

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Design and Access Statement

Doc Ref: **7.04**

Part 1

Hammersmith Pumping Station

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

Hard copy available in
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January 2013

Thames
Tideway Tunnel 
Creating a cleaner, healthier River Thames

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Section 7

Hammersmith Pumping Station

7.1 Introduction

7.1.1 A worksite is required to connect the Hammersmith Pumping Station CSO to the main tunnel. The proposed development site is known as Hammersmith Pumping Station, which is located in the London Borough of Hammersmith and Fulham.

7.1.2 Some elements of the detailed design proposals would be drawn up at a later stage in consultation with the council, the adjacent landowner and the local community. 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, except for the scale of the ventilation structures, which is indicative.



Figure 7.1: Aerial photograph of the existing Hammersmith Pumping Station site with LLAU indicated

8.2 Existing site context

8.2.1 The site itself comprises part of the Thames Water operational Hammersmith Pumping Station, an area of a vacant former industrial site formerly known as Hammersmith Embankment and now as 'Fulham Reach', and two small highway worksites: one in Chancellor's Road (for construction of a rising main) and the other in Chancellor's Road/Distillery Road (for a kerb realignment). The Fulham Reach site primarily comprises hardstanding with a few small patches of vegetation.

8.2.2 The historic land use of the site included a number of potentially contaminative activities including a distillery, a chemical manufacturing and storage plant, and its present use as a storm water pumping station.

7.2.3 The site falls within the Hammersmith Air Quality Management Area, which is declared for nitrogen dioxide. It also lies within the 'high probability' flood zone, although it is protected by flood defences.

7.2.4 The site also falls within the Fulham Reach Conservation Area and the southwestern part of the site falls within the Winslow Road Archaeological Priority Zone. However, there are no listed buildings on the site or in the surrounding area.

7.2.5 The site is identified in the Strategic Site and Housing Estate Regeneration Area – HTC 3 in the London Borough of Hammersmith and Fulham's Core Strategy and Proposals Map. Policy HTC 3 seeks comprehensive residential redevelopment of the 'Hammersmith Embankment former office site', which includes our proposed site.

7.2.6 Supporting text of Policy HTC 3 states that: "part of this site may be required to accommodate within the scheme layout and programme, permanent and construction works required for the construction of the Thames Tunnel".

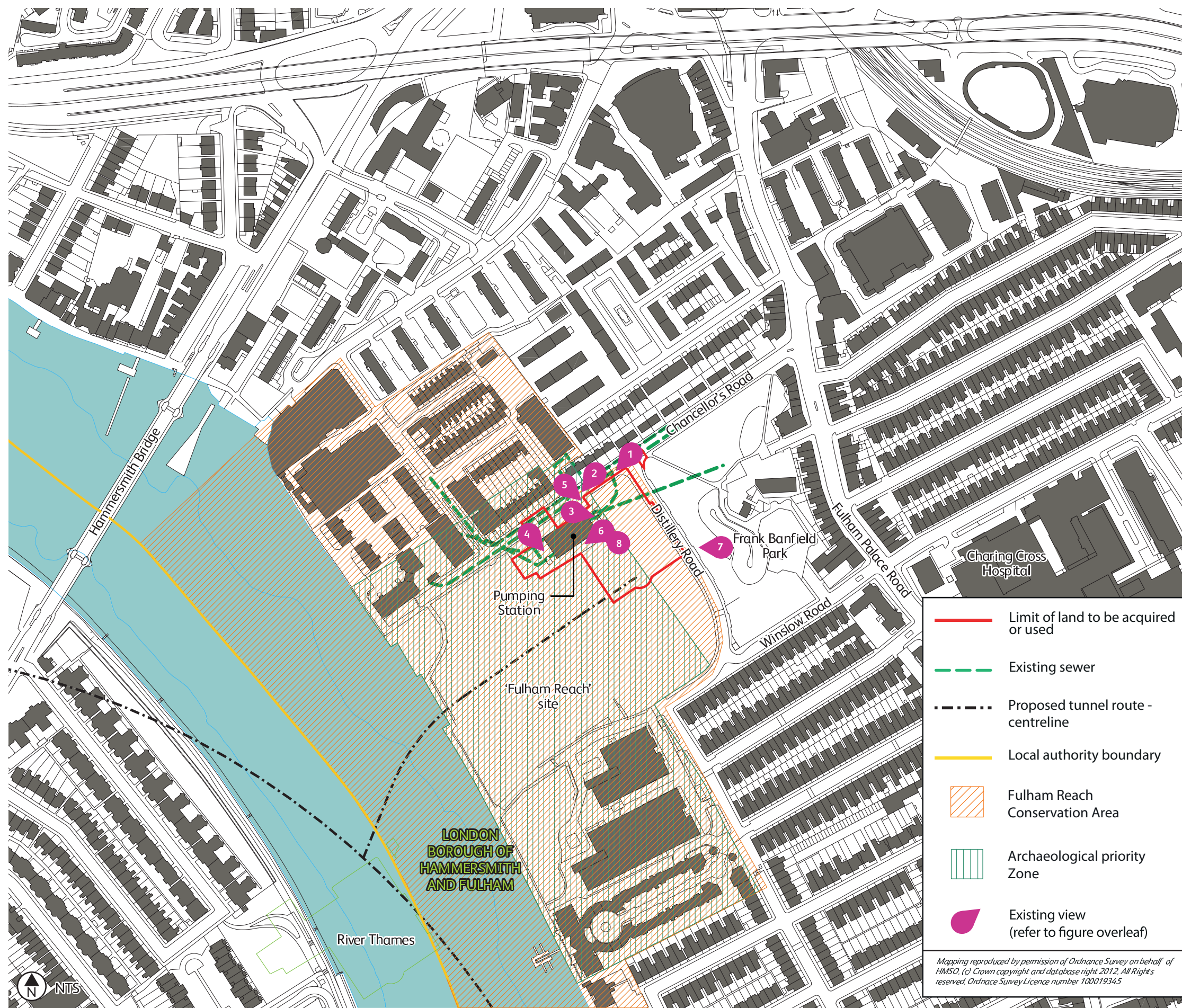


Figure 7.2: Existing site plan



Figure 7.3: Chancellor's Road looking west



Figure 7.4: Pumping station on Chancellor's Road



Figure 7.5: Screen house building within compound

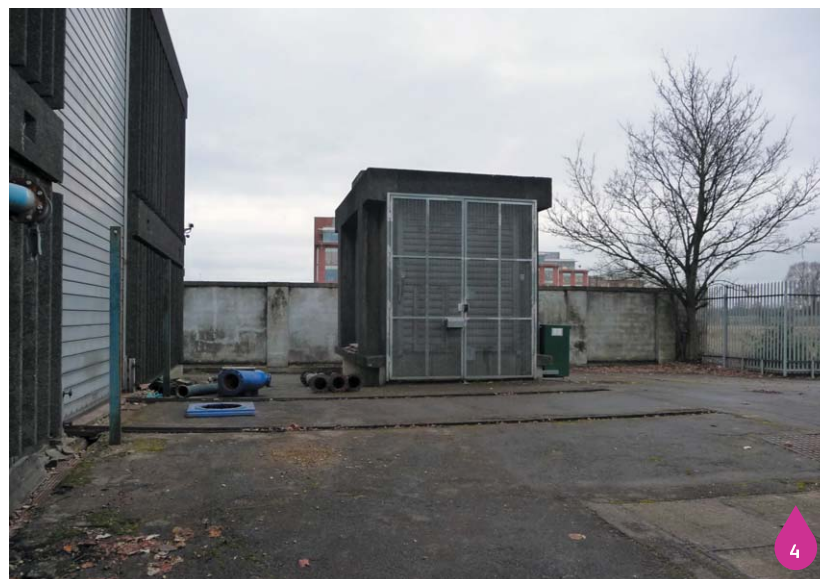


Figure 7.6: Venturi building



Figure 7.7: Screen house building outside compound



Figure 7.8: Along southern boundary within compound



Figure 7.9: Fulham reach development site with pumping station behind



Figure 7.10: East elevation of pumping station

7.2.7 A hybrid planning application (Reference 2011/00407/COMB) for a mixed use development known as the 'Fulham Reach' development has been approved on the 'Hammersmith Embankment former office site' and is currently under construction. This development would provide a total of 744 residential units and 3,823m² of commercial floorspace. The applicant and owner of the Fulham Reach site is St George Central London Limited ('St George').

7.2.8 Thames Water has been working closely with St George in order to reserve the area of the site required temporarily and permanently for the project works. As a result of negotiations, Thames Water and St George have entered into a legal agreement to agree the use, by way of licence, of the area of the site required for the construction of the project, and the freehold interest to parts of the site including the CSO drop shaft and the connection tunnel, subject to certain build-over rights by St George.

7.2.9 The site is bounded by Chancellor's Road to the northwest, by Distillery Road to the northeast, and by the Fulham Reach site to the southeast and southwest.

7.2.10 The surrounding area is predominantly residential in character. There are two storey dwellings along Chancellor's Road to the north, along with modern office developments.

7.2.11 To the east lies Frank Banfield Park, which includes a children's play area. Beyond lie residential properties and the Charing Cross Hospital.

7.2.12 The area to the south comprises residential properties and further modern office developments.

7.2.13 The River Thames, which forms the River Thames and Tidal Tributaries Site of Importance for Nature Conservation, lies immediately to the west of the Fulham Reach site. There are no other sites designated for nature conservation in the vicinity.

Existing site access and movement

7.2.14 Vehicle access to the site is from Fulham Palace Road and Chancellor's Road.

Highways

7.2.15 Fulham Palace Road (A219) forms part of the Strategic Road Network and provides a north-south connection between the Hammersmith Gyratory system in the north and Fulham High Street (A219) in the south. The Hammersmith Gyratory system is a major distributor to and from the west via the A4.

7.2.16 Chancellor's Road is a two-way single carriageway with a 20mph speed limit. It forms a priority junction with Distillery Road close to the existing Hammersmith Pumping Station.

7.2.17 Distillery Road is another two-way single carriageway with a 20mph speed limit. It meets Winslow Road at a priority junction to the south of the site.

Car parking

7.2.18 Shared use car parking bays are available on Chancellor's Road, Distillery Road and Winslow Road, which fall within a Controlled Parking Zone.

7.2.19 There are three off-street car parks in the vicinity of the site: Charing Cross Hospital car park on Fulham Palace Road, Novotel Hotel car park on 1 Shortlands, and a National Car Parks car park on Hammersmith Grove.

7.2.20 The closest car club parking spaces are located on Riverview Gardens and Arundel Terrace, both approximately 480m to the southwest of the site, and are operated by Zipcar.

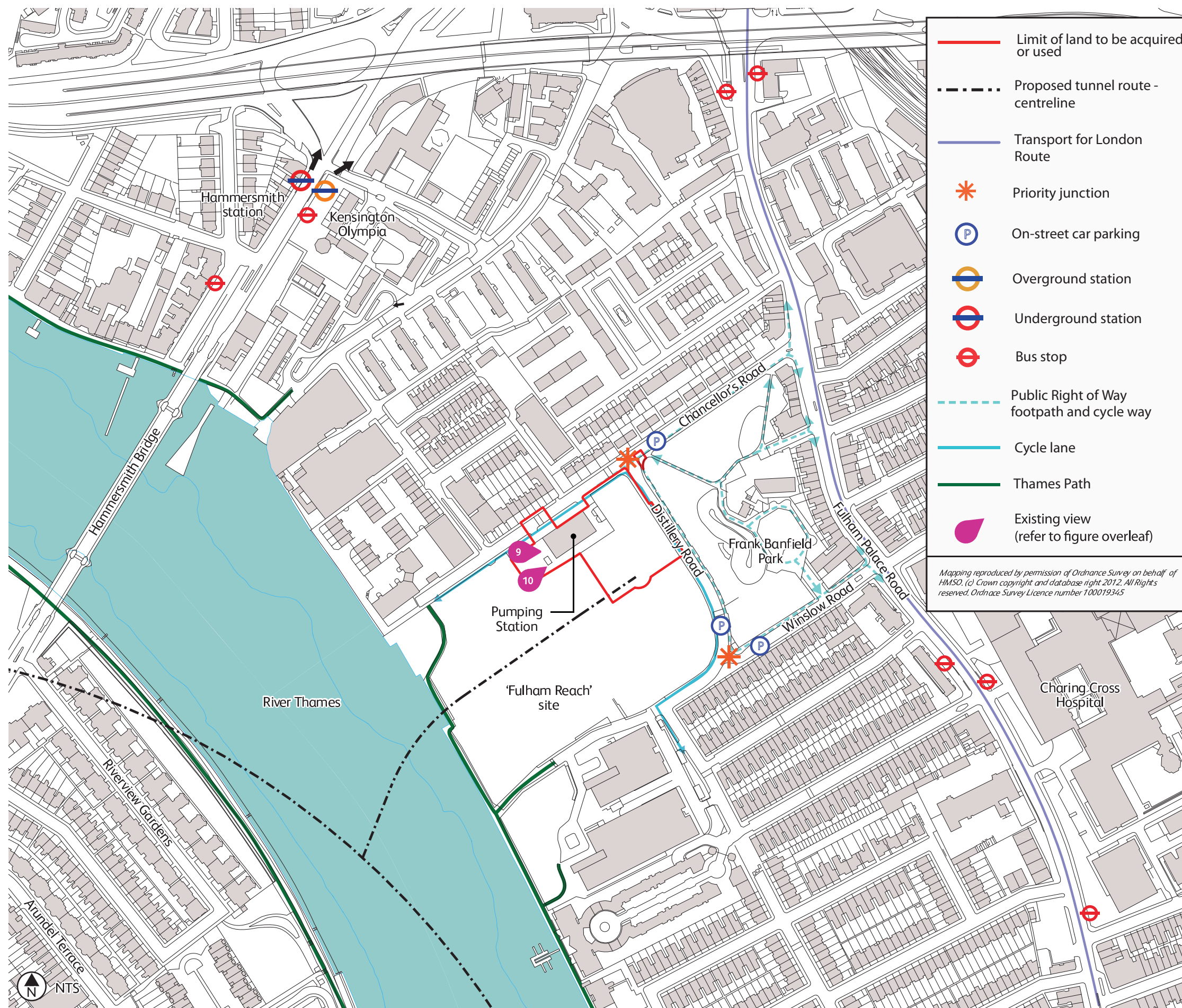


Figure 7.11: Existing site analysis plan



Figure 7.12: Access doors in the western elevation of pumping station



Figure 7.13: West elevation of pumping station and Venturi building

Public transport

7.2.21 The nearest London Underground Station is Hammersmith, which consists of two stations approximately 500m and 800m to the north of the site. The station serves the Circle, District, Piccadilly and Hammersmith and City lines.

7.2.22 The closest London Overground Station is Kensington Olympia rail station, which is located approximately 1.7km to the northeast of the site.

7.2.23 A total of 20 daytime buses and three night bus routes operate within 640m of the site from bus stops at Charing Cross Hospital on Fulham Palace Road, and on the Hammersmith Gyratory.

Cycle routes

7.2.24 A designated London Cycle Route runs along Chancellor's Road to the west of its junction with Distillery Road and south along Distillery Road. The route then continues south and east towards Fulham through a number of residential roads.

7.2.25 The closest Barclays Cycle Hire docking station is located on West Cromwell Road, Earls Court, approximately 2.3km to the northeast of the site on the eastbound carriageway.

Pedestrian routes

7.2.26 Fulham Palace Road provides a north-south pedestrian connection between Hammersmith Bridge Road (A306) and Fulham High Street. Pedestrian routes from the site to Fulham Palace Road are via Chancellor's Road to the northeast and Winslow Road to the southeast.

7.2.27 There is also a network of pedestrian routes between the site and Fulham Palace Road through Frank Banfield Park.

7.2.28 The Thames Path runs along the riverfront of the Fulham Reach development site to the south and west of the site. There are a number of pedestrian routes proposed across the site as part of the new development.

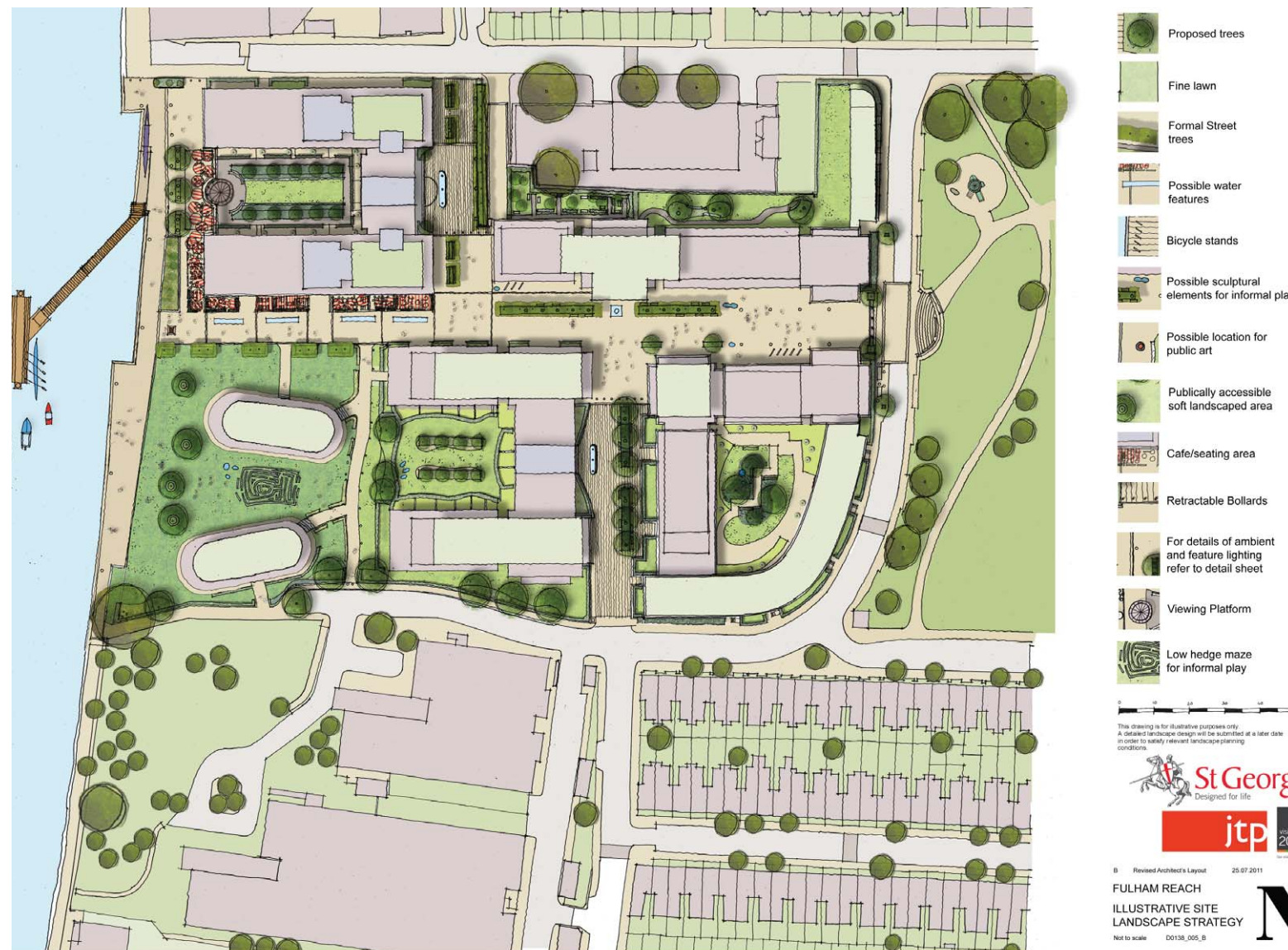


Figure 7.14: Extract from masterplan by Fulham reach ©John Thompson & Partners

Historical context

7.2.29 The site is located on the Thames gravel terrace; in places the gravel is capped with Brickearth. During the prehistoric period (700,000 BC to AD 43), the gravel terrace may have been favoured for agriculture and settlement.

7.2.30 During the Roman period (AD 43 to 410), the site lay within a rural landscape of open fields and scattered farmsteads. A minor road may have followed the line of King Street and Hammersmith Road, 300m to the north of the site, towards a small settlement to the southeast in the Fulham area.

7.2.31 During the early medieval period (AD 410 to 1066), the site lay within an early Saxon settlement. Excavations immediately to the southwest of the site revealed three sunken-featured buildings. The settlement appears to have been fairly extensive; an archaeological excavation 175m to the south of the site discovered a further six sunken-featured buildings, two post-built structures, various pits, a gully, a ditch and evidence of metal working.

7.2.32 By the later medieval period (AD 1066 to 1485), the settlement appears to have shifted 250m to the north of the site. The site and the surrounding area formed open fields, possibly under arable cultivation.

7.2.33 From the early 17th century, a Jacobean house, later known as Brandenburg House, stood to the southwest of the site. Archaeological excavations approximately 20m to the southwest of the site boundary uncovered 17th century brick structures probably associated with this house. The remains of at least two glass-working furnaces were recorded to the southwest of the site.

7.2.34 By the mid-18th century, Brandenburg House lay within an orchard and fields. Much of the surrounding area now formed extensive market gardens. The house was demolished in 1823, and by 1862 it had been replaced by two large distillery buildings to the west of the site.

7.2.35 By the 1960s, most of the earlier industrial buildings and terraced houses had been demolished and the current pumping station was constructed on the western part of the site.

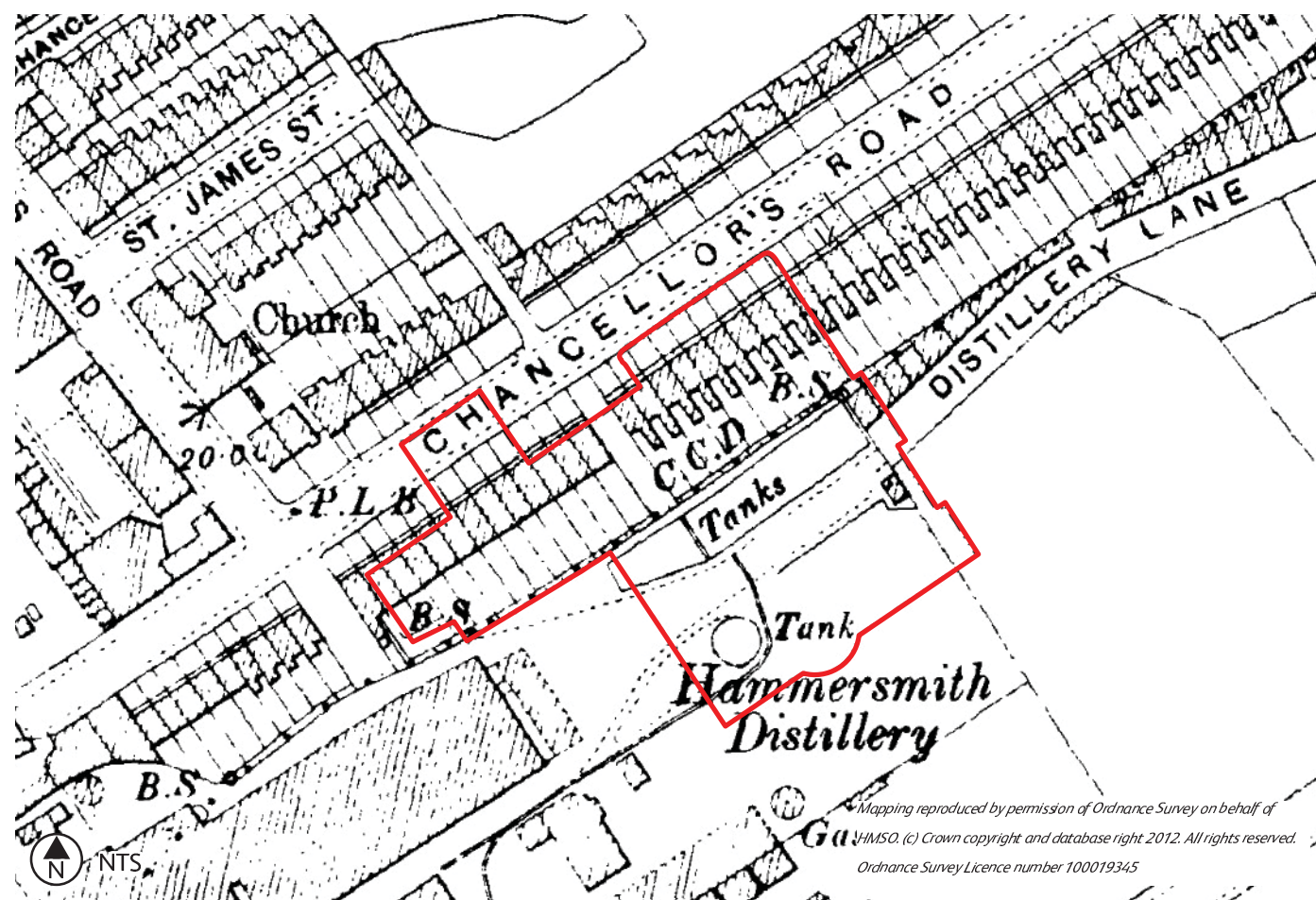


Figure 7.15: Historic map of Hammersmith (1896)

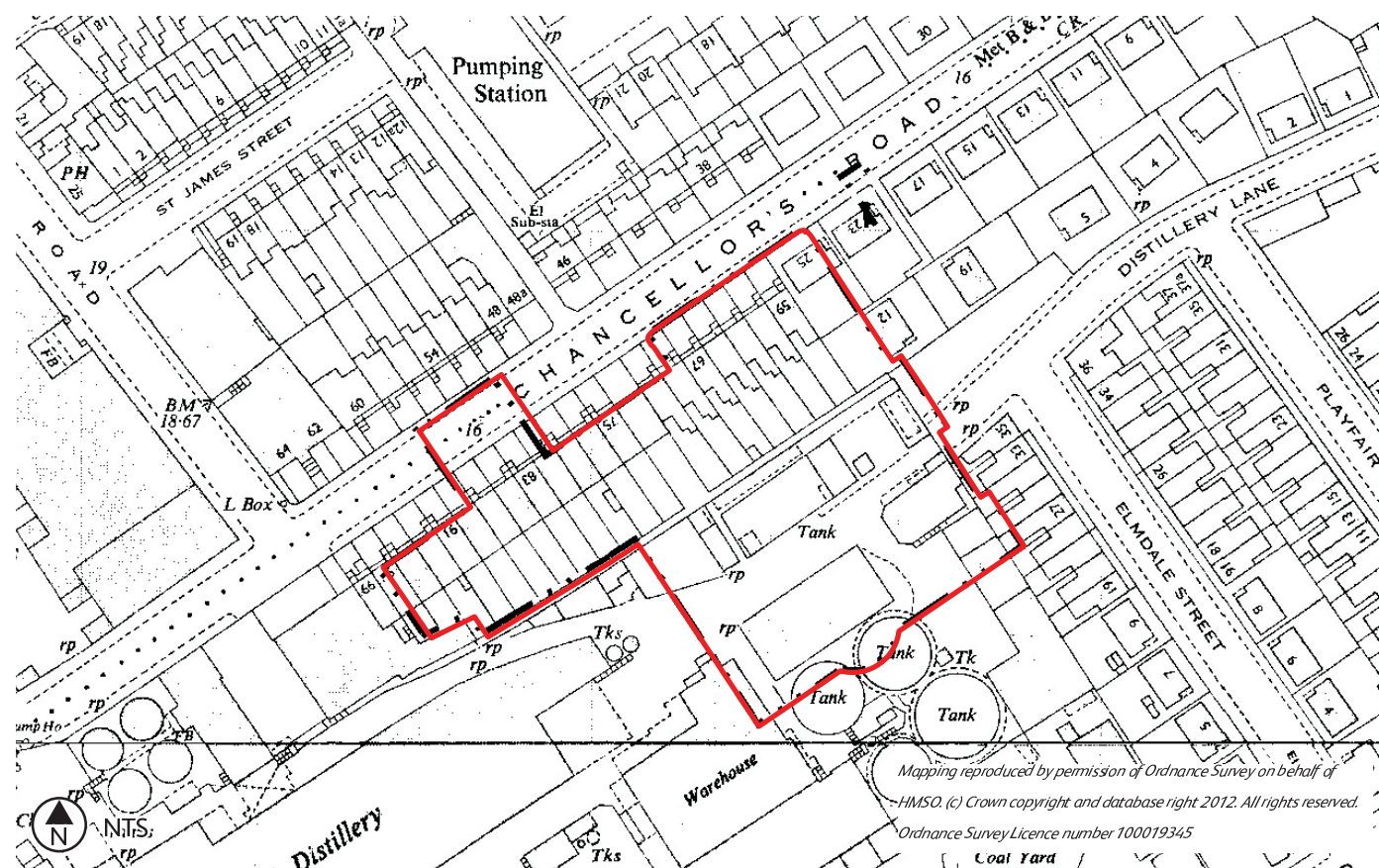


Figure 7.16: Historic map of Hammersmith (1951)

Site analysis: Opportunities and constraints

The site-specific design opportunities included:

- a. Coordinate the works to tie in with the Fulham Reach development to minimise sterilised land.
- c. Position the permanent above-ground works within the existing Thames Water pumping station or its compound.

The site-specific design constraints included:

- a. The site is in close proximity to sensitive receptors including residents and Frank Banfield Park.
- b. The adjacent Fulham Reach development would be partly complete and partly under construction during construction of the project.
- c. The layout of the buildings on the site constrains the location of the below-ground structures.
- d. The site is constrained by the location of existing underground infrastructure within the Hammersmith Pumping Station building and compound.

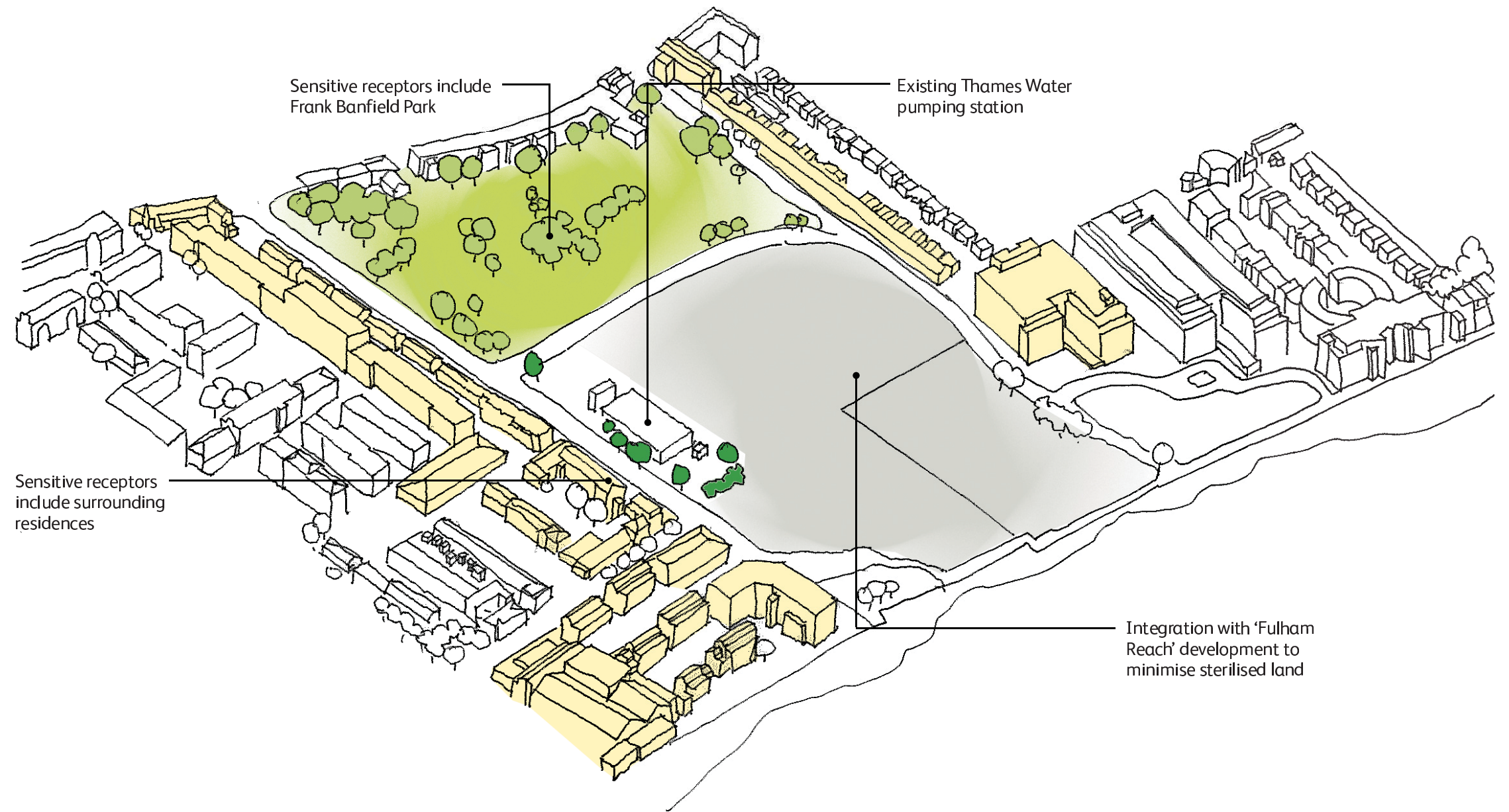


Figure 7.17: Existing site opportunities and constraints sketch

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7.3 Design evolution and alternatives

7.3.1 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 Hammersmith Pumping Station was to successfully integrate the works with the existing Thames Water pumping station and the adjacent Fulham Reach development as discreetly as possible.

7.3.2 The design of our proposals at Hammersmith Pumping Station was also significantly influenced by an extensive process of stakeholder engagement and design review. In order to ensure design quality, we undertook a review hosted by the Design Council CABE. We also held various pre-application meetings with the London Borough of Hammersmith and Fulham, St George and other strategic stakeholders. More information on our public consultation process is provided in the Consultation Report, which accompanies the application.

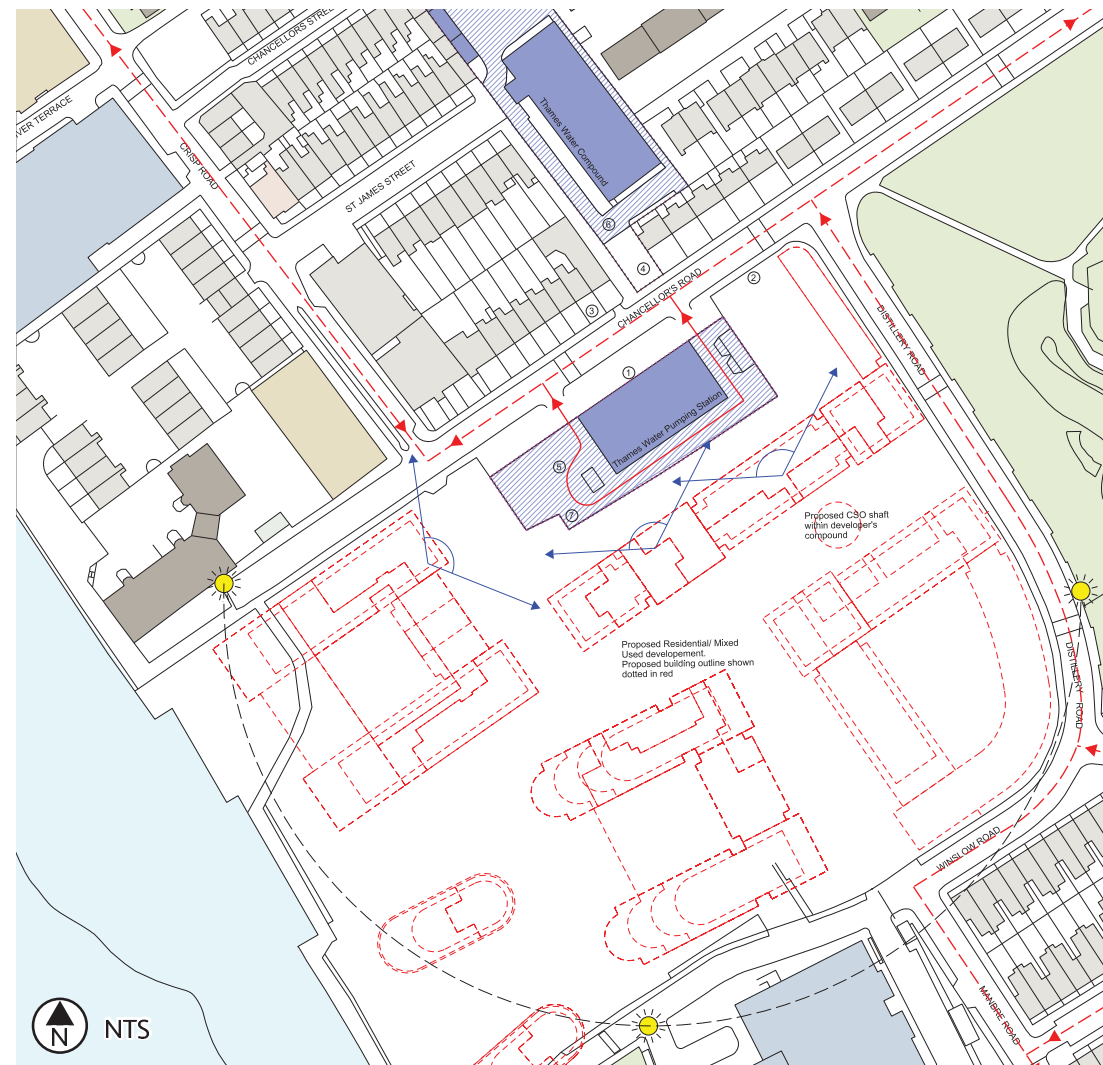


Figure 7.18: Design development diagram

October 2010

Phase one consultation

7.3.3 At phase one consultation, Hammersmith Pumping Station was presented as our preferred site to serve as a combined main tunnel reception and CSO interception site.

7.3.4 The key design-related issues raised by the London Borough of Hammersmith and Fulham, stakeholders and members of the public included:

- the impact on the planned development and regeneration of the site
- the design and visual impact of the permanent structures.
- proximity to existing residences

7.3.5 Following phase one consultation, the proposals emerged for the Fulham Reach development. We also carried out additional engineering design work for the western section of the main tunnel. We determined that the connection tunnel from the main tunnel to Acton Storm Tanks needed to be larger than initially proposed in order to meet hydraulic requirements.

7.3.6 As a result, we proposed to extend the main tunnel to Acton Storm Tanks. We then conducted a site selection back-check and chose Hammersmith Pumping Station for use as a CSO site only (see the Final Report on Site Selection Process, Volume 4, which accompanies the application, for details).



Figure 7.19: Proposed view from phase one consultation

7.3.7 We then explored the following design considerations:

- reducing the diameter of the CSO drop shaft
- optimising the location of the site in relation to the Fulham Reach development and integrating some of the permanent works into the development
- removing the proposed ventilation building and reducing the height of the single ventilation column in response to the change of use of the site and modifications to the project-wide air management strategy
- reducing the size of the above-ground structures as far as possible
- enhancing the appearance of the existing Venturi building within the pumping station compound.

May 2011

CABE sketch review

7.3.8 We held a sketch review based on our initial assessment and sketched ideas for the site with the Design Council CABE in May 2011. We presented the site as a CSO site only: the proposed permanent infrastructure included a connection tunnel from the CSO to the main tunnel, various ventilation structures, an electrical and control kiosk within the pumping station compound and a CSO drop shaft finished at the same level as the surrounding areas of public realm within the Fulham Reach development. The drop shaft was positioned under the pedestrianised future central boulevard proposed as part of the Fulham Reach development.

7.3.9 The Design Council CABE panel welcomed the proposals. It also suggested enhancing the profile of the pumping station and improving its outward appearance to achieve a more positive relationship with its surroundings. We noted the panel's suggestion regarding the pumping station's appearance; however, this was outside of the scope of the project.

7.3.10 Following this review, we held regular meetings with St George in order to optimise the layout and design of the project construction works and permanent structures alongside the Fulham Reach redevelopment proposals.

7.3.11 We also held various meetings with the London Borough of Hammersmith and Fulham during 2011 in relation to developing the design and construction logistics.

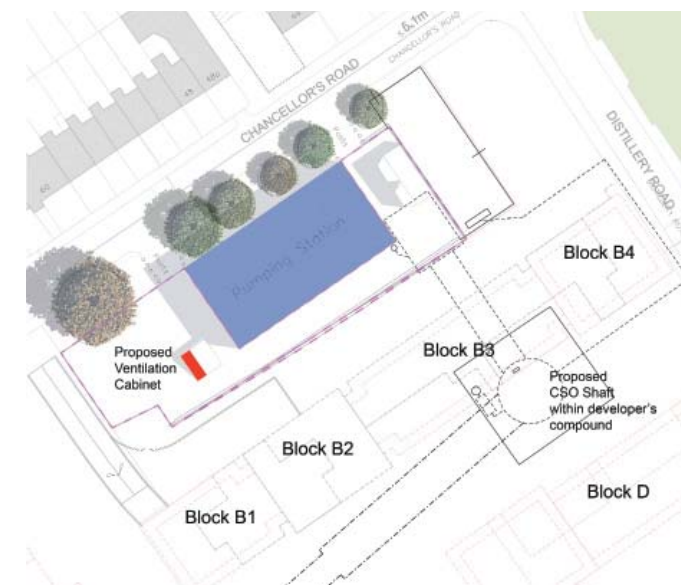


Figure 7.20: Proposed plan from Design Council CABE sketch review

February 2012

Phase two consultation

7.3.12 At phase two consultation, we proposed to use part of the Thames Water pumping station site and part of the adjacent Fulham Reach site to accommodate the permanent works.

7.3.13 The key issues raised by stakeholders and members of the public in relation to the permanent design included:

- The project's compatibility with the existing Fulham Reach planning permission is of concern.
- The proposals are unimaginative/bland and should be environmentally friendly.
- The final design of the site should be informed by local consultation and ideas should be sought from local artists and the community.

7.3.14 Other feedback received from the London Borough of Hammersmith and Fulham included detailed comments on the construction and operational effects of the project and the measures we proposed to reduce and manage those effects.

7.3.15 We considered the feedback received and determined that no new information was raised that would fundamentally change our proposals for the site. We continued to refine the detailed proposals in order to improve the design and reduce the potential impacts on the environment and the local community. For example, we considered whether it was feasible to locate all the above-ground structures proposed at phase two consultation within the Hammersmith Pumping Station building or compound.



Figure 7.21: Proposed view from phase two consultation

July 2012

Section 48 publicity

7.3.16 Following phase two consultation, the engineering proposals within the compound were modified slightly to respond to refined system-wide requirements.

7.3.17 A dry weather flow pumping station was introduced at the northeastern end of the compound, which would prevent base seepage within the sewerage network entering the main tunnel in dry weather. In order to construct this pumping station and improve long-term access, it would be necessary to demolish the existing screen housing building. This building would be replaced with a similar structure no larger than the existing.

7.3.18 Additional small diameter ventilation columns were added adjacent to the northeastern corner of the pumping station in order to replace the ventilation function of the screen house building.

7.3.19 We continued to engage with St George to ensure that our proposals could be accommodated within its proposals and programme for the Fulham Reach development.

7.3.20 The amended proposals were published at Section 48 publicity. There were no significant design developments after this stage.



Figure 7.22: Proposed view from Section 48 publicity

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7.4 Proposed design

7.4.1 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

7.4.2 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, ventilation structures and ventilation columns.

7.4.3 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.

Proposed design

7.4.4 We had regard to Core Strategy Policy BE1, which seeks to create high quality urban environments, and Policy EN31X, which seeks to ensure that all built development within the Thames Policy Area is of a high quality design that reflects the riverside location. We also had regard to saved Unitary Development Plan Policy EN2, which seeks to ensure the preservation or enhancement of the character or appearance of conservation areas. Our main objectives in developing the design for this site were to limit the effects of our works on the Fulham Reach development by:

- a. locating all of the above-ground structures within the Thames Water compound
- b. positioning the CSO drop shaft to coordinate with the St George’s master plan for the Fulham Reach development.

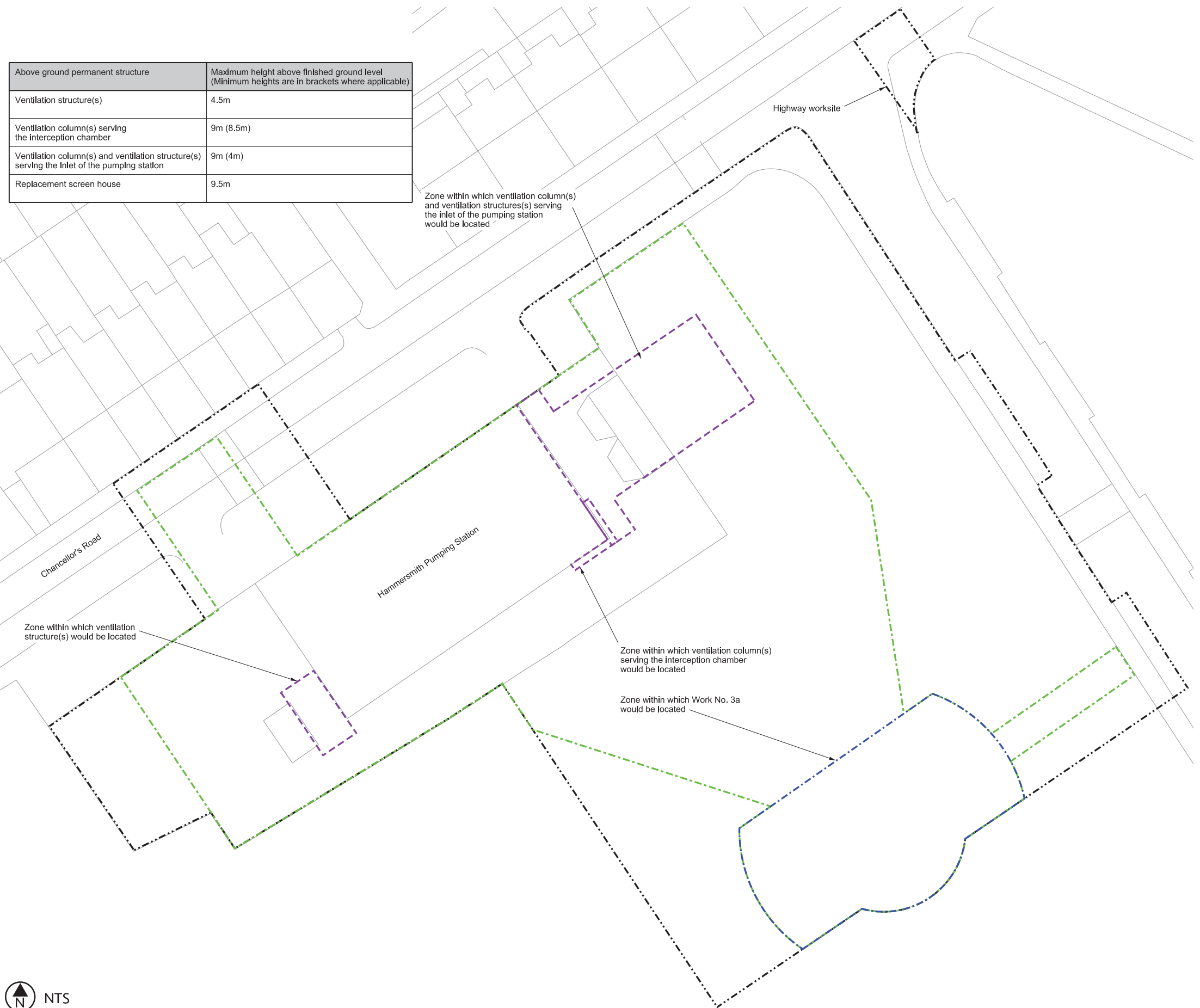


Figure 7.23: Site works parameter plan - refer to Site works parameter plan in the *Book of Plans*

Integration of the functional components

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

- a CSO drop shaft
- a connection tunnel
- a CSO interception chamber
- associated hydraulic structures, culverts, pipes and ducts.

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

- a ventilation structure
- six ventilation columns
- a penstock control panel
- ventilation column(s) or structure(s) serving the inlet of the pumping station, which might be incorporated into any potential replacement screen house structure
- a potential replacement screen house structure.

CSO drop shaft and associated structures

7.4.7 The CSO drop shaft would be approximately 11m in internal diameter. It would be constructed within a future pedestrian boulevard of the Fulham Reach development approximately 45m to the southeast of the pumping station. Combined sewage flows diverted from the pumping station inlet would be conveyed to the drop shaft via an underground connection culvert and from there into the main tunnel via the connection tunnel.

7.4.8 The CSO interception chamber would be built immediately adjacent to the inlet of Hammersmith Pumping Station within the Thames Water compound. It would be rectangular in shape and contain penstock gates to control flows into the main tunnel. It would also incorporate a small pumping station. The top of the chamber would feature access covers for inspection and maintenance purposes.

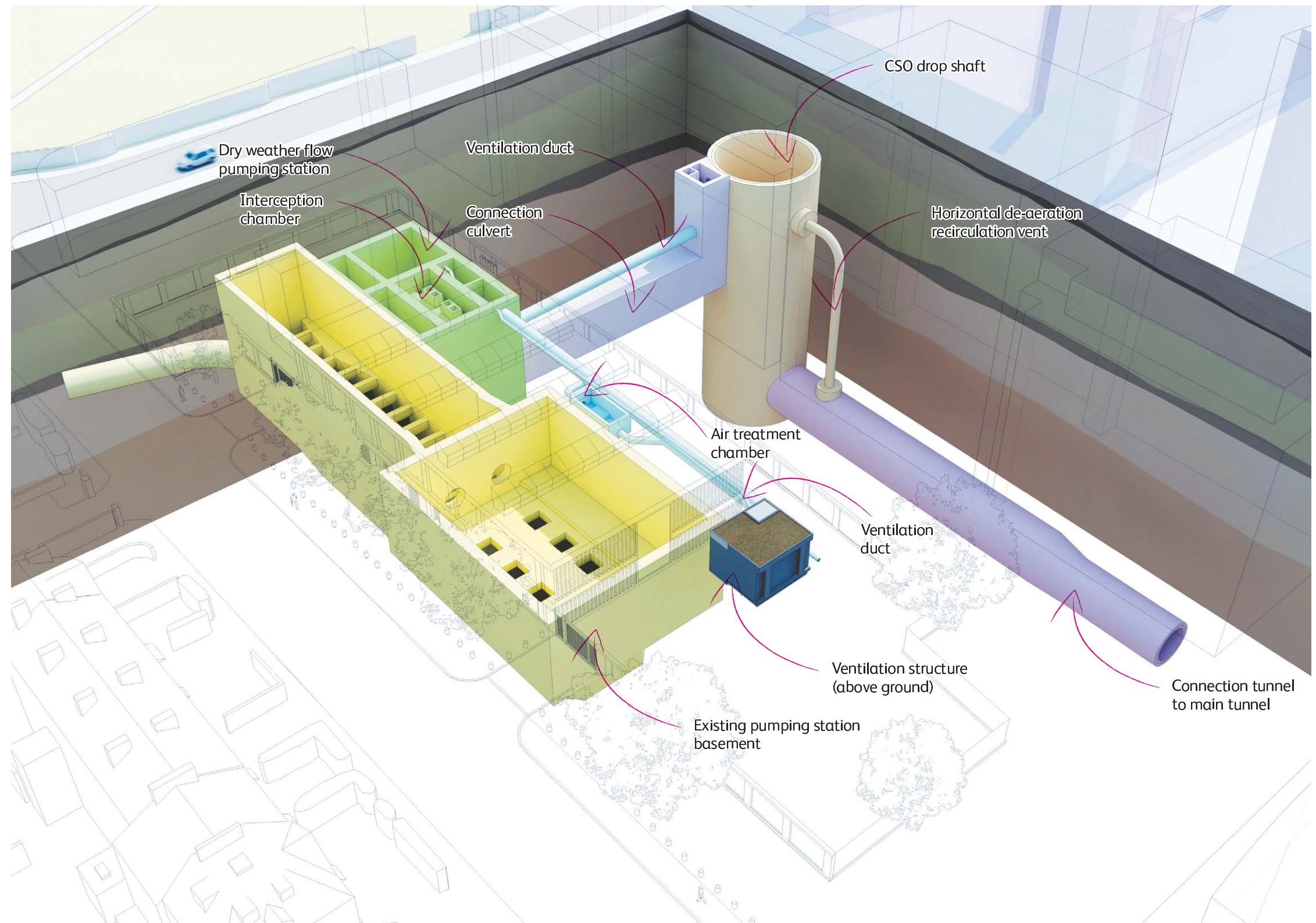


Figure 7.24: Proposed functional components diagram : below ground view



Figure 7.25: Proposed functional components diagram : above ground view

Ventilation structures

7.4.9 The number and size of the ventilation columns is determined by the air management requirements for the site. At Hammersmith Pumping Station, we propose to include six small diameter ventilation columns to serve the CSO interception chamber along the southeastern façade of the pumping station building. The minimum height would be 8.5m and the maximum height 9m to enable them to discharge above the roof of the pumping station building.

7.4.10 The ventilation structure would sit within the Thames Water compound at the southwestern end of the pumping station building. The height (approximately 4.5m) and massing of the structure were designed to align with the existing infrastructure in order to reduce its visual impact. It would be constructed with high quality precast concrete panels with a planted brown roof.

Other works

7.4.11 The electrical and control equipment would be housed within the existing pumping station building and therefore would not be visible from the public domain. The works also include various modifications within the pumping station building. A 1.5m high penstock control panel would be mounted on the external wall of the building. Accommodating these permanent works within the building would significantly reduce the visual impact on the surrounding area, including the Fulham Reach Conservation Area.

7.4.12 The existing screen house sits at the northeastern end of the Thames Water compound. This building would potentially be replaced with a similar structure, the height and footprint of which would not exceed the existing.

7.4.13 The wall of the pumping station compound that faces Chancellor's Road and Distillery Road would be extended and rebuilt to match the existing precast concrete wall. Walls or fencing on the southern and western boundaries of the compound would be rebuilt with materials that would be sympathetic to the Fulham Reach development. The area within the pumping station compound would be reinstated to hardstanding to preserve Thames Water operational access.

7.4.14 Areas of hardstanding would be included to facilitate maintenance vehicle access and incorporate ground-level access covers to the below-ground infrastructure. The access covers to the CSO drop shaft and other below-ground infrastructure within the Fulham Reach site would either be temporarily in-filled or paved with materials agreed with St George. They would be finished at a suitable level to accommodate any final finishes that would be installed by St George.

7.4.15 The location and layout of the permanent works were influenced by negotiations with St George, detailed consideration of its development proposals, and the proximity of various sensitive receptors. Trees lost as a result of the construction works would be replaced in line with the St George development requirements.

Landscaping and appearance

7.4.16 The existing Hammersmith Pumping Station building was built in the 1960s in a New Brutalist style of fair-faced concrete. The style extends to the design of the screen housing, the Venturi structure and the concrete boundary wall on Chancellor's Road. While this style may currently be out of fashion, we sought to maintain the coherence of the style of the compound. We selected appropriate materials for our illustrative proposals and designed the proposed structures to tie in with the existing.

7.4.17 Apart from the functional components, the main visible legacy of the project would be the design of the boundary treatments for the Thames Water compound. It is necessary to extend the existing boundary wall around the full extent of the northern end of the compound. This wall would be constructed in fair-faced concrete panels to match the existing wall on Chancellor's Road.

7.4.18 The existing wall on the southeastern boundary, which faces the new development, comprises a mixture of blockwork and palisade fencing. It would be rebuilt to comply with Thames Water security standards in materials to be agreed with St George and the local authority at a later stage.

7.4.19 The landscape works over the CSO drop shaft would be completed by others as part of the Fulham Reach development; therefore our proposals do not include any soft landscaping materials as such. Any planting would be limited to a planted brown roof on the new ventilation structure.



Maximum Volume of replacement screen house building

Figure 7.26: Proposed site view

7.5 Access and movement

7.5.1 The majority of the permanent works would be located within the Thames Water operational compound, which would remain inaccessible to the public.

7.5.2 The access covers to the CSO drop shaft and other below-ground infrastructure within the Fulham Reach development site would sit just below the finished surface of the future central boulevard. Therefore they should not affect access or movement across this area.

7.5.3 The site is broadly flat and there are few constraints on designing a space that is accessible to all. In line with project-wide aspirations and good practice, any landscaping treatments and materials would meet the best standards of accessibility.

7.5.4 Our works would not affect pedestrian movements in the surrounding area, including the Thames Path.

Thames Water access requirements

7.5.5 Access to the operational infrastructure within the Thames Water compound would be via the existing pumping station access off Chancellor's Road.

7.5.6 We propose to create a new entrance off Distillery Road for use during construction, and a second, separate access for future operational access. In agreement with St George, periodic maintenance access to the access covers within the Fulham Reach development site would be via this access and the future pedestrian boulevard.

7.5.7 Once the project is operational, Thames Water would occasionally need to access the site for inspection and maintenance purposes. It is anticipated that 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.

7.5.8 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 require a small team of inspection staff and support crew, two mobile cranes to lower the team into the CSO drop shaft, and various support vehicles. The inspection would be carried out during normal working hours and would likely take several weeks.

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

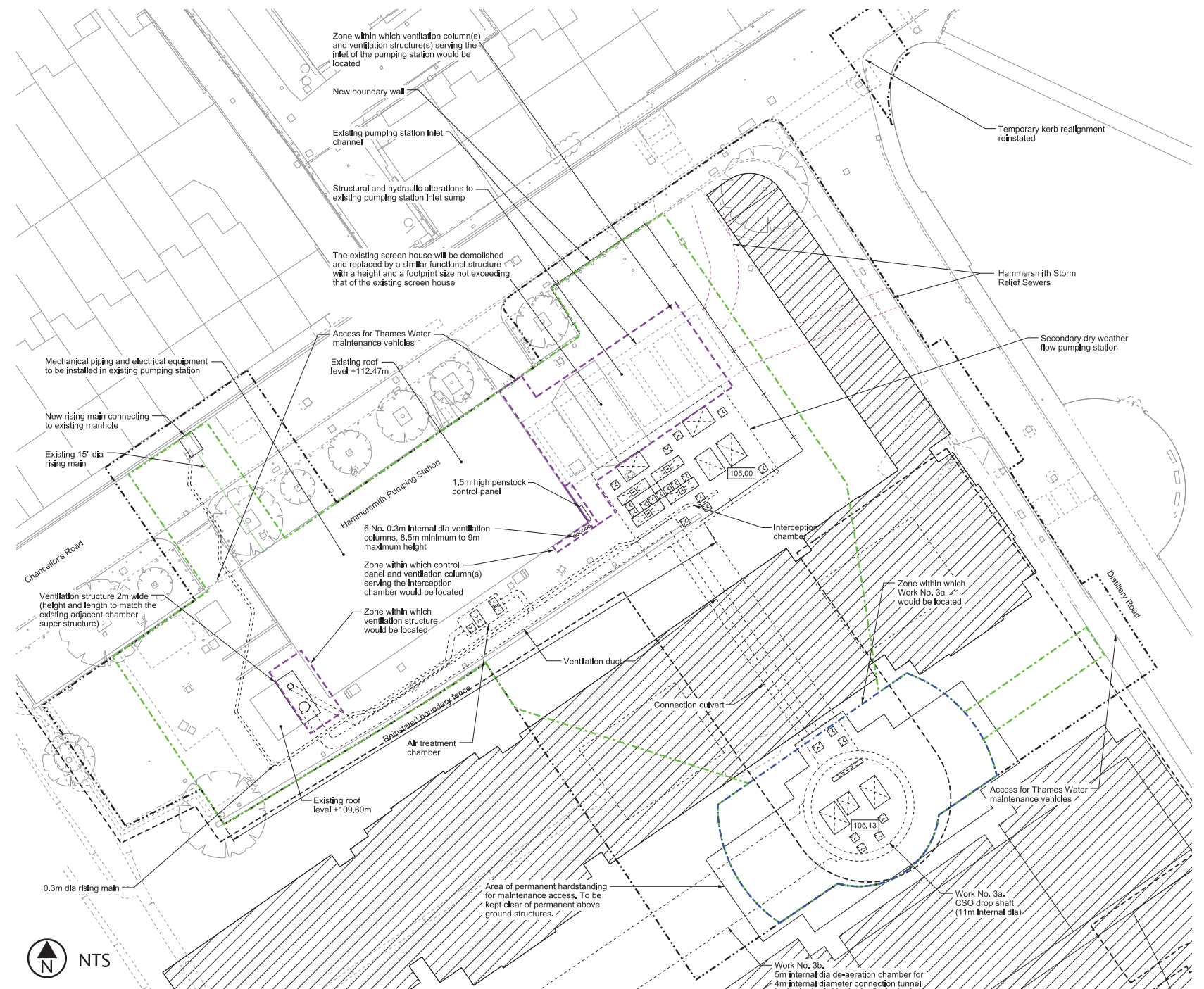


Figure 7.27: Permanent works layout - refer to Permanent works layout in the *Book of Plans*

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DCO-DT-000-ZZZZZ-070400

