

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Planning Statement

Doc Ref: **7.01**

Appendix U

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

Hard copy available in

Box **44** Folder **B**
January 2013

**Thames
Tideway Tunnel**



Creating a cleaner, healthier River Thames

This page is intentionally blank

Thames Tideway Tunnel

Planning Statement

Appendix U: Earl Pumping Station

List of contents

	Page number
U.1 Introduction	1
U.2 Site description	1
U.3 Planning context	3
U.4 Site-specific description of development	5
Overview	5
Application for development consent	6
Nationally Significant Infrastructure Project.....	7
Construction.....	7
Site set-up.....	9
Shaft construction	9
Tunnel works.....	10
Secondary lining of shaft.....	10
Construction of other structures	11
Completion of works and site restoration	12
Operation	12
CSO drop shaft	12
Chambers and culverts	12
Ventilation structures.....	13
Permanent restoration and landscaping.....	13
Access and movement.....	14
Typical maintenance regime	15
Scheme development	15
U.5 Site-specific planning considerations.....	17
Meeting the need	17
Good design.....	18
Managing Impacts of construction.....	20
Water resources and flood risk.....	21
Air quality, emissions, dust and odour.....	23

Biodiversity and geological conservation	24
Landscape and visual impacts	24
Land use including open space, green infrastructure and green belt	25
Noise and vibration	27
Historic environment	29
Light.....	29
Traffic and transport	29
Waste management	32
Socio-economic.....	32
U.6 Overall conclusions	33
Annex U: Drawings for Earl Pumping Station.....	35

List of figures

	Page number
Figure U.1 Aerial photograph of Earl Pumping Station	2
Figure U.2 Map of Plough Way Strategic Site	4
Figure U.3 Visualisation of Earl Pumping Station	6
Figure U.4 Construction timeline	8
Figure U.5 Functional components diagram	12
Figure U.6 Visualisation of the completed site.....	20
Figure U.7 Estimated construction lorry profile	30

List of tables

	Page number
Table U.1 Earl Pumping Station: Drawings that define the proposed development....	6

Appendix U: Earl Pumping Station

U.1 Introduction

- U.1.1 In an average year, the Earl Pumping Station combined sewer overflow (CSO) discharges approximately 539,000m³ of untreated sewage, into the tidal Thames in front of St George's Square on the boundary of the London Boroughs of Lewisham and Southwark. On the basis that litter tonnages are proportional to discharge volumes, approximately 135 tonnes of sewage derived litter is also discharged from this CSO in an average year.
- U.1.2 A worksite is required to intercept and connect the Earl Pumping Station CSO to the Greenwich connection tunnel, which would transfer wastewater flows into the main tunnel at Chambers Wharf. The proposed development site is known as Earl Pumping Station which is located predominantly in the London Borough of Lewisham although works would extend into the highway which is partly within the London Borough of Southwark to the north. The location of the site is illustrated in Annex U.
- U.1.3 This assessment is structured as follows:
- a. Section U.2 provides a brief description of the Earl Pumping Station site.
 - b. Section U.3 sets out the planning context for works in this location.
 - c. Section U.4 describes the site-specific development for which consent is sought and how the proposals evolved through consultation.
 - d. Section U.5 analyses the principal site-specific planning considerations and how the proposals comply with relevant planning policy.
 - e. Section U.6 provides an overall conclusion of the site-specific assessment for the proposed works at the site.

U.2 Site description

- U.2.1 The site itself comprises Thames Water's operational Earl Pumping Station, which dates from the late 1940s, at the northern end of the site and four adjacent plots of industrial land at the southern end as well as areas of the highway. Figure U.1 overleaf shows an aerial view of the site.

Figure U.1 Aerial photograph of Earl Pumping Station



- U.2.2 The Thames Water owned area of the site houses the existing pumping station building, servicing areas and associated wastewater infrastructure. Two of the four industrial plots front Yeoman Street. The plot that abuts the pumping station is occupied by a poor quality large metal warehouse with a two-storey brick office and servicing area at the front, and the second plot features a small metal shed, also of poor quality, 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.
- U.2.3 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 site boundary. The site is bounded to the west by Croft Street.
- U.2.4 The area to the north of the site comprises residential flat developments that are three to five storeys high.
- U.2.5 To the east, on the opposite side of Yeoman Street, the land uses are mostly industrial.
- U.2.6 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.

- U.2.7 A brick electrical substation is located to the southwest of the existing pumping station.
- U.2.8 A five-storey block of flats and a large industrial unit lie immediately west of the site and the area beyond this is predominantly residential.
- U.2.9 The site features plan located in Annex U provides additional context of the site and surrounding area.

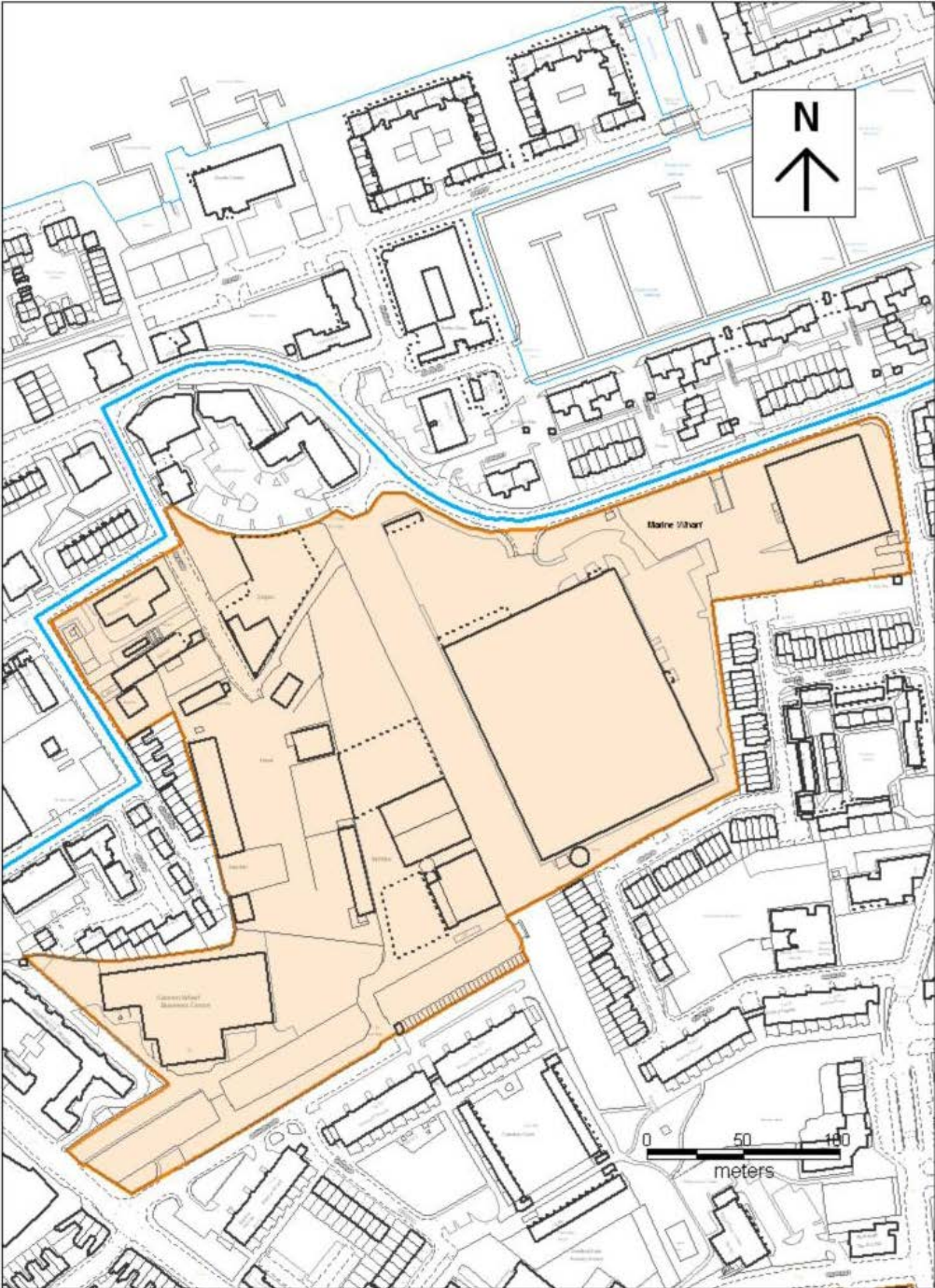
U.3 Planning context

- U.3.1 In developing the proposals and mitigation measures for the development at Earl Pumping Station, Thames Water¹ had regard to the policies set out in the National Planning Statement for Waste Water (the 'NPS') and the local development plan designations where they are relevant to the application. The local development plan comprises the *London Plan* (2011), the London Borough of Lewisham's *Core Strategy* (2011) and saved policies from the London Borough of Lewisham's *Unitary Development Plan* (2004).
- U.3.2 Earl Pumping Station constitutes operational land as defined in the Town and Country Planning Act, as land that is either specifically used or held for the purposes of carrying out Thames Water's statutory undertakings. The development is proposed on and under land owned by Thames Water as well as land outside of this designation to the south.
- U.3.3 The site is located in the Deptford, Deptford Creek, New Cross and New Cross Gate Regeneration Area, as designated within the *Core Strategy*. Within this wider regeneration area there are four strategic development sites, of which, Plough Way, encompasses the pumping station and the site. The Plough Way Strategic Site is allocated for mixed-use development in the *Core Strategy* which requires: "a comprehensive phased approach to the redevelopment of this site in line with an approved master plan". The *Core Strategy* allocates the site for a maximum of 1,500 new homes and 20 per cent of built floor space for a mix of business uses. Figure U.2 overleaf illustrates the extent of the Plough Way Strategic Site.
- U.3.4 To date, there is no approved master plan for the Plough Way Strategic Site. However, the *Core Strategy* states that future development should take account of, and allow for, the continued operation of Thames Water Earl Pumping Station, in consultation with Thames Water.
- U.3.5 The site falls within the northwestern edge of the Deptford – Strand, Sayes Court and the Royal Naval Dockyard Area of Archaeological Priority.
- U.3.6 There are no listed structures, conservation areas, or areas designated for nature conservation on or adjacent to the site.
- U.3.7 Planning permission DC/11/77408/X has been granted for the construction of a five-storey building that will provide 33 residential units on the eastern side of Yeoman Street.

¹ Thames Water Utilities Ltd (TWUL). The Draft Development Consent Order (DCO) contains an ability for TWUL to transfer powers to an Infrastructure Provider (as defined in article 2(1) of the DCO) and/or, with the consent of the Secretary of State, another body

- U.3.8 At Cannon Wharf Business Centre, 100m to the south of the site, planning permission DC/08/68523/X has been granted to demolish existing buildings and to construct a number of buildings three to eight storeys high and two buildings 20 and 23 storeys high respectively with a mix of uses including residential and commercial.
- U.3.9 No planning applications for the site have been submitted within the last five years.

Figure U.2 Map of Plough Way Strategic Site



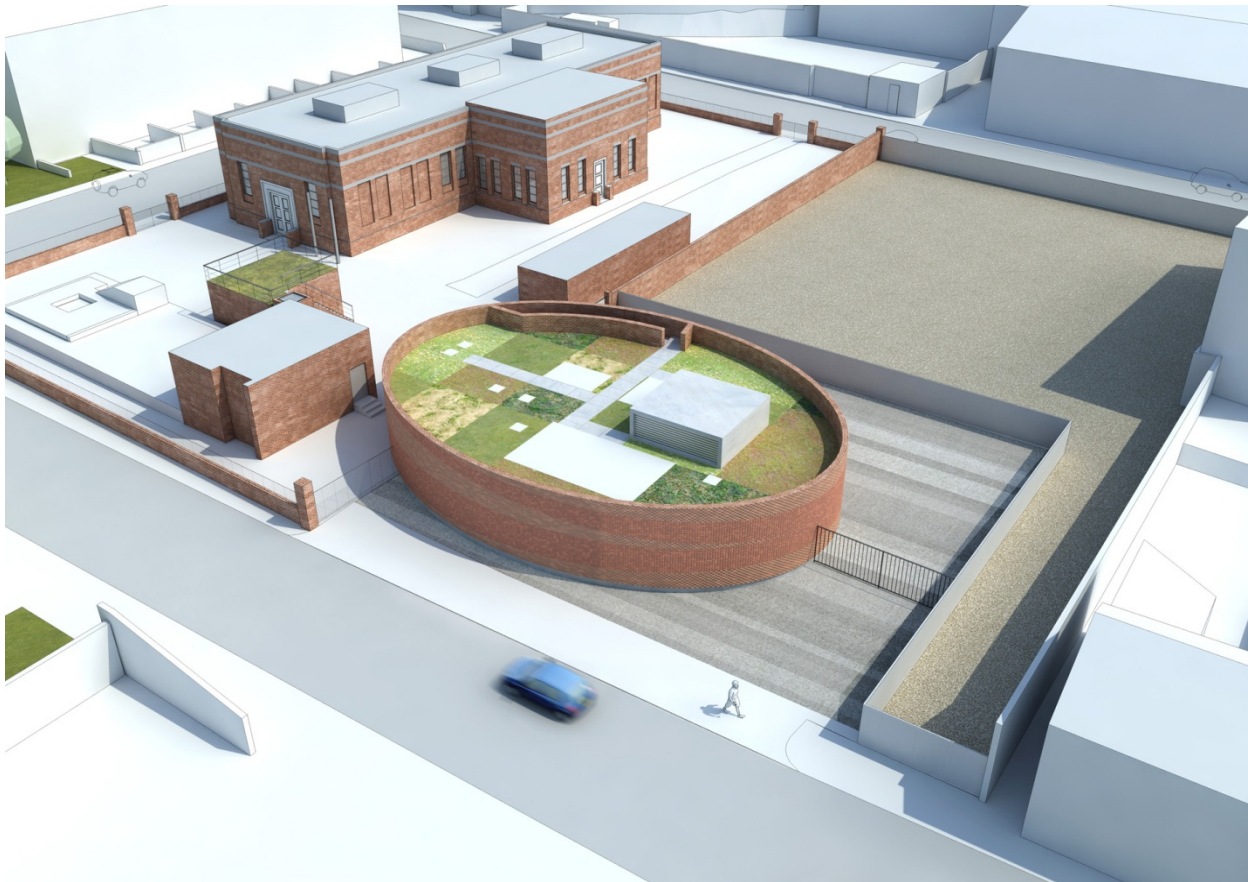
© Crown Copyright. All rights reserved 100017710 2009

U.4 Site-specific description of development

Overview

- U.4.1 The proposed development at Earl Pumping Station would intercept the Earl Pumping Station CSO. The works would convey the flows from the existing sewer to the new Greenwich connection tunnel which in turn connects to the main tunnel at Chambers Wharf.
- U.4.2 The work would require the construction of a CSO interception chamber, hydraulic structures (including chambers, culverts and pipes), ventilation structures and electrical and control equipment. Flows would be transferred from the relatively shallow depth of the Earl Pumping Station CSO to the deeper level of the Greenwich connection tunnel via a drop shaft approximately 51m deep. The shaft would be online of the connection tunnel.
- U.4.3 For hydraulic reasons, the CSO drop shaft and valve chamber need to be finished above ground level. The area around the shaft would be finished with hardstanding to enable cranes to access the covers on top of the shaft.
- U.4.4 The broad locations (within parameters) and size thresholds of the shaft, air management structures, electrical and control kiosk and other below-ground chambers, culverts, pipes and ducts to connect, control and intercept flow are all submitted for approval as part of the application. Illustrative landscaping plans and designs are also submitted as part of the application to show how the site could look once construction is complete, but not for approval. Those elements to be submitted for detailed approval by the London Borough of Lewisham must be consistent with the general and site-specific design principles which are set out in the *Design Principles* document submitted for approval as part of the application.

Figure U.3 Visualisation of Earl Pumping Station



Application for development consent

U.4.5 The geographic extent of the proposals for which development consent is sought, is defined by the limits of land to be acquired or used and further detail of the proposed works is shown in the Site works parameter plan in Annex U.

U.4.6 Table U.1 below sets out the application drawings of relevance to this site and their status.

Table U.1 Earl Pumping Station: Drawings that define the proposed development

Drawing title	Status	Location
Proposed schedule of works	For approval	Schedule 1 to the <i>Draft Thames Water Utilities Limited (Thames Tideway Tunnel) Development Consent Order</i> (the 'Draft DCO')
Access plan	For approval	<i>Book of Plans</i> , Section 22
Demolition and site clearance plan	For approval	<i>Book of Plans</i> , Section 22
Site works parameter plan	For approval	<i>Book of Plans</i> , Section 22
Permanent works layout	Illustrative	<i>Book of Plans</i> , Section 22
Proposed landscape plan	Illustrative except	<i>Book of Plans</i> , Section 22

Drawing title	Status	Location
	the above-ground structures, which is indicative	
Section AA	Illustrative	<i>Book of Plans</i> , Section 22
As existing and proposed elevation (various)	Illustrative	<i>Book of Plans</i> , Section 22
Construction phases	Illustrative	<i>Book of Plans</i> , Section 22
Highway layout during construction (Phases)	Illustrative	<i>Transport Assessment Earl Pumping Station Figures</i>
Permanent highway layout (Phases)	Illustrative	<i>Transport Assessment Earl Pumping Station Figures</i>

Nationally Significant Infrastructure Project

- U.4.7 The Nationally Significant Infrastructure Project works (Work No. 21a) comprises the construction of a CSO drop shaft with an internal diameter of 17m which extends 3m above the existing ground level and which has a depth (to invert level) of 51m. Work No. 21b: Earl Pumping Station associated development – Works to intercept and divert flow from the Earl Pumping Station CSO to the Earl Pumping Station CSO drop shaft (Work No. 21a) and into the Greenwich connection tunnel (Work No. 20), CSO overflow structures, hydraulic structures, chambers with access covers, structures for air management plant and equipment and other structures to manage and intercept flow. The full description of the proposed development can be found in the *Draft DCO*.
- U.4.8 Further details of temporary construction works and permanent operational structures are contained below and an extended description can also be found in the *Environmental Statement (Vol 22)*, which accompanies the application.
- U.4.9 At this site, approval is sought for the works shown on the Works plan showing the Greenwich connection tunnel (Work no. 20), Earl Pumping Station CSO drop shaft (Work No. 21a); the Site works parameter plan, which shows the relevant zones and area in which the associated development works would be undertaken (Work No. 21b); the Access plans; and the Demolition and site clearance plans. The plans for approval are contained in the *Book of Plans* along with other plans showing the construction phasing and permanent works plans relevant to this site. These other plans are marked either for approval, for information, indicative or illustrative depending on the level of detail they are providing. Section U.2 of this document explains in more detail the overall approach to the level of detail and how the plans for approval were developed.

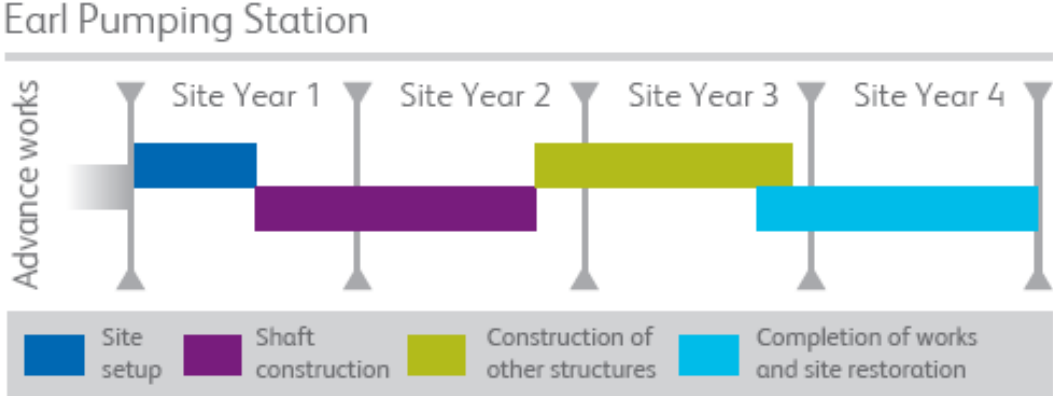
Construction

- U.4.10 Construction at Earl Pumping Station is anticipated to take approximately four years and would involve the following main works (with some overlaps):
- site set-up (approximately six months)

- b. shaft construction (approximately 15 months)
- c. construction of other structures (approximately 14 months)
- d. completion of works and site restoration (approximately 14 months).

U.4.11 Connection of utilities and diversion of utilities may be conducted in advance of the main activities listed above.

Figure U.4 Construction timeline



U.4.12 This site would operate to the standard and extended working hours for various phases and activities as set out in the *Code of Construction Practice (CoCP) Part A and Part B*, which accompanies the application. Standard working hours would be applied to all of the above phases of construction work apart from elements of shaft construction and secondary lining as described below.

U.4.13 It is assumed that extended hours would be required approximately twice a week during diaphragm walling for a total duration of approximately three months, and once a month during other major concrete pours. Extended working hours are required at this site to allow for major concrete pours for shaft construction including diaphragm wall panels, base slab, roof slab and other large elements. The exact timing of any extended hours of working would be consulted on, and notified to the London Borough of Lewisham.

U.4.14 Construction traffic would access the site travelling northbound along Lower Road (A200), using the one way system and turning left onto Plough Way, right into Yeoman Street and right into the site from a new access on Yeoman Street. Traffic leaving the site would turn right out of the site from a new entrance on Croft Street, then travel along Chilton Grove, Yeoman Street, Plough Way and southbound along Lower Road (A200).

U.4.15 Suspension or relocation of parking bays and other parking restrictions would be required on the streets adjacent to the site and new construction accesses to the site would be required on Croft Street and Yeoman Street. The access on Croft Street would be retained for future maintenance access.

U.4.16 It is anticipated that an average of nine heavy goods vehicles (HGVs) would access the site per day for the majority of the construction period. This would rise to approximately 34 HGVs per day over an estimated four month period during CSO drop shaft construction. There may be additional periods during key construction activities when these HGV numbers would need to be exceeded. Further details regarding the number and breakdown of anticipated heavy goods vehicles accessing the site per day is contained within the *Transport Strategy*, which accompanies the application.

U.4.17 Potential layouts of the construction site are shown on the Construction phasing plan contained within the *Book of Plans*. It should be noted that these layouts are illustrative only. The contractor may arrange the site in a different way, depending on the chosen construction method, provided that any environmental effects are appropriately managed.

Site set-up

U.4.18 Trees to the west of the existing pumping station adjacent to Croft Street may require maintenance and pruning in advance of the works.

U.4.19 Part of the proposed site is currently occupied by businesses which would need to be relocated.

U.4.20 Prior to any works commencing the site boundary would be established and would consist of close boarded hoarding panels to the heights specified in the *CoCP*. Welfare and office facilities would also be set up in this phase.

U.4.21 Other site works set up at this early stage would include the setting up of the required site accesses from Croft Street and Yeoman Street and introduction of the required traffic management activities.

U.4.22 Utility and power connections would be required to service the construction and would be set up in this phase.

U.4.23 The approach to any land remediation that might be required cannot be defined at this stage. However, it is assumed that any remediation required at this site would occur within this earliest phase of construction and that any associated lorry movements would be substantially lower than the peak during the main construction phases.

Shaft construction

U.4.24 The 17m internal diameter CSO drop shaft would then be constructed by diaphragm wall techniques.

U.4.25 The presence of the creosote contamination within the sands and gravels at this site is likely to require specific measures to be adopted by the contractor to ensure that a pathway is not created into the underlying chalk aquifer during shaft construction. Measures to be adopted may include, as a minimum, procedures to ensure a positive bentonite slurry pressure is maintained at all times within the trench so that contaminated material cannot flow into the excavation.

U.4.26 During diaphragm wall excavation the trench would be filled with bentonite for ground support; on completion of the excavation cycle, steel bar

reinforcement cages would be lowered in before concrete is pumped into the trench in order to displace the bentonite and form a wall panel.

U.4.27 This process would be repeated for each diaphragm wall panel in order to create the full circle of the shaft. Diaphragm wall excavated material would be processed as required and then loaded onto lorries for transport off site.

U.4.28 The shaft excavation would commence after the diaphragm walls are complete. Excavated material would be put into skips within the shaft working area and hoisted by crawler crane from the shaft and deposited in a suitable storage area. After any required treatment, the material would be loaded onto lorries for transport off site. Once the excavation is complete, a steel reinforced concrete base plug would be formed at the base of the shaft.

U.4.29 It is anticipated that dewatering would be required at this site. Dewatering wells would be drilled from the surface within the shaft (a process known as 'internal dewatering') and groundwater extracted via pumps.

U.4.30 It is anticipated that ground treatment would also be required during the interception and CSO works.

Tunnel works

U.4.31 As the Earl Pumping Station shaft would be online with the Greenwich connection tunnel drive, there is no connection tunnel to be constructed. A temporary cradle would be constructed to receive the tunnel boring machine from Deptford Church Street and re-launch to Chambers Wharf.

U.4.32 Grouting would additionally be required either side of the shaft to facilitate tunnel boring machine break in/break out. This would consist of a block of treated ground, external to the shaft and would be constructed using fissure grouting techniques from within the excavated shaft.

U.4.33 Tunnel portals with the launch and reception seals would be formed in the shaft lining. The portals would consist of cast *in situ* concrete with a sealing arrangement tied to the shaft lining.

Secondary lining of shaft

U.4.34 It is assumed that the lining of the shaft would be made of reinforced concrete placed inside the shaft's primary support. The steel reinforcement would be assembled in sections and a shutter would be used to cast the concrete against. The shutter would be assembled at the bottom of the shaft and sections of reinforcement installed and lining cast progressively up the shaft. At this site, because the shaft extends above finished ground level, an external shutter would be added to allow construction of the shaft to continue above ground level to the proposed roof slab level.

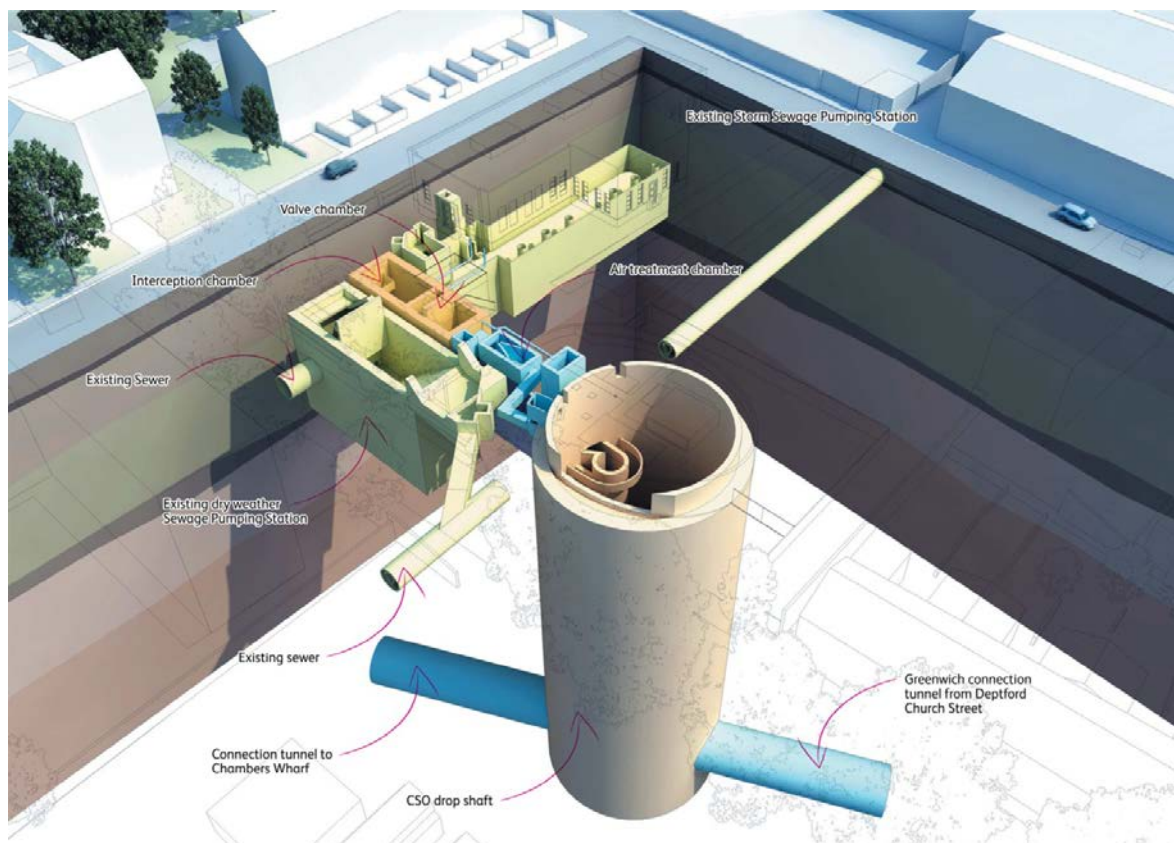
U.4.35 Any reinforced concrete structures internal to the shaft and the roof slab would be constructed in a similar manner progressively from the shaft bottom. In some cases precast concrete members may be used.

U.4.36 At this site it is assumed that concrete would be supplied by ready mix concrete mixer trucks.

Construction of other structures

- U.4.37 An interception chamber, connection culvert and valve chamber would be constructed to intercept the sewer running into the existing pumping station and connect it to the drop shaft. In addition, air management structures comprising an underground chamber, a ventilation column and louvre chambers for ventilation control would be constructed.
- U.4.38 Sheet pile and/or secant pile walls would be used to provide support within which the underground chambers to be constructed. Piled walls would stop short of the existing sewer. Generally the walls would be driven to depth to minimise water ingress into the excavation under the wall. During piling works, techniques such as utilising positive slurry pressures, would need to be instigated to ensure that the known contamination is not spread to underlying strata.
- U.4.39 Due to the presence of the creosote contamination, it is assumed that the base of the excavation would be treated by jet grouting (or similar) techniques.
- U.4.40 The chamber would be excavated exposing the sewer. The sewer would be internally lined and supported during excavation.
- U.4.41 Small pumps would be utilised to manage any ground water that does seep through and treated in accordance with the approach described above.
- U.4.42 The walls, bases and roofs of the chambers and shallow foundations for above-ground structures would be formed by *in situ* concrete techniques. Ready mixed concrete (or on-site batched concrete if available) would be pumped or skipped to the chamber.
- U.4.43 It is assumed that piles would be used to support the underground chambers, and would be bored reinforced concrete piles. The diameter, depth and spacing would depend on the structure design and ground conditions.
- U.4.44 For the above-ground structures, including the kiosk and ventilation column (but excluding the above-ground shaft structure), the components would be delivered by road and assembled on site using suitable lifting equipment.
- U.4.45 The illustrative construction phasing plans in Annex U provide context for the two construction phases.
- U.4.46 Figure U.5 overleaf provides an illustration of the key functional components of the proposed works. It shows the existing underground infrastructure and new interception chamber in yellow, proposed air management infrastructure in blue, the shaft in pink with the Greenwich connection tunnel running through the base of the shaft.

Figure U.5 Functional components diagram



Completion of works and site restoration

- U.4.47 On completion of the construction works the permanent works area would be finished in accordance with the landscaping requirements.

Operation

CSO drop shaft

- U.4.48 The drop shaft would have an approximate internal diameter of 17m and be approximately 47m deep from ground level to invert of the tunnel. As the ground level at the site is low, the cover slab of the drop shaft is approximately 3m above ground level to meet hydraulic requirements.
- U.4.49 The internal diameter of the drop shaft is dictated partly by the size of the Greenwich connection tunnel (approximately 5m internal diameter), which would pass through it, and partly by the plan area required in the shaft base for de-aeration of the flows descending from the connection culvert through the vortex drop.

Chambers and culverts

- U.4.50 The interception chamber and culvert would sit below ground. The size of the interception chamber is limited by the space between the existing storm and dry weather pumping stations, and its depth by the depth of the sewer linking them. The size of the chamber is also influenced by the design flow rate to be intercepted. Hydraulic modelling was undertaken to verify the chamber size.

- U.4.51 A valve chamber would be located to the west of the existing pumping station buildings. It would extend approximately 3m above ground and incorporate the main ventilation column.
- U.4.52 The sizes of the valve chamber and connection culvert are dictated by the design flow rate and the depth of the structures by the depth of the interception chamber.
- U.4.53 Access covers would be incorporated on top of the chambers for inspection and maintenance purposes.

Ventilation structures

- U.4.54 The size of the air treatment chamber is dictated by the peak flow rate of air to be treated, which is determined by pneumatic modelling.
- U.4.55 The ventilation column serving the drop shaft would be approximately 4.8m minimum to 8m maximum high.
- U.4.56 A ventilation structure would be incorporated into the building above the shaft also serving the drop shaft. It would stand between approximately 5m and 7m high, from ground level and extend approximately 1.5m to 3m above the building's structural roof.
- U.4.57 The number and diameter of the ventilation columns are dictated by the peak air flow rate. The minimum height of the ventilation column is designed to meet Environment Agency guidance criteria for odour dispersion and to comply with the Dangerous Substances and Explosive Atmospheres Directive. The maximum height is influenced by the aesthetic proportions of the columns.
- U.4.58 Two ventilation columns would serve the interception and valve chambers and would each have an approximate internal diameter of 0.225m and be approximately 6m high.
- U.4.59 The height of the smaller diameter ventilation column is consistent with Thames Water standards.
- U.4.60 An electrical and control panel would be installed in the existing storm pumping station building.
- U.4.61 A filter would be housed in a below-ground chamber within the Thames Water pumping station compound. Other air pressure relief and air inlet structures would be positioned on the roof of the raised shaft structure.
- U.4.62 Underground structures would contain passive filters and connect the ventilation columns to the structures that they would ventilate. The underground structures would have ground level access covers for inspection and maintenance purposes.

Permanent restoration and landscaping

- U.4.63 The existing pumping station compound wall would be reinstated to its current position.
- U.4.64 Much of the operational structure at the site would be below ground. However the shaft and valve chamber would be finished to approximately 3m above ground level for hydraulic requirements.

- U.4.65 The area around the shaft would be finished with hardstanding to provide operational access for cranes and maintenance vehicles. This hardstanding would be publicly accessible. However, during maintenance, public access would be restricted and temporary fencing would be installed for health and safety reasons.
- U.4.66 The area within the pumping station would be returned to hardstanding to provide continued operational access within the pumping station. New gates would be added to the existing pumping station boundary.
- U.4.67 Access to the Earl Pumping Station site would continue to be through gates on Chilton Grove and Yeoman Street. A new vehicular access gate would be installed between the existing Thames Water site and the additional land to the south, to allow access to the hardstanding around the shaft.
- U.4.68 The southern part of the land, which falls outside of the Earl Pumping Station site, adjacent to Croft Street, would be accessible to the public by foot. Vehicular access would be restricted by temporary bollards. These would be removed should access be required.
- U.4.69 Street lighting would be reinstated and lighting would be provided to the staircase and shaft surface for maintenance activity.

Access and movement

- U.4.70 Earl Pumping Station is an operational site and public access is not permitted.
- U.4.71 The two existing entrances into Earl Pumping Station, from Chilton Grove and Yeoman Street, would be retained and supplemented by a new access from Croft Street south of the drop shaft.
- U.4.72 The primary fence line would be that of the existing pumping station site, with the drop shaft superstructure extending outside it to the south. A new gateway would be provided in the southern fence, just east of the drop shaft, for access to the drop shaft from the pumping station.
- U.4.73 Prior to redevelopment of the southeastern part of the construction site, a temporary fence would be provided to separate the retained south-western part of the site from the development site. Temporary gates would be provided between the shaft superstructure and the southern temporary fence to restrict access from Croft Street to the area 'behind' the drop shaft. The area south and east of the drop shaft superstructure could be open to public access after redevelopment of the southeastern part of the site, depending on the design of the redevelopment.
- U.4.74 The stairs to the drop shaft superstructure roof would be accessed from within the pumping station fence for security and ease of access for maintenance personnel.
- U.4.75 Since the drop shaft, valve chamber and part of the interception chamber roofs would be above-ground level and thus inaccessible to vehicles, lightweight access covers are proposed for these areas. All other access covers would be at ground level.

Typical maintenance regime

- U.4.76 Once the project is operational, it is anticipated that Thames Water personnel would visit the site approximately every three to six months to carry out inspections of the air treatment chamber, ventilation columns, vortex drop, interception chamber, valve chamber and electrical and control equipment. It is likely that this would involve a visit by staff in a small van. Staff would open access covers to inspect and carry out minor maintenance of below-ground equipment. Access to interception and valve chambers would be by fixed ladders recessed into the chamber walls.
- U.4.77 Should a major blockage occur, a crane or jetting lorry would be brought to the site to clear the blockage via the appropriate access cover.
- U.4.78 It is anticipated that approximately once every three years the filter media in the air treatment chamber would need to be replaced. This would be carried out via the access covers within the pumping station fence and the vehicles required would park within the pumping station site.
- U.4.79 It is anticipated that once every ten years, a major internal inspection of the connection tunnel (in conjunction with the main tunnel) and underground structures would be required. It is likely that this would involve an expert team of inspection staff, a small support crew with support vehicles, and two mobile cranes to lower the inspection team and tunnel inspection vehicle into the drop shaft. This process would take several weeks and temporary fencing would be erected around the retained land around the shaft.

Scheme development

- U.4.80 The proposed Earl Pumping Station site was subject to over two years of extensive consultation and engagement. The site featured as a preferred site in two full rounds of public consultation (phase one and phase two), and a period of pre-application publicity (Section 48). Throughout this period the scheme evolved in response to consultation, through engagement with key stakeholders, and through on-going design development. The *Consultation Report*, which accompanies the application, contains detailed information on the consultation process.
- U.4.81 Five sites were originally shortlisted for interception of the Earl Pumping Station CSO, the Foreshore, a parking and seating area in St George's Square, the boat yard off Calypso Way, the car park to a commercial premises on Plough Way, and Earl Pumping Station.
- U.4.82 The foreshore site includes a number of planning and environmental designations that restrict development on the site and the proximity of residential properties and likely impact on views toward the river mean that the foreshore site was considered less suitable in comparison to Earl Pumping Station where the works can predominantly be located within an existing Thames Water operational site. Similarly, in planning and environmental terms, the parking and seating area in St George's Square was considered less suitable compared to the Earl Pumping Station site due to the high level of mitigation would likely be required to avoid unacceptable impacts, particularly on residential amenity. The car park to factory/office/commercial on Plough Way was considered suitable for use

as a CSO site however it was considered that an extension to Earl Pumping Station would be preferable as it enables the works to be contained within one area. Earl Pumping Station was also considered preferable to the use of the boat yard at Calypso Way as the relocation of the boat yard business operating from the site was judged more problematic than relocation of those businesses in occupation on part of the Earl Pumping Station site.

- U.4.83 At phase one consultation, which ran from September 2010 to January 2011, the preferred site was Earl Pumping Station. Following extensive analysis and design development it remained the preferred site at phase two consultation which ran from November 2011 to February 2012 and was publicised as Thames Water's proposed site at Section 48 publicity which ran from July to October 2012. The site was considered the most suitable site for the following reasons:
- a. The site would make use of the Thames Water-owned site and previously developed land and enable the new waste water infrastructure to be located in an extended operational Thames Water site. This would also minimise health and safety risks.
 - b. The site is located above the CSO and would allow the CSO to be intercepted upstream of the pumping station, which would maximise the volume of flow intercepted and minimise pumping requirements for the pumping station during storm events.
 - c. There are some planning policy designations that relate to the site but it was considered that, with appropriate mitigation measures, these were not an overriding constraint. Further design development for the site demonstrated that the proposed works could be accommodated whilst minimising impacts on the proposed mixed-use redevelopment of the wider area, in accordance with the *Core Strategy* policy for the Plough Way Strategic Area.
 - d. Residential amenities for adjacent residential properties could be protected by implementing appropriate mitigation measures.
- U.4.84 The proposed works and detailed design proposals, addressed in the Good design subsection below, continued to evolve in response to consultation responses received and on-going engagement. Following further improvements and the identification of possible mitigation measures, the site was considered most appropriate site to intercept the Earl Pumping Station CSO and connect to the main tunnel, and was publicised as Thames Water's proposed site at Section 48 publicity, which ran from July 2012 to October 2012.
- U.4.85 In developing the proposals all issues raised throughout the pre-application consultation, Section 48 publicity and discussions with stakeholders, was taken into account. Full details are set out in the *Consultation Report*. The key issues raised were:
- a. Objection to the proposed use of the site. Alternative shortlisted sites are more suitable: This issue is addressed in this subsection and in the *Final Report on Site Selection Process*, which accompanies the application.

- b. Impact of the proposed development on the Plough Way Strategic Site allocation: This issue is addressed in the Land use including open space, green infrastructure and green belt subsection below.
- c. The relocation of businesses as a result of the proposed development: This issue is addressed in the Socio-economic subsection below.
- d. Concern about amenity impacts arising from construction: This issue is addressed in the Air quality, emissions, dust and odour, Noise and vibration, Landscape and visual and light subsections below.
- e. The need for the proposals to reflect the character of the area, and concerns about the visual impacts of the proposed structures: This issue is addressed in the Good design, and Landscape and visual subsections below.

U.5 Site-specific planning considerations

U.5.1 This section provides an analysis of the key planning considerations associated with the proposed works at Earl Pumping Station. It considers the issues and factors identified in the NPS and other issues relevant to the site. The design response to each of these issues was informed by extensive consultation with stakeholders, as set out in the *Consultation Report*, and detailed below.

Meeting the need

U.5.2 The proposed works at Earl Pumping Station would be successful in meeting the need to intercept the Earl Pumping Station CSO, and would make an important contribution to meeting the wider need for the project identified in the NPS.

U.5.3 Currently, in an average year, the Earl Pumping Station CSO discharges approximately 539,000m³ of untreated sewage into the River Thames in front of St George's Square on the boundary of the London Boroughs of Lewisham and Southwark. The CSO discharges approximately 26 times a year, and releases 135 tonnes of sewage derived litter.

U.5.4 The CSO was identified by the Environment Agency as one requiring control. The CSO discharges have multiple impacts on water quality in this location, including a localised effect of rapidly dropping dissolved oxygen levels, the release of pollutants and the discharge of sewage derived litter and effluent.

U.5.5 It is predicted that the CSO discharges will continue to worsen both in terms of volume, frequency and content. By the time the proposed works at Earl Pumping Station are ready to become operational the CSO is predicted to discharge, in an average year, approximately 594,000 m³ of untreated sewage, discharging approximately 30 times a year, releasing 150 tonnes of sewage derived litter.

U.5.6 Modelling suggests with the project in operation the discharges of untreated sewage in an average year would be reduced to 51,000m³, to a predicted level of four spills per year, with 13 tonnes of sewage derived

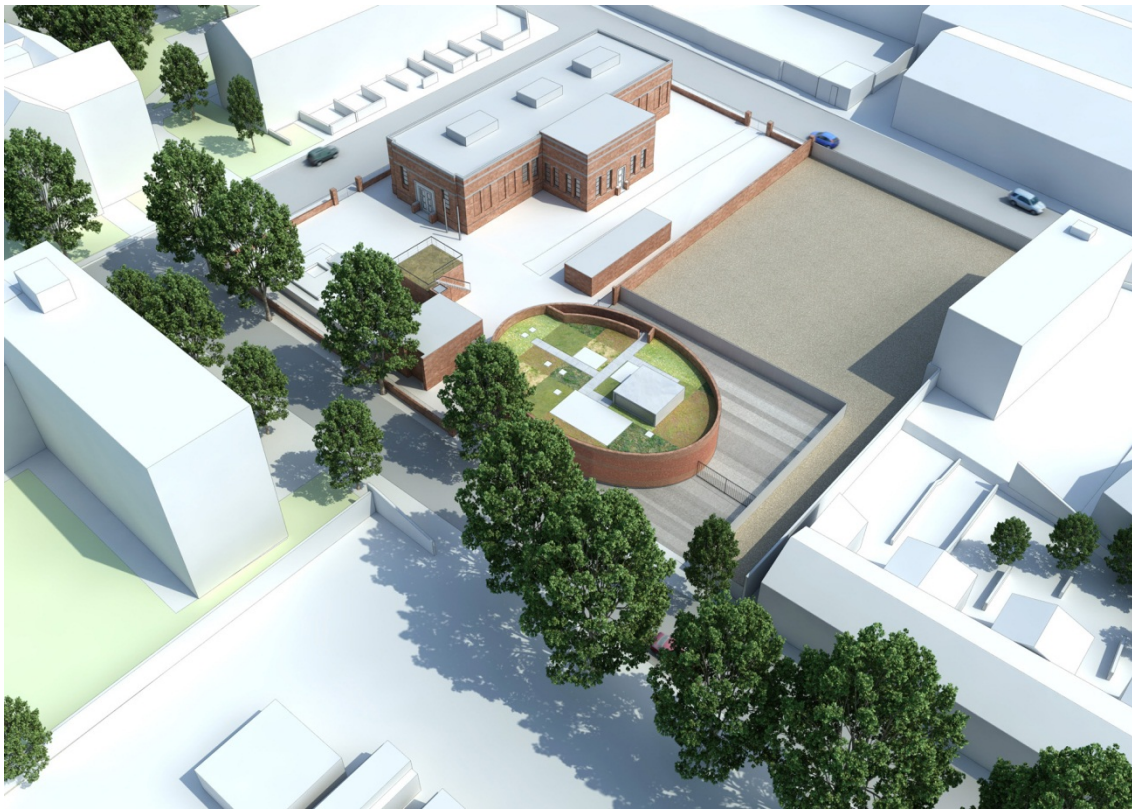
litter. This reduction would have significant beneficial effects on water quality.

Good design

- U.5.7 The amount, layout and scale of the proposed structures are primarily dictated by the function they need to perform. At this site the key functional consideration is the need to transfer flows from the Earl Pumping Station CSO to the main tunnel via the Greenwich connection tunnel. The functional design proposed is durable and adaptable and in keeping with the existing use of much of the site as a sewage pumping station.
- U.5.8 Early site analysis and subsequent engagement identified that it was important for the design to respond to the following key opportunities and constraints.
- U.5.9 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.
- U.5.10 The site-specific design constraints included:
- a. The site is subject to future regeneration proposals.
 - b. There are sensitive residential receptors in proximity to the site.
 - c. The local highway network surrounds the site on three sides.
 - d. There is significant existing infrastructure on-site both above and below ground and beneath the surrounding highway network.
- U.5.11 The design of the proposals for the site evolved through two rounds of consultation and continued engagement with key stakeholders including the Design Council CABE. The detail of the consultation process for the site is reported in the *Consultation Report* and the *Design and Access Statement*, which accompanies the application. The key design objectives which were developed from the analysis of opportunities and constraints, and in response to stakeholder consultations, were:
- a. ensuring the design of the works respects the local character, which is presently a mix of industrial and residential uses and adding interest to the streetscape
 - b. creating a modern structure that ties in with the existing pumping station and provides a secure access point to the CSO drop shaft
 - c. ensuring the footprint of above-ground structures is minimised in order to maximise the area of land available for future redevelopment once the infrastructure works are complete
 - d. locating as many of the permanent works inside the pumping station compound as possible

- e. limiting impacts of construction.
- U.5.12 The CSO drop shaft structure would be the main new structure at this site. The shaft building was designed to reflect the local townscape character and the existing pumping station, as well as matching the scale of the neighbouring residential properties on Croft Street. The main point of access to the shaft would be via the pumping station compound for security reasons (design principle EARPS.07). The structure would be set back from Croft Street, which has a very narrow footpath in order to create additional room for pedestrians.
- U.5.13 Whilst the CSO drop shaft structure would have no active ground-floor use it was designed to be a practical but modern sculptural form with textured cladding. This would add interest to the streetscape which could be appreciated at street level and from neighbouring residential properties (design principle EARPS.05). The Design Council CABA felt that the proposals for the drop shaft structure represented an “*exciting prospect to create a distinct building that could become a cherished local landmark*”. The structure above the shaft was designed with an interesting brick cladding (subject to approval) and the elliptical shape would provide for an interesting feature at the site. However, the structure would barely be visible from outside of the compound as it would be largely hidden by the canopies of street trees along Croft Street and by the existing pumping station infrastructure.
- U.5.14 The siting of the CSO drop shaft structure as close as possible to the existing pumping station boundary minimises the area required for the proposed structures, and maximises the potential for subsequent development of the remainder of the site (excluding the pumping station). This approach would be consistent with the policy aspirations for the Plough Way Strategic Site in the *Core Strategy*.
- U.5.15 The other smaller structures required on the site, such as the valve chamber and interception chamber, electrical and control equipment, would be located on the pumping station site and be integrated into the existing operational infrastructure. These works within the existing pumping station compound were designed so as to fit within their operational context (design principle EARPS.08). Access to the below-ground equipment for maintenance would be required at various intervals and safe access formed a key design consideration.
- U.5.16 The number and size of the ventilation columns is determined by the air management requirements for the site. The main ventilation columns would be integrated into the structure above the CSO drop shaft to limit visual bulk.
- U.5.17 The proposals are of a scale, layout and appearance that are appropriate and consistent with existing structures, plant and buildings at Earl Pumping Station and adjacent buildings and land uses. The proposals are not dominant from any views into the site from public viewpoints.

Figure U.6 Visualisation of the completed site



- U.5.18 The proposed designs for Earl Pumping Station evolved throughout the development of the project, through the iterative consideration of alternatives and from feedback received during the consultation periods. Further details are provided in the *Design and Access Statement*. In summary the following alternatives were considered:
- a. Alternative layouts for the proposed structures: in order to maximise the area of land available for future redevelopment once the works are complete, the size of the above-shaft structure was reduced and located further west.
 - b. Alternative cladding solutions for the CSO drop shaft structure, including the use of customised brickwork and embossed text to inform passers-by of its function: these options were eventually dismissed in the final design in view of concerns that the openings and projections in the brickwork would make the structure easy to climb. This was deemed to be a health and safety risk.

Managing impacts of construction

- U.5.19 The *CoCP* submitted as part of the application sets out how the environmental effects resulting from the construction of the project would be managed. The *Draft DCO* includes requirements that the construction works are carried out in accordance with the *CoCP*.
- U.5.20 Design measures to manage impacts of construction traffic are outlined in *CoCP Part A* which includes the provision of site-specific transport management plans to set out how vehicular access to the site would be

managed so as to minimise impacts on the local area and a requirement to communicate this with the local borough and other stakeholders.

- U.5.21 Further specific design measures to minimise temporary construction impacts at this site are outlined in the *CoCP* Part B and include use of hoarding of a height and extent to achieve appropriate visual screening and noise attenuation. Public-facing sections would incorporate suitable art work.
- U.5.22 Compaction of material on site would be undertaken using machinery generating the lowest practicable vibration levels.
- U.5.23 The proposals for Earl Pumping Station were carefully developed through a collaborative process of design review and extensive consultation. The key functional requirements at this site relate to the need to intercept the Earl Pumping Station Storm Relief CSO and connect flows to the Greenwich connection tunnel, and this is achieved in an efficient manner. The aesthetic components relate to the creation of a new, high quality and visually attractive building which enhances the setting of the site and relates positively to the surrounding environment. The function and aesthetic elements were combined to create an attractive, usable and adaptable design in accordance with NPS paras. 3.5.1 to 3.5.3. The site specific design principles and Requirements were developed with key stakeholders and would ensure that the details of landscaping and materials are submitted to the local planning authority for approval.

Water resources and flood risk

- U.5.24 In terms of ground water resources there are no licensed abstractions from the River Terrace Deposits or upper aquifer within a radius of 1km of the Earl Pumping Station site. There are two licensed abstractions from the Chalk or lower aquifer, located 0.6km and 0.8km to the north and northeast east of the site. The use of the licenses is for industrial, commercial, public services, sanitary and amenity purposes. There are no known unlicensed groundwater abstractions within 1km of the Earl Pumping Station site. The nearest Source Protection Zone lies approximately 1.4km away to the southeast. There are no environmental designations relevant to groundwater in the vicinity of the Earl Pumping Station site.
- U.5.25 Measures to protect water quality and resources during construction are detailed in Section 8 of the *CoCP* Part A, and referred to in the Section 8 of the *Planning Statement*. The *CoCP* also covers activities that are subject to pollution control and makes reference to good practice.
- U.5.26 With the measures incorporated into the design and *CoCP*, including adherence to good pollution prevention practice, potential impacts on surface water resources, river flows and groundwater resources are not predicted to be significant.
- U.5.27 Once operational, the project would have a beneficial effect on water quality in the tidal Thames and contribute to the protection and enhancement of biodiversity of the Blue Ribbon Network.

- U.5.28 The site is located in Flood Zone 3a associated with the tidal Thames but benefits from the presence of flood defences.
- U.5.29 A Flood Risk Assessment undertaken in accordance with NPS Section 4.4 is included within the *Environmental Statement*. This shows that the proposed development would be appropriate for the area as flood risk to the development would remain unchanged. Flood risk would be managed through appropriate design measures and the development would not lead to an increase in flood risk on the surrounding areas. Therefore, no significant flood risk effects are likely.
- U.5.30 In accordance with the *CoCP* (Section 8) all site drainage during construction would be drained and discharged to mains foul or combined sewers and where this is not practicable, the site would be drained such that accumulating surface water would be directed to holding or settling tanks, separators and other measures prior to discharge to the combined or surface water drains. Foul drainage from the site welfare facilities would be connected to the mains foul or combined sewer. This design measure would help manage the risk from this source during construction but would not reduce the level of risk associated with this flood source.
- U.5.31 The development is at residual risk of tidal flooding in the event of a breach in the local flood defence wall along the edge of the tidal Thames or overtopping of the defence wall as a result of a failure of the Thames Barrier. In the very unlikely event of a mechanical failure at the pumping station, there is potential for sewage to back up within the system and surcharge through manholes and gullies. The consequence of a breach or failure of flood defences or a failure of the pumping station, would not compromise the long term operational function of the main tunnel and therefore no additional measures above those outlined in the *CoCP* are proposed.
- U.5.32 Flood risk from all sources has been managed as far as possible through design and the measures incorporated in the *CoCP*, so the criteria in NPS para. 4.10 would be satisfied. No significant flood effects are likely from the proposed development.
- U.5.33 Part B of the *CoCP* for the site includes a specific measure to incorporate permeable surfacing on temporary hard standing as far as reasonably practicable.
- U.5.34 Thames Water developed a series of design principles for site drainage. At brownfield sites, site drainage shall comply with the Mayor's Essential Standard by using Sustainable Drainage Systems measures wherever practical and achieve a 50 per cent attenuation of the undeveloped site's peak surface water run-off.
- U.5.35 The application includes a Requirement for drainage details to be submitted and approved in writing by the local authority.
- U.5.36 The site therefore meets the decision making principles set out in the NPS because no adverse effects are expected on water quality, water resources or flood risk.

Air quality, emissions, dust and odour

- U.5.37 The project-wide air management plan is designed to ensure that the air in the tunnels is kept fresh, that a low pressure is maintained within the tunnels to prevent unwanted releases and that when air is released it is treated. This would be achieved by a combination of forced or active ventilation and treatment and passive air treatment. In addition, at all sites there are to be ventilation structures which would allow air to enter and leave the tunnel system.
- U.5.38 When the tunnels are empty, clean air would be drawn into the tunnels at specific sites by the extraction of air at other specific sites so as to keep the air in the tunnels fresh. This means that odours would not build up while the tunnels are empty. As the tunnels fill, air displaced from the tunnels would initially be extracted and treated at the active ventilation sites before being released and later, depending of the level of filling, would pass through the passive carbon filters. These filters clean the air and remove any odours before it is released.
- U.5.39 At this site a passive ventilation system is proposed. A passive carbon filter would be installed within a below ground chamber. During a typical year this treats all the air displaced from the particular shaft which would occur only when the shaft is drowned by the rising wastewater in the tunnel. During infrequent, extreme storm events (approximately once in 15 years), the air that is pushed out of the shaft could exceed the capacity of the passive filter and would be released untreated through a pressure relief structure to prevent damage to the passive filter. For 100 per cent of the time during a typical year, all air released would be treated, which means that all regulatory requirements would be met and there would be no nuisance odours or loss of amenity due to odours.
- U.5.40 As a result of previous exceedances of air quality objectives, the London Borough of Lewisham has declared an Air Quality Management Area across the whole Borough for nitrogen dioxide and particulate matter. Local monitoring data indicates that the air quality standards for nitrogen dioxide and particulate matter are regularly exceeded in the vicinity of the site.
- U.5.41 The closest sensitive receptors to the development are occupiers of nearby existing and proposed residential dwellings and commercial premises, as well as educational, medical and recreational establishments in the vicinity.
- U.5.42 In accordance with the measures included in the *CoCP*, all reasonable steps would be taken to minimise detrimental impacts on air quality or amenity resulting from emissions and dust, as required by the NPS. With the implementation of the *CoCP* measures, the overall effect on local air quality from construction (ie, effects from construction road traffic and construction plant), would not be significant at any of the closest sensitive receptors.
- U.5.43 The consideration of operational air quality, odour and dust impacts is reported in the project-wide section of this document. The ventilation

strategy for the project is designed to ensure that odours do not arise from the operation of the scheme at any of the proposed site locations.

- U.5.44 The construction and operational effects with regard to air quality and odour would be consistent with the NPS policy objectives (at paras. 4.3.11 to 4.3.15 and 4.11.4 to 4.11.5) to minimise detrimental impacts on amenity. Appropriate measures are proposed to ensure that the proposals would not lead to a material deterioration of, or change in, air quality or a significant loss of amenity at this location.

Biodiversity and geological conservation

- U.5.45 The Earl Pumping Station CSO discharges directly into the designated River Thames and Tidal Tributaries Site of Metropolitan Importance.
- U.5.46 There would be no construction impacts on aquatic ecology as there would not be any works in proximity to a waterway. During operation the interception of the CSO would result in reduced discharge of sewerage into the tidal Thames, with consequential beneficial effects on ecology.
- U.5.47 In accordance with NPS policy, the project proposals for this location seek to maximise opportunities to conserve and enhance biodiversity. Measures in the *CoCP* and the *Design Principles* would be applied including protection of trees and the provision of bat boxes. Covering the roof of the structure above the shaft with materials such as low nutrient rubble and gravels would promote natural colonisation by brown field plants of particular value to insects and birds. The *CoCP* requires an ecological management plan to be prepared for the site, and details the approach to managing effects on ecological receptors.
- U.5.48 These measures would be addressed through final landscape designs to be submitted to and approved by the London Borough of Lewisham. The measures allow for the maximisation of opportunities for building in beneficial biodiversity features as part of good design (NPS para. 4.5.14).
- U.5.49 As required by the NPS (para. 4.5.17), the footprint of the proposals is no greater than it needs to be and measures are in place to mitigate any adverse effects. The works are not expected to give rise to significant effects on terrestrial ecology.

Landscape and visual impacts

- U.5.50 The Earl Pumping Station site does not lie within or in proximity to any nationally or locally designated landscapes. However, the local townscape shaped the design development and evolution of the proposed works in this location.
- U.5.51 Through robust site selection, extensive consultation, significant design developments and mitigation, the proposed scheme was refined to minimise its impact on the surrounding townscape and views during construction, and provide benefits once operational in terms of visual appearance and high quality design.
- U.5.52 The northern part of the site comprises an operational pumping station and significant infrastructure associated with wastewater whilst the southern part of the site comprises industrial buildings which are poorly

maintained and do not contribute positively to the character of the area. The surrounding character is a mix of residential and industrial uses with a number of large regeneration schemes currently under construction.

- U.5.53 The NPS recognises in para. 1.4.4 that nationally significant infrastructure projects are likely to take place in mature urban environments, with some adverse townscape and visual effects within a built up environment, with many possible receptors. Large scale construction works are commonplace in this part of London, which is a regeneration area. The construction effects of the project are unavoidable and temporary and should be considered in this context.
- U.5.54 The permanent proposals in this location were carefully designed to provide a beneficial legacy for the local townscape. The building above the shaft was designed to reflect the character of the local townscape and the existing pumping station, to match the scale of the neighbouring residential properties on Croft Street and to add interest to the streetscape. The existing poorly maintained industrial and commercial premises would be cleared creating the potential for the future redevelopment of the south eastern part of the site. As a result of the clearance of dilapidated buildings and the high quality design of the shaft structure, beneficial effects are anticipated at all viewpoints in proximity to the site.
- U.5.55 Accordingly, the proposals are consistent with the approach required in NPS Section 4.7 because they were designed taking careful account of the landscape characteristics of the area, to minimise adverse effects during the construction phase and to create long-term landscape and visual benefits.

Land use including open space, green infrastructure and green belt

- U.5.56 The majority of the Earl Pumping Station site constitutes operational land, ie, land that is either specifically used or held for the purposes of carrying out Thames Water's statutory undertakings. The development in this part of the site is proposed on and under land owned by Thames Water. The whole of the site involves the re-use of previously-developed land.
- U.5.57 The impact of the proposals on land uses and designations (as identified in the London Borough of Lewisham Core Strategy and retained policies) was a key consideration in the site selection process and design development. The land use plan illustrates the land uses of the site and the surroundings.
- U.5.58 The site is located in the Deptford, Deptford Creek, New Cross and New Cross Gate Regeneration Area, as designated within the *Core Strategy*. Within this wider regeneration area, there are four strategic development sites, one of which, Plough Way, encompasses the site. The Plough Way Strategic Site is allocated for mixed-use development in the *Core Strategy* which requires "a comprehensive phased approach to the redevelopment of this site in line with an approved master plan". The council has indicated a maximum of 1,500 new homes and 20 per cent of built floor space developed for a mix of business uses within the allocated site.

- U.5.59 To date, there is no approved master plan for the Plough Way Strategic Site. However, the *Core Strategy* sets out the following design principles, which should be key features of any future master plan:
- a. have flexibility in the design of business units, to ensure viability and flexibility between business uses and compatibility with residential uses
 - b. improve access and linkage between Evelyn Street and the River Thames
 - c. take account of the scale, mass and orientation of buildings in the surrounding built context and create a coherent area
 - d. take account of, and allow for, the continued operation of Thames Water Earl Pumping Station, in consultation with Thames Water.
- U.5.60 The *Core Strategy* also designates the Plough Way area as a mixed-use employment location where good quality business development is encouraged. *Core Strategy* Policy 4 specifies that mixed-use employment locations should: “provide a sense of place through new buildings and spaces and an enhanced street environment that would raise the overall standard of design and environmental quality and improve the permeability and accessibility of the area by providing new landmarks and links”.
- U.5.61 The siting of the drop shaft as close as possible to the existing pumping station boundary facilitates use of the existing site and the sharing of access arrangements thus minimising the amount of new land required for the proposed works. This ensures that the potential for subsequent development of the remainder of the site is maximised (excluding the pumping station) which would be consistent with the policy aspirations for the Plough Way Strategic Site in the *Core Strategy*.
- U.5.62 Earl Pumping Station would remain operational, as acknowledged by the council’s policy, and the proposed works would be consistent with the pumping station use.
- U.5.63 The project’s proposals at Earl Pumping Station would not compromise the future wider redevelopment of the Plough Way Strategic Site either for residential or employment use in accordance with the *Core Strategy*.
- U.5.64 Proposals for this site could potentially open up access and linkages from Croft Street to Yeoman Street, an approach which was recommended by the Design Council CABI during a design review in June 2011. This was discussed with the London Borough of Lewisham and it was agreed that this link would not be required, suitable or appropriate given issues surrounding safety and security and the anticipated connectivity improvements pursuant to the Plough Way Strategic Site proposals.
- U.5.65 In the vicinity of Earl Pumping Station it is assumed that the following other developments would be under construction or complete by 2022:
- a. Canon Wharf mixed-use scheme including 679 residential units and 6,588m² of commercial floor space
 - b. Yeoman Street scheme involving the construction of a five storey building providing 33 units

- c. Marine Wharf mixed-use scheme 532 residential units and 4126m² of commercial floor space
- d. Tavern Quay mixed-use scheme over nine storeys including 71 residential units and business uses
- e. Oxestalls Road comprehensive mixed-use redevelopment comprising up to 905 residential units, 17,645m² of non-residential commercial floor space and associated works
- f. Surrey Quays leisure site including 11,105m² leisure floor space, 2695m² retail floor space and 49,276m² of affordable residential floor space.

U.5.66 Surrounding land uses were reviewed and considered in the site selection process and on-going design development. The proposed works would be a further development of, and extension to, the existing use of this sewage pumping station. No extant planning permissions, committed developments, or policy allocations for future development would be adversely impacted as a result of the works in this location.

Noise and vibration

U.5.67 The current noise environment in the vicinity of the site is predominantly generated by road traffic noise including construction vehicles servicing a number of large regeneration schemes currently under construction in the area and local industrial/commercial operations. The nearest receptors that are sensitive to noise and vibration are residential dwellings on Yeoman Street, Croft Street and Chilton Grove as well as offices on Yeoman Street.

U.5.68 A series of measures are detailed in the *CoCP* to manage noise effects during construction. These measures include operating in accordance with best practice, selecting the quietest cost-effective plant available, restricting hours of construction activity and optimising plant layout to minimise or screen noise emissions. The *CoCP* also contains, in Part B, site specific measures including a local increase in the site hoarding adjacent to 62 Croft Street to approximately 3.6m for acoustic screening.

U.5.69 The implementation of these measures would ensure many effects are not significant including noise from road based construction traffic. However, despite the measures identified in the *CoCP* the assessment undertaken and reported in the *Environmental Statement* identifies some adverse noise effects during the temporary construction phase. Adverse effects are predicted at some residential properties at 1 to 39 and 108 to 136 Chilton Grove, 52 to 62 Croft Street and Cannon Wharf (Block J) as a result of the proposed construction works and the proximity of these residential properties.

U.5.70 In regards to vibration the levels reported at this site are well below those likely to cause cosmetic building damage.

U.5.71 A significant vibration effect is predicted at 52 to 62 Croft Street and Block J Cannon Wharf. The *CoCP* Part A seeks to ensure that piling methods which limit noise and vibration are selected where possible (*CoCP* Part A para 6.4.3d). If ground conditions at the Earl Pumping Station site are

such that these methods could be implemented, effects would not be significant. However as the specific ground conditions encountered would not be known until piling is underway; it cannot be guaranteed that these measures can be implemented. Therefore, in the worst case significant effects would arise from piling at this location.

- U.5.72 The NPS recognises that Nationally Significant Infrastructure Projects are likely to take place in mature urban environments and in the short term lead to noise and vibration disturbance during construction. This site is also located within a designated regeneration area where significant new development will be undertaken. The design of the site was developed as far as practical to minimise adverse noise effects on sensitive receptors and Thames Water's proposed mitigation measures seek to manage and control noise and minimise the impacts upon health and quality of life as far as practical.
- U.5.73 The NPS advises that in situations where other forms of noise mitigation have been exhausted, noise insulation to dwellings or, in extreme cases, compulsory purchase of affected properties may be considered in order to gain consent for what might otherwise be an unacceptable development. In the case of the project, no extreme cases had been identified at the date of submission of the application that would necessitate the compulsory acquisition of properties due to significant adverse effects. The Thames Tideway Tunnel noise insulation and temporary re-housing policy and the Thames Tideway Tunnel project compensation programme (included within Schedule 2 to the *Statement of Reasons*, which accompanies the application) were developed to offset the effects arising from construction related disturbance. The noise insulation and temporary re-housing policy would be implemented where predicted or measured construction noise levels exceed published trigger levels. The compensation programme was established to address claims of exceptional hardship or disturbance. In relation to construction, eligible works would be directed towards mitigation or other required actions to reasonably reduce disturbance from noise or construction activities. Residential properties at 108 to 136 Chilton Grove and Cannon Wharf (Block J) may be eligible for noise insulation as described under the policy which, if taken up, would reduce the predicted noise effects to a non-significant level. Properties at 1 to 39 Chilton Grove and 52 to 62 Croft Street may be eligible for compensation in respect of noise. If the identified mitigation measures for vibration cannot be implemented, properties at Cannon Wharf Block J and 52 to 62 Croft Street may be eligible for compensation under the policy.
- U.5.74 No noise or vibration issues arise from the proposals at Earl Pumping Station during the operational phase.
- U.5.75 Thames Water has employed all possible measures to mitigate the effects of noise at the site. The project demonstrates good design and mitigates and minimises adverse impacts on health and quality of life in accordance with NPS paras. 4.9.8 and 4.9.9.

Historic environment

- U.5.76 The only relevant heritage consideration within the vicinity of the Earl Pumping Station site is its location within an archaeological priority area, which covers a large area of Deptford, including The Strand, Sayes Court, and the Royal Naval Dockyard.
- U.5.77 With mitigation in the form of targeted archaeological investigation and recording in place, no effects on the historic environment would arise from the proposals at the Earl Pumping Station site.

Light

- U.5.78 A screening assessment carried out into the daylight/sunlight impacts of the proposed development concluded that there would be no material impact on sunlight or daylight from either construction or the permanent works.
- U.5.79 The area surrounding the site is currently lit in the early evening by street lighting and by light spill from surrounding buildings and commercial and industrial uses.
- U.5.80 During construction, the site would only be lit in the evenings in winter. Any site lighting during construction would be capped and directional so as to ensure minimal light spill in accordance with the mitigation measures set out in the *CoCP* and the resulting effects would be negligible from residential and other viewpoints.
- U.5.81 Once operational, lighting shall be provided to the staircase and shaft surface for maintenance activities only.
- U.5.82 There would therefore be no significant effects from lighting either during construction or operation.

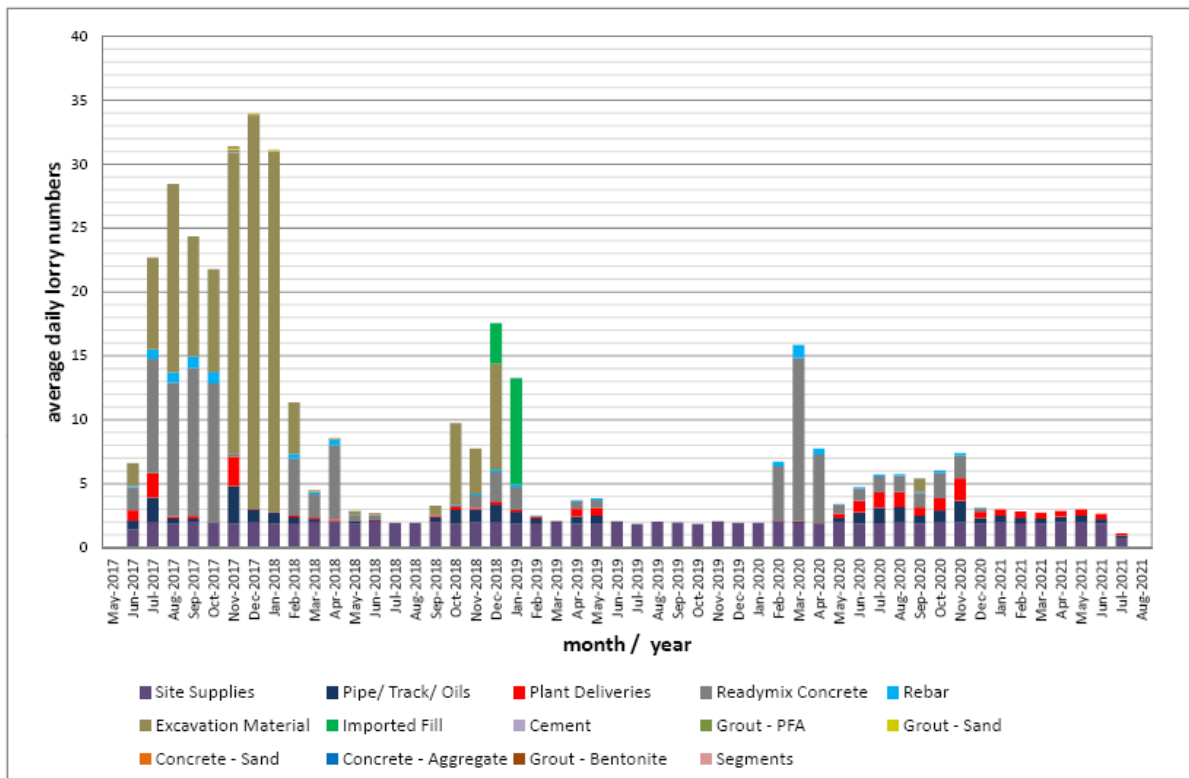
Traffic and transport

- U.5.83 The Earl Pumping Station site has moderate public transport accessibility. It is located in proximity to a number of local bus services, Surrey Quays Overground Station (760m), Canada Water Underground Station (1.4km) and South Bermondsey Station (1.7km), which provides National Rail services.
- U.5.84 No parking would be provided within the site boundary for construction workers and measures would be incorporated into site-specific Travel Plan requirements in order to minimise the number of workers travelling to and from the site by car (in accordance with the overall aims and objectives of the *Draft Project Framework Travel Plan*, which accompanies the application). The maximum construction workforce would be approximately 40 workers at any one time and with the implementation of a travel plan it is not anticipated that any significant effects would arise in terms of workers arriving and departing from the site.
- U.5.85 At this site two construction phases are proposed. During phase 1 construction, vehicles would access the site from Yeoman Street and exit onto Croft Street. During the second phase a short term lane closure on Chilton Grove outside the Earl Pumping Station access point would be

required to make a connection to the existing sewer. During this period vehicles would enter and exit the site via Yeoman Street.

- U.5.86 During the proposed construction phases there would be minor changes to the surrounding highway network including, revised parking arrangements and necessary suspensions, highway layout changes including removal of traffic calming features and junction modifications (requiring short-term pedestrian and traffic management).
- U.5.87 In general, vehicle movements during construction would take place on weekdays between 8am and 6pm and from 8am to 1pm on Saturdays, with up to one hour before and after these hours for mobilisation and demobilisation processes. Mobilisation may include loading, unloading, the arrival and departure of staff onsite, and movement to and from the place of work. In exceptional circumstances, heavy goods vehicle and abnormal load movements for large concrete pours could take place up to 10pm and later at night in agreement with the local authority.
- U.5.88 The assessment provided in the *Environmental Statement* predicts that an average peak flow of 34 HGVs per day is expected during the months of greatest activity during year 1 when construction of the shaft would be undertaken. HGV numbers would be substantially lower during subsequent construction phases. This level of additional vehicle movement is considered to be acceptable and is not predicted to cause any adverse impacts on the local highway network.

Figure U.7 Estimated construction lorry profile



- U.5.89 The construction works in this location are not likely to result in any significant effects on highway users, pedestrian routes, cycle routes and facilities, public transport routes and patronage, parking or the highway network.
- U.5.90 Additional measures to limit transport impacts included in the *CoCP* include heavy goods vehicle management and control measures such as designated routes to sites for construction vehicles. There is also provision for management plans for construction worker journeys to and from the site. In addition to the general measures in the *CoCP* Part A, the following measures were incorporated into the Code of construction practice Part B in relation to the Earl Pumping Station site:
- a. Access to the site shall be from Plough Way (B206), right into Yeoman Street and right into the site and site egress shall be onto Croft Street with only a right turn out.
 - b. Suitable traffic management would be required during the connection to the existing sewer in Chilton Grove and Croft Street during diversion of the Earl sewer around the shaft. During this phase site egress shall be onto Yeoman Street
 - c. Revised parking arrangements and necessary suspensions shall be agreed with the London Borough of Lewisham
 - d. Highway layout changes including removal of traffic-calming features and junction modifications (requiring short-term pedestrian and traffic management) shall be agreed with the London Borough of Lewisham.
 - e. The footway diversions on Croft Street, Yeoman Street and Chilton Grove shall be adequately signed and protected and provide suitable pedestrian access throughout the entire construction period.
- U.5.91 During operation maintenance vehicles would access the site via the existing site entrance. A gate is proposed between the existing site and the area in which the drop shaft would be situated.
- U.5.92 Access would be required for a light commercial vehicle on a three to six-monthly maintenance schedule. In addition, there would be more significant maintenance visits every ten years that would require access for two cranes, which might require the temporary suspension of on-street parking in the vicinity of the site. There would be no significant transport effects during the operational phase given the infrequent expected vehicle visits, and no further mitigation measures would be required.
- U.5.93 The construction works in this location are not likely to result in any significant transport effects. As detailed above a range of measures are in place in the *CoCP* and travel plan which would mitigate any potential significant impacts. HGV traffic at the site would not be substantial and there would be sufficient car parking in the area to accommodate parking displaced during the temporary road closures. There would not be any adverse effects regarding pedestrian or cyclist amenity, safety or public transport services as supported in the *Environmental Statement* (Vol 22, Section 12).

Waste management

- U.5.94 There are no specific waste issues associated with the use of this site.
- U.5.95 The Waste Strategy was developed to provide a framework for the management of materials and waste that would be produced throughout the construction and operation of the project. This would satisfy the requirements set out NPS para. 4.14.6.

Socio-economic

- U.5.96 The project-wide socio-economic issues and benefits of the project both during construction and operation are detailed in Section 8 of the *Planning Statement*.
- U.5.97 The site is surrounded by residential properties and a mixture of functioning and derelict industrial and warehousing related uses located to the immediate south and east of the site, which are proposed to be redeveloped for residential-led mixed-uses as part of the Plough Way Strategic Site allocation.
- U.5.98 The northern part of the site is occupied by a Thames Water owned pumping station. The southern part of the site is occupied by three businesses that use their respective premises at the site for warehousing/storage or distribution activities. The receptors identified and considered as part of the environmental impact assessment include the businesses and nearby residential properties.
- U.5.99 The construction works would result in displacement of three businesses at the site. The magnitude of the impact is influenced by a number of factors including:
- a. The deletion of the employment land use designation means that it is most likely that the site would be redeveloped in accordance with the land use objectives provided for by the local authority's Plough Way Strategic Site Allocation designation.
 - b. Based on the activities taking place on site, it is assumed that the three businesses do not depend intrinsically on their location at this site to attract business and would potentially be able to 'carry' their customers with them to a new location.
 - c. The three businesses are micro size enterprises based on the number of employees that they are estimated to employ on site.
 - d. The effect on the businesses of relocating could be potentially significant as there would be costs and expenditure associated with relocating
- U.5.100 The *Environmental Statement* predicts that the businesses requiring relocation would relocate to new locations and continue to operate. Therefore, it is assessed that no significant effects would result on the businesses and the employment provided by those businesses arising from the displacement of the business at this site.

- U.5.101 Further to this provision of the statutory compensation code would apply to ensure that the businesses are compensated for the costs associated with relocation.
- U.5.102 This site is expected to require a maximum workforce of approximately 40 workers. These jobs and training opportunities would provide a stimulus to the local economy.
- U.5.103 No adverse socio-economic effects are expected during the operational phase that would require mitigation.
- U.5.104 An *Equalities Impact Assessment (EqIA)* was undertaken for the project. In accordance with the NPS (para. 4.15.6), an initial *EqIA* was undertaken to identify potential adverse, differential or positive impacts on equalities groups, direct or indirect, and whether a full *EqIA* should be undertaken. Thames Water engaged with potentially affected groups throughout the pre-application stage.
- U.5.105 In accordance with the NPS, the *EqIA* describes the demographics of the surrounding area and assesses whether a disproportionate number of people from particular equalities groups would be affected by the generic impacts associated with the project, including air emissions, flood risk, noise and vibration. The *EqIA* also outlines the impact on people living, working or owning businesses that may be displaced as a result of the project.
- U.5.106 A potential disproportional impact at this site would arise from the temporary diversion of footpaths around the site. All other identified potential impacts are considered proportionate. Footpath diversion impacts would be mitigated by clear signage and suitable pedestrian access would be provided throughout the entire construction period.
- U.5.107 While the proposed works would cause short term inconvenience for some local residents, these would be limited in time and mitigated as far as practical. Three businesses would need to be relocated. In the longer term no negative effects were identified.

U.6 Overall conclusions

- U.6.1 The need for the project and the principle for this part of it is established at the national level in the NPS. In the average year, the Earl Pumping Station CSO discharges approximately 539,000m³ of untreated sewage into the tidal Thames in front of St George's Square. The CSO was identified by the Environment Agency as one requiring control. The capture of these discharges within the main tunnel would substantially reduce the flows of untreated sewage into the tidal Thames in this location.
- U.6.2 This site-specific section presented an analysis of the key planning considerations associated with the proposed works at Earl Pumping Station in accordance with factors identified in the NPS relevant to the site. The comprehensive site selection and consultation processes clearly demonstrate that the site at the Earl Pumping Station site meets the need for delivering the project, demonstrates that key issues arising from the

use of the site were appropriately considered and logically sets out the reasons for why Earl Pumping Station is the best site to undertake the works required.

- U.6.3 Despite the site's location within and immediately adjacent to an operational pumping station it is inevitable that some disturbance would be experienced during the anticipated four year construction period. Thames Water sought to minimise any disturbance that would be experienced through sensitive design and mitigation of adverse effects identified in regards to noise and vibration that are predicted at residential properties in Chilton Grove, Croft Street and Cannon Wharf. The noise insulation and temporary re-housing policy could also provide additional mitigation where appropriate.
- U.6.4 For these effects all practicable mitigation would be applied and the remaining adverse effects would be an unavoidable consequence of the works required to intercept the CSO, in a mature urban environment.
- U.6.5 The footprint of the above-ground structures has been minimised in order to maximise the area of land available for future redevelopment, in line with the council's regeneration aspirations, once the works are complete. The permanent infrastructure was designed to integrate the works into the existing operational site and, in respect of the building above the shaft, it would respect the local character and add interest to the streetscape.
- U.6.6 The proposals at Earl Pumping Station would also give rise to a number of significant beneficial effects on aquatic ecology, namely the reduction in the occurrence of dissolved oxygen related fish mortalities, an increase the distribution of pollution sensitive fish species and an improved foraging habitat for fish.
- U.6.7 The legacies that the project would leave in this location are considered to be substantial. Reducing the discharges from the Earl Pumping Station CSO would improve the water quality in the tidal Thames with associated benefits to ecology and amenity. It would also help reduce the health risks to river users and the quantity of sewage derived litter.
- U.6.8 The proposed works at the Earl Pumping Station site, and the mitigation measures developed as part of the application for development consent, directly accord with the approach required by the NPS. Adverse effects have been minimised as far as possible and opportunities have been taken to enhance the local environment and to leave a positive legacy.
- U.6.9 Section 8 of the *Planning Statement* considers the implications of the local effects of the works at Earl Pumping Station and the other sites, and describes the overall balance between impacts and benefits associated with the project as a whole, against the guidance in the NPS. It concludes that the works at Earl Pumping Station, and the project as a whole, are compliant with the NPS and that development consent should be granted.

Annex U: Drawings for Earl Pumping Station

List of drawings

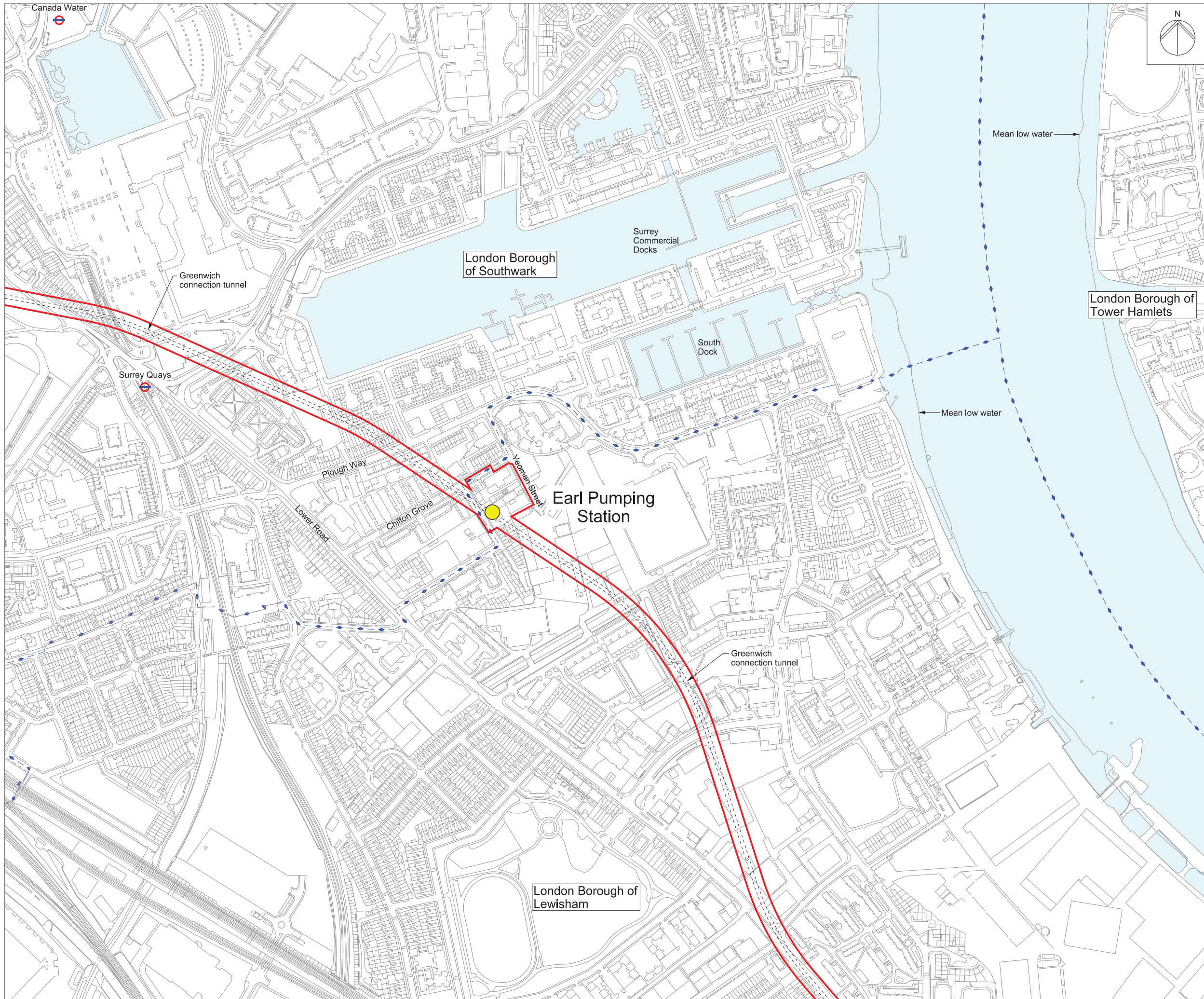
Earl Pumping Station: Location plan

Earl Pumping Station: As existing site features plan

Earl Pumping Station: Construction phases plans

Earl Pumping Station: Land use plan

This page is intentionally blank



Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordnance Survey licence number 100019345

Keyplan:

This drawing

Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key:

- Local authority boundary
- Order limits
- Tunnel
- Shaft

Notes:

- The alignment of the tunnels are illustrative within limits of deviation.

100m 0 100m
Scale 1:2500 at A1
1:5000 if reproduced at A3

FOR INFORMATION

Location
Earl Pumping Station
London Borough of Lewisham

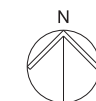
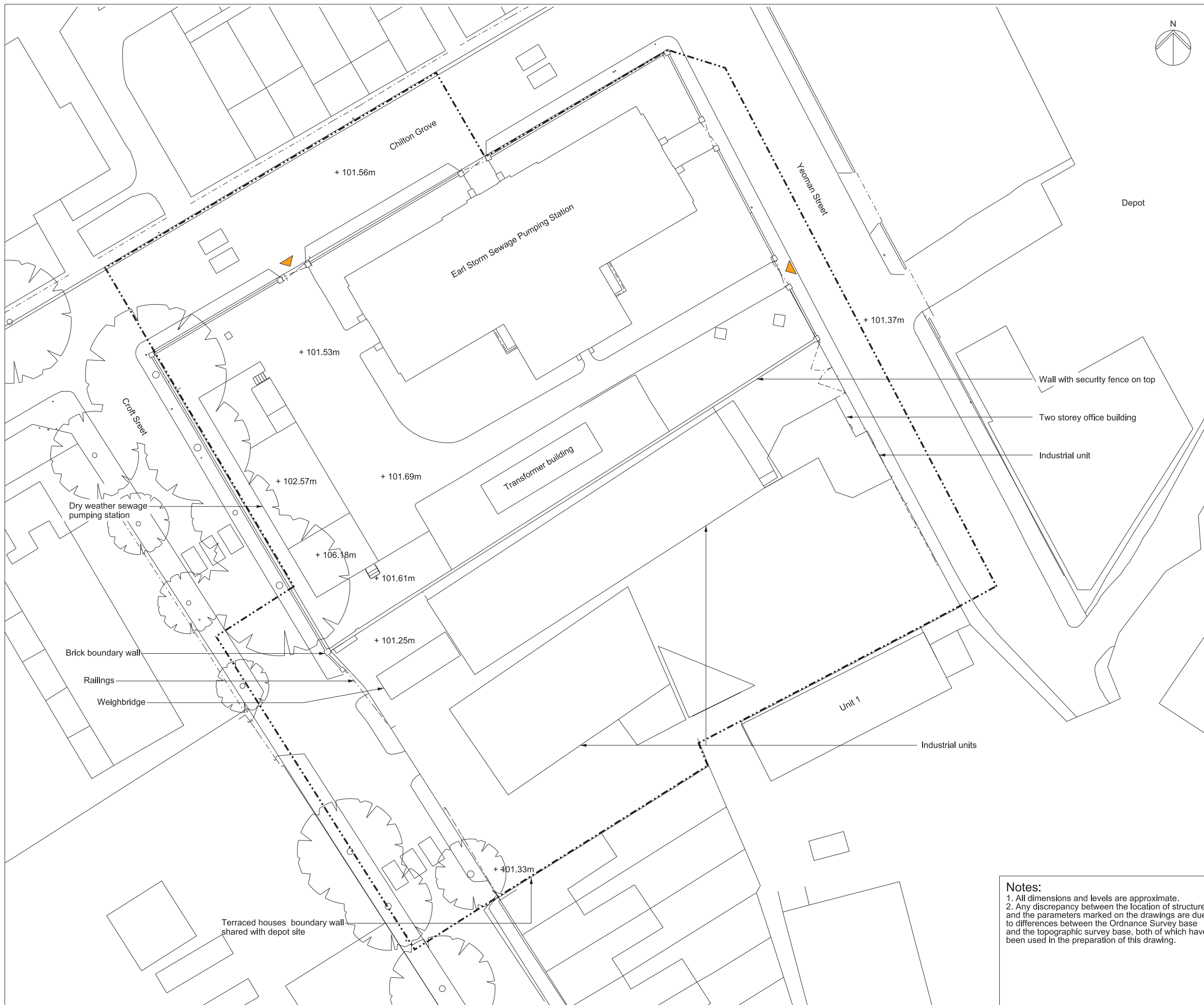
Document Information
Application for Development Consent
Location plan

Book of plans - section 22
DCO-PP-21X-EARPS-220001
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

© Thames Water Utilities Ltd 2008



Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordnance Survey licence number 100019345

Keyplan:



Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key:

- Limits of land to be acquired or used (LLAU)
- + 105.40m Existing levels (shown in metres above tunnel datum)
- Existing trees within surveyed area (trunk sizes vary)
- Thames Water access



Scale 1:200 at A1
1:400 if reproduced at A3

FOR INFORMATION

Location
Earl Pumping Station
London Borough of Lewisham

Document Information
Application for Development Consent

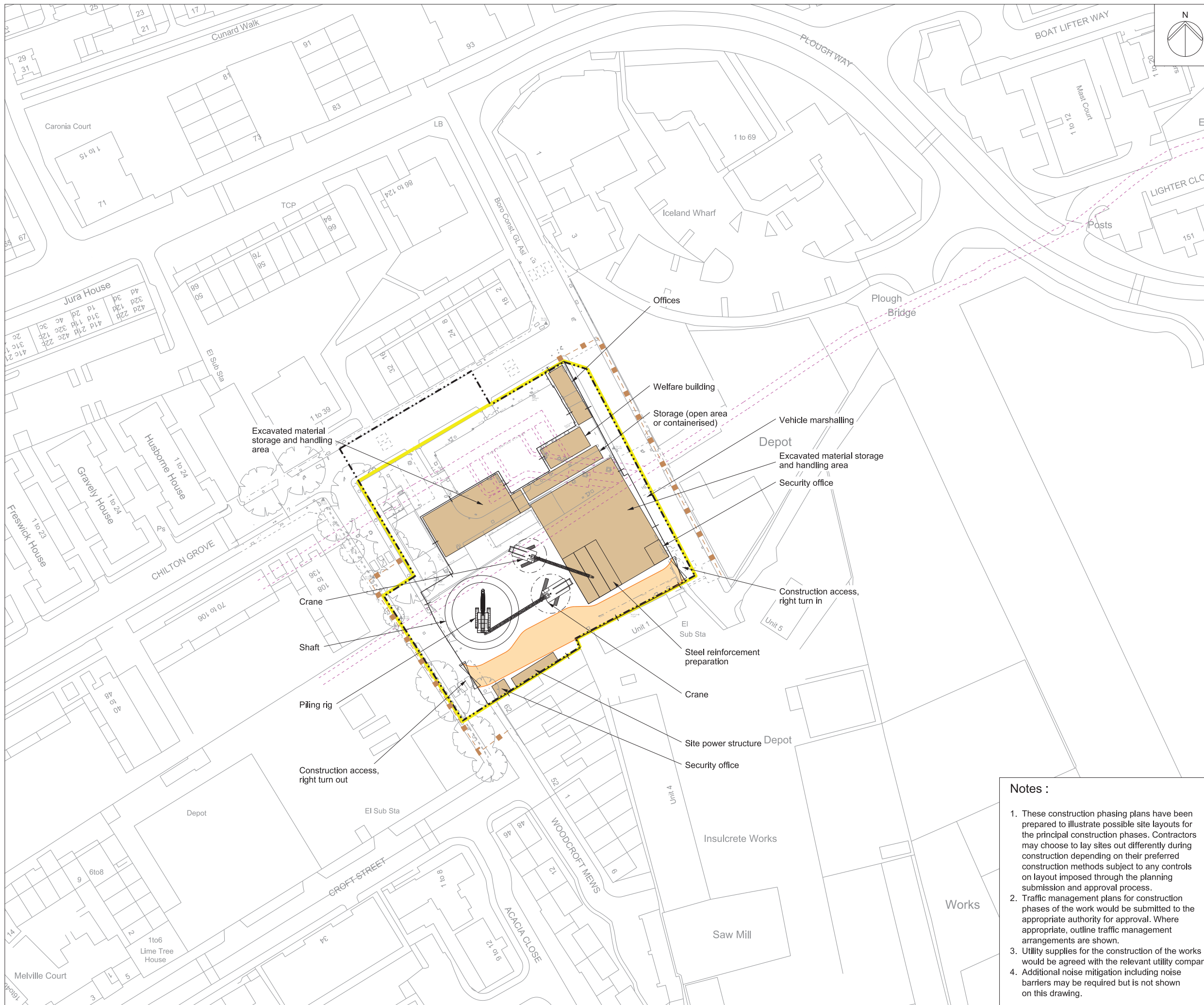
As existing
Site features plan
Book of plans - section 22
DCO-PP-21X-EARPS-220002
January 2013

Notes:

1. All dimensions and levels are approximate.
2. Any discrepancy between the location of structures and the parameters marked on the drawings are due to differences between the Ordnance Survey base and the topographic survey base, both of which have been used in the preparation of this drawing.

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames



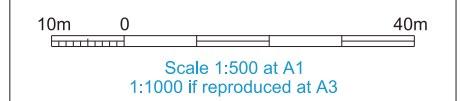


Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordnance Survey licence number 100019345



Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

- Key:**
- Limits of land to be acquired or used (LLAU)
 - +— Hoarding
 - Maximum extent of working area
 - Route of temporary diversion of footway
 - Site access
 - Access / haul route
 - Existing sewers



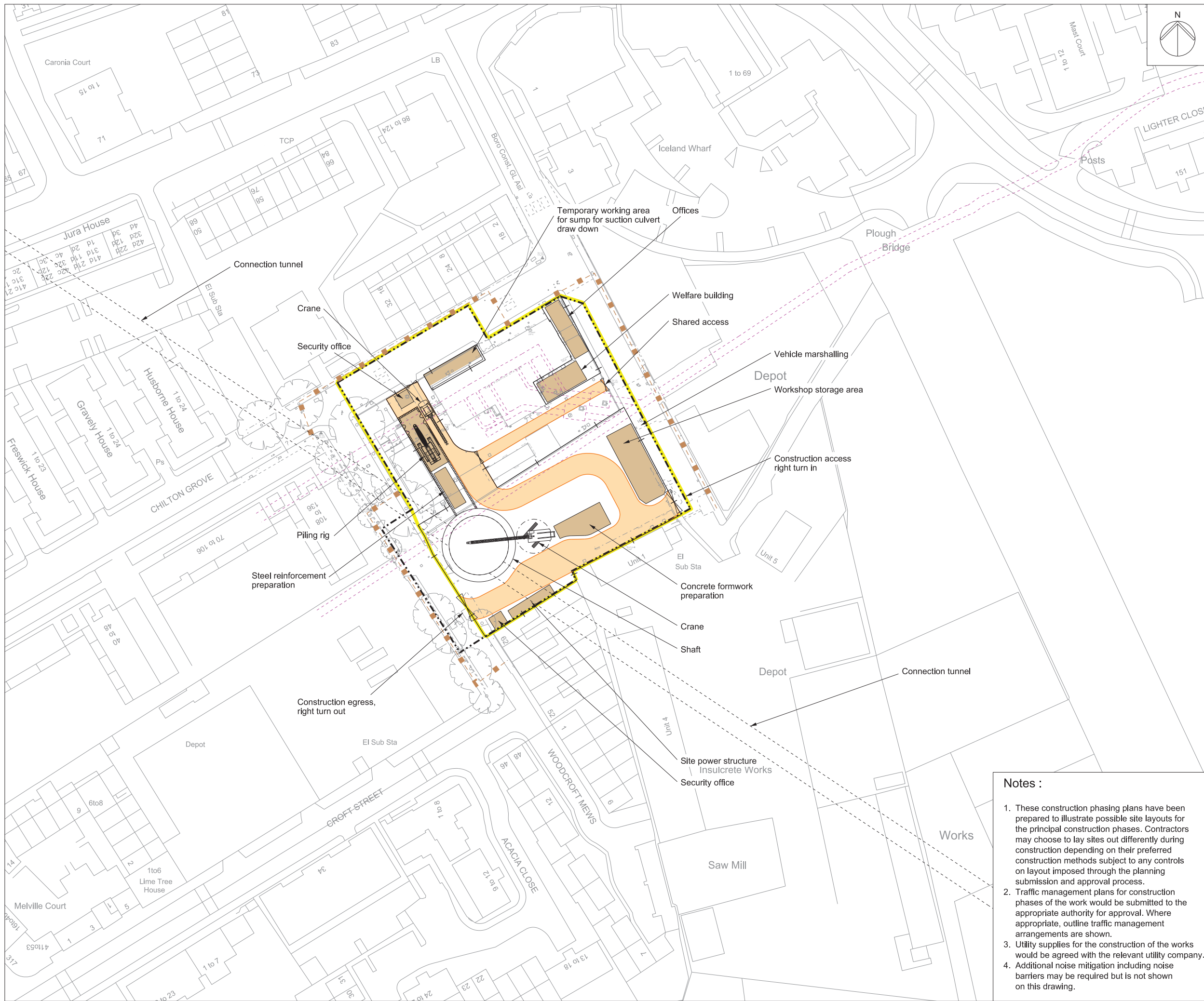
ILLUSTRATIVE

- Notes :**
1. These construction phasing plans have been prepared to illustrate possible site layouts for the principal construction phases. Contractors may choose to lay sites out differently during construction depending on their preferred construction methods subject to any controls on layout imposed through the planning submission and approval process.
 2. Traffic management plans for construction phases of the work would be submitted to the appropriate authority for approval. Where appropriate, outline traffic management arrangements are shown.
 3. Utility supplies for the construction of the works would be agreed with the relevant utility company.
 4. Additional noise mitigation including noise barriers may be required but is not shown on this drawing.

Location
Earl Pumping Station
 London Borough of Lewisham

Document Information
Application for Development Consent
 Construction phases - phase 1
 Site setup and shaft construction
 Book of plans - section 22
 DCO-PP-21X-EARPS-220012
 January 2013

Thames Tideway Tunnel
 Creating a cleaner, healthier River Thames



Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordnance Survey licence number 100019345

Keyplan:
This drawing

Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

- Key:**
- Limits of land to be acquired or used (LLAU)
 - Hoarding
 - Maximum extent of working area
 - Route of temporary diversion of footway
 - Site access
 - Access / haul route
 - Existing sewers

10m 0 40m
Scale 1:500 at A1
1:1000 if reproduced at A3

ILLUSTRATIVE

- Notes :**
1. These construction phasing plans have been prepared to illustrate possible site layouts for the principal construction phases. Contractors may choose to lay sites out differently during construction depending on their preferred construction methods subject to any controls on layout imposed through the planning submission and approval process.
 2. Traffic management plans for construction phases of the work would be submitted to the appropriate authority for approval. Where appropriate, outline traffic management arrangements are shown.
 3. Utility supplies for the construction of the works would be agreed with the relevant utility company.
 4. Additional noise mitigation including noise barriers may be required but is not shown on this drawing.

Location
Earl Pumping Station
London Borough of Lewisham

Document Information
Application for Development Consent
Construction phases - phase 2
Construction of other structures
Book of plans - section 22
DCO-PP-21X-EARPS-220013
January 2013

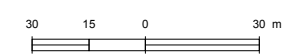
Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

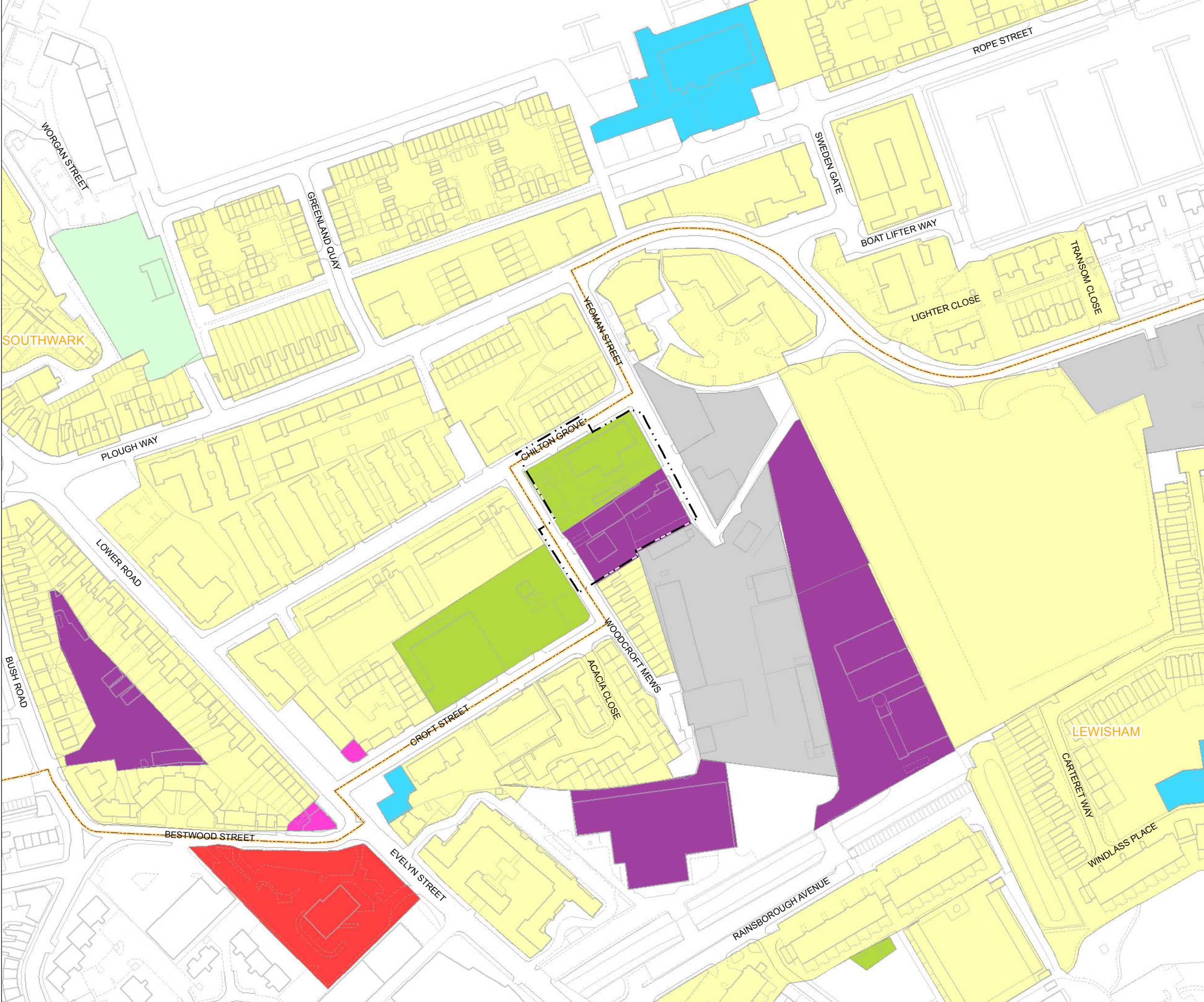
Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordnance Survey licence number 100019345



- Key**
- Limits of Land to be Acquired or Used
 - Local Authority Boundary
- Land Use**
- Class A1-A5 (Shops, Financial & Professional Services, Restaurants, Drinking Establishments and Hot Food Takeaways)
 - Class B1 (Business (Offices except A2) Research and Development, Light Industry)
 - Class B2-B8 (General Industrial / Storage or Distribution)
 - Class C2-C2A (Residential Institutions)
 - Class C3-C4 (Dwelling Houses)
 - Class D1-D2 (Non Residential Institutions (Community Facilities) and Assembly and Leisure)
 - Mixed Use
 - Other
 - Open Space



Scale 1 : 2,000 at A3



FOR INFORMATION

Location
Earl Pumping Station
 London Borough of Lewisham

Document Information
Planning Statement
 Land use

1PL03-MG-00820
 January 2013



This page is intentionally left blank

This page is intentionally blank

Copyright notice

Copyright © Thames Water Utilities Limited January 2013.
All rights reserved.

Any plans, drawings, designs and materials (materials) submitted by Thames Water Utilities Limited (Thames Water) as part of this application for Development Consent to the Planning Inspectorate are protected by copyright. You may only use this material (including making copies of it) in order to (a) inspect those plans, drawings, designs and materials at a more convenient time or place; or (b) to facilitate the exercise of a right to participate in the pre-examination or examination stages of the application which is available under the Planning Act 2008 and related regulations. Use for any other purpose is prohibited and further copies must not be made without the prior written consent of Thames Water.

Thames Water Utilities Limited

Clearwater Court, Vastern Road, Reading RG1 8DB

The Thames Water logo and Thames Tideway Tunnel logo are © Thames Water Utilities Limited. All rights reserved.

DCO-DT-000-ZZZZ-070100

