

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Design and Access Statement

Doc Ref: **7.04**

Part 2

Blackfriars Bridge Foreshore

APFP Regulations 2009: Regulation **5(2)(g)**

Hard copy available in

Box **69** Folder **B**

January 2013

Thames
Tideway Tunnel 

Creating a cleaner, healthier River Thames

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Section 20

Blackfriars Bridge Foreshore

20.1 Introduction

20.1.1 A worksite is required to intercept the existing Fleet Main CSO, connect to the northern Low Level Sewer No.1, and connect them both to the main tunnel. The proposed development site is known as Blackfriars Bridge Foreshore, which is located in the City of London.

20.1.2 Relieving the flow from the northern Low Level Sewer No. 1 at this site, as well as at Chelsea Embankment Foreshore and Victoria Embankment Foreshore, would control the flows from ten other CSOs along the northern bank of the river (from Church Street in Chelsea to Essex Street in Westminster). This would avoid the need for additional sites at or near these CSOs.

20.1.3 We have agreed with the City of London that some elements of the detailed design proposals would be drawn up at a later stage. The detailed design would be submitted to the local authority for approval in the form of a DCO requirement. Therefore, the majority of the images and plans in this section are for illustrative purposes only. The proposed landscape design, however, is indicative.



Figure 20.1: Aerial photograph of the existing Blackfriars Bridge Foreshore site with LLAU indicated

20.2 Existing site context

20.2.1 The site itself comprises two sections of the foreshore of the River Thames: the main site (where we propose to construct the CSO drop shaft and interception works) extends from Temple Stairs to Blackfriars Rail Bridge and the secondary site (where we propose to construct the relocated Blackfriars Pier) lies between Blackfriars Rail Bridge and the City of London School. The main site also includes sections of the Blackfriars Bridge westbound off-ramp and areas of the pavement along Victoria Embankment and Paul's Walk.

20.2.2 The majority of the main site falls within the Whitefriars Conservation Area and the western section falls within the Temples Conservation Area.

20.2.3 The foreshore is designated as part of the River Thames and Tidal Tributaries Site of Metropolitan Importance for Nature Conservation. The site also lies within the 'Thames and the Riverside' area, which is designated as one of the City of London's five key city places in Policy CS 9 of its Core Strategy. The entire City of London is considered to have archaeological potential except where it is demonstrated that archaeological remains have been lost.

20.2.4 The site falls within designated linear views in the Mayor's London View Management Framework (King Henry VIII's Mound, Richmond to St Paul's Cathedral and Westminster Pier to St Paul's Cathedral). It also falls within river prospect views from the western pavement of Blackfriars Bridge, the eastern pavement of Waterloo Bridge and Gabriel's Wharf on the South Bank.

20.2.5 The majority of the river wall within the site forms part of the original Grade II listed embankment wall designed by Sir Joseph Bazalgette, which includes cast iron lamp standards, a granite retaining wall, various steamer piers, stairs and Blackfriars Bridge.

20.2.6 The site is bounded to the north by Victoria Embankment/Blackfriars Underpass/ Upper Thames Street and to the east, south and west by the River Thames.

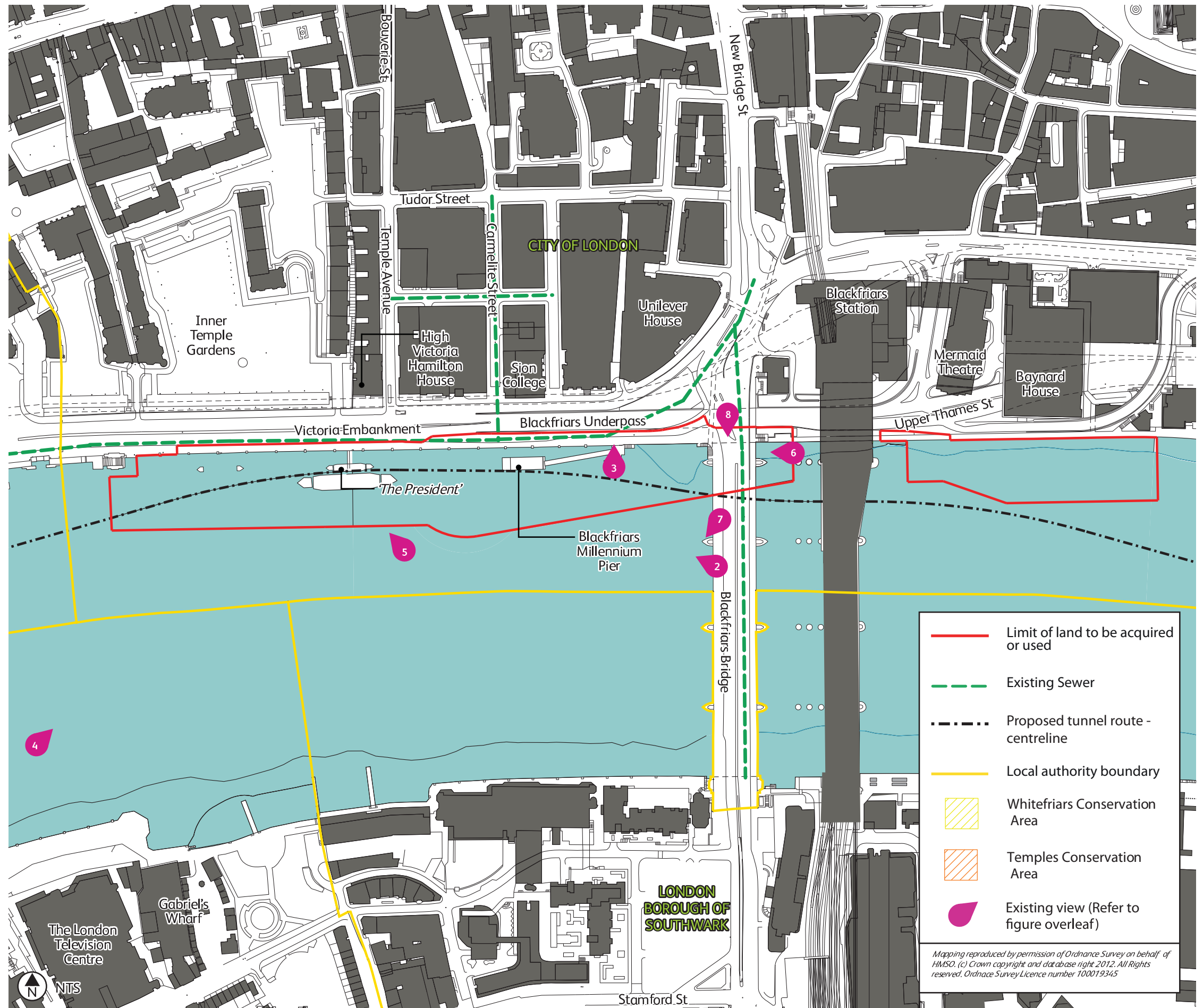


Figure 20.2: Existing site plan



Figure 20.3: Aerial view of existing site



Figure 20.4: Existing site from Blackfriars Bridge

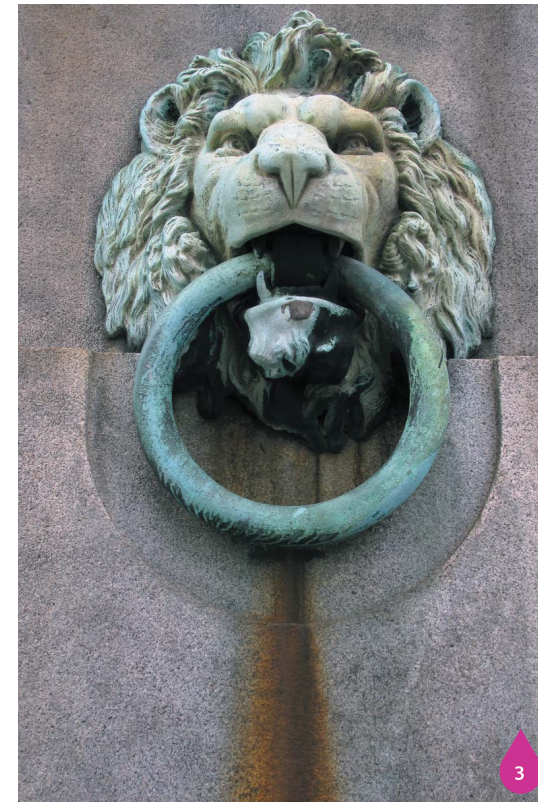


Figure 20.5: Detail of Lions head on embankment wall



Figure 20.6: Existing site from the River Thames



Figure 20.7: 'The President' ship



Figure 20.8: Fleet Main CSO outfall under Blackfriars Bridge



Figure 20.9: Detail of capital at Blackfriars Bridge



Figure 20.10: Underside of Blackfriars Bridge

20.2.7 To the north of the main site lie multi-storey buildings that are predominantly in business use. The Grade II listed buildings front Victoria Embankment and are characterised by a varied roof line and frontages in different architectural styles, notably the imposing neo-classical Unilever House, the Tudor Gothic Sion College and 9 Carmelite Street, and the high Victorian Hamilton House.

20.2.8 To the north of the secondary site, the area is characterised by late 20th century development including the Mermaid Theatre, Baynard House, the recently rebuilt Blackfriars mainline rail station as well as the Flemish influenced City of London School.

20.2.9 The Millennium Footbridge crosses the River Thames approximately 100m to the east of the secondary site.

20.2.10 To the south of the secondary site, on the opposite side of the River Thames, lie the Tate Modern art gallery and other contemporary residential and office developments within the London Borough of Southwark.

20.2.11 To the south of the main site, the opposite side of the River Thames is characterised by cultural uses such as Gabriel's Wharf, the London Television Centre and the National Theatre.

20.2.12 To the northwest of the main site lies Middle Temple including Inner Temple Gardens, which is listed on English Heritage's Register of Historic Parks and Gardens.

Existing site access and movement

20.2.13 There is no existing vehicle or public pedestrian access to the foreshore from Victoria Embankment.

Highways

20.2.14 Victoria Embankment/Blackfriars Underpass/Upper Thames Street (A3211) is a dual carriageway with a 30mph speed limit, which forms part of the Transport for London Road Network.

20.2.15 The A201 runs north-south across Blackfriars Bridge and follows the alignment of the Fleet Sewer north along New Bridge Street.

20.2.16 Access to the various office buildings in the area is gained via a number of local one-way streets between Victoria Embankment and Fleet Street, including Temple Avenue, Bouverie Street and Tudor Street.

Car parking

20.2.17 No on-street car parking is available on this section of Victoria Embankment. There are four private car parks within 720m of the site, at Bouverie Street, Baynard House, Little New Street (International Press Centre) and Limeburner Street (Hillgate House).

Public transport

20.2.18 There are several bus stops within 600m of the site at Victoria Embankment, Blackfriars Station, New Bridge Street, Fleet Street and Stamford Street.

20.2.19 Blackfriars Millennium Pier lies within the main site and acts as a river bus stop for services to Putney, the London Eye and St George Wharf to the west and Woolwich Arsenal to the east. The pier is accessible from the Thames Path via a ramp.

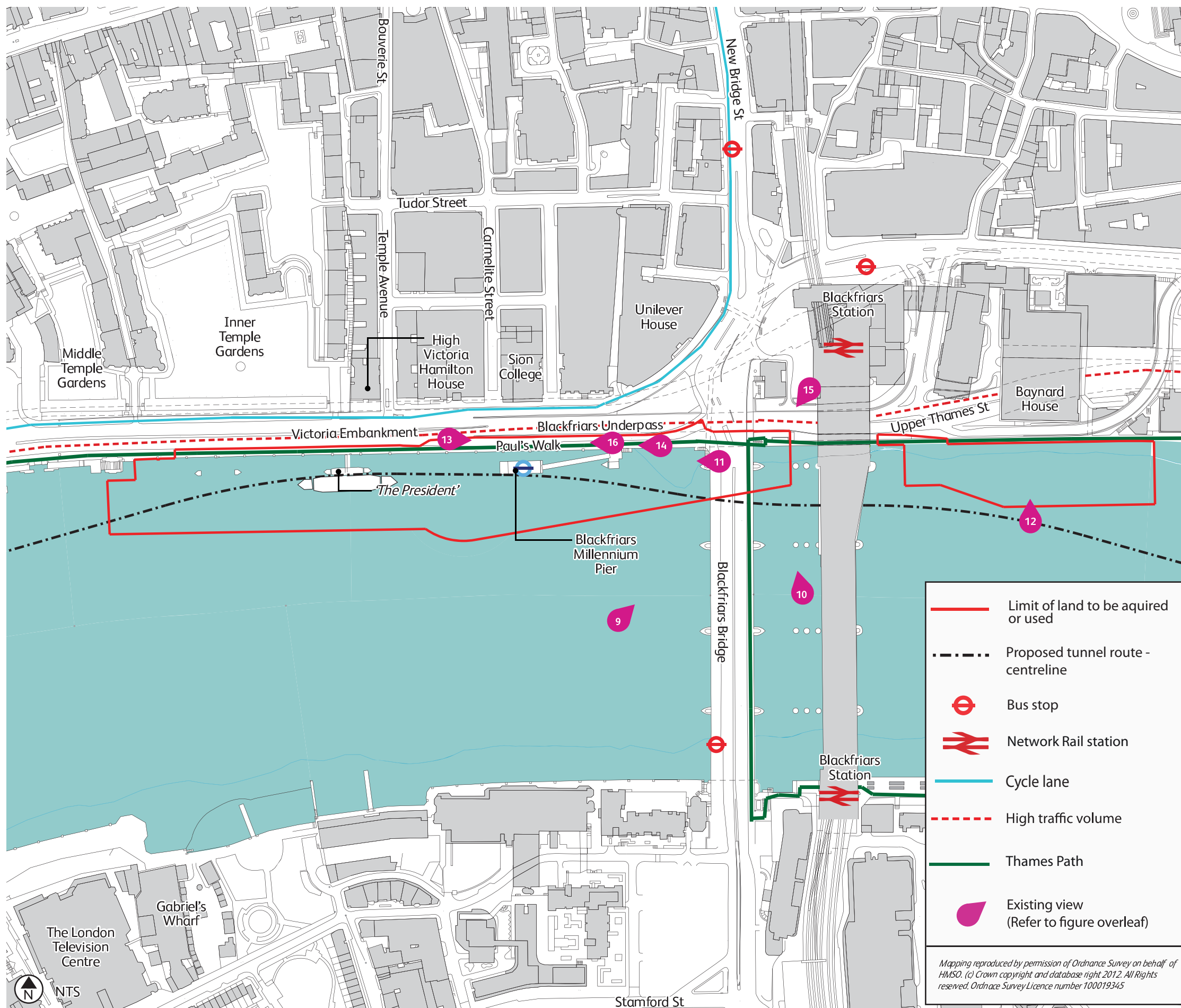


Figure 20.11: Existing site analysis plan



Figure 20.12: Blackfriars Bridge from the River Thames looking northeast



Figure 20.13: Blackfriars Bridge from River Thames looking northwest



Figure 20.15: Existing secondary site from the River Thames



Figure 20.16: Blackfriars Millennium Pier from Victoria Embankment



Figure 20.17: Paul's Walk underneath Victoria Embankment

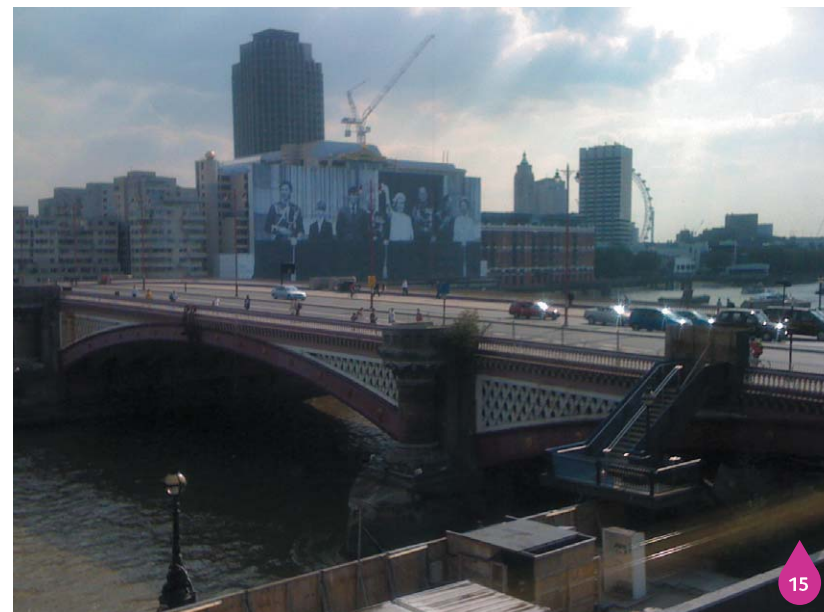


Figure 20.18: Blackfriars Bridge from Blackfriars Station



Figure 20.14: Paul's Walk towards Blackfriars Millennium Pier



Figure 20.19: Ramp from Paul's Walk up to Victoria Embankment

20.2.20 Blackfriars Rail Station, which is serviced by National Rail services and the London Underground Circle and District lines, is located 80m east of the secondary site. The station was recently rebuilt to improve operations and lengthen the platforms across Blackfriars Rail Bridge to enable high capacity trains to use the station. A pedestrian access to the station was also created from the south side of the river.

Cycle routes

20.2.21 Cycle lanes are provided in both directions on Victoria Embankment, however cycling is not permitted on this section of the Thames Path.

Pedestrian routes

20.2.22 Victoria Embankment provides a continuous east-west link for pedestrians along the northern bank of the River Thames and forms part of the Thames Path. From the west, the path leaves the road when it reaches the Blackfriars Bridge off-ramp and descends to a lower level via a ramp and steps. The path then continues eastwards along the river via Paul's Walk beneath Blackfriars Bridge and Blackfriars Rail Bridge.

20.2.23 This section of the Thames Path is popular with pedestrians including local office workers, who use it as an indirect transport route or for recreational walking and running.

Historical context

20.2.24 The site lies on the northern bank of the River Thames and spans its confluence with the now 'lost' River Fleet. Throughout the prehistoric period (700,000 BC to AD 43), the site was probably largely submerged within the channel of the River Thames. In the Roman period (AD 43 to 410), various revetments, quays, jetties and warehouses were built along the waterfront in this location.

20.2.25 In the later medieval period (AD 1066 to 1485), the banks of the River Thames in the area were systematically drained and reclaimed. Following the Norman Conquest in 1066, forts were built along the rebuilt western city wall including Baynard's Castle (30m to the northeast of the Blackfriars Pier site) and Montfichet's Tower (100m to the northeast). In 1157, Henry II gifted large tracts of reclaimed land on both banks of the River Fleet to the Order of the Knights Templar. Baynard's Castle was destroyed in 1213 and in 1276 the site was gifted to the Dominican Order of Black Friars for a new religious precinct.

20.2.26 Land continued to be reclaimed from the channel of the River Thames from the 15th and 16th centuries onwards. In 1760, a forerunner of Blackfriars Bridge was built in the same position as the present bridge.

20.2.27 The City of London Gas Works was constructed over a large area of land to the north of the site in the early 19th century. By the mid-19th century, the confluence of the rivers Thames and Fleet had been built over entirely. The London, Dover and Chatham Railway was constructed adjacent to the present rail bridge in 1862 and the original Blackfriars Bridge was replaced by the current structure in 1869.

20.2.28 The present Victoria Embankment riverfront was constructed between 1865 and 1870 as part of Sir Joseph Bazalgette's sewerage improvements. The improvement works included construction of the northern Low Level Sewer No. 1, the Metropolitan District Railway and the utilities subway. The river wall and sewer originally curved northwards away from the main course of the River Thames.

20.2.29 In the 1940s, a pier and a pump house were built on the eastern part of the main site. The Blackfriars Underpass and realigned river wall were constructed in the 1960s. Arch 1 of Blackfriars Bridge was predominantly filled in at this time and the Fleet Sewer extended so that the Fleet CSO now discharges from the 1960s wall. At this time the pump house was decommissioned, and significantly altered to include offices within the building.

20.2.30 The London, Dover and Chatham Railway bridge deck was eventually removed in 1985. The Blackfriars Millennium Pier and the associated accesses were built in 2000.

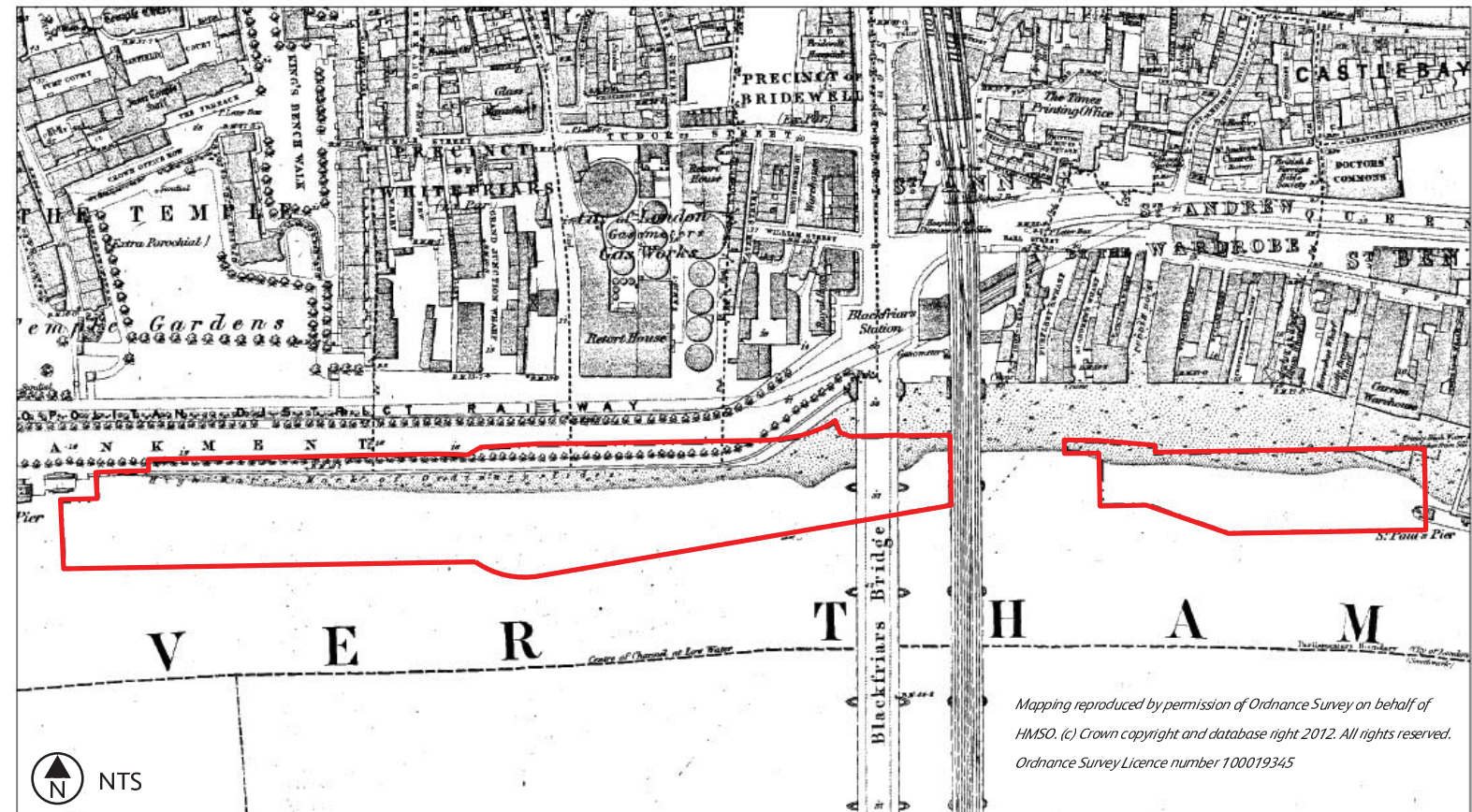


Figure 20.20: Historic map of the Blackfriars Bridge Foreshore site (1878)

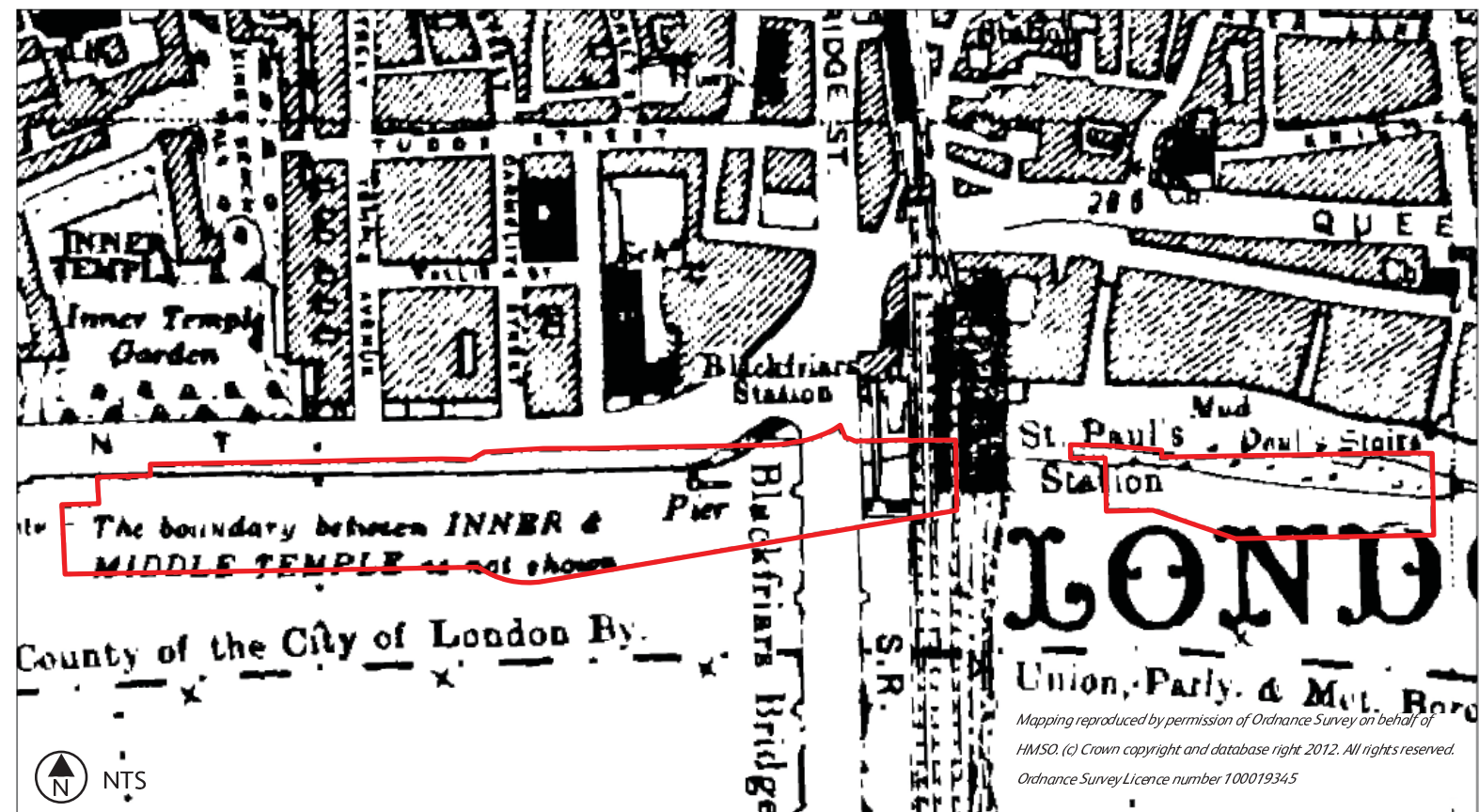


Figure 20.21: Historic map of the Blackfriars Bridge Foreshore site (1938)

Site analysis: Opportunities and constraints

The site-specific design opportunities included:

- a. Create a new area of public realm on top of the foreshore structure with views across the River Thames towards the South Bank and Waterloo Bridge.
- b. Provide a level route for the Thames Path.
- c. Enable future development of the area under Blackfriars Bridge and the westbound off-ramp by others.
- d. Increase the usability and attractiveness of the riverside for local residents, workers and tourists.
- e. Help to indirectly control flows from ten other CSOs along the northern bank of the River Thames.

The site-specific design constraints included:

- a. the proximity of the authorised navigation channel of the River Thames and the need to ensure navigational safety
- b. the limited headroom available beneath Blackfriars Bridge, where the Fleet Main CSO outfall is located
- c. the London Underground Waterloo and City Line tunnels, which run parallel to the west of Blackfriars Bridge
- d. the London Underground District Line tunnels, which run beneath the Embankment
- e. a UK Power Networks (formerly EDF) cable tunnel, which runs under the River Thames to the east of Blackfriars Bridge
- f. a service tunnel in the embankment wall, directly above the northern Low Level Sewer No. 1
- g. the proximity of Victoria Embankment and Blackfriars Underpass, which form part of the Transport for London Road Network

- h. the need to locate the shaft on the line of the main tunnel to facilitate safe construction of the connection in the local ground conditions
- i. the need for the main tunnel to pass beneath the Blackfriars road and rail bridges
- j. the separation required from Blackfriars Bridge to maintain safe navigation under Arch 2 (the northernmost full arch)
- k. the complexity of pedestrian flows through and around the site and the various steps, ramps and subways (mostly dating from the 1960s) that negotiate the level changes between Victoria Embankment, the Thames Path, the Blackfriars road and rail bridges and a pedestrian subway
- l. the 1960s Blackfriars Underpass and Blackfriars Bridge westbound off-ramp
- m. Environment Agency stated policy to minimise encroachment into the foreshore
- n. the need to protect the foreshore structure from vessel impacts
- o. the setting of the listed buildings fronting Victoria Embankment and Blackfriars Bridge itself
- p. the need to relocate Blackfriars Millennium Pier
- q. Whitefriars and Temple conservation areas and protected views along the riverside
- r. the depth and relatively fast flow of the river at this point.

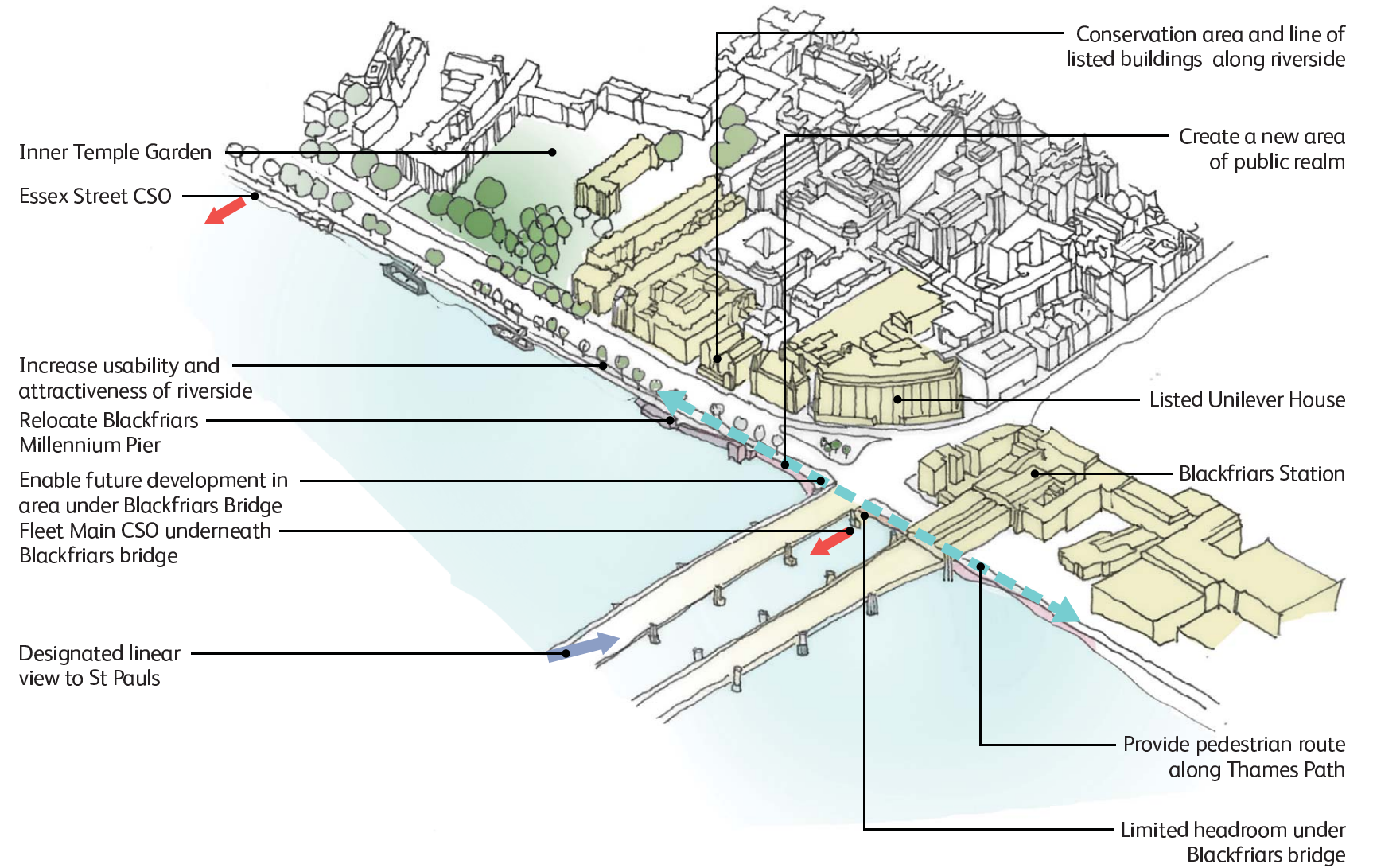


Figure 20.22: Existing site opportunities and constraints sketch

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20.3 Design evolution and alternatives

20.3.1 As the majority of the infrastructure for the project would be below ground, the key design objective for the permanent above-ground works was to integrate the functional components into the surroundings. The site-specific design objective at Blackfriars Bridge Foreshore was to successfully integrate the new foreshore structure into its context as an area of public realm, protect the setting of nearby listed buildings and views of St Paul's Cathedral from the river, and minimise any effects on river navigation.

20.3.2 The design of our proposals at Blackfriars Bridge Foreshore was also significantly influenced by an extensive process of stakeholder engagement and design review. In order to ensure design quality, we undertook two rounds of review hosted by the Design Council CABI. We also held various pre-application meetings with the City of London and other strategic stakeholders. More information on our public consultation process is provided in the *Consultation Report* which accompanies the application.

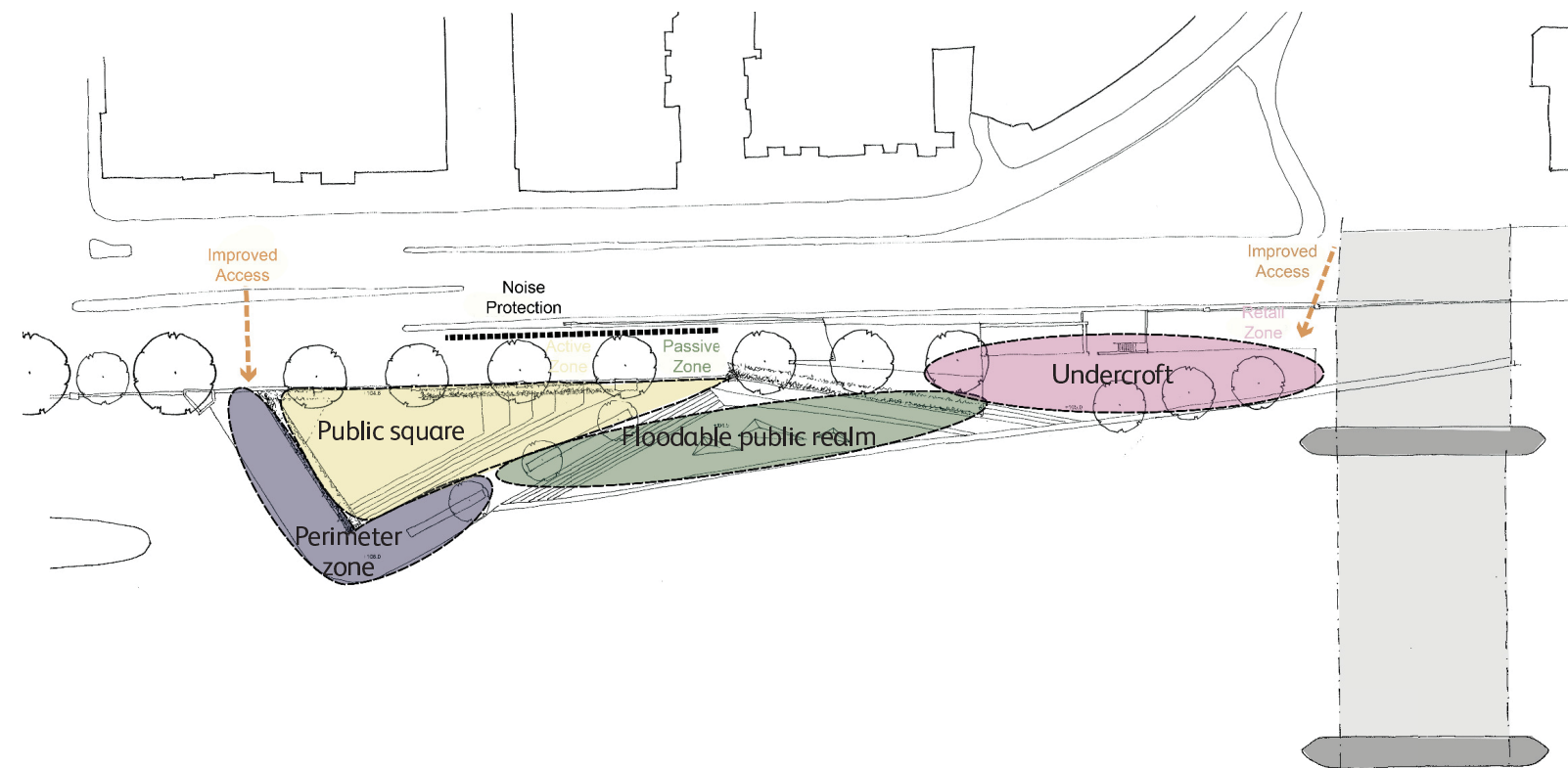


Figure 20.23: Design development sketch

October 2010

Phase one consultation

20.3.3 Blackfriars Bridge Foreshore was presented as our preferred site at phase one consultation as there was no other suitable site near the Fleet Main CSO. The proposals comprised an interception chamber at the outfall of the Fleet Main CSO joined by a culvert in the foreshore to a structure encompassing the CSO drop shaft to the west. We proposed to position an overflow weir chamber on the northern Low Level Sewer No.1 in the embankment wall to the west of the drop shaft, which was connected to the drop shaft by a short culvert. The landscaped permanent site included a ventilation building (approximately 10m high) and a ventilation column (approximately 15m high). We proposed temporarily to relocate Blackfriars Pier and to return it to a position close to its existing location.

20.3.4 We received feedback from the City of London, the Greater London Authority, the Port of London Authority, English Heritage, neighbouring landowners, the local community and other respondents. The key concerns raised in relation to the permanent design included:

- the loss of foreshore area
- the impact on existing heritage features, including Blackfriars Bridge and views of St Paul's Cathedral from the bridge
- the permanent design of the site.



Figure 20.24: Proposed view from phase one consultation

Design development

20.3.5 Having examined the phase one consultation feedback, we still considered Blackfriars Bridge Foreshore to be the most appropriate site. We undertook further technical work and determined that it was necessary to increase the size of the functional components at this site for the following reasons:

- We moved the northern Low Level Sewer No. 1 interception chamber east of the CSO drop shaft where there are fewer utility services in the subway above.
- Physical modelling demonstrated that the shaft needed to be 24m in diameter to adequately de-aerate flows before they enter the tunnel.
- We developed the engineering design of the below-ground structures including connection culverts and valve chambers.
- We moved the shaft further away from Blackfriars Bridge to increase its distance from the Waterloo and City Line tunnels, improve the alignment of the main tunnel, and reduce potential effects on river navigation.

20.3.6 In view of these changes, it was not practical to return Blackfriars Millennium Pier to its original location. Instead, we proposed to relocate the pier permanently to the east of Blackfriars Rail Bridge.

20.3.7 Furthermore, changes to the project-wide air management strategy enabled us to eliminate the need for a ventilation building at this site and reduce the size of the ventilation structures.

May 2011

CABE sketch review

20.3.8 We held a sketch review based on an initial assessment and sketched ideas for the site with the Design Council CABE in April 2011. We revised the footprint of the permanent works from phase one consultation in view of our technical changes. We proposed a landscape scheme for the area of public realm on the foreshore structure, which included a series of three multi-level open spaces, each with a different character, linked by steps and ramps. The western section of the space was the highest level and afforded views of the river; the middle section was the lowest and was designed to be floodable; and the mid-level eastern section was intended to be a low key area in which to sit and enjoy the river.

20.3.9 The Design Council CABE panel provided the following feedback:

“While we recognise the current stage of design development we were disappointed that the proposals did not present a more convincing response to the challenges presented by this site. We think that use of a physical model would assist in developing a simpler, more legible design solution. Our specific comments are as follows:

- “The presentation highlighted the opportunity for the proposals to begin to address the complexity of levels and movement patterns on this site by unpicking and stitching this streetscape back together. As the designs develop, we think they should be informed by a thorough analysis of movement patterns, including with [sic] those associated with Blackfriars Station, to determine how the needs of different groups can be addressed. This [analysis] should consider the need for new pedestrian crossings and suggest how an ‘access language’ of steps, ramps and lifts can be developed to overcome existing barriers and the difference in levels between the embankment and the foreshore development.*

- “In our view, the triangular geometry of the foreshore site as something separate from the City could be successful. However, the proposed diagonal alignment of trees produces an awkward relationship with those running along the embankment. We would also question whether the latter would perform effectively as an acoustic screen to the highway; if the site is to achieve a level of tranquillity and relief from the traffic a more solid structure may be required to serve this role.*

“We would support the decision to permanently relocate the pier east of the bridge and welcome the reuse of the area under and beside the bridge for retail uses” [Letter dated 13 April 2011].



Figure 20.25: Proposed view from Design Council CABE sketch view



Figure 20.26: Proposed view from foreshore structure from Design Council CABE sketch view

June 2011

CABE scheme review

20.3.10 We held a more detailed review with the Design Council CABE in June 2011 prior to phase two consultation. We redesigned the multi-level area of public realm in a simpler fashion. The design comprised: a widened section of the Thames Path running through and around the site; a series of wide steps, to be used as an informal seating area, descending from the Blackfriars Bridge westbound off-ramp onto the foreshore structure; and a viewing platform at the western end of the foreshore structure.

20.3.11 The Design Council CABE panel provided the following feedback:

“The presentation highlighted the opportunity for the proposals to begin to address the complexity of levels and movement patterns on this site by unpicking and stitching this streetscape back together. We think the proposals represent a commendable response to this challenge. Our specific comments are as follows:

a. *“The designs appear to resolve a complex set of site conditions and engineering constraints to produce a public realm proposal that is simple, functional and elegant. The astute handling of the level of change from the highway down to the Thames Tunnel platform underpins an assured design solution.*

b. *“We support the principle of maintaining a floodable area between the new structure and the Embankment. The detailed resolution of this element would merit further examination. The benefits of offering access down to the water at this point should be considered.*

c. *“We think these proposals could inform the development of an ‘access language’ of steps, ramps and lifts for the whole Thames Tunnel project. A consistent approach across all sites would help signal to visitors that they were entering a space associated with the Thames Tunnel. While the use of feathered steps at Blackfriars may be justified, they can raise issues of safety and so require careful thought. Equally, further thought should be given to the positioning of landings along the route of the ramp.*

d. *“The selective use of trees within the space could work well to reinforce its linearity and frame vistas of the River, which could provide a sense of shelter from the road.*

e. *“We welcome the incorporation of a diagrammatic plan of the Thames within the paving design, which provides a good sense of the potential educational value of the space.*

f. *“We welcome the reuse of the area under and beside the bridge for retail uses and are pleased to note that public conveniences are included in the designs.*

g. *“The views studies revealed an awkward resolution of the corner treatment where the platform cantilevers over the curved wall of the structure below. Therefore, we think there could be better ways of finishing this corner.*

h. *“We welcome the use of horizontal fenders to mark the tide levels, an approach which we note is being echoed on other foreshore sites” [Letter dated 30 June 2011].*



Figure 20.27: Proposed view from Design Council CABE scheme review



Figure 20.28: Proposed view from Design Council CABE scheme review

Novemebr 2011

Phase two consultation

20.3.12 We made no significant changes to the design following the Design Council CABE scheme review. At phase two consultation, the main supportive and neutral feedback included:

a. selective use of trees within the space could reinforce the linearity of the foreshore structure and frame vistas of the River Thames

b. support for some of the detailed design suggestions, including incorporating a rill in the form of a diagrammatic plan of the River Thames and reusing the area under and beside Blackfriars Bridge for retail uses

c. qualified support for the proposed design if it would not increase scour, which would put the archaeology of the river at risk.

20.3.13 The main objections, issues and concerns included:

a. The foreshore structure is too large, has too great an impact on navigation and there should be no structures in the river.

b. The potential effect on foreshore habitats is of concern.

c. The design should include landscaping, planting and other elements to enhance biodiversity.

d. The design should include seating, shelter and areas for play.

e. The effect of the permanent design on nearby listed buildings and the conservation area is a concern.

f. The improved Thames Path and imaginative public realm proposals are welcomed but more detailed proposals should be agreed with stakeholders.

20.3.14 In response to the feedback received, we made minor revisions to the design. Following phase two consultation, we continued to liaise with representatives of the City of London to develop the design and design principles for the site to accommodate their aspirations for the area. Our indicative design for submission with the application is based closely on the post phase two consultation design.

July 2012

Section 48 publicity

20.3.15 In response to the phase two consultation feedback, we modified the landscape design for the foreshore structure. We included more levels of planting and a water feature to provide opportunities for play and introduced a more informal arrangement for the street furniture. We omitted the Thames-shaped rill, but retained the shape by engraving it into the paving. We also developed the engineering and architectural design of the foreshore structure to reduce the projection into the authorised channel by approximately 4m. This involved softening the geometry of the structure and introducing curved corners (most notably on the southwestern corner) and moving the CSO drop shaft closer to the existing river wall.



Figure 20.29: Proposed view from phase two consultation



Figure 20.30: Proposed view from Section 48 publicity

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20.4 Proposed design

20.4.1 This section describes the amount, layout and scale of the proposed development and how the functional components would be integrated into the existing site. Details of the proposed landscaping and appearance of the site are also embedded in the description where relevant.

Fixed principles

20.4.2 The Site works parameter plan defines the zones in which the proposed works would take place. The plan indicates the general location of the CSO drop shaft and interception chamber, the ventilation structures and columns, and the electrical and control kiosks.

20.4.3 The site-specific design principles are included in the *Design Principles* document which accompanies this application. These principles establish the parameters for the above ground structures and landscaping on the site and have, where possible, been developed in consultation with the local authority. The site-specific principles should be read in conjunction with the project-wide design principles.

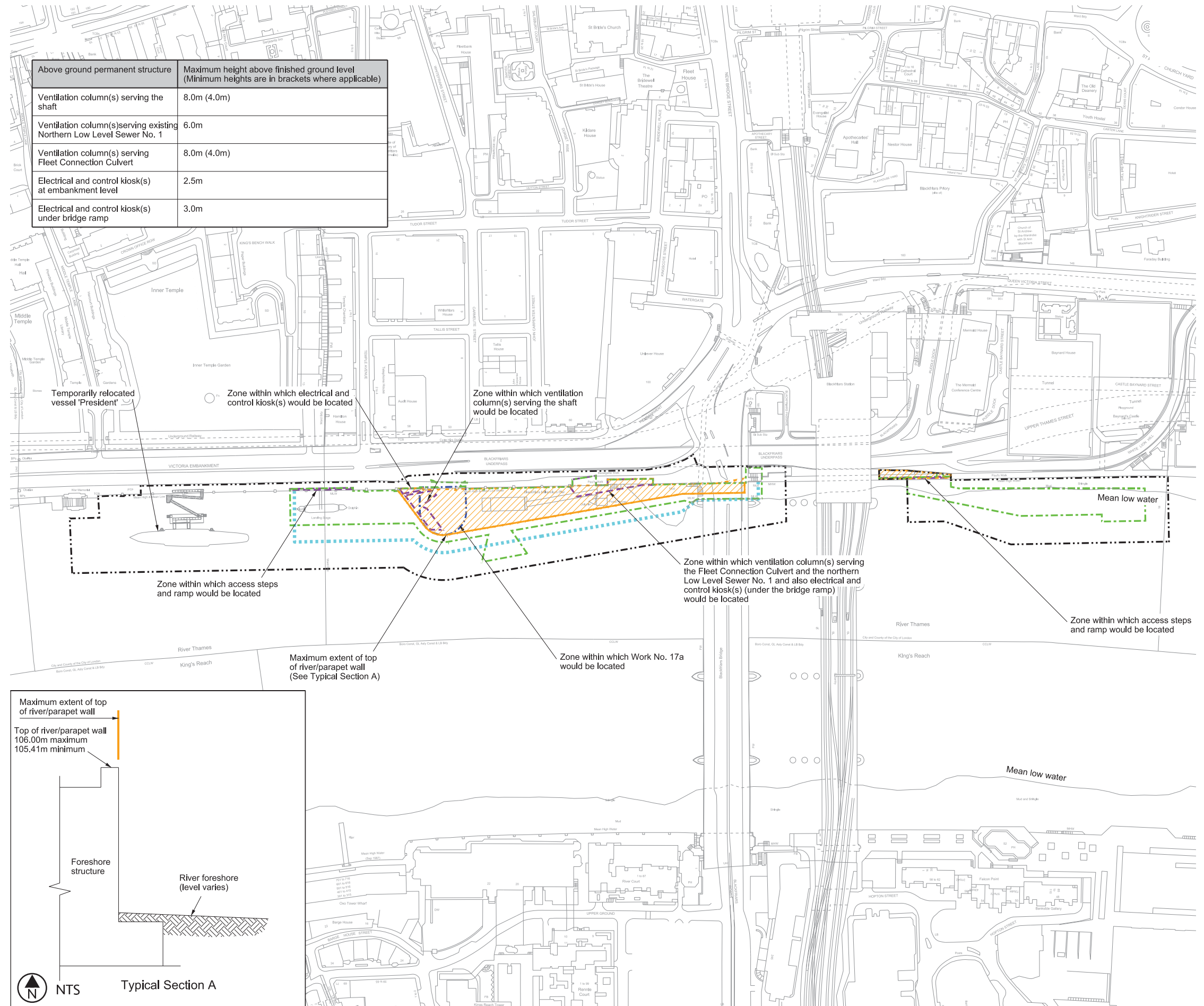


Figure 20.31: Proposed site works parameter plan and cross section - refer to Site works parameter plan in the *Book of Plans*

Design objectives

20.4.4 The proposed foreshore structure would form a new area of public realm. The main driver behind the development of the indicative designs was to explore ways in which the structures could fit in with and contribute positively to their environment. Our other objectives included:

a. Position the foreshore structure where it could positively contribute to the setting of the embankment and Blackfriars Bridge and enable unhindered views of the listed buildings and views towards St Paul's Cathedral.

b. Design the form of the foreshore structure to be contemporary and elegant while respecting the historic setting, in line with the City of London's Core Strategy (CS12 Historic Environment). Reinforce visual links with the River Thames and create attractive structures that complement the historic section of the embankment wall when viewed from the river or the shore.

c. Create a world-class area of public realm on the northern bank of the River Thames that would be identified as a destination in which to relax and enjoy the views. The area could also potentially host outdoor functions and events.

d. Resolve the level differences between the Thames Path and the Blackfriars Bridge westbound off-ramp by creating a series of viewing platforms that would offer new vantage points from which to view the River Thames.

e. Substantially improve pedestrian accessibility along the river frontage and enhance the Thames Path by creating a simple, clearly defined and level route from the western access point on the embankment to the eastern access on Paul's Walk beneath Blackfriars Road Bridge.

f. Extend the historic line of London Plane trees along the embankment.

g. Create opportunities for appropriate commercial activity that would support the function of an area of public realm.

h. Playfully communicate the story of sustainable water management.

i. Propose materials that complement those of the embankment and the listed buildings close to the site while making it clear that the foreshore structure is a new extension into the River Thames.

j. Ensure that the function of the Blackfriars Millennium Pier is not compromised.

k. Enhance the unique character of the foreshore by promoting aquatic ecology.

l. Utilise high quality surface treatments and landscape, having regard to the City of London's *Unitary Development Plan Saved Policy ENV8* and its objective to respond positively to the character and appearance of the city.

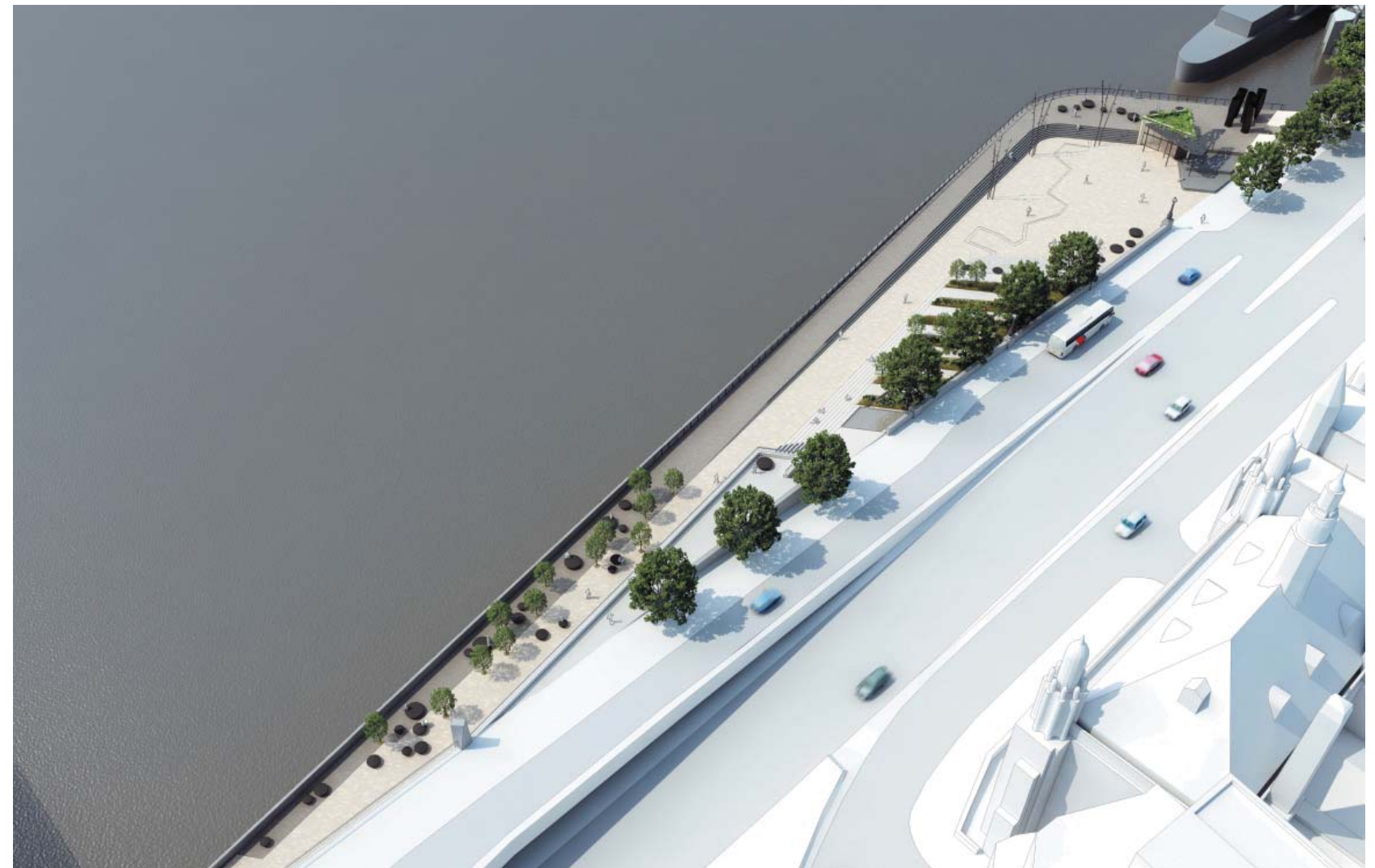


Figure 20.32: Proposed aerial view of site

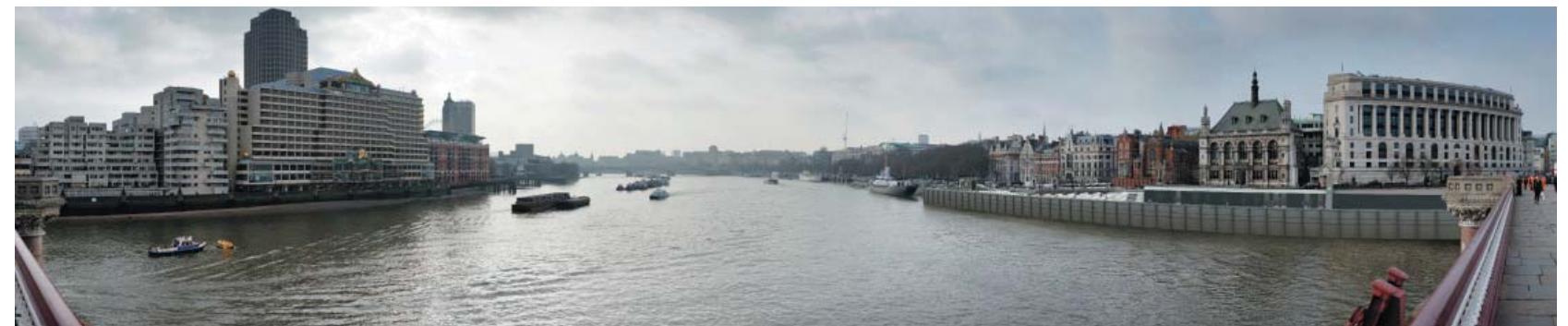


Figure 20.33: Proposed panoramic view from Blackfriars Bridge



Figure 20.34: Proposed panoramic view looking towards proposed site from Gabriel's Wharf

Use and programme

20.4.5 The foreshore structure over the CSO drop shaft would form a new, publically accessible open space in accordance with the City of London's *Core Strategy Policy CS19* (open space and recreation). The functional requirements and constraints at this site require a sizeable foreshore structure and therefore a good-sized public space. Primarily we anticipate that it would be used as a significant viewing and seating space for pedestrians passing along the Thames Path and for local workers and tourists.

20.4.6 Its proximity to the wide open spaces of the River Thames and south-facing aspect, combined with the potential to include units for commercial and cultural activity would make it an attractive place to spend time. It would be accessible to people of all ages and increase access to the riverfront.

20.4.7 The new area of public realm would offer a flexible space for a multitude of activities, which could include:

- a. informal play and recreation through playful water features, stepping stones, seating areas, and performance space
- b. relaxation spaces, seating and a terraced garden that would be pleasant to use year-round, providing shade during summer and solar gain during winter
- c. potential active commercial use of the proposed amenity kiosk and undercroft area, which would foster natural surveillance and make the area self-policing
- d. formal or informal events, exhibitions and other activities such as markets.

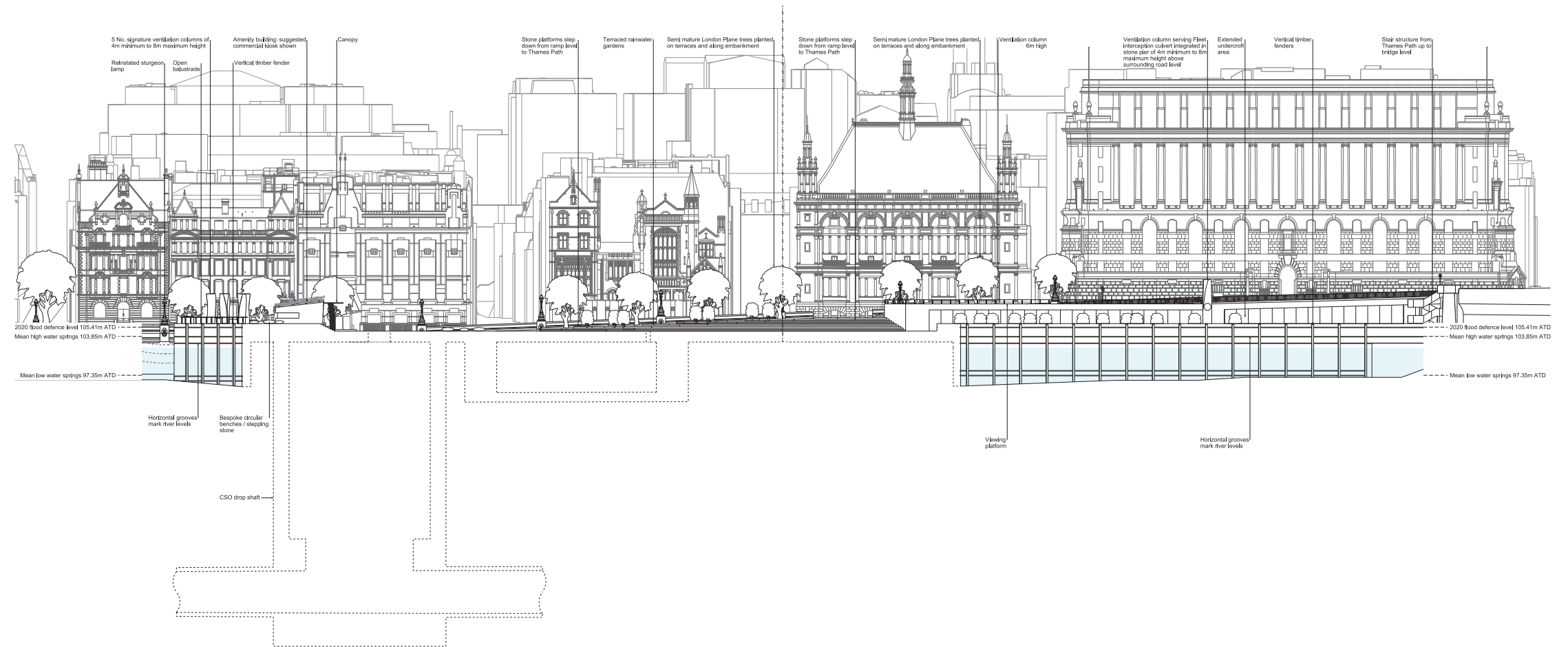


Figure 20.35: Proposed site section (not to scale) - refer to Proposed section AA in the *Book of Plans*

Detailed description

20.4.8 The main constraints on the design and layout of the foreshore structure were the various level changes at the site. The diverging levels of the riverside walkway, Blackfriars Underpass and the Blackfriars westbound off-ramp, which leads up to the level of the bridge, needed to be accommodated and the pedestrian subway and stepped access to the bridge presented an additional complication. The challenge was to create a vibrant and interesting new public space for London by rationalising and celebrating these level changes with a simple and elegant structure that would be open and accessible.

20.4.9 We drew sections through the site and identified the opportunity to simplify the level changes for users of the Thames Path. We sought to create a level linear promenade that would extend from the western entrance onto the structure at the base of the Blackfriars westbound off-ramp to the existing Thames Path to the east of Blackfriars Road Bridge. The promenade would widen at the western end to form a new public square. Additional open spaces to either side of the promenade and square for various activities and passing the time would activate and enrich the space. We termed these spaces the 'new public square', the 'terraced garden', the 'undercroft area', the 'linear promenade' and the 'riverfront viewing platform'.

20.4.10 We carefully considered the interaction of the spatial components with their existing surroundings. The different elements would be drawn together by a broadly triangular geometry and alignment that would appear to 'hinge' out of the line of the existing embankment.

New public square

20.4.11 We propose to create a clearly defined, level route through the space on top of the foreshore structure from the western access point on Victoria Embankment, which would invite passers-by into the space and divert them away from the busy road. They would enter the space via a gap in the historic river wall and traverse it diagonally; they could also be directed to the principal views via the terraces, steps and ramps.

20.4.12 The foreshore structure would be large enough to incorporate a new public square over the CSO drop shaft and interception structures. The square could be used as a large multifunctional space for leisure, events and pedestrian circulation.

20.4.13 The square would have its own distinctive identity; it would be distinguished from the more intimate terraced gardens and riverfront viewing platform by clearly defined level changes that would wrap around the space.

20.4.14 Its identity would also derive from the tension between the historic urban backdrop and the panoramic views of the River Thames. The main theme would be water: we propose to incorporate a water feature including a reflecting pool and fountain jets to catch the eye. The pool would incorporate a sloping edge traversed by fun, pebble-shaped seats and the water level could fluctuate in accordance with the tide in the River Thames. The square would form a flexible, dynamic space and the various uses would create completely different atmospheres: from a vibrant daytime space, when bubblers would make the pool a lively place to play, to a quiet, romantic night-time space, when the pool would be calm and reflective, and feature mist fountains and sparkling lights. These contrasts and dynamics would make the space a destination in its own right.

20.4.15 The square could also support a commercial use and an amenity kiosk could form a focal point along the western edge of the space. Such a use would increase activity, natural surveillance and a sense of security within the area and add to the character of the space.

20.4.16 The proposed form of the amenity kiosk reflects the triangular geometry of the site and the sculptural treatment of the structures within it. It would be clad in natural stone similar to the proposed kiosk and plinths nearby that would mark the intervention in the existing river wall. This treatment references the existing large monolithic stone piers in the embankment wall, such as the nearby Submariner's Memorial, in a more contemporary style. The kiosk would feature a planted brown roof and incorporate a lightweight sculptural shade structure.



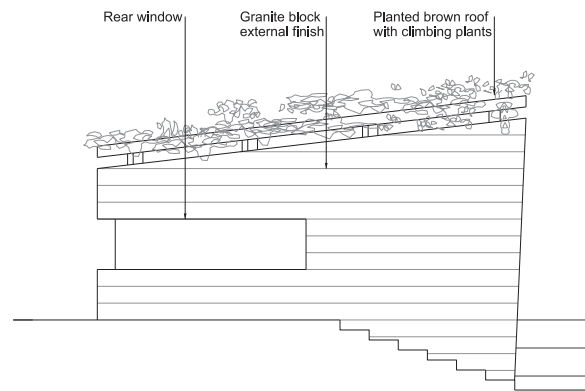
Figure 20.36: Example of seating and water feature



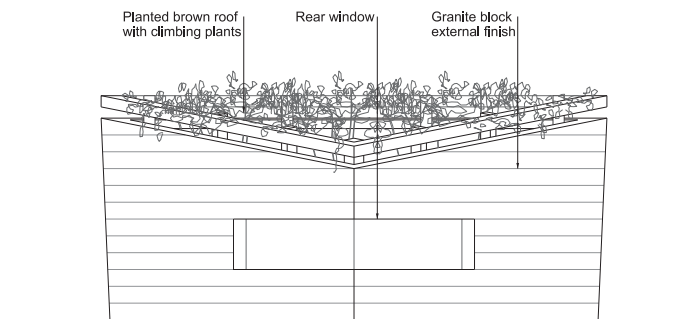
Figure 20.37: Example of water feature



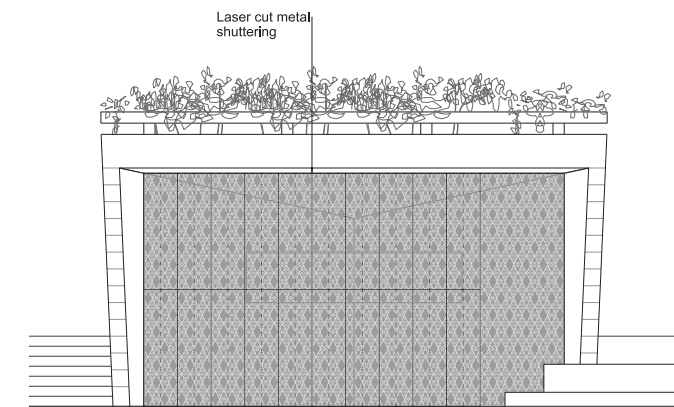
Figure 20.38: Example of canopy and kiosk



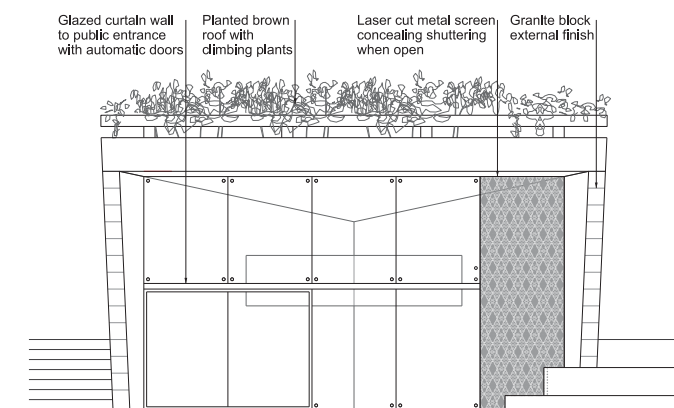
South elevation



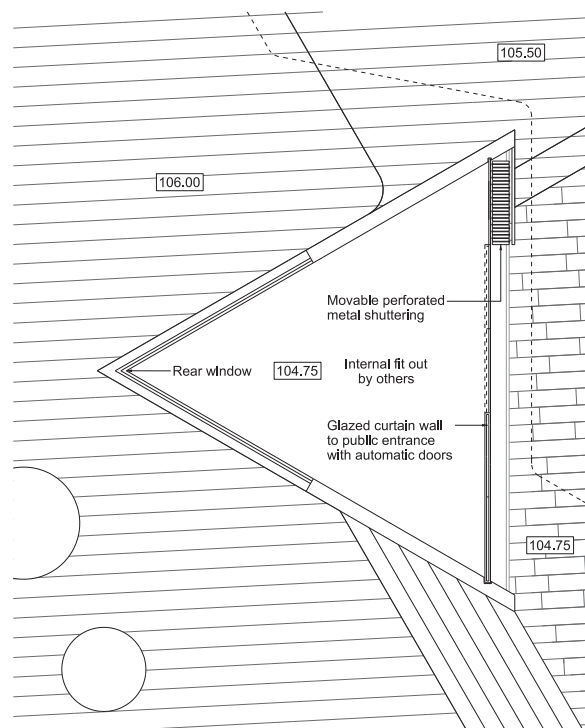
West elevation



East elevation (shuttering closed)



East elevation (shuttering open)



Floor plan

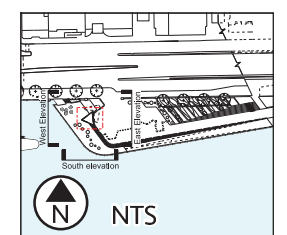


Figure 20.39: Proposed kiosk (not to scale) - refer to Kiosk design intent in the *Book of Plans*

Terraced garden

20.4.17 The terraced garden would mediate the level differences between the Blackfriars westbound off-ramp and the new public square. The top terrace would form a level platform above the undercroft area and the other terraces would step down towards the square. The tapering form of the terraces would be orientated westwards towards the principal views and create secluded seating spaces, with 'rainwater gardens', playful water rills, and an infinity pool on the top terrace.

20.4.18 The terraced 'rainwater gardens' would demonstrate sustainable methods for harvesting and recycling rainwater. Rainwater would be harvested from the surrounding vegetated roofs and hard pedestrianised surfaces and collected in open channels, then pumped to the top terrace to be purified and cleansed through the rainwater gardens before entering the pools and water features.

20.4.19 The pools would serve multiple purposes: they would mask the ambient traffic noise, cool the microclimate, and form a play feature with cascades, small sluice gates and textured surfaces for aeration.

20.4.20 Sections of the existing river wall would be retained and raised slightly to separate the hectic Victoria Embankment from the intimate garden terraces. The iconic river-facing features on the existing wall, such as the Lion's Heads, would be retained, which would make this one of the few places in London in which to appreciate these sculptural forms at close quarters.

20.4.21 In order to continue the traditional line of tree planting along the embankment, we propose to include three semi-mature London Plane trees on the terraces where there is adequate depth of soil. These trees would improve the microclimate and provide shade and shelter in hot weather. The line of trees would continue to the east up the ramp in a planter formed in the void left by the former access ramp down to the riverside walkway.



Figure 20.40: Example of public space along waterfront

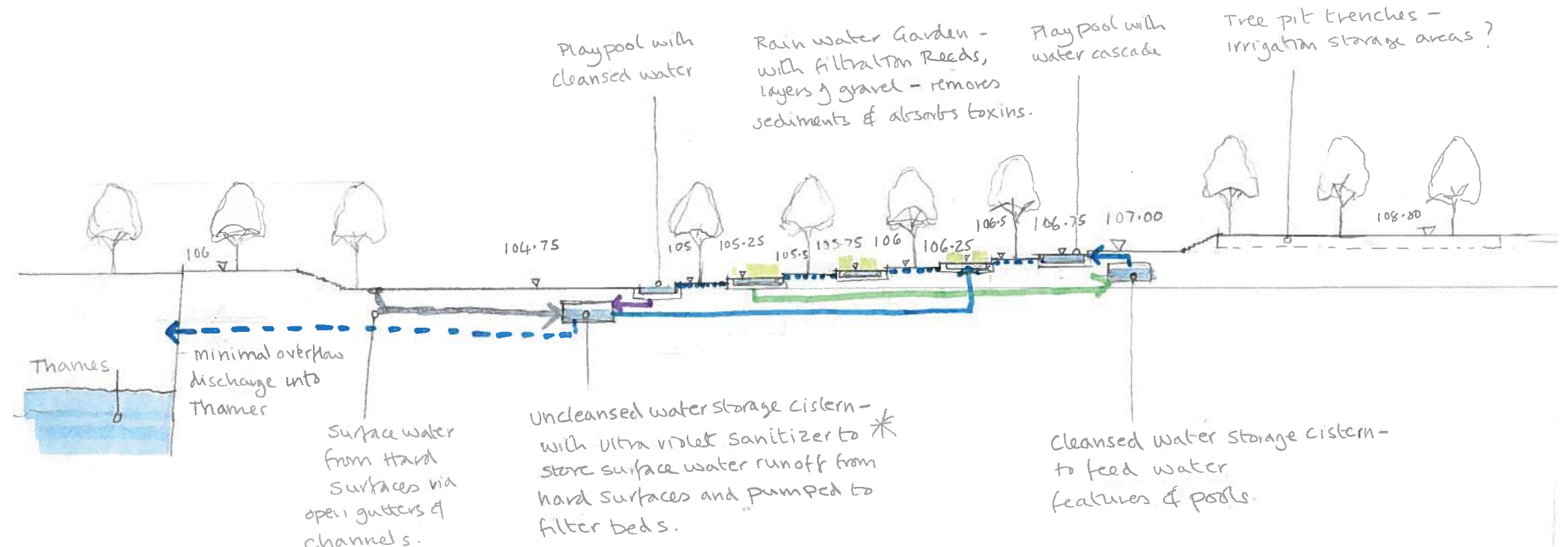


Figure 20.41: Design development sketch section of proposed terrace garden (not to scale)

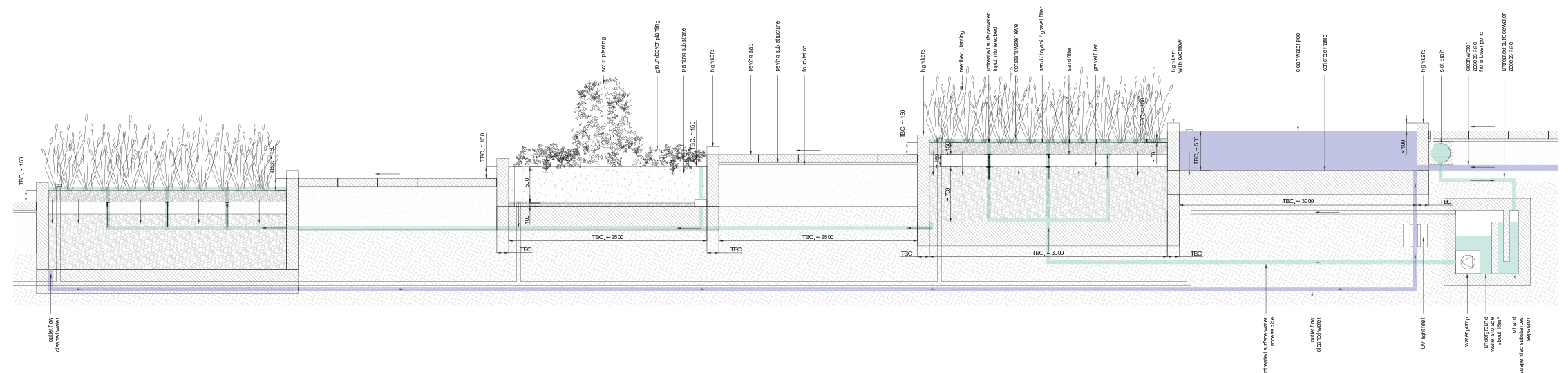


Figure 20.42: Design development section of proposed terrace garden (not to scale)

Undercroft area

20.4.22 The existing undercroft area below the Blackfriars westbound off-ramp would be extended and enhanced to create a new enclosed area that could be used for commercial and cultural activities, in line with the aspirations of the local authority. The width of the foreshore structure could accommodate viable commercial units under the off-ramp with ample circulation space in front. Any commercial development (by others) would be the subject of separate planning applications; however, we propose to provide utilities connections to the space to facilitate this potential future use.

20.4.23 We also propose to create a new area of undercroft under the top terrace. The new undercroft would 'hinge' out of the river wall and set up the geometry for the rest of the space.

20.4.24 The new and existing undercroft areas would be unified by a single façade treatment. Bespoke laser-cut metal shutters would be included along the entire length of the façade and incorporate the required entrances. We envisage that the shutters would feature an abstract pattern that references the decorative motifs on Blackfriars Bridge. The same treatment would be applied to the amenity kiosk in the new public square and to the guarding of the new sets of stairs on the eastern and western sides of the bridge.

20.4.25 A new handrail and edge treatment would be continued above the façade to tie the foreshore structure into its surroundings. The structure's 'hinge point' would be around one of the existing piers of the embankment wall. This stone pier would be adapted and extended to accommodate a ventilation column for the below-ground culverts. The pier and the proposed ventilation column would be subtly twisted to reference the spirals of both the 19th century sturgeon lamp standards and the project's 'signature' ventilation column design in a contemporary way.

20.4.26 Access to the existing toilet facilities and to the specialist sports facility would be reinstated.

20.4.27 The extended undercroft beneath Blackfriars Road Bridge would also accommodate the stairs from the riverside walkway up to the bridge. The proposed stairs and lift were designed to be functional but sculptural and to respect the character of the Grade II listed bridge. Refer to the Heritage Statement for further details.



Figure 20.43: Example of a perforated metal screen



Figure 20.44: Example of commercial and cultural activities on the South Bank



Figure 20.45: Example of commercial and cultural activities on the South Bank

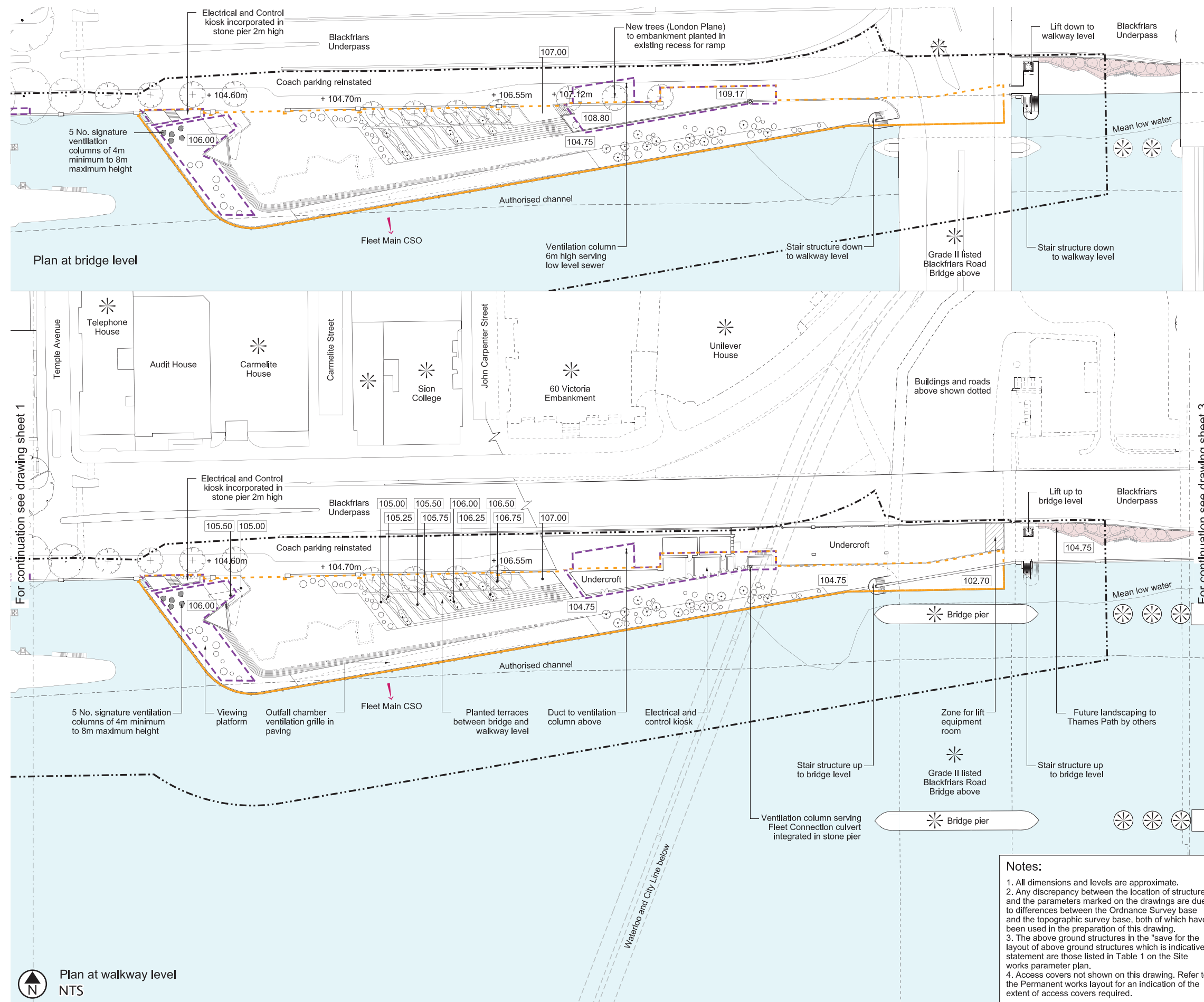


Figure 20.46: Proposed site features plan - refer to Proposed site features plan sheet 2 of 3 in the *Book of Plans*

Linear promenade

20.4.28 The linear promenade would form a connective public space to link the new square to Paul's Walk and the Thames Path. The promenade would be wide enough to incorporate the needs of different users for resting, walking or jogging.

20.4.29 The design of the promenade would reinforce pedestrian movement patterns and desire lines and create a direct, level route parallel to the river. Paving patterns and textures would be used to differentiate the main pedestrian areas from the adjacent seating areas, which would be more intimate and sheltered. The route would be interspersed with pebble-shaped stone seats and trees.

20.4.30 The promenade could also support a commercial use within the space below the top terrace and the undercroft areas. We propose to include sustainable water management features in this area, including water storage for the tree pits and areas of semi-permeable paving.



Figure 20.47: Proposed view of foreshore structure from Blackfriars Bridge

Riverfront viewing platform

20.4.31 The riverfront platform would create a dramatic vantage point along Victoria Embankment, raised above the current flood defence level. It would form a unique urban platform, characterised by its robust simplicity and openness, in which people could gather, rest and take in the expansive views of the River Thames.

20.4.32 The platform would be punctuated by pebble-shaped stone seats, which would provide opportunities for informal play. It would also feature the project’s ‘signature’ ventilation columns to create a visual connection to the wider project.

20.4.33 The viewing platform would be accessed via flowing steps flanking the new public square or via a gentle ramp from the lower promenade. The steps would form an important area of informal seating facing the linear promenade or the new public square.

20.4.34 The broad steps in the area adjacent to the new amenity kiosk would provide an attractive space in which to set out tables and chairs.

Historic interpretation

20.4.35 The size and location of the foreshore structure at Blackfriars Bridge Foreshore provides plenty of scope to include interpretive material to inform passers-by of the history of the site, the River Thames and the project itself. We intend to develop a full historical interpretation strategy, which would have particular relevance to this site.

20.4.36 Markers may be provided to indicate the location of the ‘lost’ River Fleet, or to draw attention to important features in the surrounding landscape. The markers could be incorporated on the ventilation column, in the paving treatment or in the form of bespoke signage. These details would be agreed at a later stage.

20.4.37 We developed a number of ways in which to express the aims and aspirations of the project in the design. The terraced water feature was specifically designed to educate children about sustainable water management in a playful and attractive way. A stylised representation of the course of the River Thames and the corresponding route of the main tunnel would be etched into the paving treatment, which would be most visible when it rains due to the colour and type of paving. The water level in the pool in the new public square could also rise and fall with the tide in the river. These features were designed to draw attention to the River Thames as an important and delicate resource at the heart of the city.



Figure 20.48: Proposed view of foreshore structure

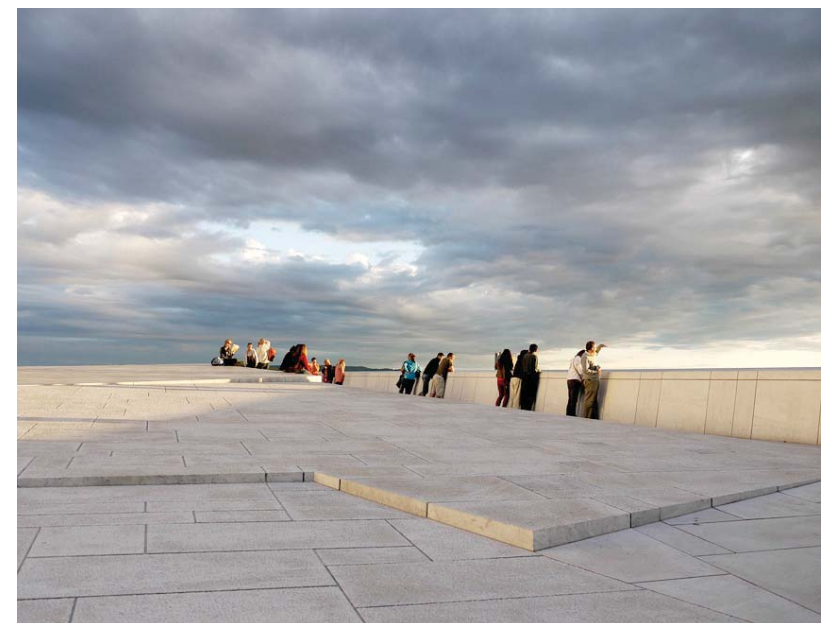


Figure 20.49: Example of viewing platform



Figure 20.50: Example of seating and public space

Navigational issues

20.4.38 Near Blackfriars Bridge, the River Thames is narrow and fast-flowing. It is well used by both freight operators and passenger services. Only a small area of foreshore is exposed at the very lowest tides. It is a challenging environment in which to introduce a new foreshore structure. Our current proposals were informed by extensive consultation with the Port of London Authority, barge operators and passenger services operators.

20.4.39 The main navigational issue would be the intrusion of the foreshore structure into the authorised channel. The extent of this projection was determined by the engineering requirements for the CSO drop shaft and the surrounding new section of river wall (refer to the Engineering Design Statement). GPS tracking information provided by barge operators showed that barges would pass close by the proposed structure.

20.4.40 Therefore, our main design aim was to ensure that Arch 2 of Blackfriars Bridge could continue to be used safely by all river traffic, of which barges are the least manoeuvrable. Following phase two consultation, we developed the engineering and architectural design of the foreshore structure and reduced the projection into the authorised channel by approximately 4m.

20.4.41 In the design submitted with the application, the foreshore structure projects approximately 3m into the authorised channel. In 2012, we installed buoys in the River Thames to mark the area of the structure and test its impact on passing vessels. This test demonstrated that it would be possible for barges to navigate through Arch 2 and past the structure. We are confident that the area of the structure in the current design is the maximum required to accommodate the functional components; however, we are continuing to develop the detailed engineering design in an attempt to reduce the projection and any possible impacts further.

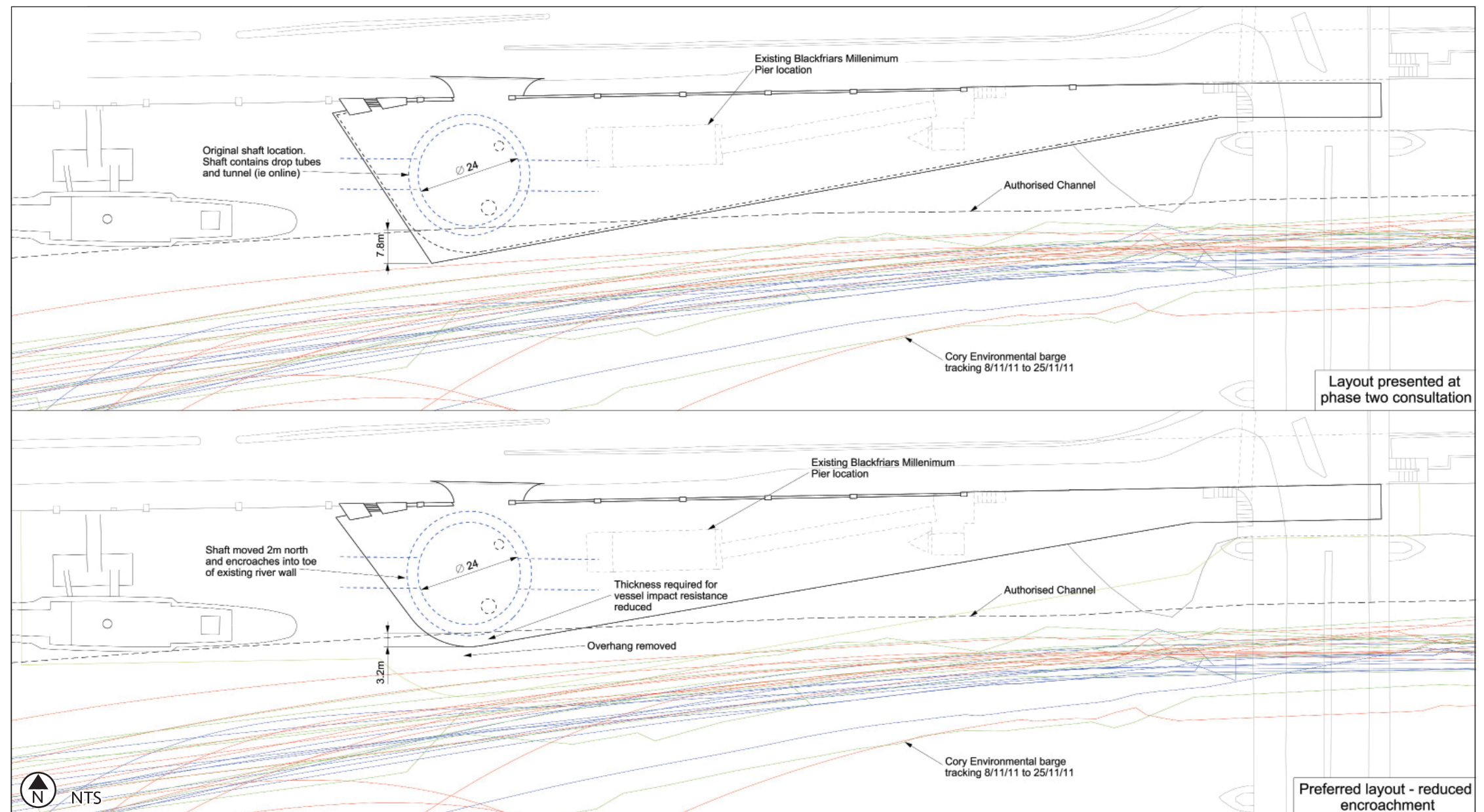


Figure 20.51: Development of the proposed site layout considering impact on navigation through Arch 2

New and replacement moorings

Blackfriars Millennium Pier

20.4.42 In order to construct the works at this site, Blackfriars Millennium Pier would need to be permanently relocated to the east of Blackfriars Rail Bridge. We have developed an illustrative design for the new mooring arrangement, which would be agreed at a later stage.

20.4.43 The relocated pier would comprise a new access ramp, a piled bankseat, an access brow and a new pontoon. The position of the new pontoon was constrained by the need to ensure sufficient distance between vessels using the pier and passing vessels.

20.4.44 The GPS tracking information on barge movements demonstrated that, in certain circumstances, there would be very little distance between a moored Thames Clipper and a barge navigating through Arch 2 of Blackfriars Bridge. Therefore we included an additional mooring pile off the eastern end of the pontoon to enable vessels to moor on the eastern end of the pier when Arch 2 is being used by tug and tow vessels.

20.4.45 There is a 'V-berth' at the western end of the existing pontoon, which was originally designed for tri-maran vessels, which no longer use the pier. At present, Rigid Inflatable Boats frequently berth at the pier. Therefore, at the request of the pier's owner, we propose to include a V-berth on the new pier.

20.4.46 The location of the new bankseat and access ramp over the river wall was constrained by the passenger interchange with Blackfriars Station and the location and access requirements to utilities beneath the Thames Path. A long bankseat and access brow arrangement was required as the maximum gradient of the ramps between the pontoon and the landward access should be approximately 1:12. Ramps would also be included on the pontoon to improve accessibility.

20.4.47 We propose to include high-level replacement facilities such as access gates, canopies, seating and a waiting area to provide shelter from wind and rain. Subject to agreement of the detailed layouts and arrangements with Transport for London's London River Services, the pier would also include the following facilities:

- a. a ticket office
- b. a canopy over the access brow
- c. bird wire on the roof of the pier and the access brow
- d. non-slip surfaces on all decks and walkways
- e. grab chains on the water line
- f. navigation lights with a counter-balanced mast or winch to facilitate bulb changes
- g. CCTV cameras covering all areas of the pier, entrance and access brows, including a pan tilt camera on the berth front and a CCTV cabinet on the pontoon
- h. fendering on the pier to match the existing
- i. two fixed man-overboard ladders with access gates on the back of the pier
- j. a Thames Clippers ramp and pen system with high bollards
- k. poster frames to display safety and passenger information
- l. fire and fresh water hoses
- m. flag poles and banner poles and gate entrances designed by Transport for London
- n. a storage cupboard for cleaning equipment
- o. electronic, real-time signs
- p. utilities including lighting, electricity, water, and telephones.

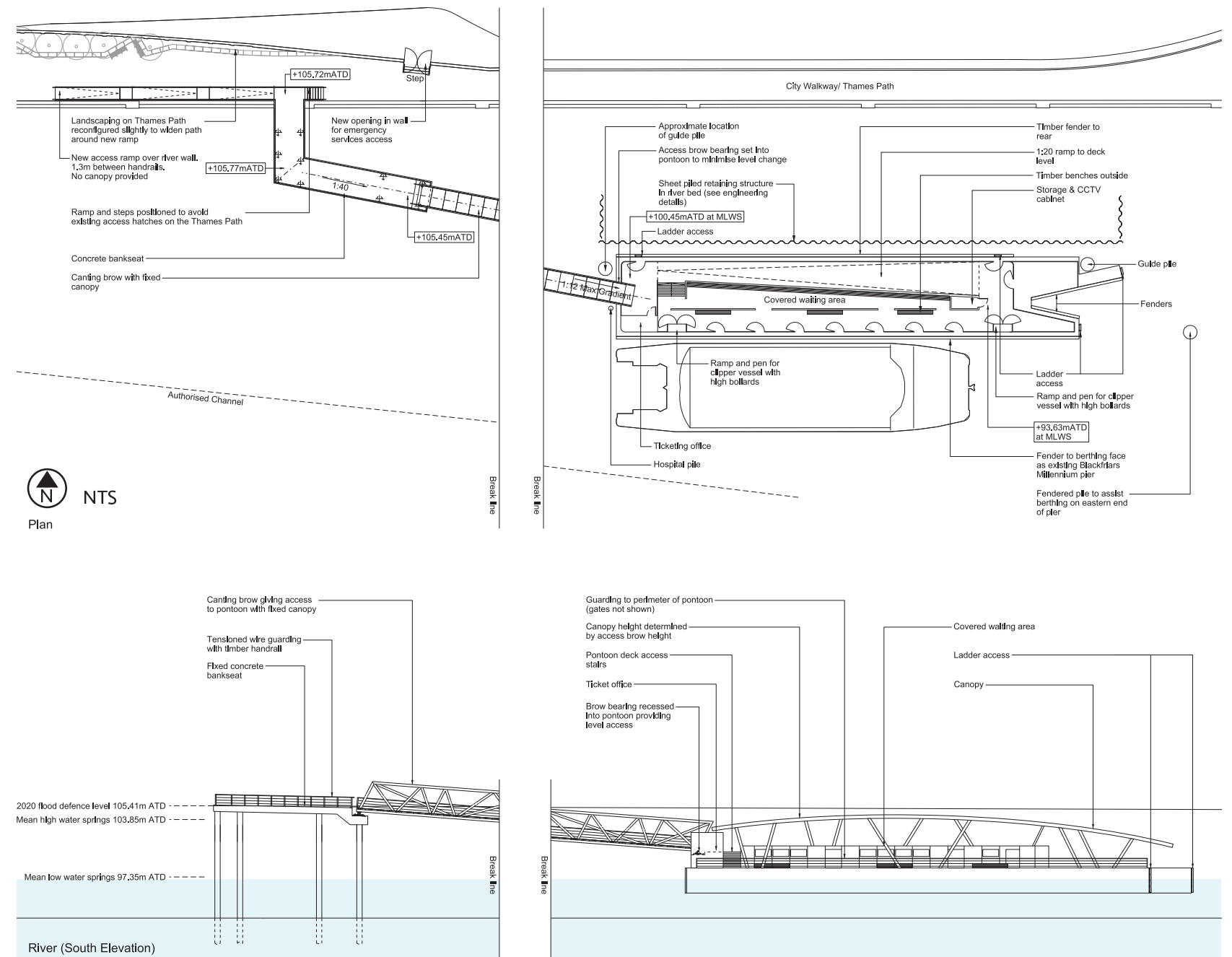


Figure 20.52: Blackfriars Pier plan and elevation (not to scale) - refer to Pontoon in the *Book of Plans*

President

20.4.48 The vessel President would need to be moved temporarily during construction; however, it would be reinstated in its current position with a new mooring arrangement. Our main design aims for the new mooring arrangement were to improve accessibility and minimise the impacts on the listed river wall.

20.4.49 The bearings of the existing access brow to the President are bolted directly into the river-facing side of the listed river wall. The steps and ramps over the wall are cut into the parapet and sit on the pavement. The bolts and fixings would be removed and the wall made good when the mooring is relocated.

20.4.50 The new mooring arrangement would be structurally independent of the listed river wall. A concrete, piled bankseat would be constructed in the river away from the toe of the wall. A steel ramp and stair structure would bear directly onto the pavement of Victoria Embankment in a similar way to the existing access structures. A brow over the parapet would span the distance between the wall and the bankseat without the need for fixings into the wall. Canopies and signage would be provided to match the existing, subject to approval by the local authority at a later stage.

20.4.51 On the riverward side, the existing access brows rest directly on a pontoon adjacent to the President and at low tide the access is very steep. We propose to improve accessibility to by limiting the maximum access gradient to approximately 1:7.5 at mean low water spring tide level, and the maximum gradient of the fixed access ramps would be 1:12. We propose to include one step-free access point over the river wall in order to minimise the size of the structure required on the landward side.

20.4.52 The mooring arrangement would change considerably; however, the President would sit in approximately the same location as existing. The layout of the ramps and access moorings parallel to the river wall would reduce the moored vessel's prominence and projection when viewed from the river.

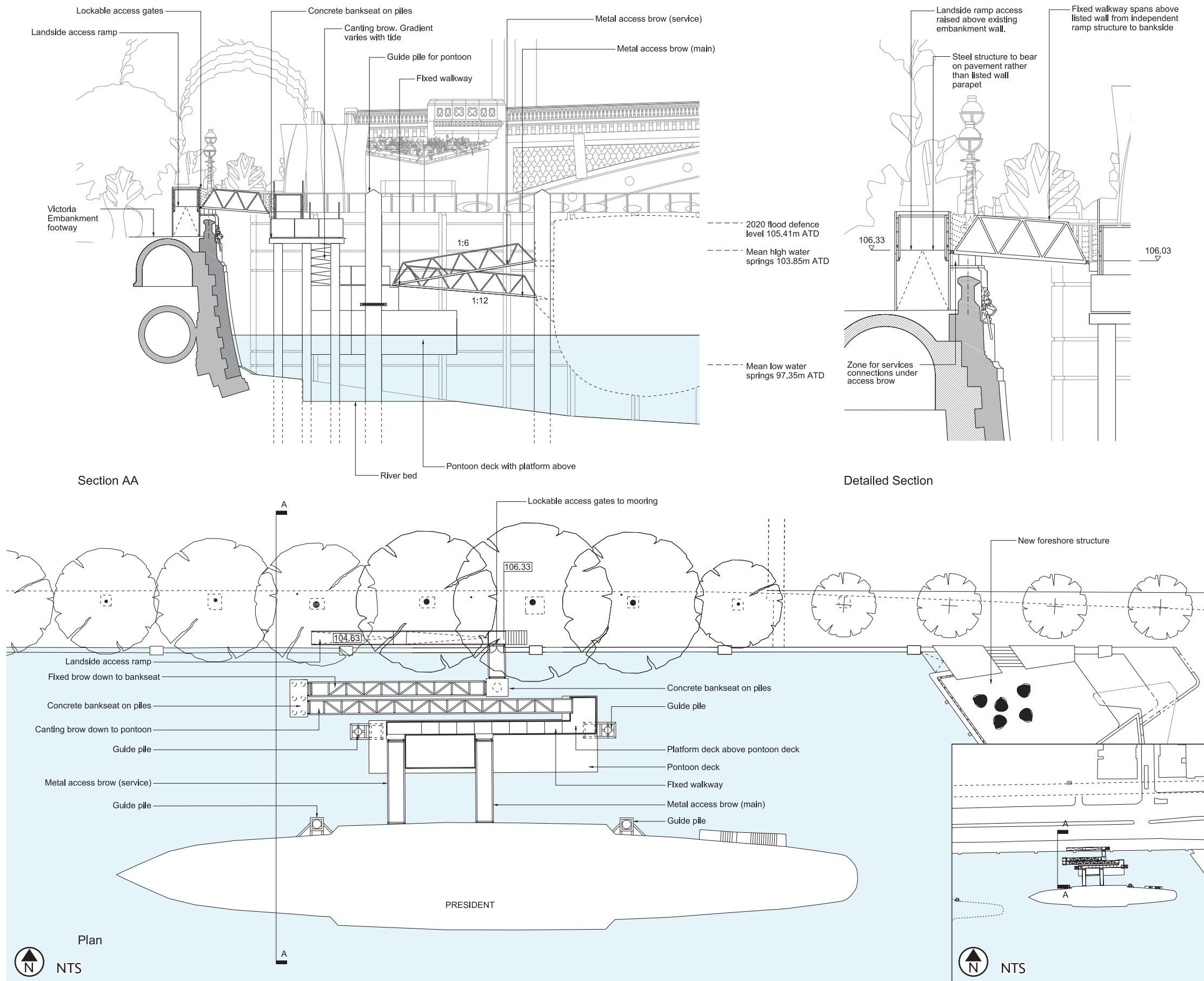


Figure 20.53: President plan and sections (not to scale) - refer to Permanent president mooring access plan and elevation in the *Book of Plans*

River walls

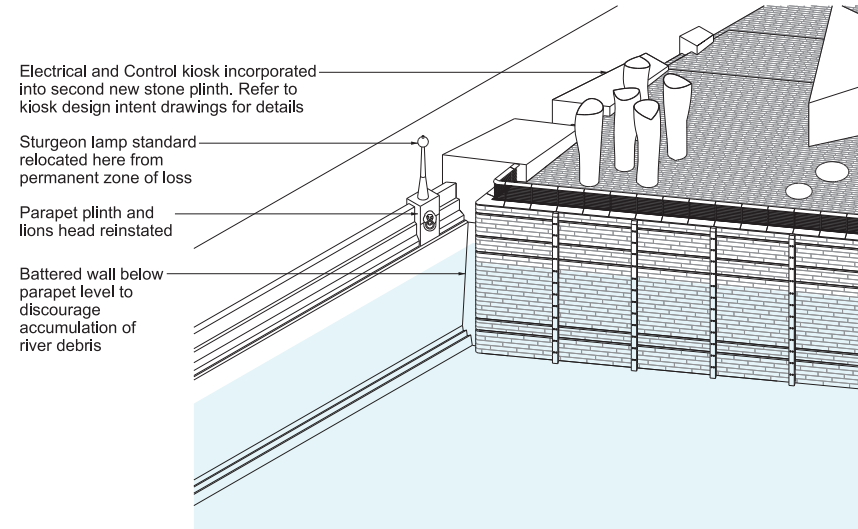
20.4.53 The site sits at the end of Victoria Embankment where the river wall becomes a patchwork of less formal sections of wall. We propose to negotiate this transition with a treatment of high quality materials in a simple, functional and modern layout.

20.4.54 The new section of wall around the foreshore structure would be clad in high quality granite, similar to the existing river walls from both the original Victoria Embankment and 1960s additions. However, the layout would be subtly elongated to reflect the linear nature of the structure. Horizontal grooves would be cut into the stonework at relevant tide heights (similar to plimsoll lines on boats) as part of a project-wide motif that draws attention to rising river levels.

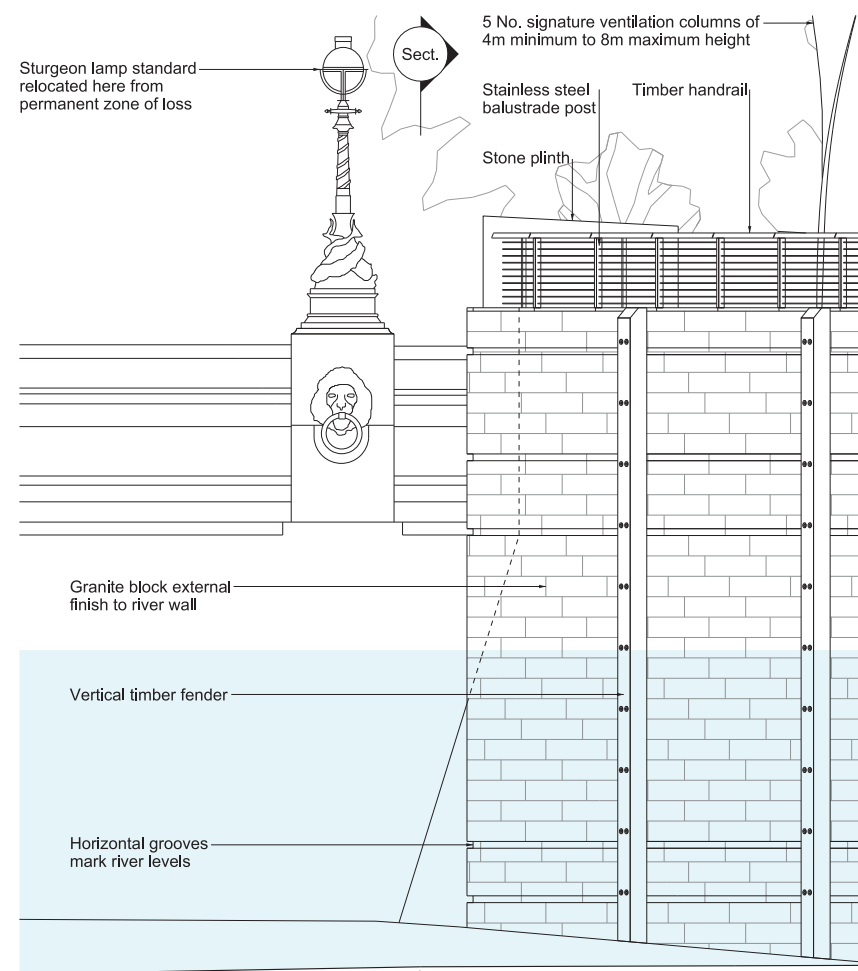
20.4.55 Given the foreshore structure's intrusion into the authorised navigation channel, we propose to include vertical timber fenders on the new wall to minimise the risk of damaging vessels in the event of a collision. Furthermore, unlike the canted walls of the Victoria Embankment, the new wall would be vertical to limit the intrusion into the river as far as possible.

20.4.56 The wall would include a stone parapet at its eastern end to match the existing as part of its flood defences. A guarding is required at the western end of the foreshore structure where ramps rise to the riverfront viewing platform in order to prevent people falling into the river. The guarding would be made of stainless steel and left as open as possible to maximise views when seated.

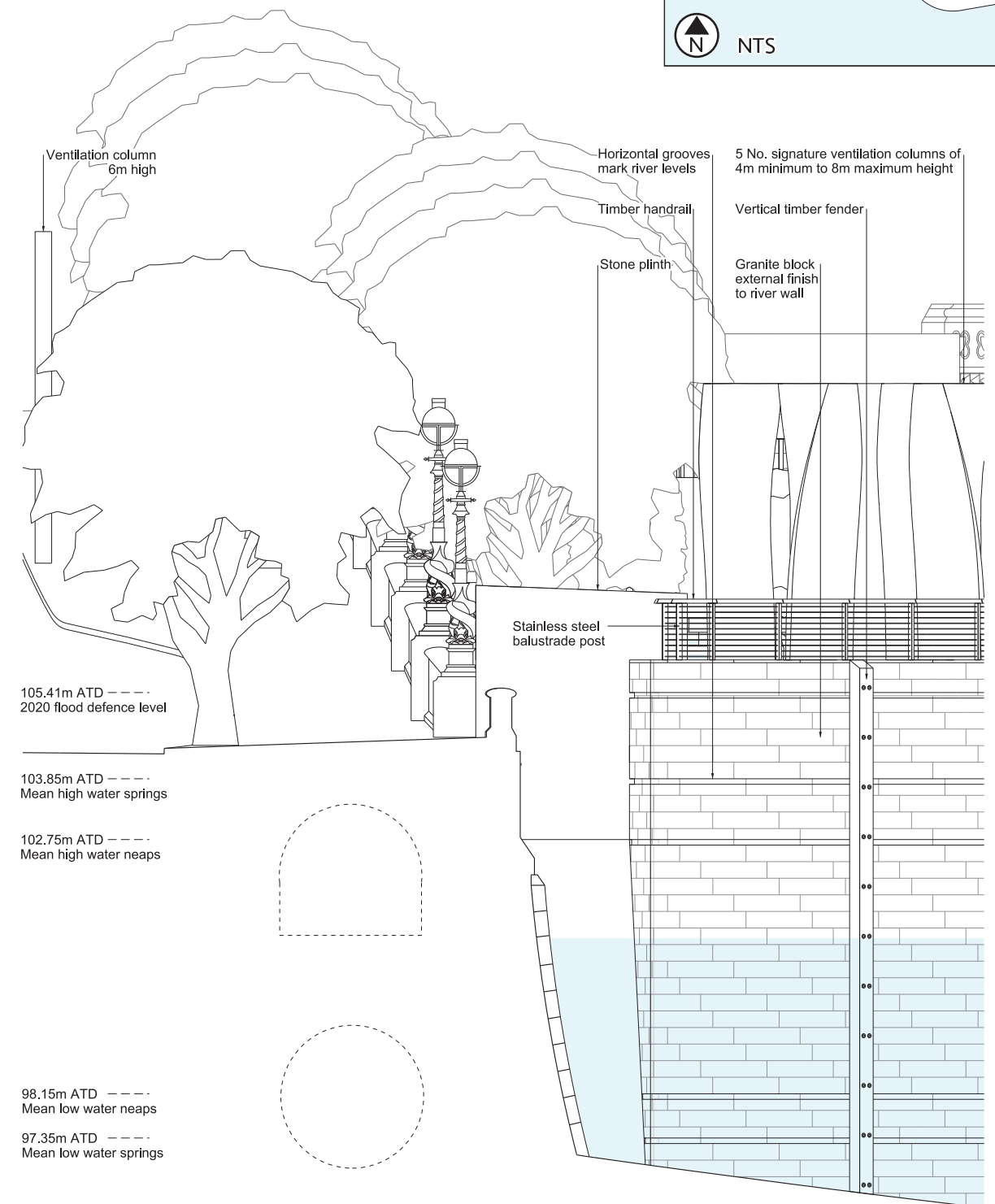
20.4.57 The stone wall would terminate against a stone block at its western end in a 'shadow gap' arrangement. The limited area of the river wall in the gap would be set at an incline to push any debris back out into the river as the tide falls in response to concerns that debris could accumulate there. We also utilised this gap to create a visual separation between the new wall and the listed wall.



Proposed isometric



Proposed South elevation



Proposed detail section

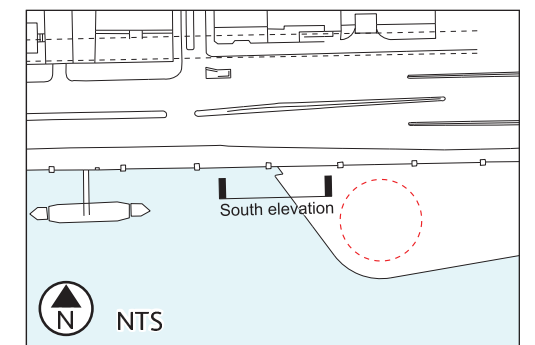


Figure 20.54: Proposed river wall listed structure interface (not to scale) - refer to Proposed listed structure interface - river wall in the *Book of plans*

20.4.58 At the eastern end of the foreshore structure beneath Blackfriars Bridge is a low-level section of river wall that projects beyond the line of the parapet. This area would accommodate the hydraulic structures to divert flows from the Fleet Main CSO. The low-level wall was retained in order to limit encroachment into the river and to reduce the visual impact on Blackfriars Bridge.

20.4.59 The new wall and parapets around the foreshore structure would sit at or above current flood defence levels. The riverside viewing platform would sit approximately 500mm above current the flood defence level at 106m Above Tunnel Datum.

20.4.60 In future, the foreshore structure's flood defences would be raised to meet the levels predicted in the Environment Agency's Thames Estuary 2100 study. The existing parapets would be raised and a new parapet constructed around the viewing platform. The structural design of the new wall would enable it to be raised further to meet the study's requirements by the year 2100.

20.4.61 We propose to include an 'aquatic habitat feature' at the base of the new wall. This is a type of timber planter filled with brush, rubble or sediment to provide habitat for juvenile fish. The planter would be located in the intertidal zone between the timber fenders away from the potential vessel impact area. Such features have been previously installed within the tidal Thames and the detailed design would be agreed at a later stage.

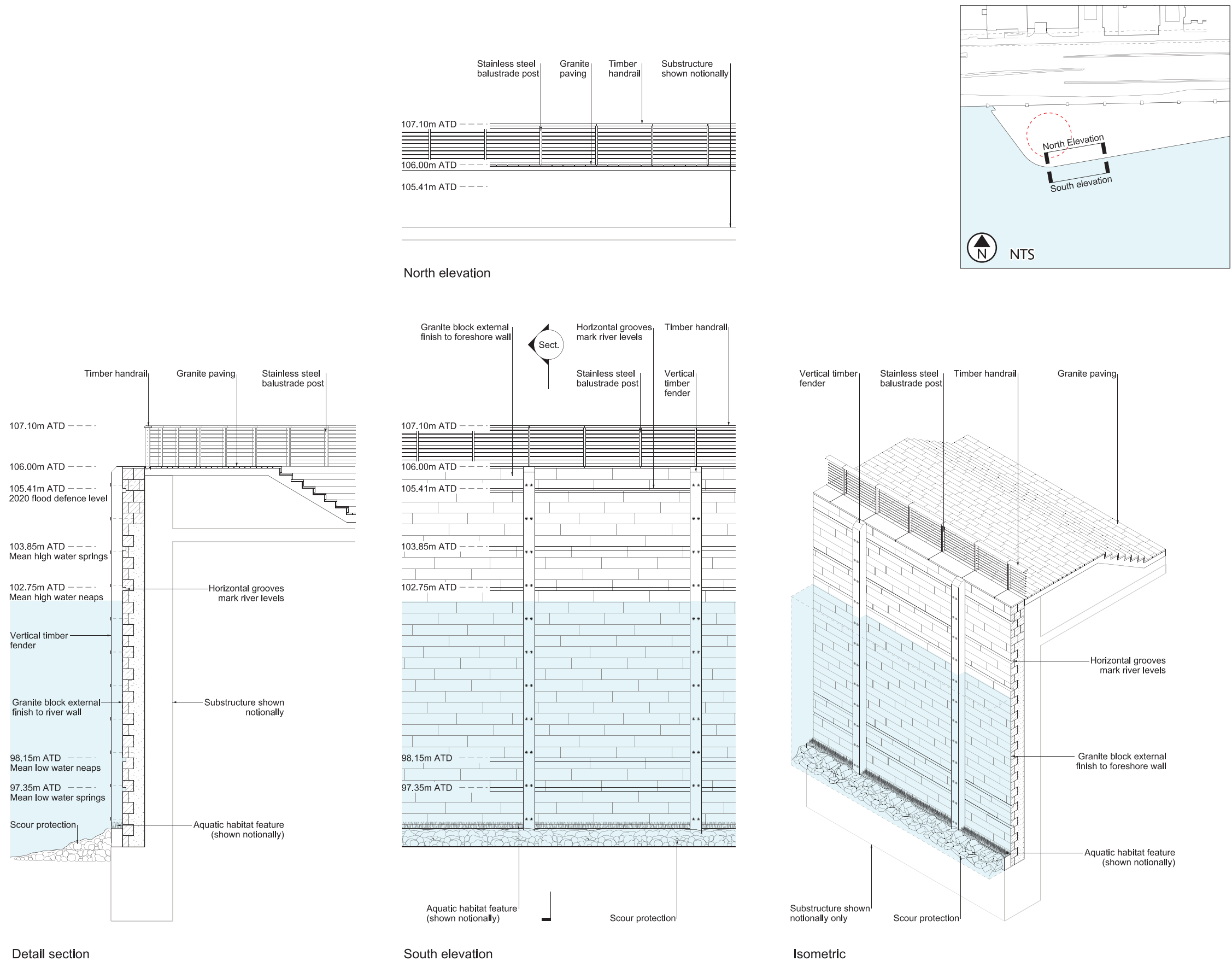


Figure 20.55: Proposed river wall (not to scale) - refer to Typical river wall design intent sheet 1 of 2 in the Book of Plans

CSOs

20.4.62 The new Fleet Main CSO would discharge through flap valves in the long southern wall of the new foreshore structure.

Apron and scour protection

20.4.63 We developed the smooth curved shape of the foreshore structure in order to reduce scour as far as possible. The existing CSO does not have an 'apron' as such; however, there is a significant amount of scour protection in the river bed in the general area around Blackfriars Bridge.

20.4.64 A new apron would be formed in front of the new CSO using rip-rap beneath a layer of foreshore sediments. Similar scour protection may also be required at the base of the new wall and the bridge piers. The maximum extent of the scour protection is defined on the Site works parameter plan.



Figure 20.56: Example of aquatic habitat feature



Figure 20.57: Example of 'rip rap' wall

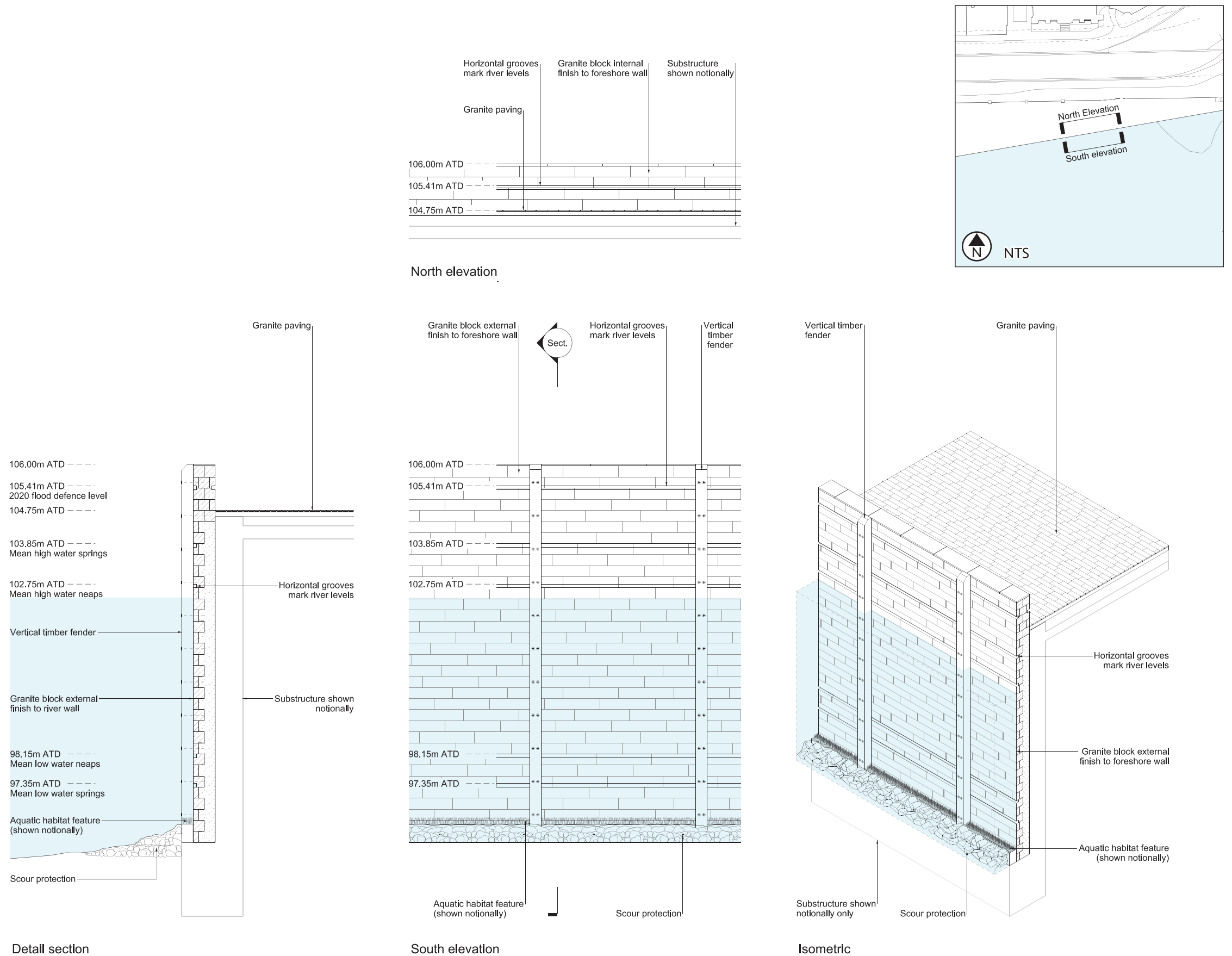


Figure 20.58: Proposed river wall (not to scale) - refer to Typical river wall design intent sheet 2 of 2 in the Book of plans

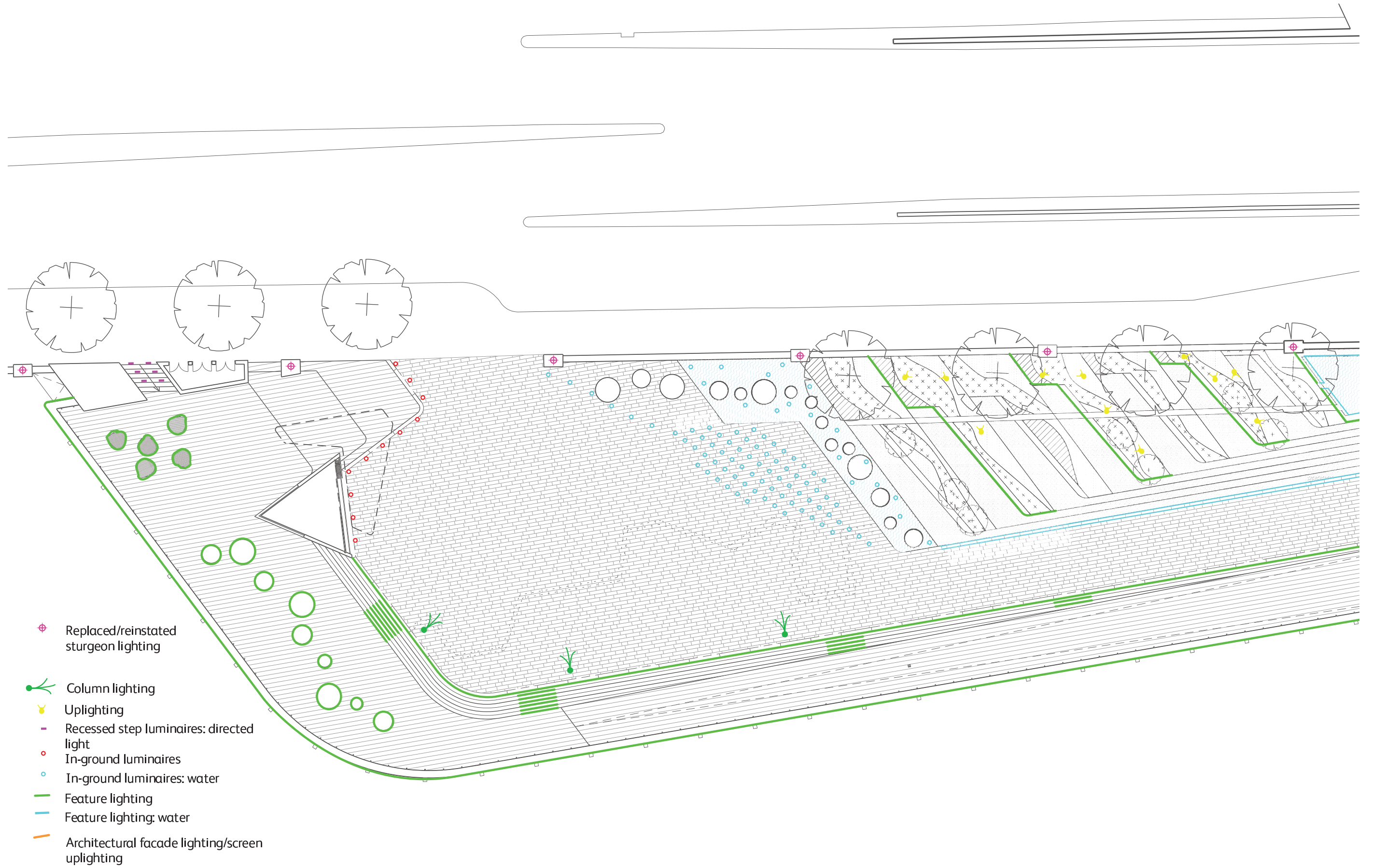
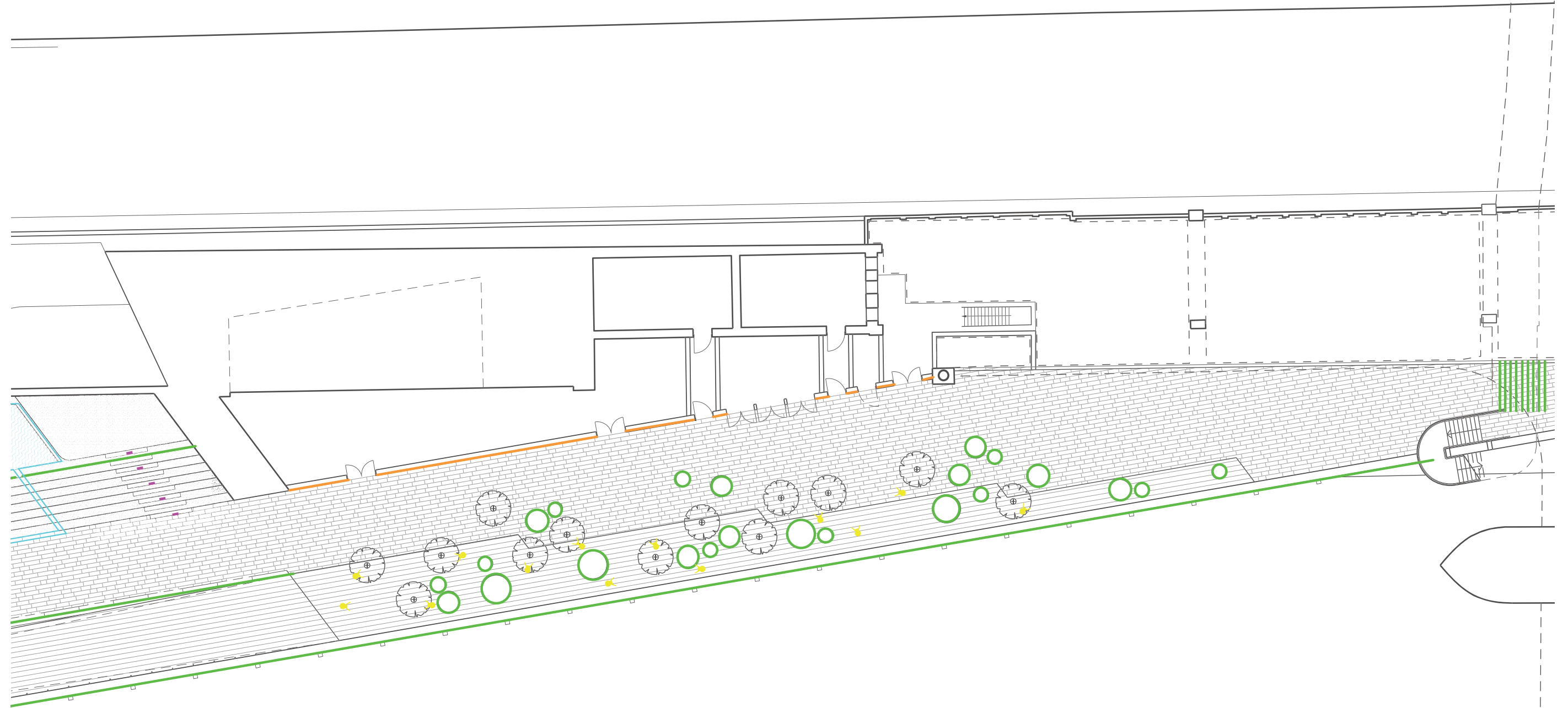


Figure 20.59: Illustrative lighting scheme



Lighting design

20.4.65 We developed an illustrative lighting design for the new public space to demonstrate its appearance in the night-time landscape. The final scheme would be agreed at a later stage.

20.4.66 Victoria Embankment is characterised by sturgeon lamp posts connected by festoon lighting. Most of the sturgeon lamp standards and associated festoon lighting would be reinstated along the existing line following construction.

20.4.67 Any lighting on the foreshore structure would be subtle and understated so as not to compete with flood-lit buildings such as Unilever House in the immediate vicinity and the iconic St Paul's Cathedral beyond.

20.4.68 The illustrative lighting schemes at the project's other proposed foreshore structures generally comprise low level lighting incorporated into furniture and features in order to minimise light pollution and visual clutter. We followed this approach as far as possible at Blackfriars Bridge Foreshore; however, the size of the new public square would require additional lighting to ensure safety and security. Therefore we propose to include indirect lighting from feature masts that could support temporary lighting trusses and banners. The trusses and banners could be complemented by fibre optics below the water jets in the square, and concealed lighting on benches, steps and handrails.

20.4.69 Functional and decorative low level LED lighting could be incorporated into the paving to define the main thoroughfare route.

20.4.70 The proposed planting and retained section of river wall around the garden terraces could be subtly up-lit. Concealed lighting could be incorporated into steps and handrails. The ventilation columns will be up lit with a collar of LED lights.

20.4.71 The river frontage could be lit with concealed balustrade lighting and the architectural screen around the undercroft area could be subtly back-lit. The lighting design for the pedestrian subway beneath Blackfriars Bridge could incorporate a dramatic and effective LED installation.

20.4.72 No light would be directed towards Blackfriars Bridge, or the River Thames itself, so as not to adversely affect resident or migratory wildlife.



Figure 20.60: Example of lighting fixtures



Figure 20.61: Example of lighting fixtures



Figure 20.62: Proposed night time panoramic view from Blackfriars Bridge



Figure 20.63: Example of proposed lighting scheme



Figure 20.65: Example of uplighting and planting



Figure 20.66: Example of uplighting and landscape steps



Figure 20.64: Example of proposed lighting scheme



Figure 20.67: Example of uplighting and landscape steps

Integration of the functional components

20.4.73 The majority of the proposed works are below-ground structures including:

- a. a CSO drop shaft
- b. a CSO interception chamber
- c. an overflow weir chamber
- d. connection culverts
- e. valve chambers
- f. CSO overflow structures and a protective foreshore apron
- g. an air treatment chamber.
- h. associated hydraulic structures, culverts, pipes and ducts.

20.4.74 Post construction, the following structures would be visible on the site:

- a. the foreshore structure surrounded by a new section of river wall
- b. five signature ventilation columns to serve the CSO drop shaft
- c. one ventilation column to serve the CSO interception chamber
- d. one ventilation column to serve the overflow weir chamber
- e. two electrical and control kiosks
- f. an amenity kiosk.

CSO drop shaft and associated structures

20.4.75 The CSO drop shaft would be approximately 24m in internal diameter and sit at the western end of the foreshore structure. The shaft would contain various vortex drop tubes, baffle walls and weirs. The air treatment chamber would sit adjacent to the shaft.

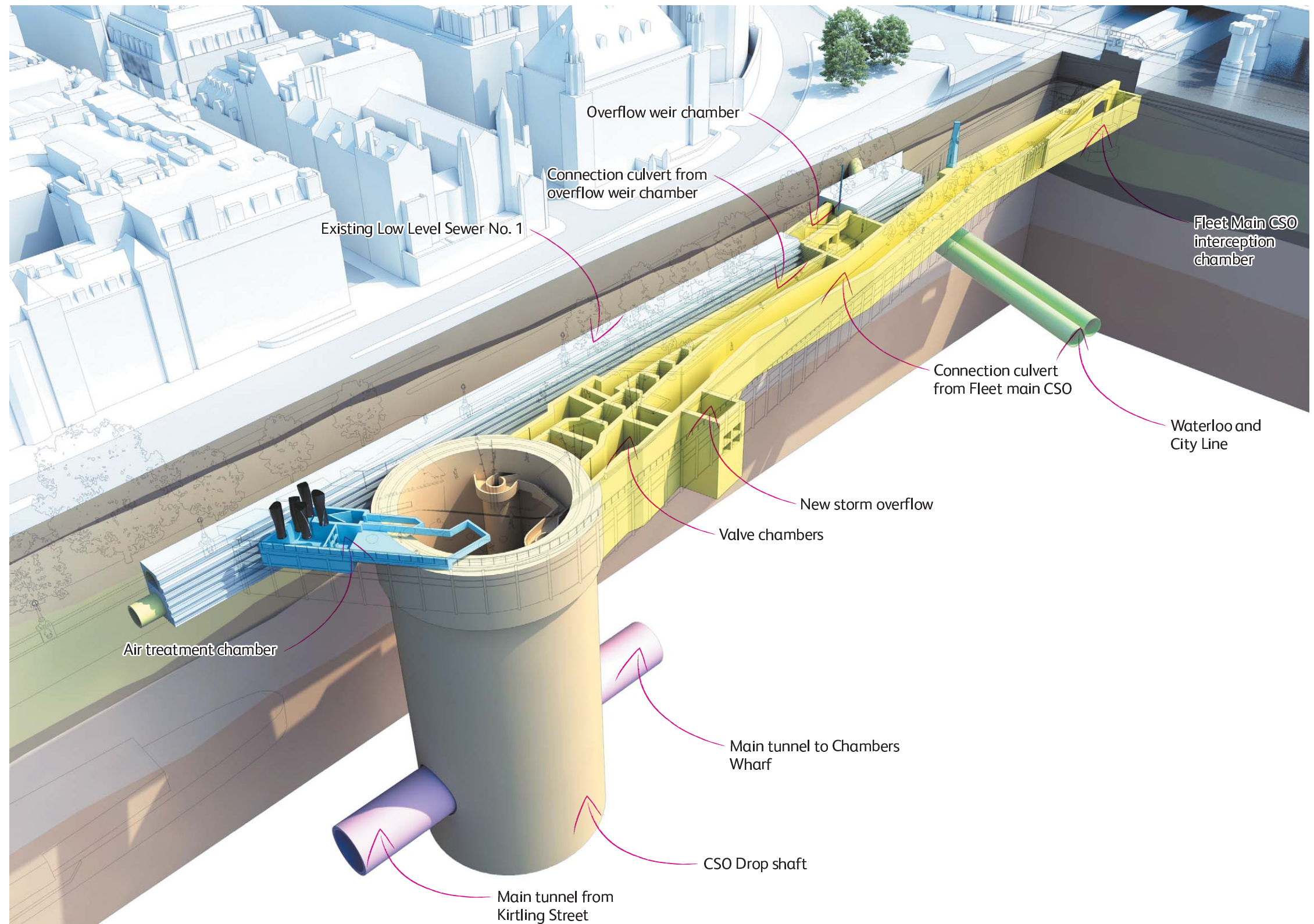


Figure 20.68: Proposed functional components diagram; below ground view



Figure 20.69: Proposed functional components diagram: above ground view

20.4.76 The drop shaft would be connected to the CSO interception chamber and the overflow weir chamber on the northern Low Level Sewer No.1 via connection culverts. The valve chambers on the culverts would contain various penstocks and flap valves. The new storm overflow on the Fleet connection culvert would also include flap valves and scour protection.

Ventilation columns

20.4.77 The number and size of the ventilation columns is determined by the air management requirements for the site. At Blackfriars Bridge Foreshore, we propose to include five signature ventilation columns to serve the CSO drop shaft. The columns would be 1.2m in internal diameter and stand 4m to 8m high. The columns would be higher than the functional requirement in order to improve their proportions and visual appearance and would also feature the project's 'signature' design.

20.4.78 We also propose to include one 4m to 8m high column that would be 0.7m internal diameter to serve the CSO interception chamber and connection culvert. This column would be incorporated into the wall adjacent to the Blackfriars Bridge westbound off-ramp.

20.4.79 A further column to serve the overflow weir chamber would stand 6m high and sit on the pavement adjacent to the off-ramp. It would be similar in scale to a lamppost and finished to blend in with the surroundings.

Kiosks

20.4.80 Where possible, we incorporated the mechanical, electrical and control equipment in the kiosk in the undercroft area adjacent to the overflow weir chamber in order to minimise the visual impact. However, some equipment must be located closer to the valve chambers and CSO drop shaft. This equipment would be accommodated in an additional kiosk on the western end of the foreshore structure.

20.4.81 We also proposed to include an amenity kiosk at the western end of the foreshore structure, which could accommodate a commercial use.

Other works

20.4.82 Areas of hardstanding would be included to facilitate maintenance vehicle access and incorporate ground-level access covers to the below-ground infrastructure.

20.4.83 We propose to incorporate a lift on the eastern side of Blackfriars Bridge to provide step-free access to Paul's Walk and the relocated Blackfriars Pier. The existing stairs in this location would be reconfigured to accommodate the lift.

Landscaping and appearance

Hard landscape palette

20.4.84 The proposed hard landscape materials and furniture palette uses traditional high quality materials in a contemporary manner. Hard surface materials would be robust, fit-for-purpose, and appropriate to the setting in order to ensure long-term quality.

20.4.85 The palette of shapes and materials would serve to unify the design, as follows:

- a. The hard surfaces would be concrete or natural stone softened by timber in some places. The predominant paving material would be granite in order to reflect the importance of the space and ensure longevity. Four different types of granite would create a coherent surface for the new public square and linear promenade.
- b. The linear promenade would feature semi-permeable paving surfaces to attenuate surface water run-off. The mixed paving system would incorporate slabs and soil to form permeable drainage joints.
- c. Natural stone and high quality architectural finishes would be used for the new river wall and the surface of the garden terraces.
- d. The pebble stone seats for fun seating and informal play would be finished in smooth cast concrete with granite composite.
- e. The sculptural shade structure around the amenity kiosk would feature slanting, elegant, brushed stainless steel poles and perforated metal canopies.



Figure 20.70: Example of proposed paving



Figure 20.71: Example of proposed paving

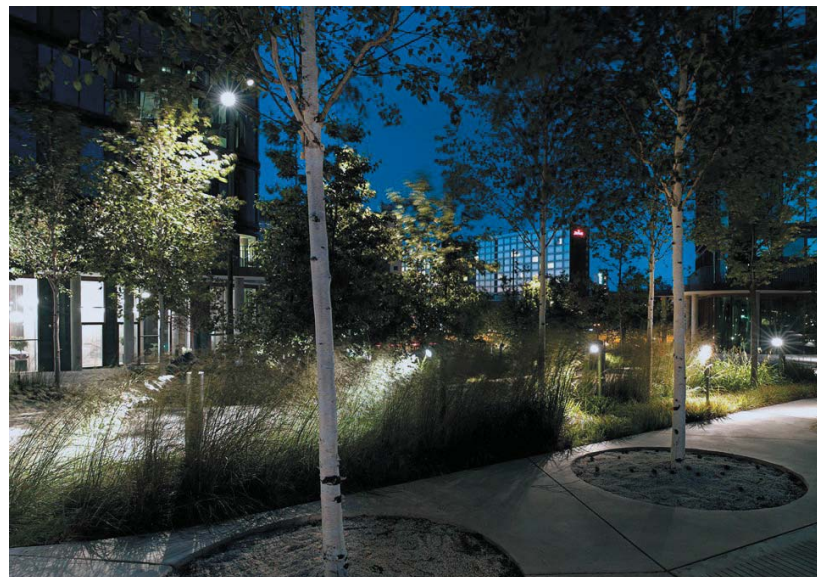


Figure 20.72: Example of planting and lighting



Figure 20.73: Example of play spaces



Figure 20.74: Example of paving and street tree planting

f. Fretted metal screens inspired by the historic and cultural character of the surrounding urban forms would be used to create attractive frontages for the potential commercial units.

g. The light and open handrails would be high quality bespoke stainless steel. They would be set at an angle of 65 degrees away from the river and designed to be comfortable to lean on.

Soft landscape palette

a. We propose to include semi-mature London Plane trees to ensure historic continuity along Victoria Embankment.

b. Small, multi-stemmed deciduous feature trees such as *Amelanchier lamarckii* (Snowy mespilus) would introduce seasonal variation and shade the linear promenade and garden terraces.

c. Wetland species including varieties of reeds (*Phragmites* spp.), cattails (*Typha* spp.), bulrushes (*Schoenoplectus* spp., *Scirpus* spp.), horsetails (*Equisetum hyemale*), iris and grasses would help to filter harvested rain-water and create a lush green environment on the garden terraces.

d. The kiosks would feature brown planted roofs to promote biodiversity in the area and attenuate surface water run-off.



Figure 20.75: Example of planting and paving



Figure 20.76: Example of planting - grasses



Figure 20.77: Example of planting - perennials



Figure 20.78: Example of planting - reeds



Figure 20.79: Example of planting - multi-stem trees



Figure 20.80: Example of planting - multi-stem trees

20.5 Access and movement

20.5.1 The new area of public realm would provide a level pedestrian route along this section of the Thames Path. It would also serve as a calm area for pedestrians, away from traffic, from which to appreciate the River Thames and interpret the historic surroundings.

20.5.2 The design of the area would comply with the Disability Discrimination Act. We would select materials of contrasting colours and textures to assist the visually impaired, while respecting the historic surroundings.

20.5.3 The pedestrian access to both the relocated Blackfriars Millennium Pier and the reinstated President would be step-free over the river wall. The footpath around the access ramps to the relocated pier would be widened to maximise room for pedestrians. At present, the local authority is implementing a landscape scheme in this area. Widening the path would involve reconfiguring the raised planters and removing four trees. We would also create a new gated opening in the wall at the back of Paul's Walk to facilitate emergency access to the pier from Upper Thames Street.

20.5.4 The proposed lift to the east of Blackfriars Bridge would facilitate step-free access from the bridge to Paul's Walk and for people interchanging between Blackfriars Station and the pier. The lift and the replacement stairs would be installed prior to the temporary closure of the Thames Path.

20.5.5 The stairs on both sides of Blackfriars Bridge would be slightly reconfigured. On the eastern side of the bridge, the stair would be reoriented to cantilever out over the river in order to accommodate the lift. This work would also widen and open up the riverside walkway. The low levels of the stairs would be protected by a concrete or stone 'shoe' that would form part of the flood defences. The top of the stairs would join to the lift access platform. The platform would be linked to the bridge through the existing stair opening in order to minimise the amount of work required to the listed structure.

20.5.6 The lift would be provided in accordance with the local authority's lift specifications contained in the City Walkway Guidance Notes. It would be predominantly glass on three sides for security reasons, with a solid panel on the side facing the Blackfriars

Underpass. There would be doors in two sides of the car to enable passengers at the bottom to wait for the lift away from the main pedestrian thoroughfare.

20.5.7 On the western side of the bridge, the stair would be aligned with the new river wall around the foreshore structure. The stair would comprise four simple flights in order to accommodate the pedestrian subway that would pass through the undercroft area at its middle landing. The connection point with the listed bridge would be modified slightly to improve its relationship with the decorative turret of the bridge pier. It would land in the 1960s curved concrete area between the bridge and the Blackfriars westbound off-ramp. We propose to mark the landing point with two stone or concrete piers in a similar manner to the existing opening to the eastern stair. Between the southernmost pier and the turret we propose to commission a replica of a short stretch of the original decorative bridge parapet.

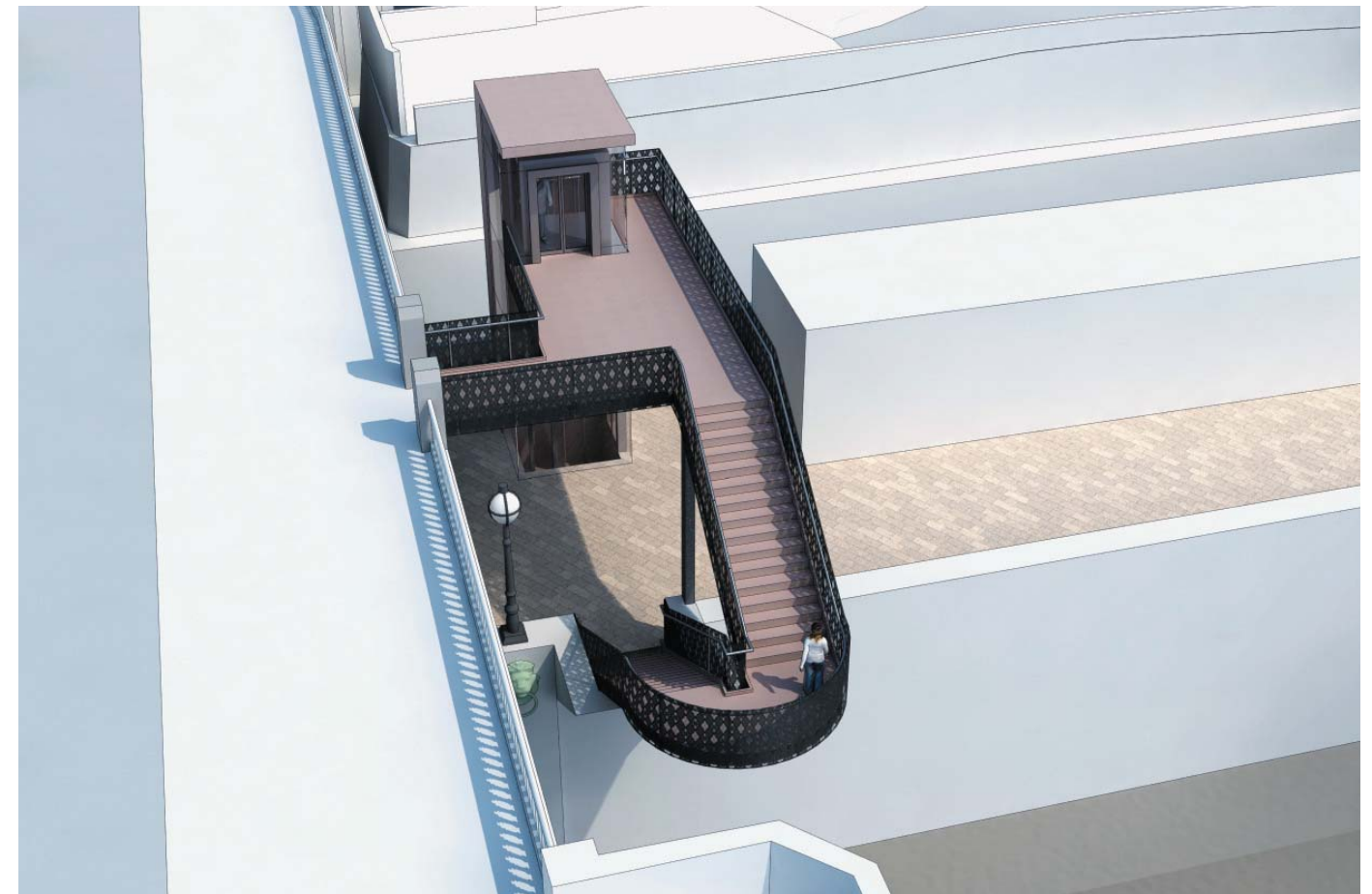


Figure 20.81: Proposed lift and replacement stairs to the east of Blackfriars Bridge

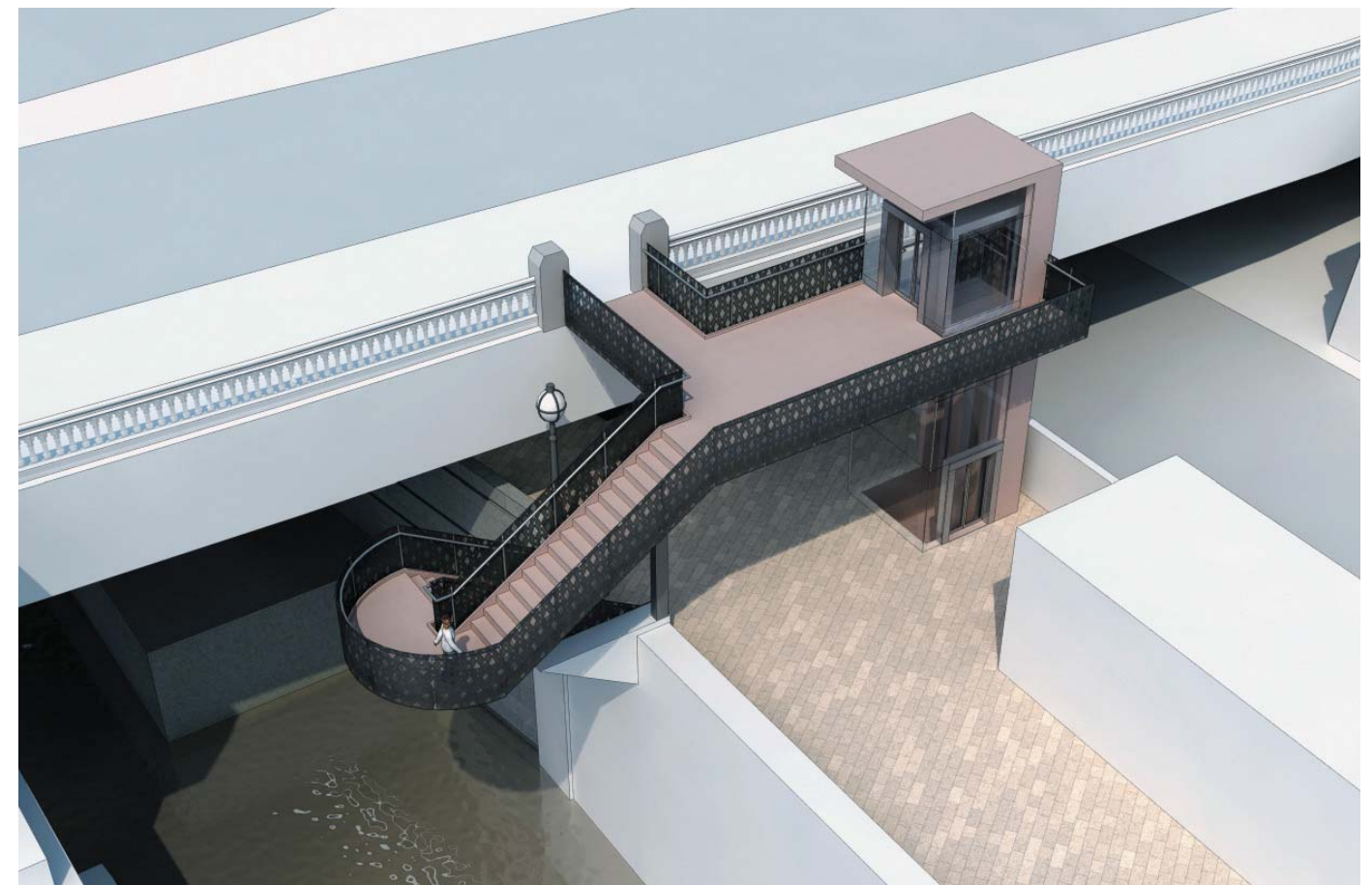


Figure 20.82: Proposed lift and replacement stairs to the east of Blackfriars Bridge

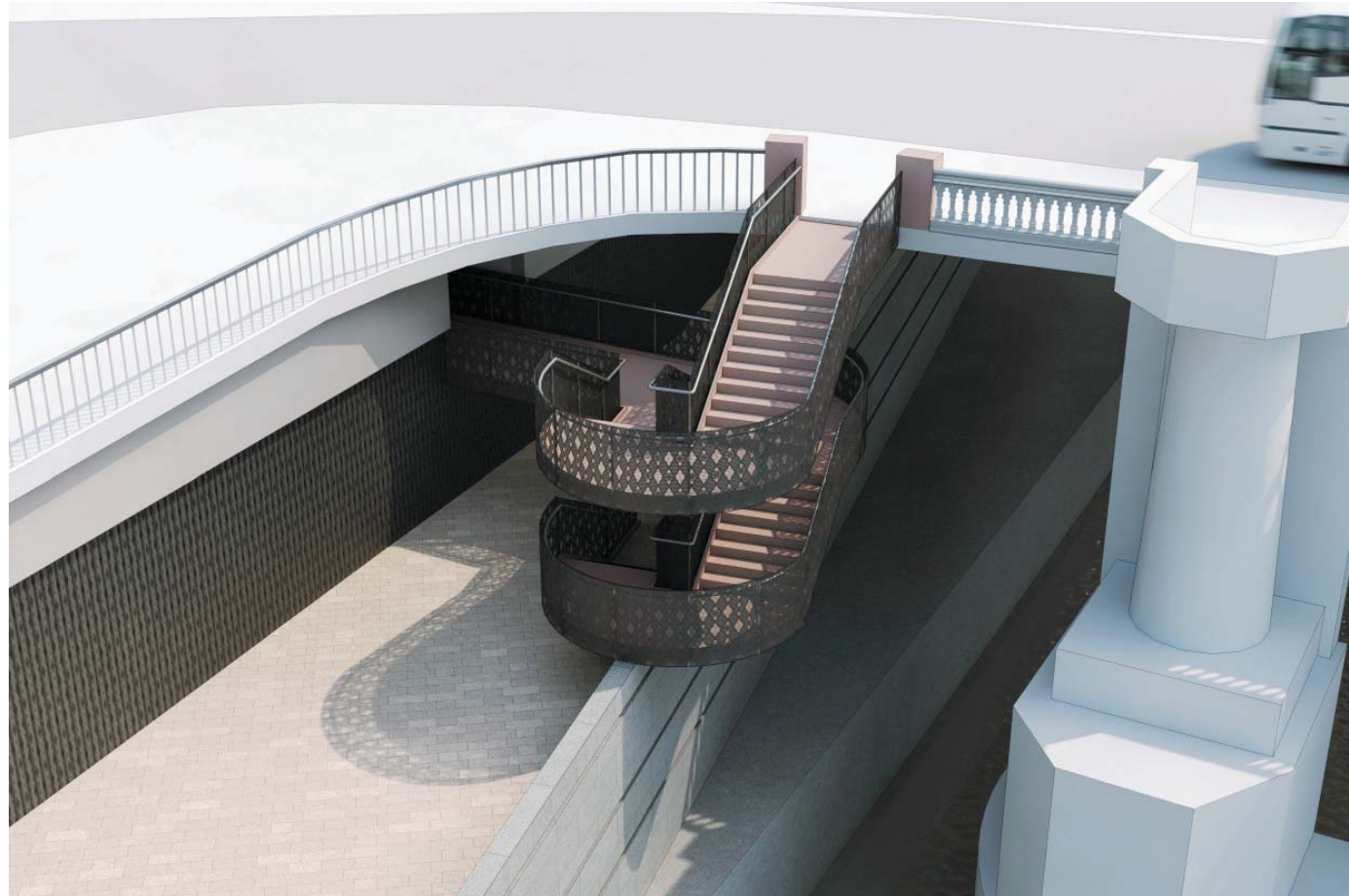


Figure 20.83: Proposed replacement stairs to the west of Blackfriars Bridge

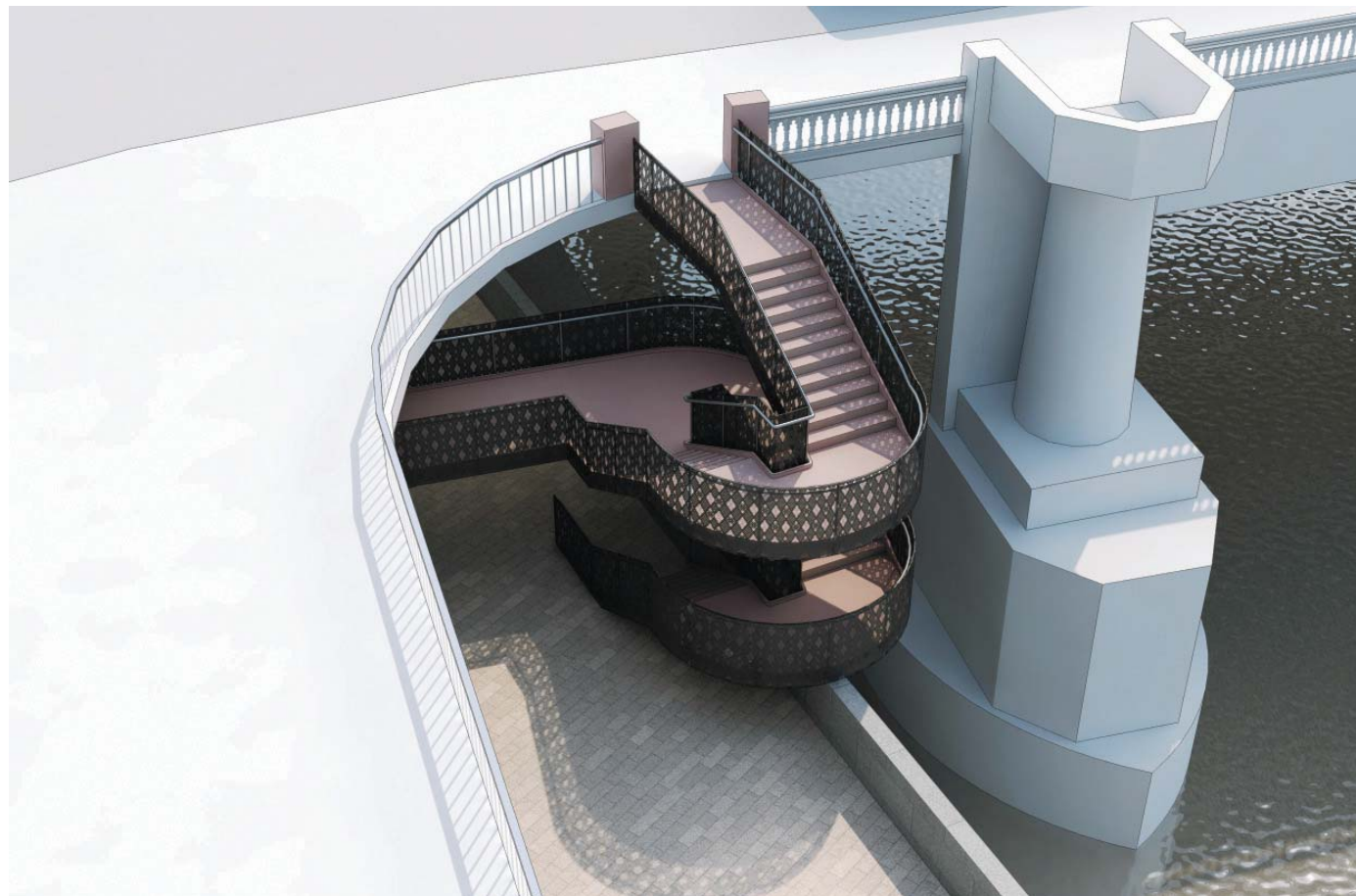


Figure 20.84: Proposed replacement stairs to the west of Blackfriars Bridge

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Thames Water access requirements

20.5.8 Access to the operational site would be directly from Victoria Embankment across the adjacent section of the Thames Path.

20.5.9 Once the project is operational, it is anticipated that Thames Water personnel would visit the site approximately every three to six months to inspect and carry out maintenance of the electrical and control, ventilation and below-ground equipment. This would likely involve a visit by personnel in a small van during normal working hours and may take several hours.

20.5.10 It is anticipated that a major internal inspection of the tunnel system and underground structures would be required once every ten years. This process would likely involve a small team of inspection staff and support crew and two mobile cranes to lower the team into the CSO drop shaft. The inspection would be carried out during normal working hours and would likely take several weeks and require temporary fencing around the shaft to ensure safety and security.

20.5.11 Thames Water may also need to visit the site for unplanned maintenance or repairs, for example, in the event of a blockage or an equipment failure. Such a visit may require the use of mobile cranes and vans.

20.5.12 Access for maintenance vehicles would be via a new mountable kerb on Victoria Embankment. It may be necessary to strengthen the utilities subway beneath the Thames Path, which the kerb would bridge in order to reach the site.

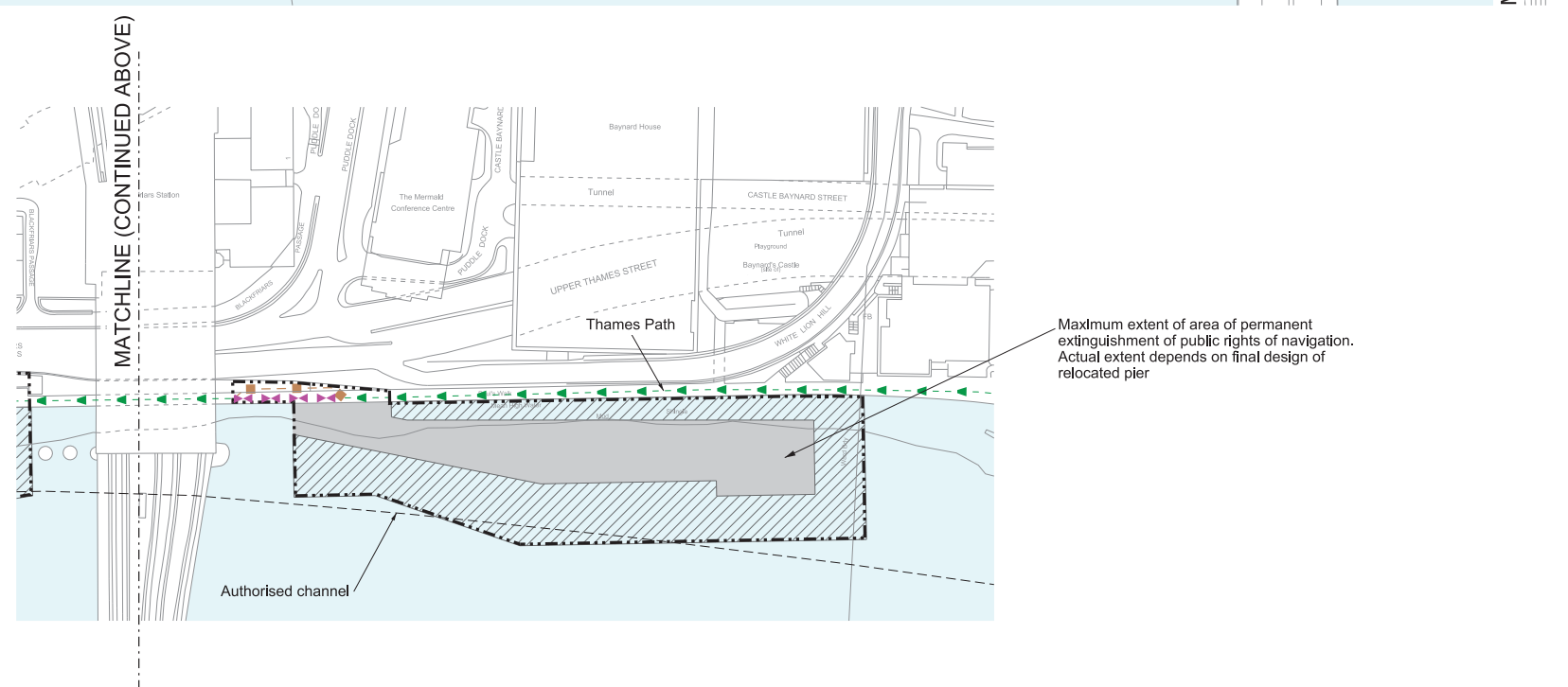
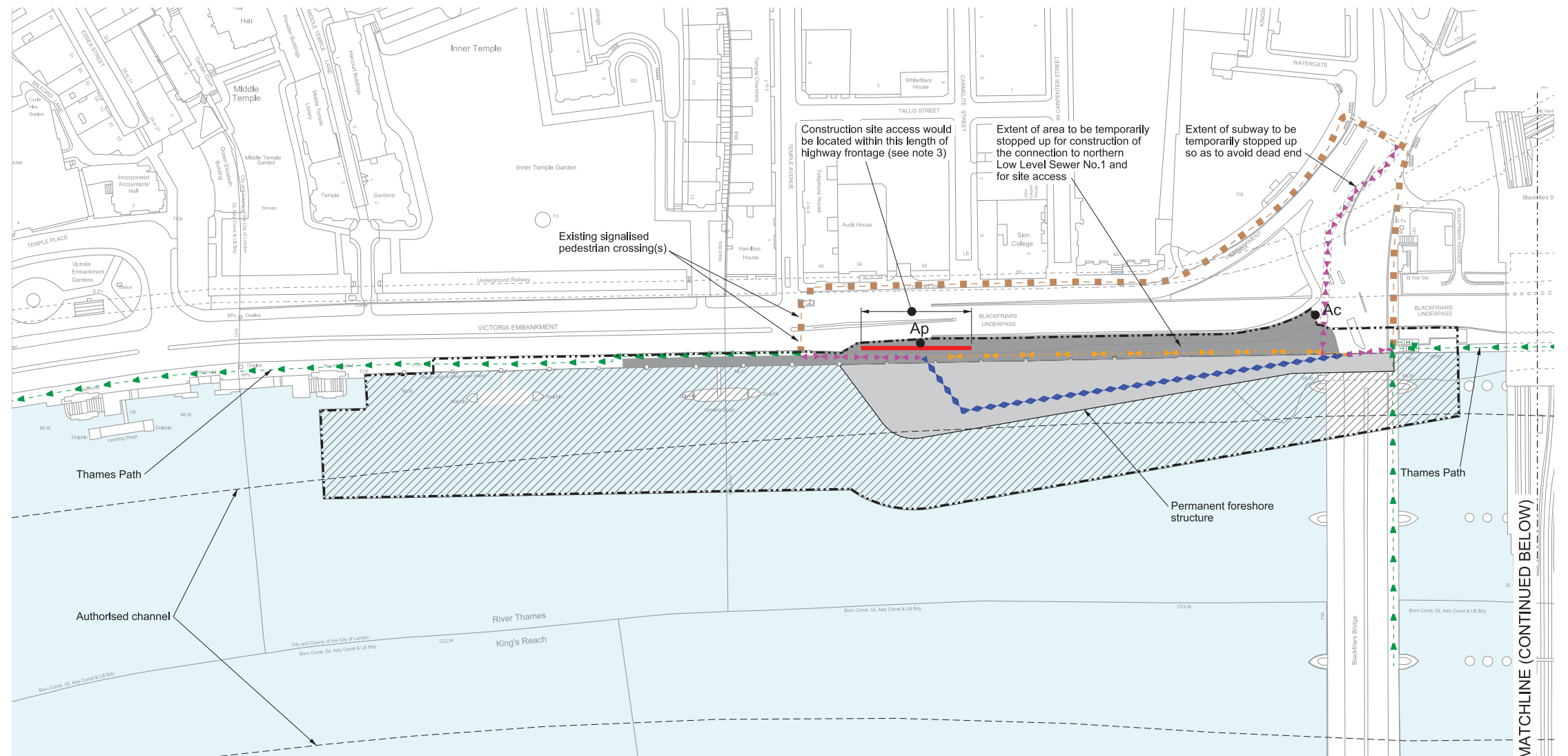


Figure 20.85: Proposed access - refer to Access plan in the *Book of plans*

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