

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Design and Access Statement

Doc Ref: **7.04**

Part 3

Earl Pumping Station

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

Hard copy available in
Box **69** Folder **C**
January 2013

Thames
Tideway Tunnel 
Creating a cleaner, healthier River Thames

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Section 24

Earl Pumping Station

24.1 Introduction

24.1.1 A worksite is required to connect the Earl Pumping Station CSO to the Greenwich connection tunnel in order to convey flows to the Chambers Wharf site, where they would be transferred into the main tunnel. The proposed development site is known as Earl Pumping Station, which is located in the London Borough of Lewisham and partly within the London Borough of Southwark to the north and west.

24.1.2 We have agreed with the London Borough of Lewisham that some elements of the detailed design proposals would be drawn up at a later stage. The detailed designs 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 scale of the above-ground structures, however, is indicative.



Figure 24.1: Aerial photograph of the existing Earl Pumping Station site with LLAU indicated

24.2 Existing site context

24.2.1 The site itself comprises Thames Water's Earl Pumping Station at the northern end of the site and four adjacent plots of industrial land at the southern end.

24.2.2 The Thames Water-owned area of the site houses the existing operational pumping station building, servicing areas and significant associated above and below-ground wastewater infrastructure. Two of the four industrial plots front Yeoman Street: the plot that abuts the pumping station is occupied by a large metal warehouse with a two-storey brick office and servicing area at the front; and the second plot features a small metal shed and is used for parking trucks that transport waste skips. The other two plots front Croft Street and are occupied by metal warehouse buildings that have servicing and parking areas at the front.

24.2.3 Neither the Earl Pumping Station site nor the surrounding area falls within a conservation area and there are no open space considerations. The site is designated by the London Borough of Lewisham as an employment area and an Archaeological Priority Area. The southern part of the site lies within the Plough Way Strategic Site Allocation as identified within the London Borough of Lewisham's Core Strategy (2011).

24.2.4 The site is bounded to the north by Chilton Grove and to the east by Yeoman Street. Occupied commercial/industrial units and a row of two-storey terraced houses with gardens lie adjacent to the southern site boundary and the first dwelling in the terrace sits adjacent to the boundary. The site is bounded to the west by Croft Street.

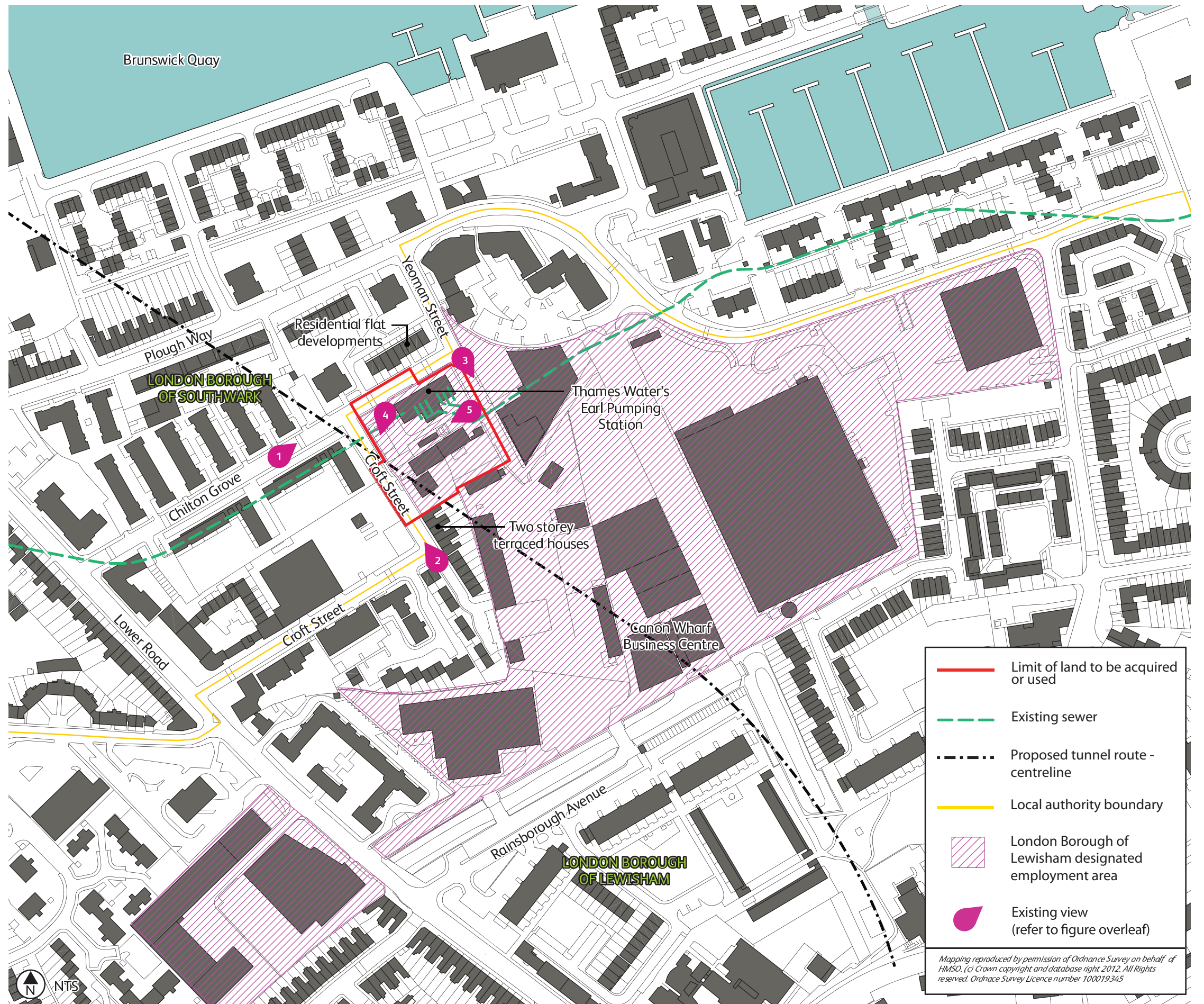


Figure 24.2: Existing site plan

	Limit of land to be acquired or used
	Existing sewer
	Proposed tunnel route - centreline
	Local authority boundary
	London Borough of Lewisham designated employment area
	Existing view (refer to figure overleaf)

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Figure 24.3: Existing site from Chilton Grove



Figure 24.5: Existing site from Yeoman Street



Figure 24.6: Existing site looking South



Figure 24.4: Existing site from Croft Street



Figure 24.7: Existing site looking West

24.2.5 The area to the north of the site comprises developments of residential flats that are three to five storeys high.

24.2.6 To the east, on the opposite side of Yeoman Street, the land uses are predominantly industrial. However, a planning permission has been granted for the construction of a five-storey building that will provide 33 residential units.

24.2.7 The area to the east, southeast and south of the site around Yeoman Street and to the north of Rainsborough Avenue is of an industrial nature and forms the Cannon Wharf Business Centre. However, planning permission has been granted to demolish existing buildings at Cannon Wharf Business Centre and 35 Evelyn Street and to construct a number buildings three to eight storeys high and two buildings 20 and 23 storeys high respectively for mixed commercial and residential use.

24.2.8 A brick electrical substation is located to the southwest of the site.

24.2.9 The area to the west is residential and a five-storey block of flats and a large industrial unit lie immediately west of the site.

Existing site access and movement

24.2.10 Earl Pumping Station is a Thames Water operational site and public access is not permitted. Two vehicle/pedestrian access points are located on Yeoman Street and one vehicle/pedestrian access and a separate pedestrian access are located on Chilton Grove.

24.2.11 The four industrial units to the south of the pumping station that form part of the site all have direct vehicle/pedestrian access from the street.

Highways

24.2.12 Lower Road (A200) forms part of the Strategic Road Network and is generally characterised by high levels of traffic. It is one-way (southbound) and has a designated bus lane. Plough Way (B206) is also part of the Strategic Road Network and connects Lower Road to Yeoman Street. Yeoman Street, Croft Street and Chilton Grove all form part of the local highway network.

Car parking

24.2.13 On-street parking is available along Plough Way, Yeoman Street, Croft Street and Chilton Grove.

24.2.14 Limited on-street parking is permitted on one side of Lower Road, off Plough Way.

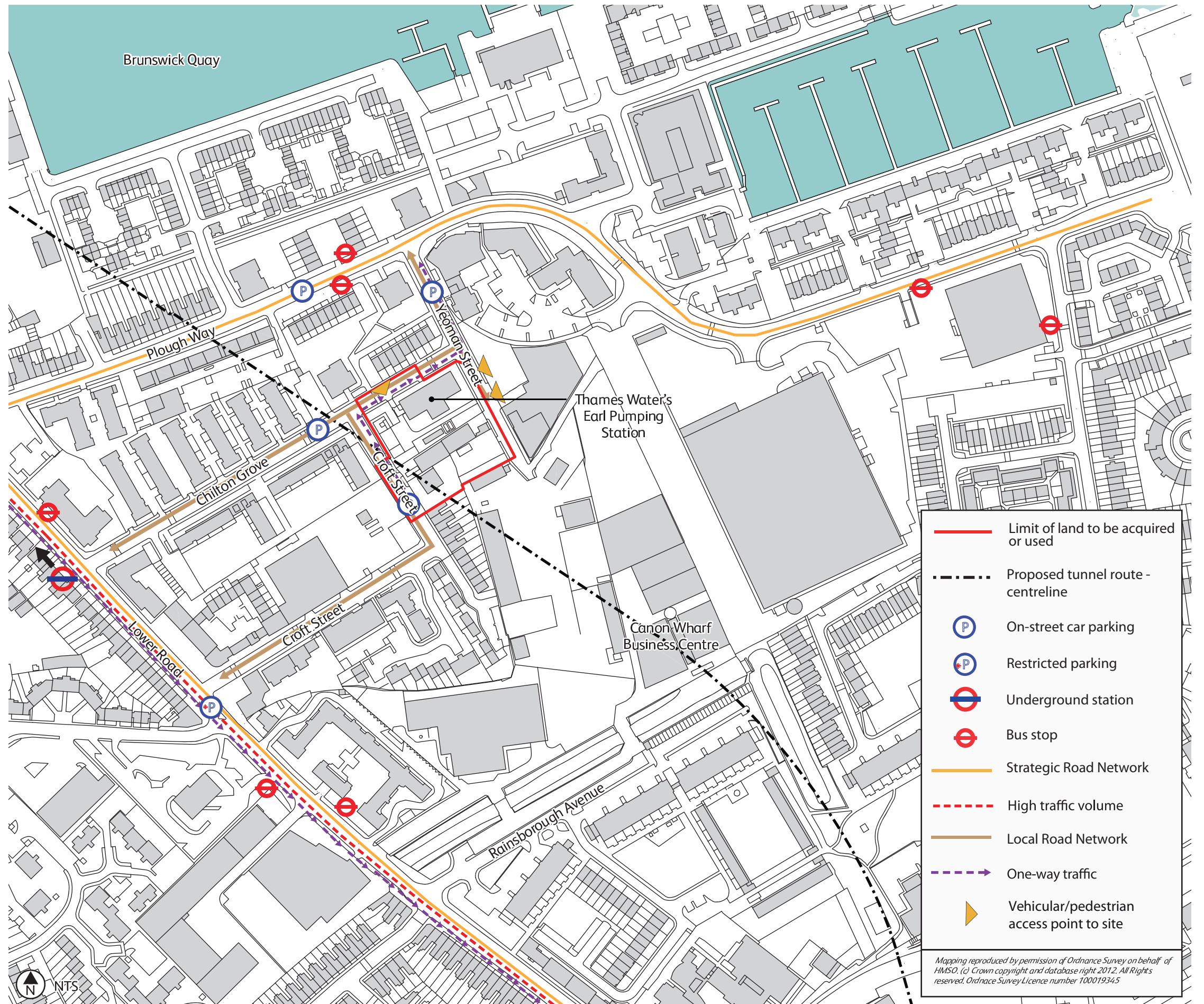


Figure 24.8: Existing site analysis plan

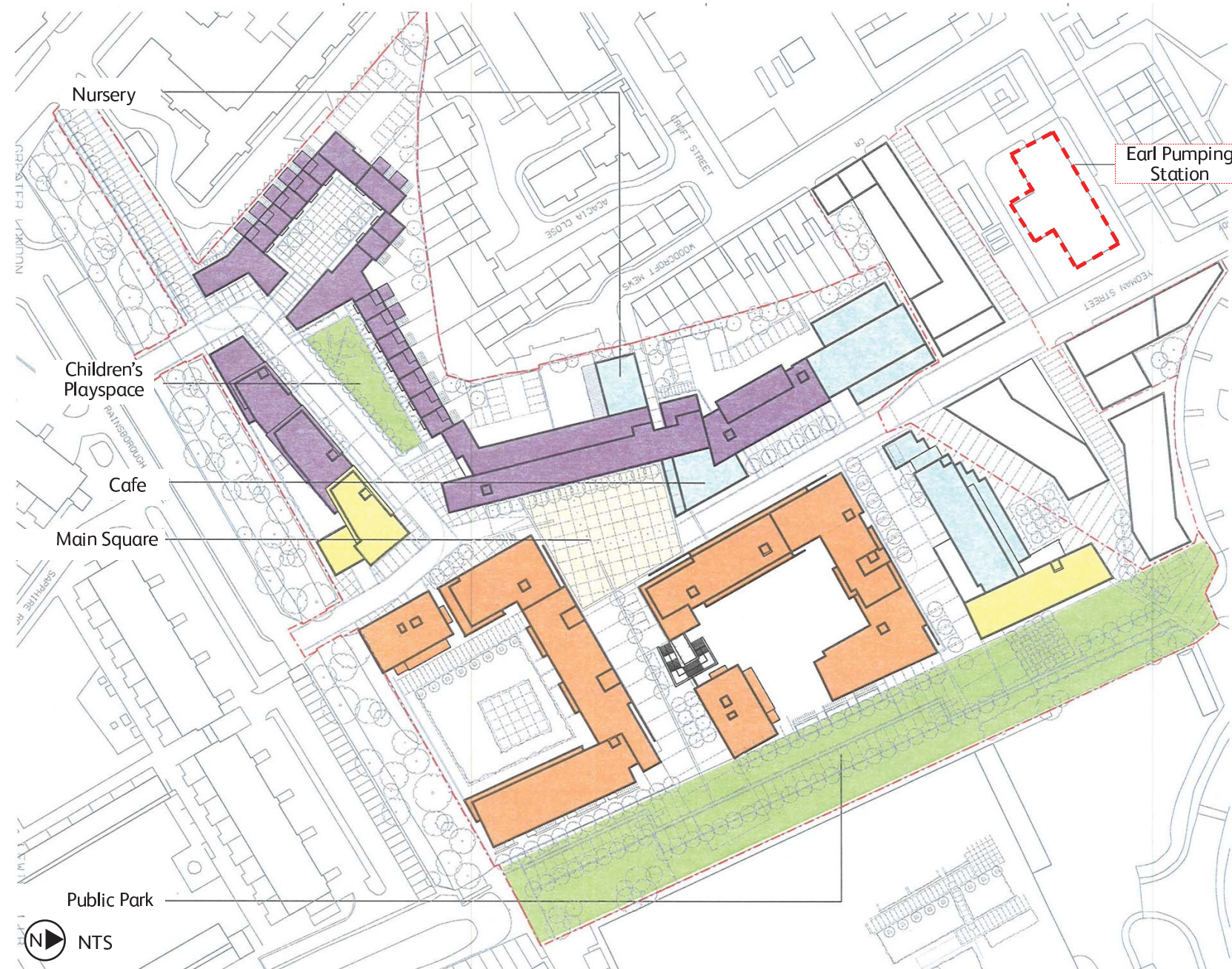


Figure 24.9: Proposed regeneration area surrounding the site (by others)

Public transport

24.2.15 Surrey Quays Overground Station is located approximately 650m to the northwest of the site and a number of bus services run along Lower Road and Plough Way.

Cycle routes

24.2.16 The main cycle route in the area is National Cycle Network Route 4 (traffic-free), which runs approximately 700m to the east of the site. The route continues south along the Thames Path.

24.2.17 An on-road cycle path runs along Brunswick Quay approximately 600m to the north of the site. All other cycling options in the vicinity of the site are on-road and undesignated.

24.2.18 It is expected that Cycle Super Highway 4, a planned future route between Woolwich and London Bridge, will open in 2015.

Pedestrian routes

24.2.19 All pedestrian movements around the site are facilitated by the comprehensive local highway network.

Historical context

24.2.20 The site lies 520m to the west of the River Thames and the Surrey Docks lie 180m to the north and 220m to the east. It is bisected by the Earl's Sluice, a stream enclosed as a sewer in the early 19th century, from east to west.

24.2.21 The site and the surrounding area are fairly flat and during the Bronze Age it lay in an area of intertidal marshland prone to flooding. From the early Mesolithic period (12,000 years ago), the area became a scattered mosaic of wetlands and patches of dry ground.

24.2.22 There is no evidence of Roman occupation (AD 43 to 410) as the site was probably unsuitable for settlement. It may have been exploited for its natural resources.

24.2.23 During the medieval period (AD 410 to 1485) the site comprised marshy pastures and there were settlements nearby at Rotherhithe (1.4km to the northwest) and Deptford (2km to the south). Towards the end of this period, the marshes were drained for agricultural use.

24.2.24 During much of the post-medieval period (AD 1485 to the present day), the riverside area to the east and southeast of the site was occupied by docks. The open fields around the site became increasingly urbanised during the 19th and early 20th centuries and housed a number of industrial and residential buildings. By the mid-19th century, the northern part of the site was occupied by houses and yards fronting onto Chilton Street. There was a tar, pitch, naphtha and creosote works located on the southeastern corner of the site, which had been demolished by 1909.

24.2.25 In the late 1940s, the site was cleared of houses and the existing pumping station was constructed. The light industrial buildings and office on the industrial plots that make up the southern half of the site were built in the 1950s.

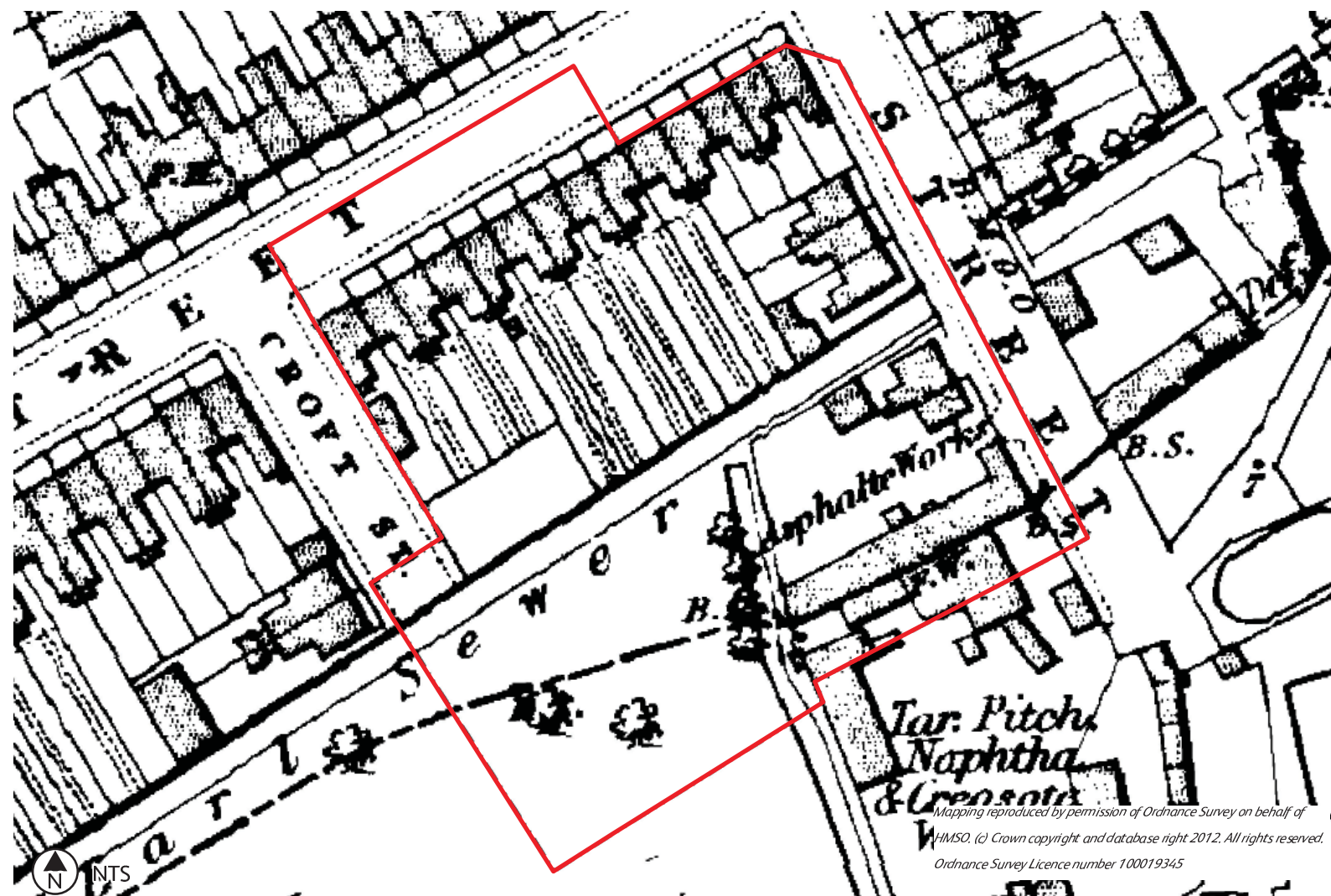


Figure 24.10: Earl Pumping Station site (1862-1895)

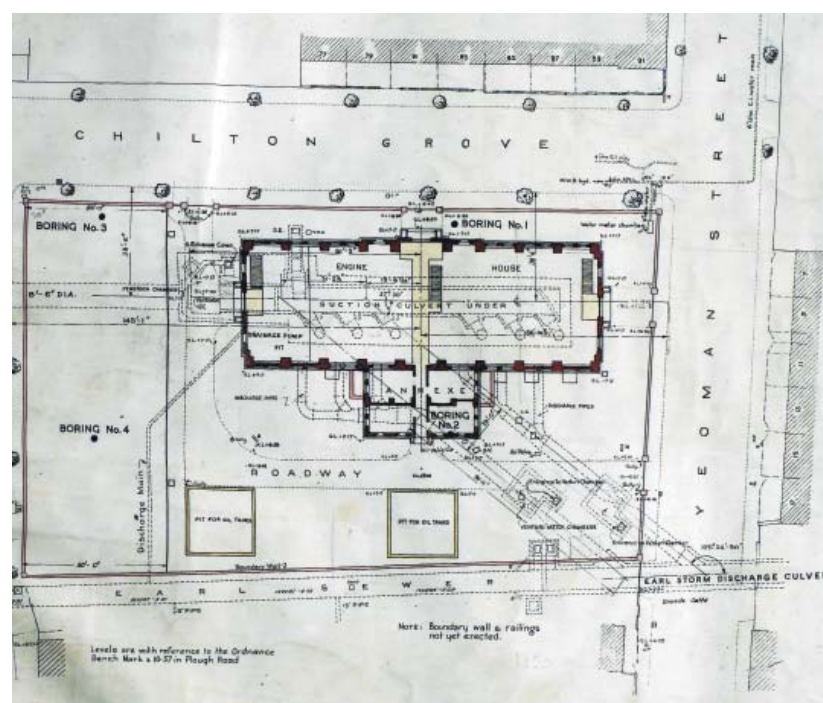


Figure 24.11: Original plans for the Earl Pumping Station (not to scale)
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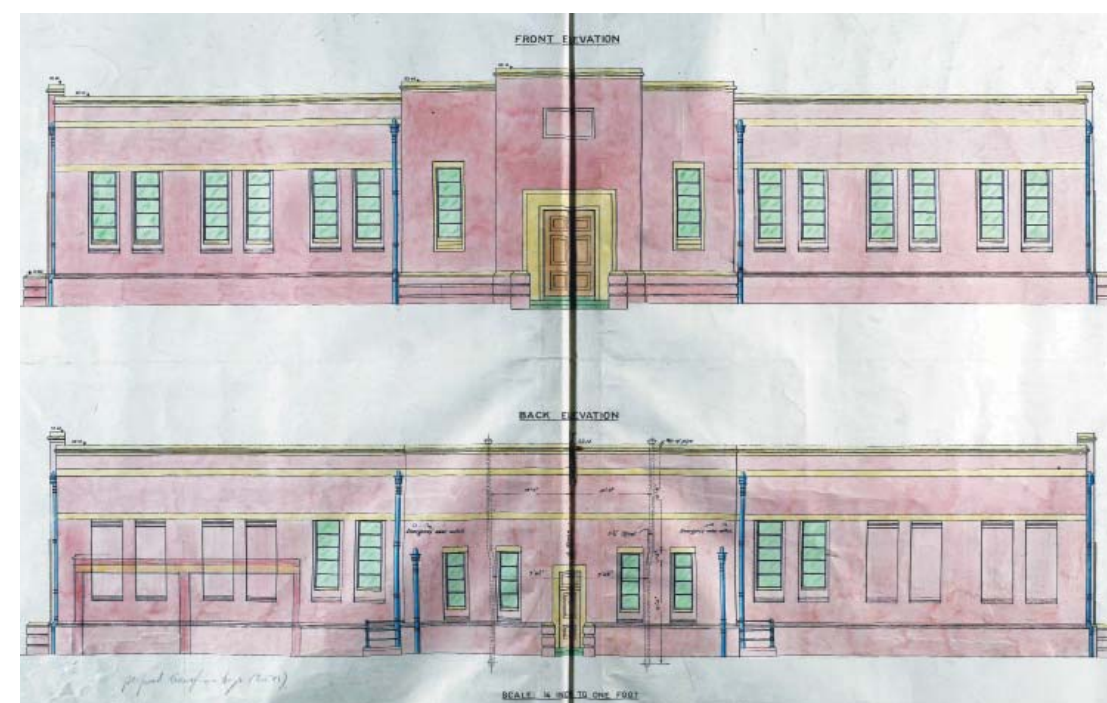


Figure 24.12: Original elevations for the Earl Pumping Station (not to scale)
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Site analysis: Opportunities and constraints

The site-specific design opportunities included:

- a. Use and enhance a Thames Water operational site.
- b. Consolidate wastewater infrastructure in a single location.
- c. Utilise existing access points to maintain new infrastructure.
- d. Safeguard future connectivity improvements between Croft Street and Yeoman Street.
- e. Improve the appearance of the public realm and streetscape.

The site-specific design constraints included:

- a. There are sensitive residential receptors in close proximity to the site.
- b. The site is surrounded by the local road network on three sides.
- c. There is significant existing infrastructure on-site both above and below ground and beneath the surrounding road network.
- d. The area is subject to future regeneration proposals.

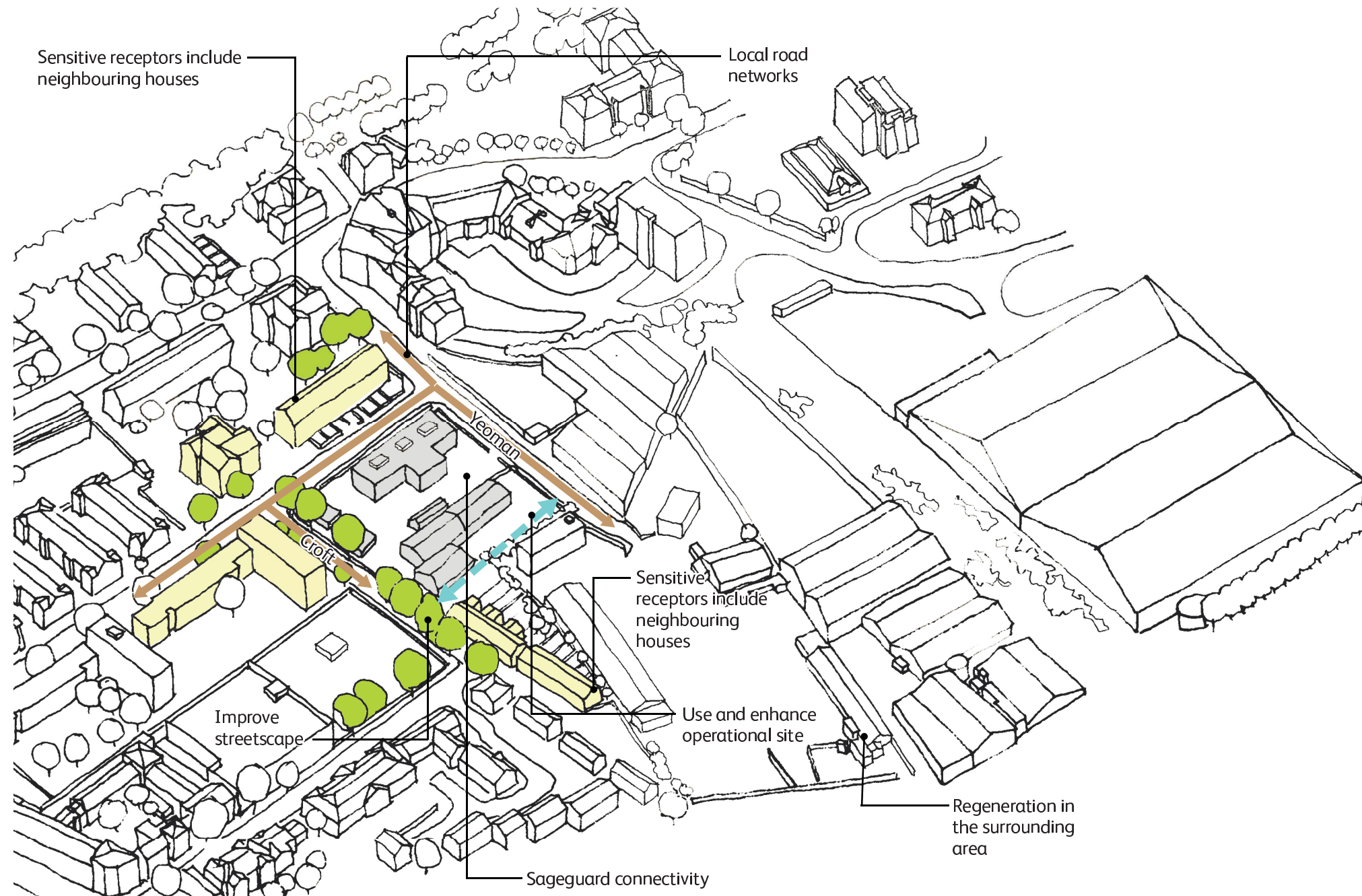


Figure 24.13: Existing site opportunities and constraints sketch

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24.3 Design evolution and alternatives

24.3.1 As the majority of the infrastructure for the project would be below ground, the key design objective of the permanent above-ground works was to integrate the functional components into the surroundings. The site-specific design objective at Earl Pumping Station was to design the above-ground works to integrate with the local character and streetscape, which is presently a mix of industrial and residential uses. A number of regeneration schemes surrounding the site have either been approved or are under construction, which will make the area more residential in character.

24.3.2 The design of our proposals at Earl Pumping Station was also significantly influenced by an extensive process of stakeholder engagement and design review. In order to ensure design quality, the team undertook two rounds of design review with the Design Council CABI. We also held various pre-application meetings with the London boroughs of Lewisham and Southwark and other strategic stakeholders. More information on our consultation process is provided in the *Consultation Report*, which accompanies the application.

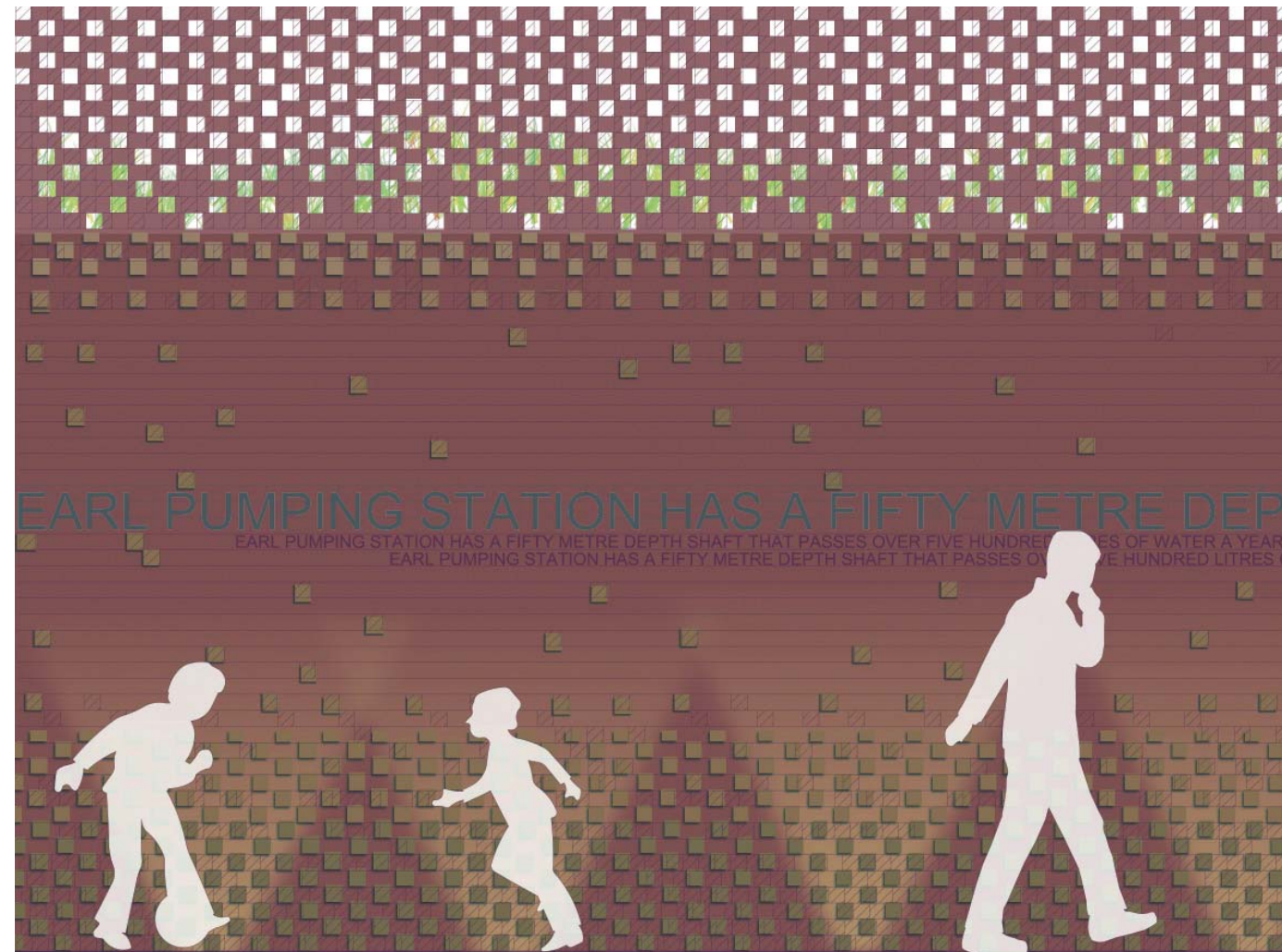


Figure 24.14: Design development image of proposed structure cladding presented at CABI scheme review

October 2010

Phase one consultation

24.3.3 The Earl Pumping Station site was presented as our preferred site at phase one consultation. We held drop in sessions on 4, 5 and 6 October 2010 at the Surrey Quays Water Sports Centre to inform the local community of the potential use of the site. We also gathered views on local issues that we should take account of in developing our proposals.

24.3.4 The key issues raised by the London Borough of Lewisham, the Greater London Authority, English Heritage and members of the public in relation to the permanent design included:

- a. the visual appearance of the proposed buildings
- b. the potential impact of odour
- c. the potential impact of construction on local residents
- d. the suitable relocation of local businesses
- e. the use of land adjoining Earl Pumping Station that forms part of the Plough Way Strategic Site in the *Core Strategy*, which would affect regeneration plans.



Figure 24.15: Proposed view from phase one consultation

Design development

24.3.5 Following phase one consultation, we explored the following design considerations:

- a. the need to reduce the scale of the structure above the CSO drop shaft and the associated ventilation structure
- b. the need to amend the layout to accommodate a design more in keeping with the existing context and to better integrate with wider regeneration proposals
- c. the need to further reinforce the relationship between the function and appearance of the structure above the CSO drop shaft
- d. the need to allow space around the CSO drop shaft for public use and particularly to safeguard options for future redevelopment of the site
- e. the need to maximise the distance between the CSO drop shaft and neighbouring residences
- f. the need to undertake work to existing infrastructure and services on the site and beneath surrounding roads.

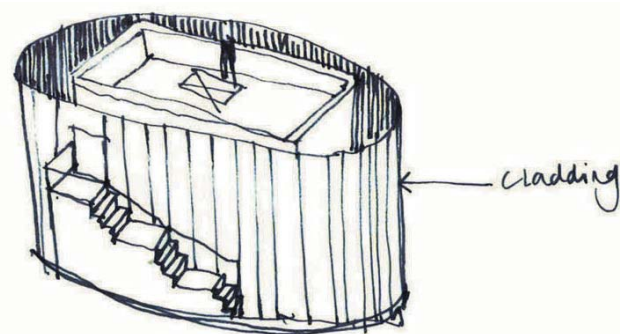


Figure 24.16: Sketch from design development

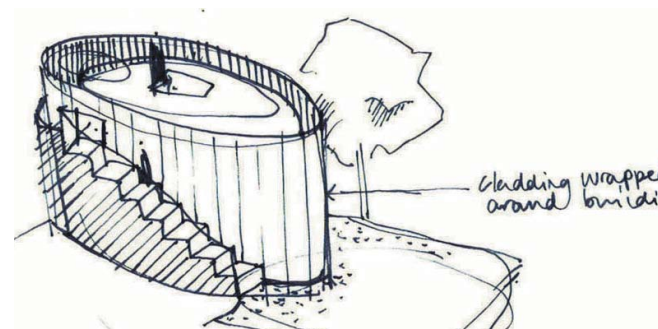


Figure 24.17: Sketch from design development

April 2011

CABE sketch review

24.3.6 We held a sketch review based on our initial site assessment and sketched ideas for the site with the Design Council CABE in April 2011.

24.3.7 The panel viewed the proposals as an exciting opportunity to create a genuine community asset in an area set to undergo regeneration. The detailed comments included:

- a. The shaft structure should stand apart from the existing pumping station to allow it to be appreciated in its own terms.
- b. The design team should undertake close engagement with local residents to allow their aspirations for the site to be incorporated into the designs, and perhaps involve local artists. The idea of setting the structure within a pocket park could be developed.
- c. The design team should investigate how the designs for both the building and the landscape could incorporate a narrative about the project and its importance for London.
- d. Thames Water should agree a long-term strategy for the management and maintenance of the site, including a plan to manage biodiversity.

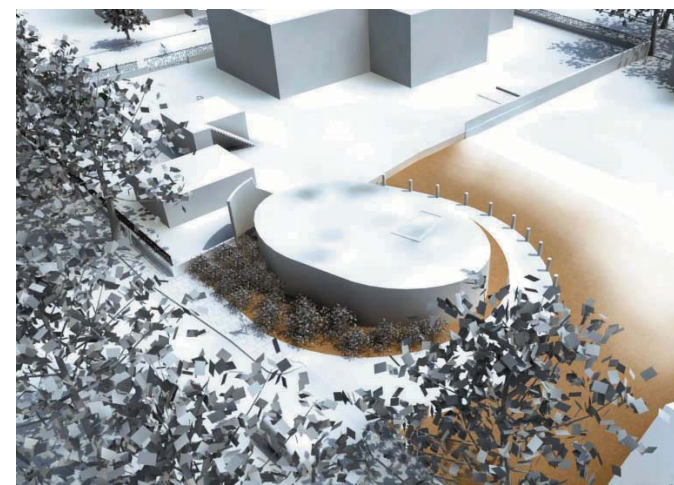


Figure 24.18: Proposed view from Design Council CABE sketch review

Design development

24.3.8 We redesigned the shaft structure in order to minimise the scale and form. In response to comments from the Design Council CABE sketch review we developed the option of reinstating the southern part of the site as a pocket park.

Pocket park design option

24.3.9 We developed this option on the basis of earlier proposals for an access route between Yeoman Street and Croft Street along the southern boundary of the site. We sought to develop a low maintenance play area for older children, which would have a colourful geometric floor pattern made from a durable sports surface. The proposal included provision for a small basketball court or play surface to lend character to the new park. The design also incorporated a lit pedestrian access route.

24.3.10 We presented the pocket park option to the local authority and the Design Council CABE as part of our on-going pre-application engagement. The feedback received indicated a lack of support for a pocket park and concerns that it would lead to unsociable behaviour in the area. In addition the London Borough of Lewisham's *Master Plan* shows a desire to open up the route of the old Surrey Canal and not to open up the route between Croft Street and Yeoman Street. The council felt that it was more beneficial to leave the site vacant and available for future redevelopment. Therefore the pocket park proposals were not progressed.

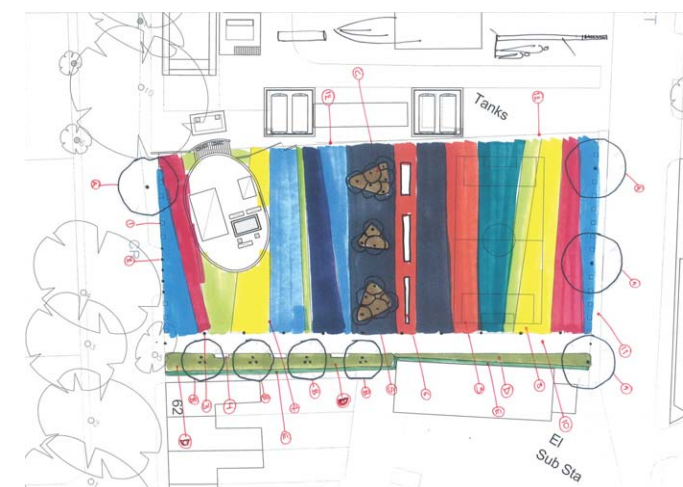


Figure 24.19: Pocket park sketch from design development

June 2011

CABE scheme review

24.3.11 A more detailed review was held on 17 June 2011 prior to phase two consultation at which we responded to previous comments and stakeholder feedback. The scheme presented to the Design Council CABE at this review included a number of important design developments in response to the feedback received, including:

- The shaft was relocated further to the west in order to maximise the area available for future development.
- The size and footprint of the structure over the shaft were reduced.
- The structure over the shaft was softened by making it oval rather than rectangular.
- The ventilation structure was reduced in size and further integrated into the shaft structure.
- Brown roofs were incorporated on the shaft structure, valve chamber and CSO interception chamber.

24.3.12 The Design Council CABE panel considered that the proposed changes were wholly positive and commented that the form and expression of the building had considerable potential. It suggested creating a masonry building with a playful expression by incorporating extruded brick work and a graduation of solid to void across the façade. The panel advised that this approach could also effectively discourage vandalism.

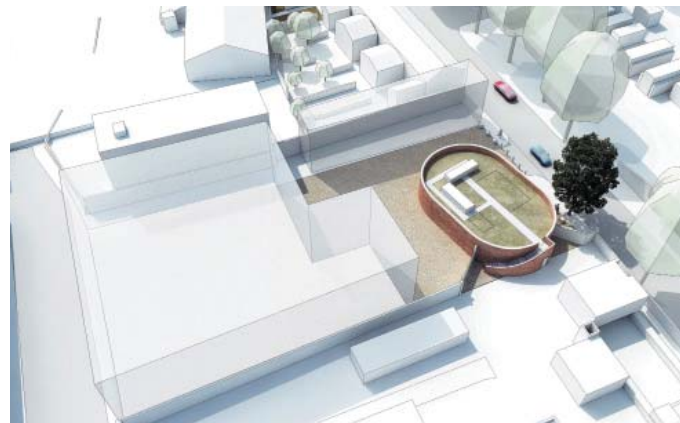


Figure 24.20: Proposed view from Design Council CABE scheme review

24.3.13 The panel also recognised that the neighbourhood is set to undergo regeneration in the coming years and welcomed the design team's acknowledgement of this fact in the proposals. It stated that the proposals were an exciting opportunity to create a distinctive building that could become a cherished local landmark.

24.3.14 Finally, the panel agreed in principle with safeguarding a public route through the site. However, it stated that, in view of the uncertainty regarding future development around the structure, public access around the building should be carefully considered and potentially restricted if there were no identifiable benefit to the community.

November 2011

Phase two consultation

24.3.15 We considered all of the comments received at phase one consultation, feedback from on-going engagement with stakeholders, the Design Council CABE reviews, and new information that had come to light. We also undertook further technical work and reviewed the site selection options and tunnelling strategy.

24.3.16 Having taken account of all these factors, we believed that Earl Pumping Station remained the most appropriate site and that we could develop a design for the engineering requirements that could enhance the appearance of the streetscape.

24.3.17 We carefully considered the concerns raised by stakeholders and took them into account wherever possible. We also looked at options for reducing or removing ventilation columns, above-ground structures and associated infrastructure at this site.

24.3.18 The Design Council CABE made formal comments on our proposals for Earl Pumping Station in its phase two consultation response, which were consistent with its advice at the scheme review.

24.3.19 Following phase two consultation, we continued to liaise with representatives of the London Borough of Lewisham to develop the design and design principles for the site to accommodate their aspirations for the area.



Figure 24.21: Proposed view from phase two consultation

July 2012

Section 48 publicity

24.3.20 There were no significant design developments at this site following Section 48 publicity.



Figure 24.22: Proposed view from Section 48 publicity

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24.4 Proposed design

24.4.1 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

24.4.2 The Site works parameter plan defines the zones in which the proposed works would take place. The plan indicates the general location of all of the permanent structures, including the CSO drop shaft, valve chamber and ventilation columns. Parameters are also provided for the height of the above-ground structures.

24.4.3 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.

Above ground permanent structure	Maximum height above finished ground level (Minimum heights are in brackets where applicable)
Ventilation column(s) serving the interception chamber	6.0m
Valve chamber(s)	4.0m
Drop shaft (Parapet)	5.0m
Ventilation structure(s) over shaft	7.0m (5.0m)
Ventilation column(s) serving the shaft	8.0m (4.8m)

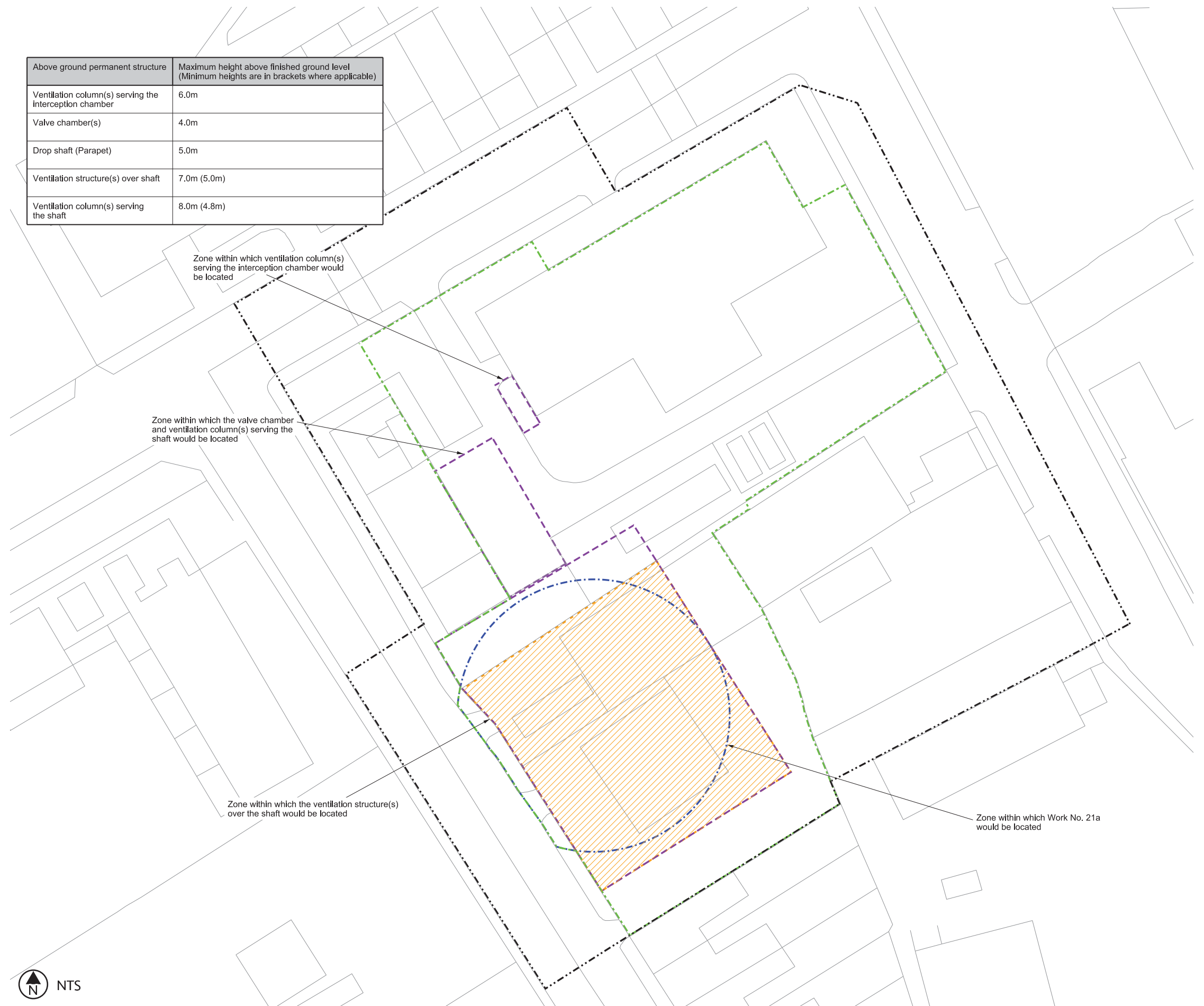


Figure 24.23: Site works parameter plan - refer to Site works parameter plan in the *Book of Plans*

Design objectives

24.4.4 Our main design objectives at this site included:

- Provide a level of interest to the streetscape that could be appreciated at both street level and also in views on to the site from neighbouring residential properties.
- Create a modern structure that ties in to the existing pumping station and provides a secure access to the CSO drop shaft within the existing pumping station compound.
- Provide interest to the façade of the shaft structure by creating a playful surface that is more sculptural than industrial in nature.
- Locate as much of the permanent works inside the existing pumping station compound as possible in order to minimise the footprint of our works and allow maximum flexibility for future development of the acquired site.

Use and programme

24.4.5 In terms of use and access the frontage of the site including the facade of the structure over the shaft would integrate to form an extended area of public realm fronting Croft Street. A gate to the south of the shaft structure and fencing would delineate the areas restricted to the public (including the roof of the shaft structure) that would form part of Thames Water's operational Earl Pumping Station. The site is not accessible to the public and all three entry points on Chilton Grove, Yeoman Street and Croft Street are secured. The site would remain an operational site only.



Figure 24.24: Proposed view of Earl Pumping Station (with existing trees)



Figure 24.25: Proposed view of Earl Pumping Station (Existing trees not shown for clarity)



Oval form pattern based on moving workers within the shaft

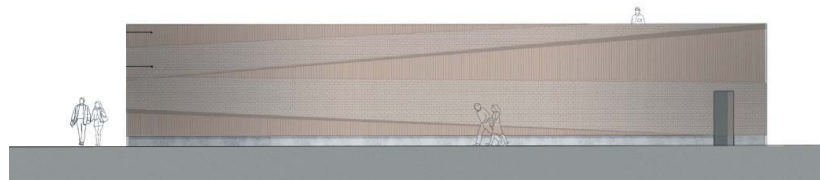


Figure 24.26: Design development

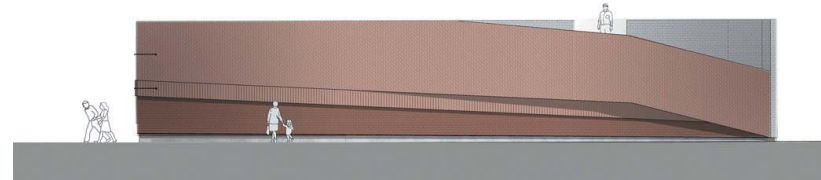
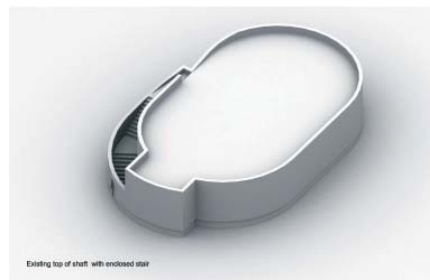


Figure 24.28: Existing view from within site



Existing top of shaft with enclosed stair

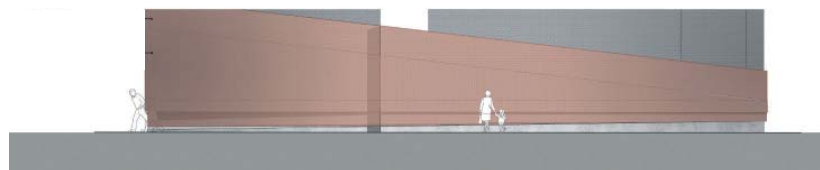


Figure 24.27: Design development

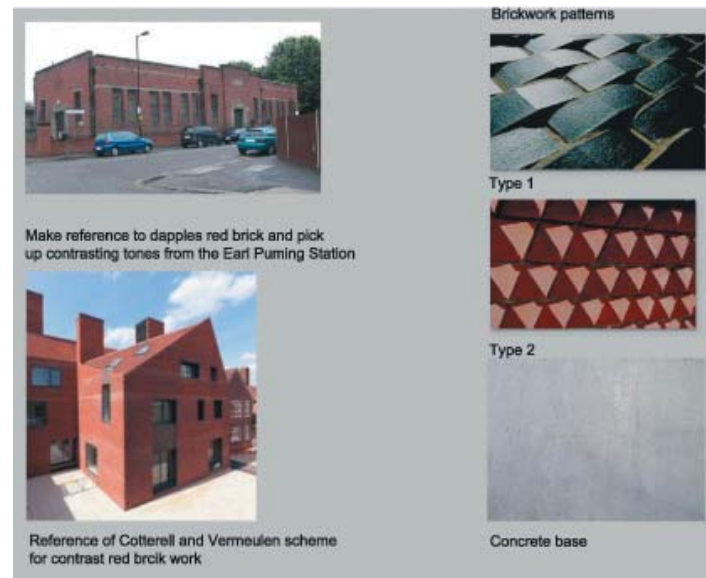


Figure 24.29: Design development samples and precedent

CSO drop shaft structure

24.4.6 The CSO drop shaft would sit within both the Thames Water compound and the acquired land to the south of the compound. The main point of access to the shaft would be via the compound to ensure that the access is secure.

24.4.7 The scale and position of the structure over the shaft, which would be set back from the street, was designed to reference the neighbouring residential properties on Croft Street. This position would provide a small area of public realm comprising hardstanding for pedestrian use. The area would form an attractive landscape and setting for the structure.

24.4.8 Given that the structure would have no active use, we intended the design to be read as a practical but sculptural form in the landscape. We undertook a number of studies of the form and selected an elliptical footprint. The shape of the structure would be simple and contained, with gentle sweeping curves at the back of pavement.

24.4.9 The structure requires no fenestration or other features that generally lend scale and interest to a façade. Therefore in line with comments from the Design Council CABI, we selected a cladding to add texture and relief to the structure without encouraging climbing. The structure would read as a crafted sculptural addition to the streetscape.

24.4.10 An existing wall divides the Thames Water compound from the newly acquired industrial site; in order to tie the drop shaft into the compound this wall would be rebuilt to provide adequate area for the shaft and for a crane to move around the perimeter of the shaft in order to access the top of the shaft. Two gates would be provided: one to restrict access to the rear of the plot hoarded off from Croft Street and the other to connect that plot to the Thames Water compound for maintenance access.

24.4.11 We anticipate that, once the work for the CSO drop shaft is complete, the remainder of the construction site would be available for redevelopment. In the meantime, the site would be appropriately hoarded off with a secure, high quality hoarding. The strip of depot land next to the access by the neighbouring residential properties required to carry out the works would be returned once the works are complete.

Integration of the functional components

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

- a. a CSO drop shaft
- b. a CSO interception chamber
- c. a connection culvert
- d. a valve chamber
- e. an air treatment chamber
- f. associated hydraulic structures, culverts, pipes and ducts.

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

- a. a structure over the CSO drop shaft
- b. a structure over the valve chamber
- c. two integrated ventilation structures to serve the CSO drop shaft
- d. one ventilation column to serve the CSO drop shaft
- e. two ventilation columns to serve the CSO interception chamber and valve chamber.

CSO drop shaft and associated structures

24.4.14 The CSO drop shaft would be approximately 17m in internal diameter. Due to hydraulic requirements, the drop shaft must extend above the surrounding ground level. The structure above the shaft would be approximately 5m high including an extended brick work parapet that would act as a balustrade. The structure would enclose all the associated infrastructure.

24.4.15 Areas of hardstanding would be included around the drop shaft structure to facilitate maintenance vehicle access and incorporate access covers to the below-ground infrastructure. This area would also form public realm.

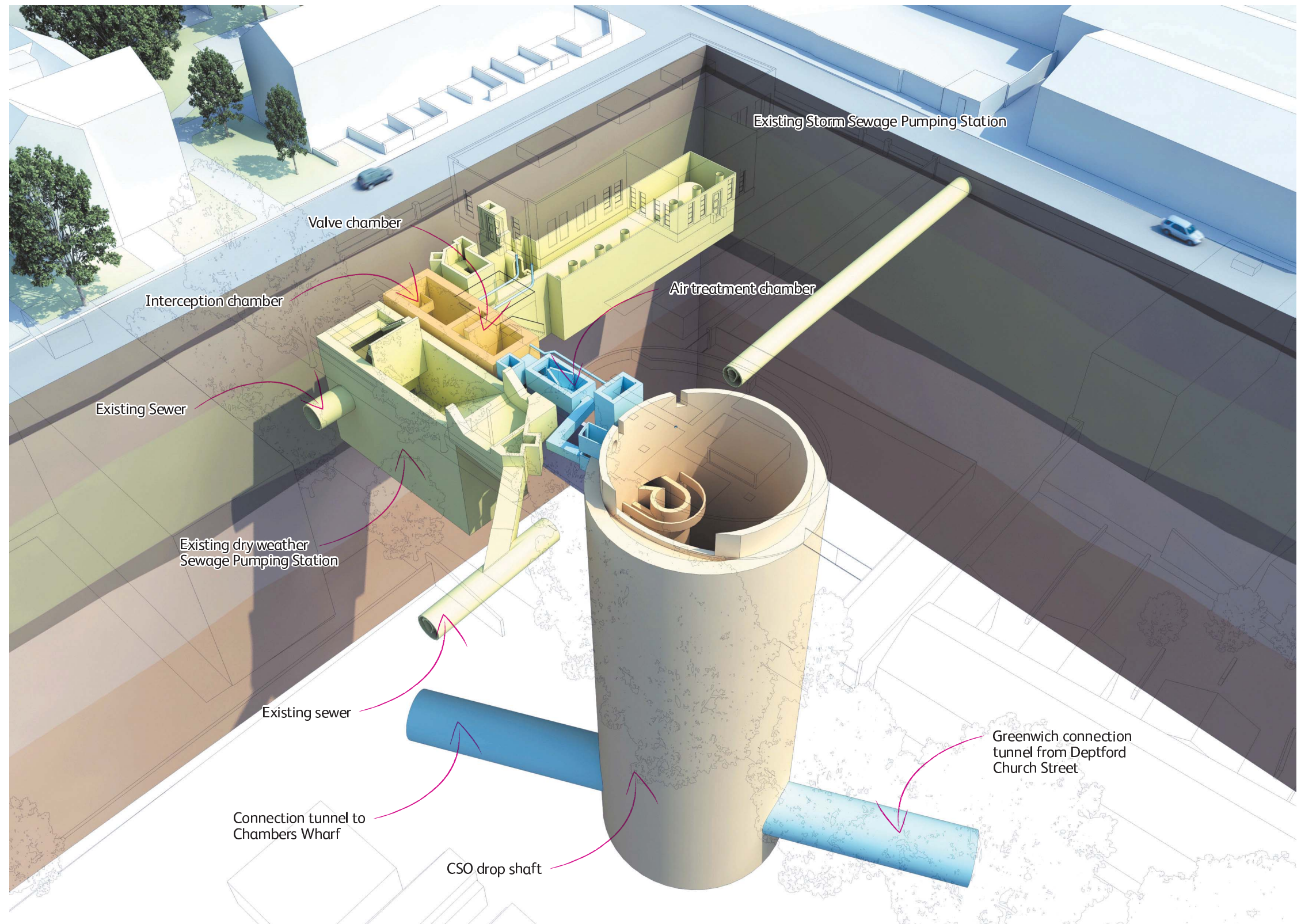


Figure 24.30: Proposed functional components diagram: below ground view



Figure 24.31: Functional components diagram: above ground view

24.4.16 The CSO drop shaft structure would be the main new structure at this site and would be located in the southwest corner. This area is generally free of existing underground infrastructure and is the best location to connect to the Greenwich connection tunnel. The structure would incorporate access covers in the roof to facilitate inspection and maintenance of the shaft.

24.4.17 The number and size of the ventilation columns is determined by the air management requirements for the site. At Earl Pumping Station, we propose to include two ventilation structures to serve the CSO drop shaft. The columns would be integrated into the drop shaft structure in order to limit their visual bulk. They would stand 5m (minimum) to 7m (maximum) high.

Works within the Thames Water compound

CSO chambers

24.4.18 The CSO interception chamber and valve chamber must extend above ground and would be 4m high (maximum). It would sit within the existing Thames Water compound and would be integrated into the existing operational infrastructure.

24.4.19 The structure would include a light weight balustrade and side access stairs to the maintenance access covers on top of the structure.

Electrical and control equipment

24.4.20 The necessary electrical and control equipment would be installed in a kiosk within the existing pumping station building. This would avoid the need for an additional structure to house the equipment.

24.4.21 Earl Pumping Station would remain operational; this is acknowledged in the London Borough of Lewisham's development plan and the proposed works would be consistent with the existing pumping station use. On completion of the works, a substantial part of the site to the south of the existing pumping station would be available for redevelopment, in line with the council's Plough Way Strategic Site Allocation identified within the Core Strategy 2011. The proposed use is also wholly consistent with Policy 5.14 of the London Plan 2011.

Ventilation columns and structures

24.4.22 We propose to include two ventilation columns to serve the CSO interception chamber and valve chamber. These columns would be up to 6m high with an internal diameter of approximately 225mm.

24.4.23 We also propose to include a further ventilation column or structure to serve the CSO drop shaft located on top of the CSO drop shaft. It would stand 4.8m (minimum) to 8m (maximum) above ground level.

24.4.24 The above-ground structures would be positioned away from the boundary of the compound. They would be partially screened when viewed from outside the compound by street trees located along Croft Street and by other existing infrastructure associated with the pumping station.

24.4.25 Throughout the design development process, we sought to minimise the footprint of the above-ground structures in order to ensure that they would be in keeping with the scale and form of other buildings within the streetscape and to maximise the area of land available for future redevelopment once our works are complete.

Landscaping and appearance

24.4.26 The illustrative landscape plan defines the area that would be landscaped as part of our proposals.

Hard landscape palette

24.4.27 The proposed cladding for the CSO drop shaft structure comprises the following features:

- The main CSO drop shaft and valve chamber structures would be clad with brick.
- We selected a red-based brick similar to the brickwork of Earl Pumping Station. We considered this to be the strongest way to reference the existing structures in the proposed works.
- The main shaft formwork would be extruded and in-filled with concrete to create the elliptical shape. We anticipate that this would be clad with customised brick work that uniquely fits the shape.

d. We propose to create a level of interest by playing with the patterning of the brickwork bonds in the form of openings and projections.

24.4.28 The materials selected and the way they would be used would provide an opportunity to inform people of the function of the drop shaft structure, including embossing text and relevant information within the fabric of the bricks.

24.4.29 We further refined these options in our design for the application for safety and security reasons in response to concerns that the openings and textured projections in the brickwork could make it possible to climb the structure.

24.4.30 We considered the significant role of water within the project works and sought to reference the spinning vortices in the CSO drop shaft. We therefore developed a language of banded strips that wrap around the structure to capture a sense of fast-moving water when walking around the structure. The bands of relief brickwork would start wide and taper to a point. The bands would be strategically placed to prevent climbing.

24.4.31 The new fencing and walling for the Thames Water compound would be designed to tie in with the existing red brick with metal railings.

Soft landscape palette

24.4.32 We propose to include biodiverse roofs on the above-ground structures with various gravel mediums to provide a colourful patchwork effect. In order to enable access to the access covers on the roofs, the planting substrate would be housed in a number of discreet removable trays. The diagrams opposite illustrate the desired effect and demonstrate two ways in which it could be achieved. Trays would not be positioned over access covers that would require more regular maintenance access.



Figure 24.32: Textured brickwork



Figure 24.33: Textured brickwork



Figure 24.34: Example of 'sawtooth' brick



Figure 24.35: Example of 'pyramid' brick



Figure 24.36: Example of engraved concrete



Figure 24.37: Example of a brown roof showing a 'tray system'

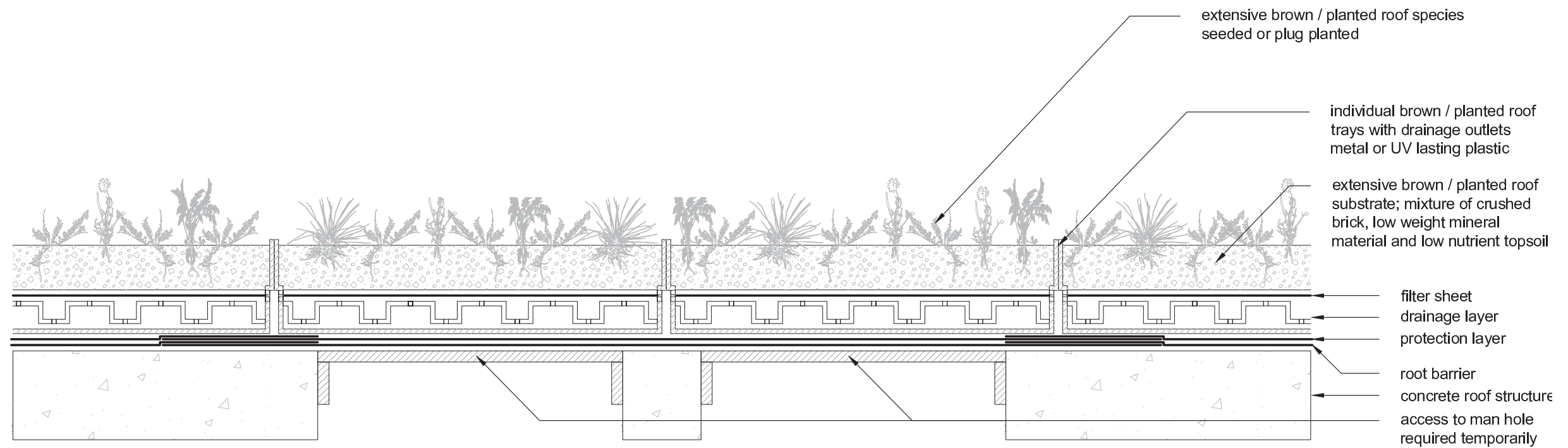


Figure 24.38: Notional brown roof construction details

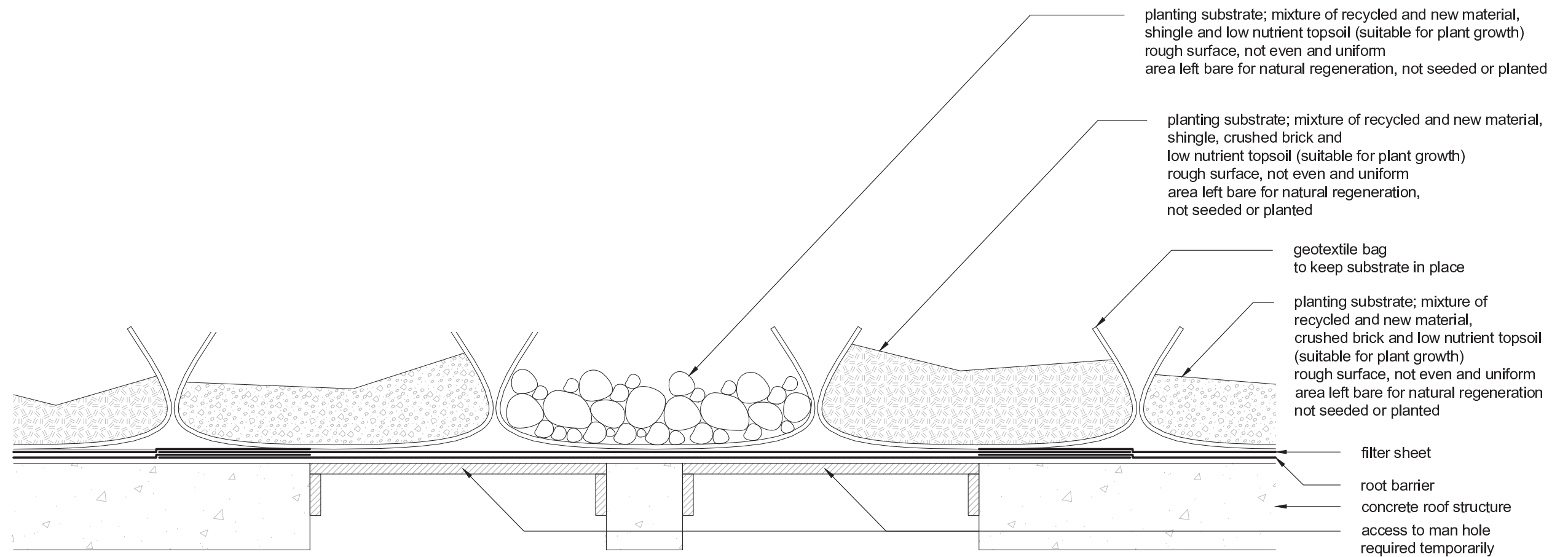


Figure 24.39: Notional brown roof construction details

24.5 Access and movement

24.5.1 The Thames Water compound would remain inaccessible to the public

24.5.2 The areas to the east and southeast of the CSO drop shaft structure would be fenced off and access restricted. The small area of public realm fronting Croft Street that would form the setting for the structure, including the proposed landscaping and associated finished levels, would be fully accessible to the public.

24.5.3 In line with project-wide aspirations and good practice, landscaping treatments and materials would ensure that pedestrian routes meet the best standards of accessibility.

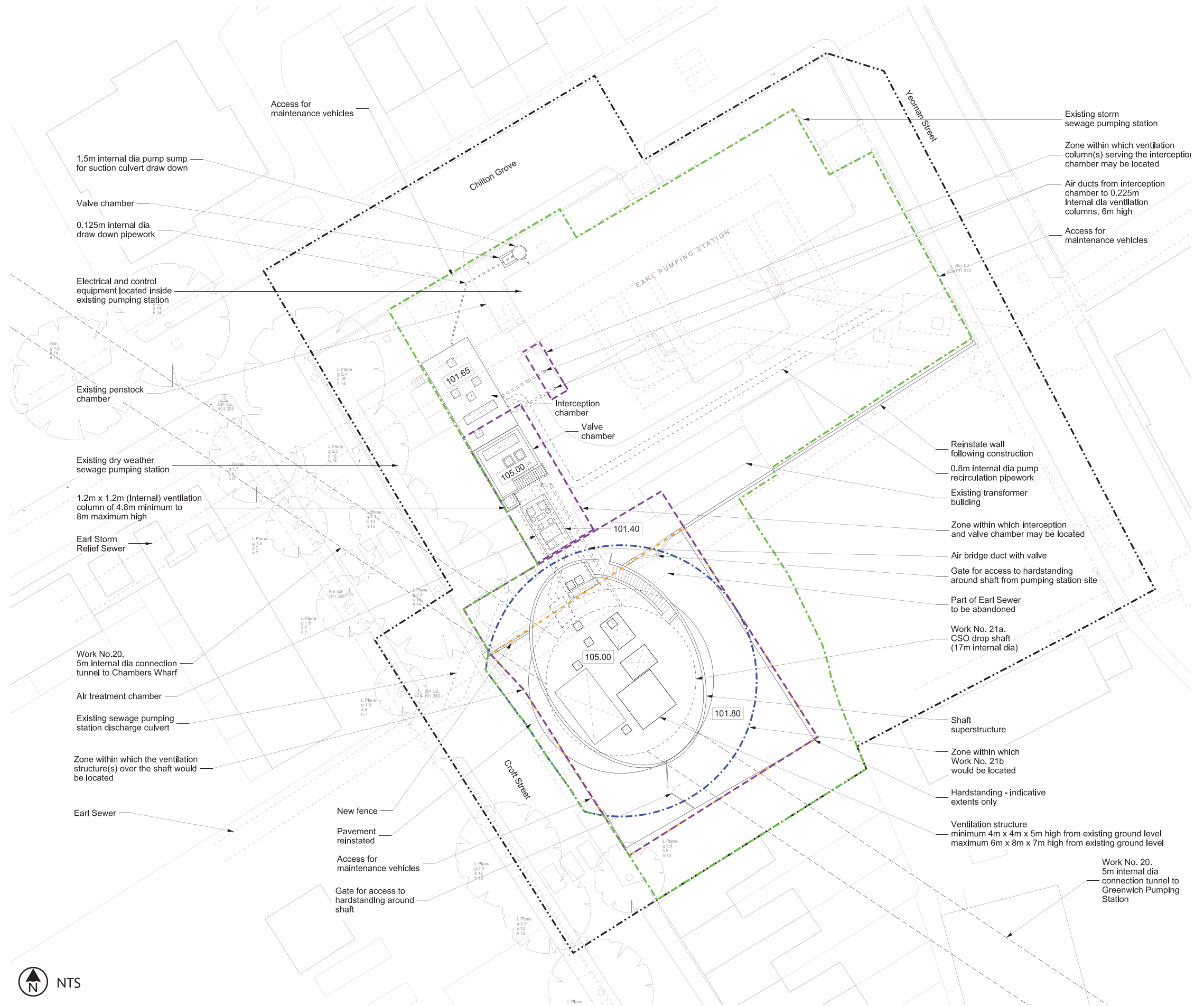
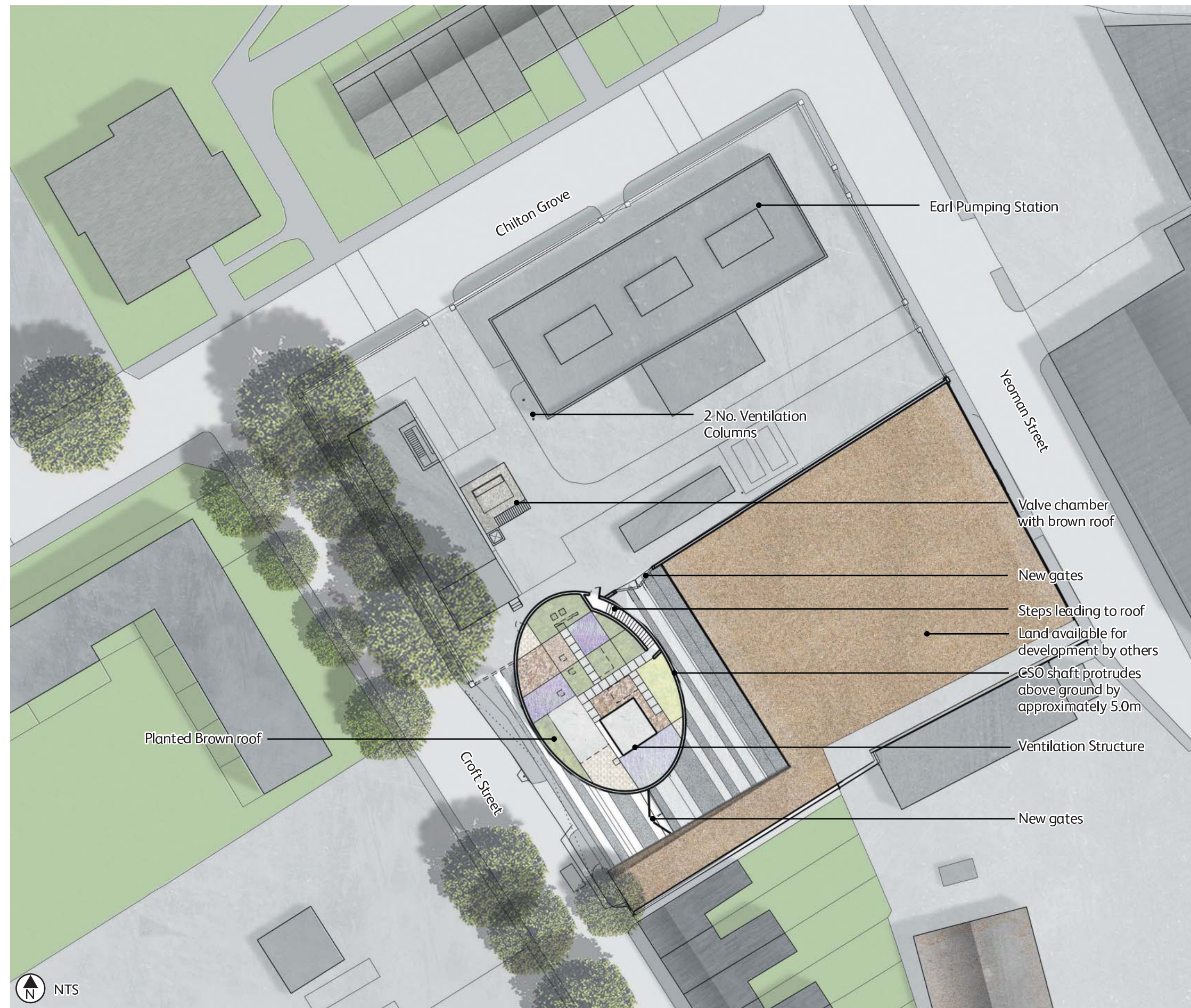


Figure 24.40: wPermanent works layout - refer to Permanent works layout in the Book of Plans



Thames Water access requirements

24.5.4 Permanent maintenance access to the project infrastructure would be via an access from the Thames Water compound and a new access would be created to the south of the site on Croft Street. Access to the project infrastructure within Earl Pumping Station would remain as existing.

24.5.5 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. This would be incorporated into the existing maintenance routine.

24.5.6 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.

24.5.7 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.

Figure 24.41: Proposed Landscape plan

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Thames Water Utilities Limited

Clearwater Court, Vastern Road, Reading RG1 8DB

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