Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Planning Statement

Doc Ref: **7.01**

Appendix J

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

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January 2013

Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

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Appendix J: Kirtling Street

J.1 Introduction

J.1.1 The Kirtling Street site, which is located in the industrial Nine Elms area of the London Borough of Wandsworth was selected to drive the main tunnel in two directions simultaneously: to Chambers Wharf in the east and Carnwath Road Riverside in the west. The location of the site is identified on the Location plan in Annex J.

J.1.2 This assessment is structured as follows:

a. Section J.2 provides a brief description of the Kirtling Street site.

b. Section J.3 sets out the planning context for the proposed works in this location.

c. Section J.4 describes the site-specific development for which consent is sought and how the proposals evolved through consultation.

d. Section J.5 analyses the principal site-specific planning considerations and how the proposals comply with relevant planning policy.

e. Section J.6 provides an overall conclusion of the site-specific assessment for the proposed works at this site.

J.2 Site description

J.2.1 The site is approximately 5.3ha and comprises a section of the foreshore of the River Thames close to Cringle Street and four adjacent, partly vacant, brownfield areas, as follows:

a. a vacant former Victoria and Albert Museum warehouse (northeastern parcel)

b. a vacant depot (eastern parcel)

c. a mixed-use area including a depot, a former petrol station (vacant) and eleven office units (Brooks Court) (southeastern parcel)

d. an active concrete batching works on the safeguarded Kirtling Wharf, also known as Cringle Wharf (western parcel).

J.2.2 The site is bisected by Cringle Street and the northern loop of Kirtling Street runs within the northern half of the site.

J.2.3 There are several above-ground structures on the site including: an overhead conveyor, a jetty, plant and silos associated with the concrete batching plant; several electricity substations; an industrial warehouse; depots; and office units. While the site is large, the extent of permanent project works required would be significantly less than the temporary construction site. The As existing site features plan is provided in Annex J.

J.2.4 The Thames Path Public Right of Way passes through the site along Kirtling Street. It runs west along the River Thames up to the northeastern edge of the site where it leaves the river and passes through the site along

Kirtling Street, crossing over Cringle Street down to Nine Elms Lane/Battersea Park Road. It returns to the river by Chelsea Bridge beyond the Battersea Power Station.

J.2.5 The site is bounded to the north by the River Thames; to the northeast by a houseboat community known as the Nine Elms Pier; to the east by the former Tideway Industrial Estate 'Riverlight' development, which is under construction; to the south by Nine Elms Lane; and to the west by the Cringle Dock waste transfer station, a Thames Water ring main pumping station and the grounds of the disused Battersea Power Station. Refer to Figure J.1 for an aerial photograph of the site.

Figure J.1 Aerial photograph of the Kirtling Street site

J.2.6 Nine Elms Pier consists of 21 houseboats moorings. Four of the houseboats lie within the Kirtling Street site. The furthest houseboat is approximately 40m from the site.

J.2.7 The 'Riverlight' development (planning application reference 2011/3748) immediately to the east of the site on the former Tideway Walk Industrial Estate is currently under construction. This major regeneration scheme was approved by the London Borough of Wandsworth in December 2011. The permission replaced a similar scheme including a hotel that was previously granted permission in March 2011. The site is currently a major construction site, and works began in September 2011. The development will provide 806 new apartments, shops, cafés, bars, and restaurants. It will significantly change the appearance and character of the area and the riverside will be dominated by several modern high rise towers. The site

has been hoarded and cleared, foundation and basement works have been undertaken, and the first blocks are under construction.

Figure J.2 Artist's impression of the Riverlight development (west)

Figure J.3 Artist's impression of the Riverlight development (northeast)

J.2.8 The blocks are to be constructed east to west. Blocks F to C are anticipated to be complete before the project construction begins. The remaining Block B is anticipated to be complete in 2016 and Block A is anticipated to be complete in 2017.

J.2.9 Blocks A and B would be approximately 20m to the east of the site. Block C would be approximately 40m to the east of the site. Blocks A and B would largely screen Block C from the site once the towers are erected.

Block C would screen remaining Blocks D to F although there may be views over the foreshore part of the site from limited parts of the blocks.

J.2.10 The ground floor and upper ground floor of Blocks A and B would be commercial floor space and the remainder of Blocks A, B and C would be largely residential.

J.2.11 Cringle Dock waste transfer station transfers an average of 257,000 tonnes of waste per year (2006/10) by barge to an energy and waste facility at Belvedere. The operator's current 30-year contract runs until 2022. The waste transfer and dock facilities are a 24-hour operation due to the reliance on the tides for the movement of barges.

J.2.12 The wider area on the south of the river is predominantly industrial and is characterised by low to mid-rise structures up to approximately four storeys high. To the north across the river and beyond mature trees and the A3212 are residential blocks (closest at a distance of approximately 160m). To the northeast across the river there are more residential blocks (closest at a distance of approximately 130m) directly on the riverbank. The Westminster Boating Base, teaching dinghy sailing, power-boating, kayaking and canoeing is beyond at approximately 220m.

J.2.13 Beyond the Riverlight development to the east is another houseboat community known as Tideway Village (in Tideway Dock), the Battersea Barge restaurant and the Heathwall Pumping Station site. To the southeast, across Nine Elms Lane is the large Royal Mail South London Mail Centre which generates significant transport movements. To the south, across Nine Elms Lane, is the entrance to the New Covent Garden Market, with the market beyond. It is the largest wholesale fruit, vegetable and flower market in the United Kingdom, covering 57 acres. Again this generates significant transport movements. The Market is open from 3am to 11am Monday to Friday and 4am to 10am on Saturdays.

J.2.14 In between the market entrance and the mail centre there is a small residential block (33 Battersea Park Road), 30m to the south of the site across Nine Elms Lane. To the south west, across Nine Elms Lane is a wholesale warehouse at a distance of approximately 40m and the Viridian apartments are beyond at a distance of approximately 90m.

J.2.15 Approximately 160m to the west of the site is the disused Battersea Power Station, a Grade II* listed building constructed in the 1930s, which features prominently in the London skyline and in nearby river views. It sits within extensive, largely cleared grounds, in which a Grade II listed pumping station is located, approximately 100m to the west of the Kirtling Street site. The grounds have been used for temporary public and private events in recent years.

J.2.16 There are several existing accesses to the various parcels of the site off Kirtling Street and Cringle Street and one off Nine Elms Lane. Kirtling Street and Cringle Street are both minor roads and are a very short distance from and accessed directly from Nine Elms Lane (A3025). Nine Elms Lane (A3025) is part of the Transport for London Road Network and a key HGV route, that runs northeast to Vauxhall and southwest to Battersea (Transport for London (TFL) data published in 2010 suggests a

daily average flow of 500 to 1,500 HGVs per day). It becomes Battersea Park Road to the west of the junction with Kirtling Street and then connects to the A3, which is part of the Strategic Road Network. The designated London Cycle Network 4 routes along Nine Elms Lane (A3205).

J.2.17 Although the area surrounding Kirtling Street is largely industrial in nature, planning policy seeks to change the wider area. Riverlight is the most advanced of several large-scale proposals in the immediate area, which will transform it from an industrial area into a residential neighbourhood. These proposals are at various stages in the planning and development process. Further information is provided below.

J.3 Planning context

J.3.1 In developing the proposals and mitigation measures for the development at Kirtling Street, Thames Water had regard to the policies set out in the National Policy Statement for Waste Water (the 'NPS') and to local development plan designations where they are relevant to the application. In this case, the statutory development plan comprises:

a. the *London Plan* (2011)

b. the London Borough of Wandsworth's *Core Strategy* (October 2010)

c. the council's *Development Management Policies Document* (February 2012)

d. the council's *Site Specific Allocations Document* (February 2012).

Planning policy

J.3.2 The site is within the Nine Elms area of the Vauxhall/Nine Elms/Battersea Opportunity Area, one of 33 'opportunity areas' identified in the *London Plan*.

J.3.3 The opportunity areas are areas that can contribute to delivery of *London Plan* objectives by providing substantial development as set out in the *Vauxhall/Nine Elms/Battersea Opportunity Area Planning Framework (VNEB OAPF)* (2012), which is adopted as supplementary planning guidance to the *London Plan*. The *VNEB* OAPF identifies potential for 16,000 new homes and 20,000 to 25,000 jobs. One of the key environmental principles in the *VNEB OAPF* is to *"Maximise opportunities to use the wharves for transportation by river of construction materials and demolition waste associated with new development in the opportunity area and the Thames Tideway Tunnel"* (p. 132).

J.3.4 The site is also within the Wandsworth Thames Policy Area, adjacent to the proposed Battersea Power Station Focal Point of Activity, as designated in the *Core Strategy* (2010).

J.3.5 *Core Strategy* Policies PL9 and PL11 provide strategic policy for the Thames riverside and the Nine Elms area, supporting mixed-use development with public spaces at key focal points along the riverside along with a riverside path, whilst promoting greater use of the river including for freight. The policies protect river infrastructure and the

safeguarded wharves for trans-shipment of freight, waste and aggregates and protect routes to the main road network serving protected wharves. They also protect flood defences and seek to protect and enhance biodiversity. The Kirtling Street site is within 'Nine Elms Riverside district', which is earmarked largely for residential mixed-use developments with an emphasis on providing active ground floor frontages, including fronting Nine Elms Lane and riverside-focused pocket parks.

J.3.6 Kirtling Wharf, within the Kirtling Street site, is safeguarded from redevelopment for non-waterborne freight-handling uses by a ministerial direction (and referred to in the *London Plan* Policy 7.26 and *Core Strategy* Policy PL9). Temporary uses of a safeguarded wharf are permitted in some circumstances where they return the wharf to waterborne freight-handling use. The *London Plan* requires that developments adjacent or opposite safeguarded wharves should be designed to minimise the potential for conflicts of use and disturbance. Cringle Dock, adjacent to the site, is also a safeguarded wharf.

J.3.7 All the on-land parts of the site are subject to allocations set out in the *Site Specific Allocations Document* (site allocations 2, 3, 7, 8, 11, 17 and 23). With the exception of Kirtling Wharf, the sites are allocated for mixed-use development. Although it is noted that several of the sites are under consideration by Thames Water for the project.

J.3.8 The *Site Specific Allocations Document* also sets out the council's aspirations to realign the Thames Path Strategic Walking Route (which passes through the site) along the riverside. An improved and realigned riverside walk is also identified in the *VNEB OAPF* as part of a wider public realm strategy for the area.

J.3.9 The entire Kirtling Street site is currently safeguarded by a Ministerial Direction. The Direction was served by the Department for Communities and Local Government and prevents the granting of planning permission on any application in respect of the safeguarded land without specific authorisation from the Department.

J.3.10 Further designations are as follows:

a. The site is within the Wandsworth Archaeological Priority Area.

b. The site is within the Wandsworth Air Quality Management Area declared for nitrogen dioxide and particulate matter.

c. The foreshore section of the site is within the River Thames and Tidal Tributaries Site of Importance for Nature Conservation (metropolitan value).

d. The adjacent disused Battersea Power Station site is designated as the Battersea Power Station Site of Importance for Nature Conservation (borough value). This is related to a breeding pair of peregrine falcons and several pairs of black redstarts. It is partly separated by the Cringle Dock waste transfer station.

e. The disused Battersea Power Station (approximately 160m to the west of the Kirtling Street site) is a Grade II* listed building constructed in the 1930s, which features prominently in the London skyline and in

nearby river views. A Grade II listed pumping station sits within the grounds, approximately 100m to the west of the Kirtling Street site.

f. To the north across the River Thames are the Churchill Gardens and Dolphin Square Conservation Areas, which are within the City of Westminster. The conservation areas boundaries extend to the borough boundary at the centre of the River Thames. At the closest point they are approximately 15m from the site.

g. Part of the site is located within the River Thames foreshore and as such it is classified as functional floodplain (Flood Zone 3b, where water must flow or be stored in times of need). The inland part of the site is located behind the River Thames flood defences within Flood Zone 3a (1 in 100 event).

Planning history

J.3.11 The site is formed of various parcels with established industrial uses including a concrete batching on Kirtling Wharf, which is permitted to transfer materials by barge and to operate 24-hours a day. The original permission for 'construction of a sand and gravel processing plant together with a concrete mixing plant' was granted in 1964 and included construction of the jetty. There are very few conditions imposed on the permission including no restrictions that limit the number of movements, delivery times, noise, and days of hours of operation.

J.3.12 Planning permission was subsequently granted in 1998 for a 24.1m high 500 tonne cement silo (reference: N/98/0404). The silo still remains in place at the site. The only condition attached to the consent was that it should be commenced within five years of the date of the permission. Planning permission was granted in 2002 for the installation of three breasted dolphins, access walkways, and associated dredging works and the development was subsequently implemented.

J.3.13 The current owner, Cemex, recently submitted a planning application to modernise the site. The London Borough of Wandsworth resolved to grant the application in September 2010, subject to the signing of a Section 106 agreement (reference: 2009/3658) for the *"redevelopment of site involving demolition of existing concrete plant, conveyor gantry, aggregate storage bins and related structures; construction of replacement concrete plant, radial aggregates storage facility and ancillary office units; laying out of car parking, hardstanding and landscaping, and redesign of access".* This permitted the upgrade and intensification of the site in order to improve efficiency and provide environmental benefits.

J.3.14 However, due to emerging Thames Water plans to use the Kirtling Street site for the project, no Section 106 agreement was agreed. Cemex instead sought a temporary permission, due to the uncertainty, to allow the plant to meet the demand from the emerging surrounding regeneration schemes in the meantime. Planning permission was granted in June 2012 by the London Borough of Wandsworth for a temporary (four-year) period for the *"installation of additional concrete plant for a temporary period of four years including the erection of a new aggregate feed hopper and 3 cement silos connected by vertical conveyors, car and cycle parking and*

relocation of existing temporary offices" (reference: 2012/0764). This temporary permission enabled the intensification of the existing permanent concrete batching plant and was fully implemented.

J.3.15 Despite the current industrial use, there are significant redevelopment proposals for mixed-use development on and around the site. In total approximately 9,000 residential units are permitted in the vicinity of the site with a further approximately 3,500 in the surrounding area.

J.3.16 There extant planning permissions and pending planning applications within the site as follows:

a. Part of the mixed-use site area (the vacant former petrol station, and the depot) and northeastern site parcel (vacant warehouse) of the Kirtling Street Site (areas a and c as listed in para J.2.1 of this appendix) are part of the outline planning permission (reference: 2009/3575) for mixed-use development including 3,800 homes (over the entire Battersea Power Station Site) (see para J.3.18 below). These parts of the permission are in phases 5 and 7 of the Battersea Power Station redevelopment and are programmed in the approved construction programme to commence in 2018 and 2021 respectively. Due to delay the programme is currently anticipated to be behind by one to two years.

b. The owners of the Nine Elms Pier have applied to redevelop the nearby Nine Elms Pier into a marina (reference: 2011/1926). This would provide moorings for 33 houseboats and two visitor boats. The application is currently subject to an Article 25 Direction issued by the Secretary of State restricting the granting of planning permission without specific authorisation. The Direction was issued to enable the Secretary of State to consider the implications of this application for development consent. Thames Water has been in discussions with the applicant and the London Borough of Wandsworth to consider the implications of the proposed project works at the nearby Heathwall Pumping Station and Kirtling Street sites, in particular with regard to waterborne navigational requirements and impacts.

J.3.17 In line with the policy and aspirations for regeneration set out in the *VNEB OAPF* and the *Core Strategy*, there are several permissions for major redevelopments adjacent to the site, which are described below.

J.3.18 To the west of the site the disused Battersea Power Station has outline planning permission, granted on 23 August 2011, for mixed-use development including 3,800 homes (reference: 2009/3575). Construction is to be phased commencing with construction of phase 1 (to the west of Battersea Power Station). As stated above (para J.3.16 a), part of the mixed-use site area (the vacant former petrol station, and the depot) and northeastern site parcel (vacant warehouse) of the Kirtling Street Site are part of the outline planning permission falling within phases 5 and 7 of the current approved Battersea Power Station redevelopment phasing plan.

Figure J.4 Artist's impression of the Battersea Power Station development (north)

J.3.19 The approved construction programme consists of seven phases; enabling works are expected to commence in October 2011 and the final phase 7 is expected to be completed at the end of 2024. Since the approval, the site was placed in control of administrators due to funding issues. It was subsequently purchased and the new owners have announced their intention to take the approved scheme forward. A reserved matters application relating to phase 1 was approved by the London Borough of Wandsworth in December 2012. The construction programme has currently been delayed by approximately one to two years. It is anticipated that phases 1 and 2 would be completed prior to the construction of the project. The remaining phases are anticipated to be completed during and following construction. The following blocks are anticipated to be constructed before or during construction of the project:

a. Block RS-1 (phase 1), approximately 290m from the site
b. Block PS (phase 2), approximately 80m from the site
c. Block RS4 (phase 3), approximately 80m from the site
d. Block O1 (phase 3), approximately 130m from the site.

Figure J.5 Artist's impression of the Battersea Power Station development (south)

Figure J.6 Battersea Power Station development: Approved land use at ground level drawing (revised October 2012)

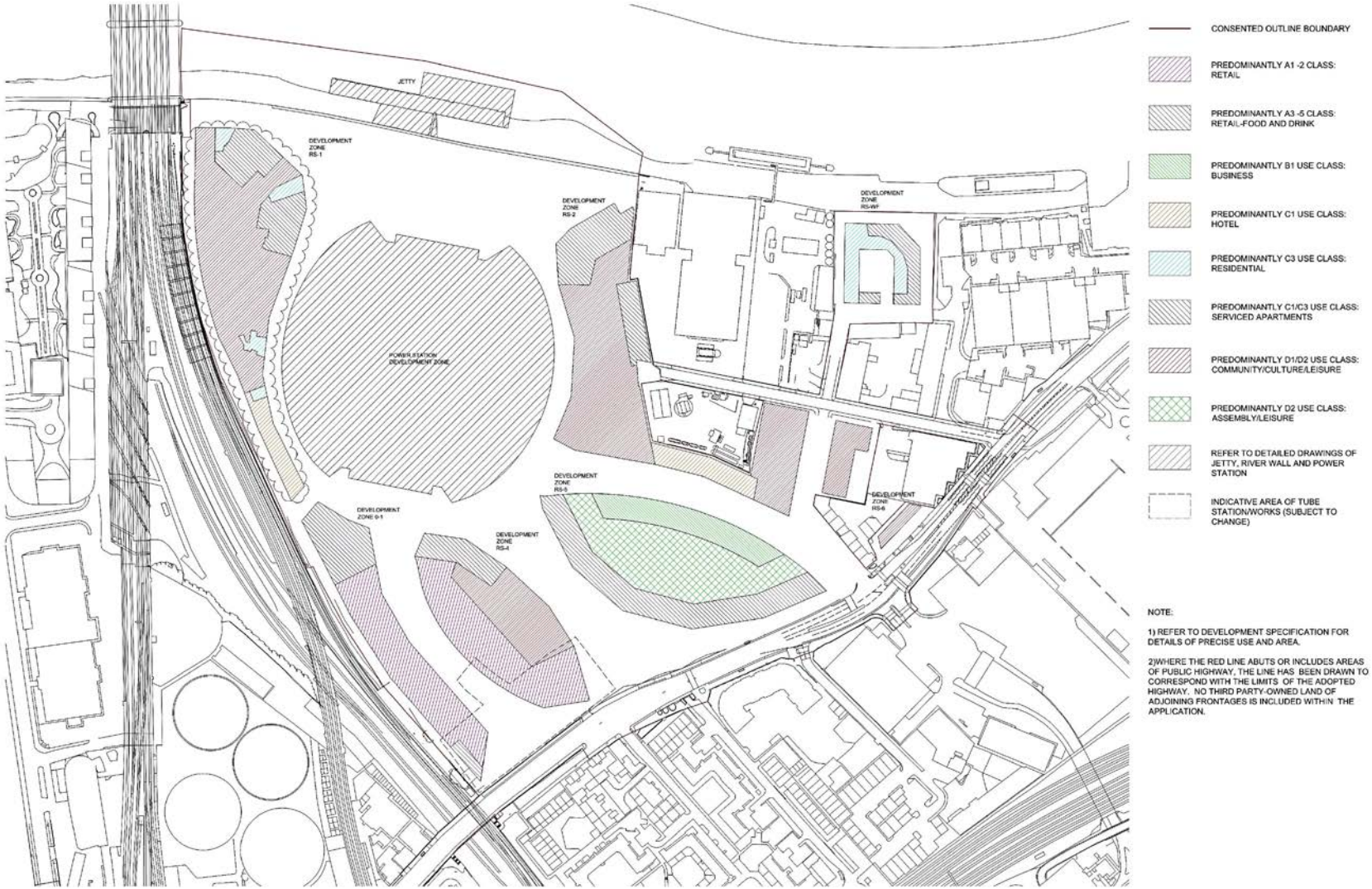
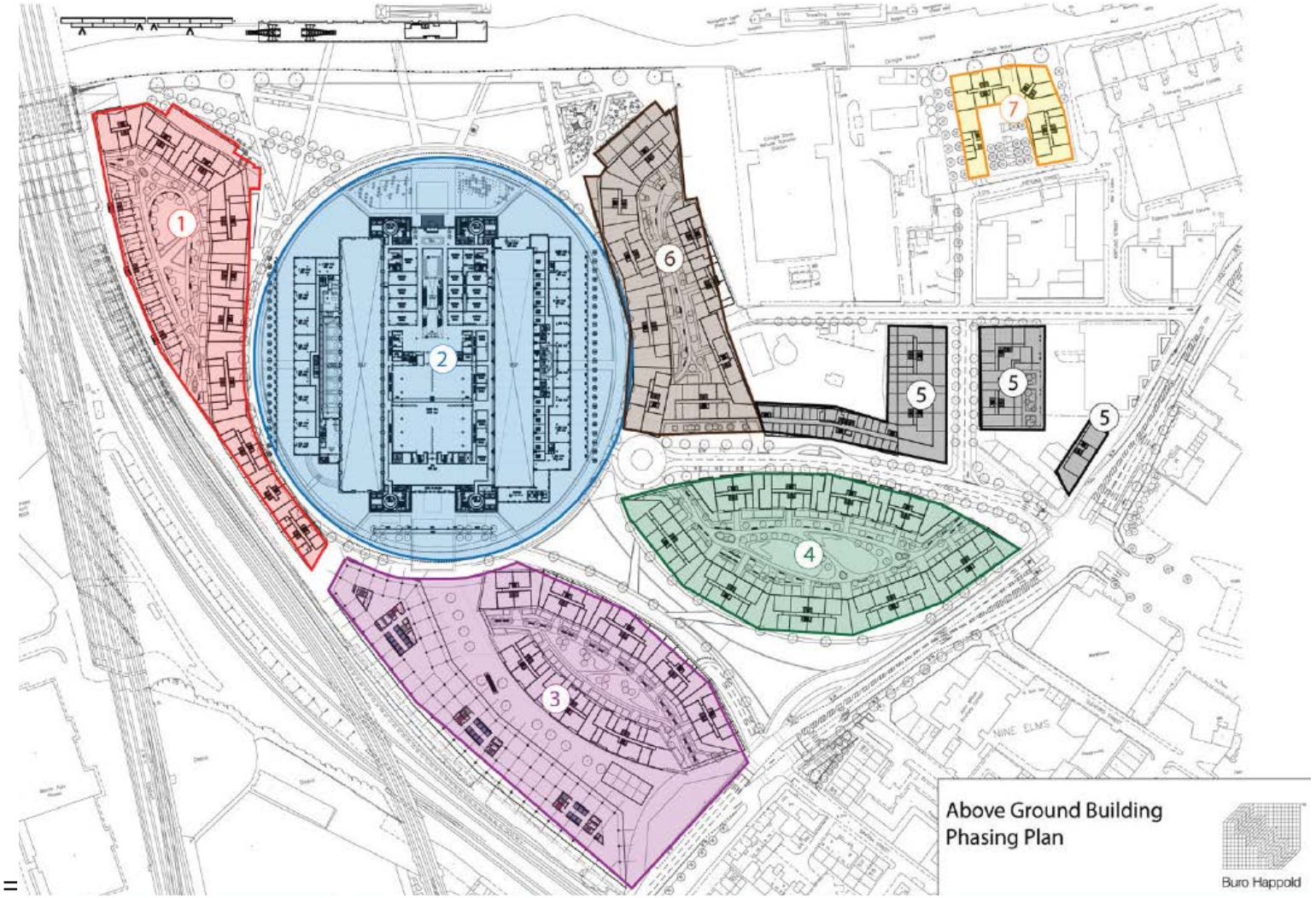


Figure J.7 Battersea Power Station development: Approved ground level building phasing plan



J.3.20 As part of the regeneration in the area, TfL proposes to extend the Northern Line to Battersea, via a new station at Nine Elms. TfL held consultations on the route options and sites in 2010 and 2011 and a further consultation from 7 November 2012 to 30 December 2012. The Battersea Power Station redevelopment permission includes a two station extension of the Northern line from Kennington (one new station at the Power Station site and another at Wandsworth Road). The actual tube extension will be the subject of a separate Transport and Works Act Order application, which is expected to be submitted in 2013. The proposed route passes under the southern part of the Kirtling Street site. TFL anticipates that the new stations could be open by 2019. It is anticipated that the jetty at the Battersea Power Station site would be used to transport construction material by river.

J.3.21 Major regeneration schemes were approved in 2012 for mixed-use development on the site of the New Covent Garden Market (reference: 2011/4664) and the Royal Mail South London Mail Centre (known as Nine Elms Parkside) (reference: 2011/2462). A modern, new market will be created along with 2,326 residential units. Nine Elms Parkside will provide 1,870 residential units. Construction is likely to commence shortly.

J.3.22 The following planning applications have been approved within the wider area of the site:

a. Sainsbury's Nine Elms (to the southeast) for mixed-use development including 737 homes (London Borough of Lambeth reference: 11/02326/OUT); the planning committee resolved to grant subject to the signing of a Section 106 agreement in June 2012.

b. Embassy Gardens (Ballymore) (to the southeast) for mixed-use development including 1,982 homes (reference: 2011/1815) was approved March 2012.

c. Marco Polo House (to the west) for mixed-use development including 456 homes (reference: 2011/2089) was approved March 2012.

d. Sky Gardens (to the southeast) for 239 homes (reference: 09/04322) was approved September 2010.

e. The new US Embassy (to the southeast) (reference: 2009/1506) was approved October 2009.

J.3.23 The following planning applications are understood to be in the pre-application phase:

a. Battersea Gas Holders (to the southwest) for mixed-use development including approximately 800 homes

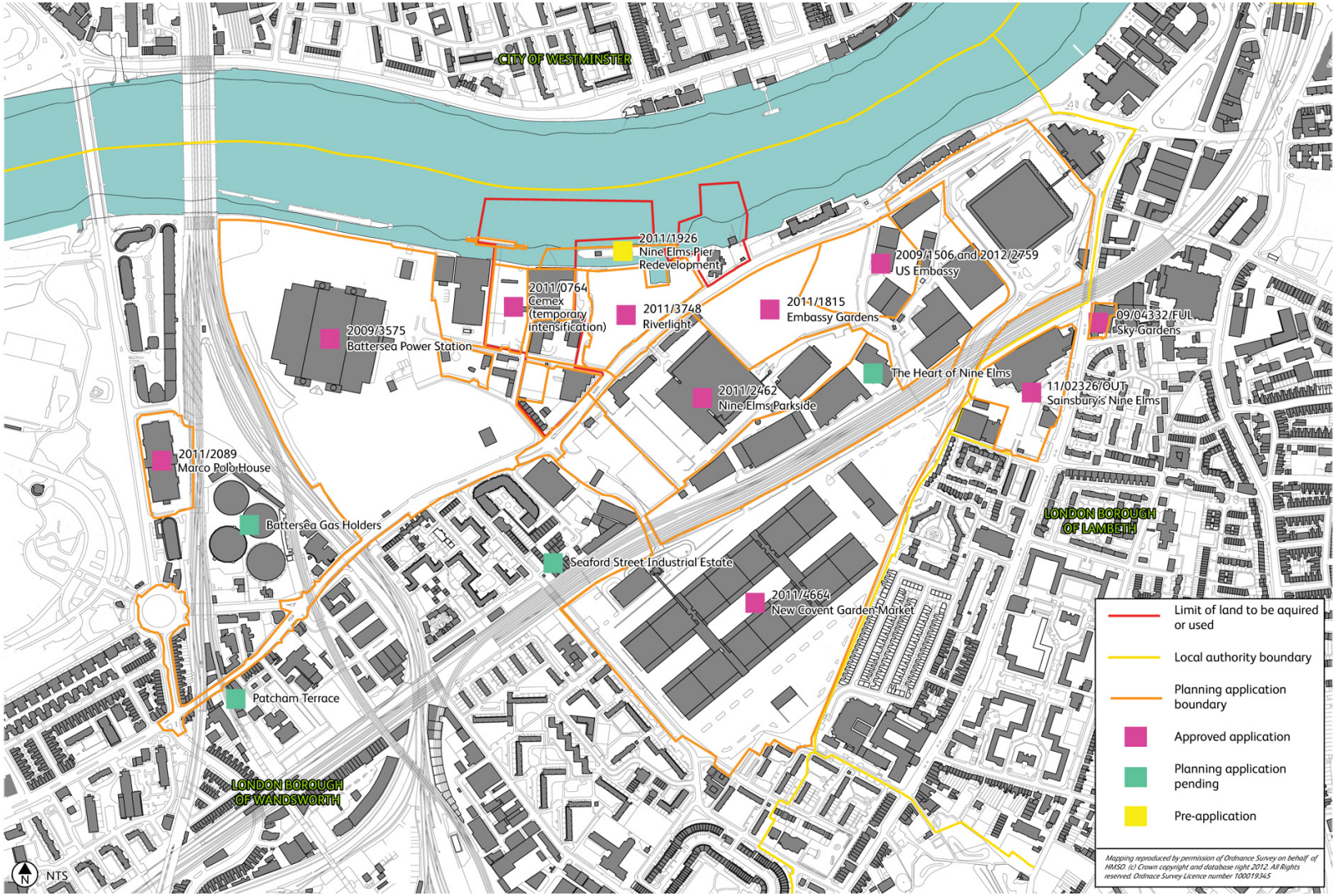
b. Patcham Terrace (to the southwest) for mixed-use development

c. Sleaford Street Industrial Estate (to the southwest) for mixed-use development including approximately 300 homes

d. Heart of Nine Elms (to the east) for mixed-use development including approximately 493 homes.

J.3.24 A plan of permitted and pending applications and pre-application proposals on the site, and in the vicinity, is provided below.

Figure J.8 Key planning applications and proposals in the Nine Elms area



J.4 Site-specific description of development

Overview

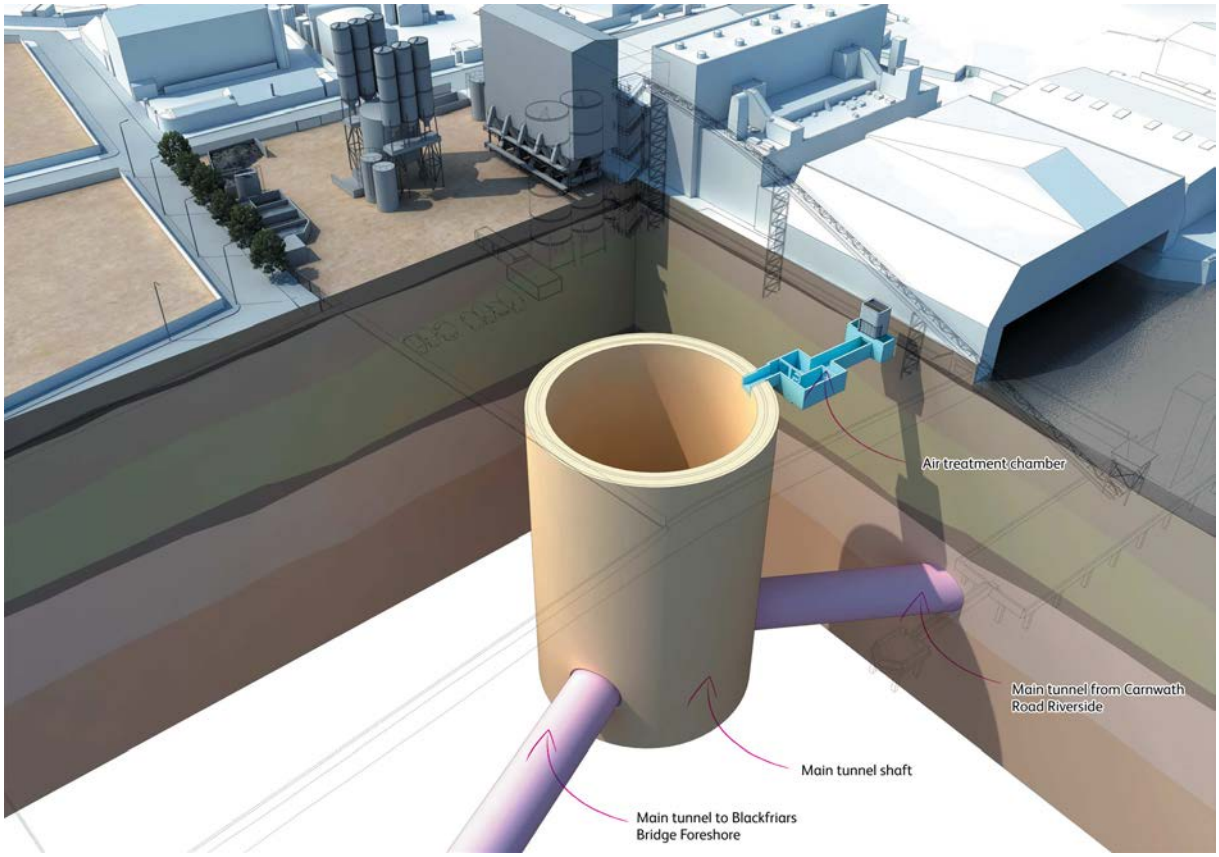
J.4.1 The proposed development at Kirtling Street includes a main tunnel site for the main tunnel. The site would act as a double-drive site at which the main tunnel would be driven in two directions towards Chambers Wharf in the east and towards Carnwath Road Riverside in the west.

J.4.2 The work would require the construction of a main tunnel shaft and ventilation structures on the north of Kirtling Wharf. The shaft would be approximately 48m deep. A new concrete batching plant would be provided on the southern part of Kirtling Wharf prior to construction.

J.4.3 Electrical and control equipment would be located in a kiosk that would also house a ventilation column, which would be located on the boundary of Kirtling Wharf.

J.4.4 The main tunnel shaft would be finished flush with existing ground level. Kirtling Wharf would be finished with hardstanding and returned for use as part of the concrete batching plant. Other parts of the site would be hoarded for redevelopment by others.

Figure J.9 Functional components diagram



Application for development consent

J.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 the drawings listed in Table J.1.

Table J.1 Kirtling Street: Drawings that define the proposed development

Drawing title	Status	Location
Proposed schedule of works	For approval	Schedule 1 to the *Draft Thames Water Utilities Limited (Thames Tideway Tunnel) Development Consent Order (*the *'Draft DCO')*
Access plan	For approval	*Book of Plans,* Vol 5, Section 15
Demolition and site clearance	For approval	*Book of Plans,* Vol 5, Section 15
Site works parameter plan	For approval	*Book of Plans,* Vol 5, Section 15
Permanent works layout	Illustrative	*Book of Plans,* Vol 5, Section 15
Proposed landscape plan	Indicative save for layout of above-ground structures, which is illustrative	*Book of Plans,* Vol 5, Section 15
Section AA	Illustrative	*Book of Plans,* Vol 5, Section 15
As existing and proposed north elevation	Illustrative	*Book of Plans,* Vol 5, Section 15
Kiosk and ventilation column design intent	Illustrative	*Book of Plans,* Vol 5, Section 15
Construction phases (various)	Illustrative	*Book of Plans,* Vol 5, Section 15
Highway layout during construction (phases)	Illustrative	7.10.11 *Transport Assessment Kirtling Street* Figures
Permanent highway layout (phases)	Illustrative	7.10.11 *Transport Assessment* Kirtling Street Figures
Construction base case highway layout (various)	Illustrative	*7.10.11 Transport Assessment* Kirtling Street Figures
River foreshore zones of working	For information	*Navigational Issues and Preliminary Risk Assessment* Kirtling Street

J.4.6 The Nationally Significant Infrastructure Project (NSIP) works (Work No. 13a) comprises the construction of a main tunnel shaft with an internal diameter of approximately 30m and depth of 48m. Associated development (Work no. 13b) comprises the works to establish a main tunnel drive site to construct, connect and operate the main tunnel (west central) (Work No. 1b) and main tunnel (east central) (Work No. 1c) including demolition of existing buildings, provision of a concrete batching plant, construction of temporary jetty, construction of an acoustic enclosure building, and construction of structures for air management plant. The full description of the proposed development can be found in

Schedule 1 to the *Draft DCO*. Further details of temporary construction works and permanent operational structures are contained below.

J.4.7 At this site, approval is sought for the works shown on the Works plan showing the main tunnel (west central) (Work No. 1b) and main tunnel (east central) (Work No. 1c); the Kirtling Street main tunnel shaft (Work No. 13a); the Site works parameter plan, which shows the relevant zones and the limits of land to be acquired or used in which the associated development works would be undertaken (Work No. 13b); the Access plan; and the Demolition and site clearance plan. 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 provide. The Operation and maintenance and Good design subsections of this appendix explain this level of detail with regard to the proposed above-ground structures at this site and the need to obtain further approvals.

Construction

J.4.8 The construction is programmed to take approximately six years and would involve the following main works:

a. site year 1: site set-up (approximately seven months)

b. site years 1 to 2: shaft construction (approximately 15 months)

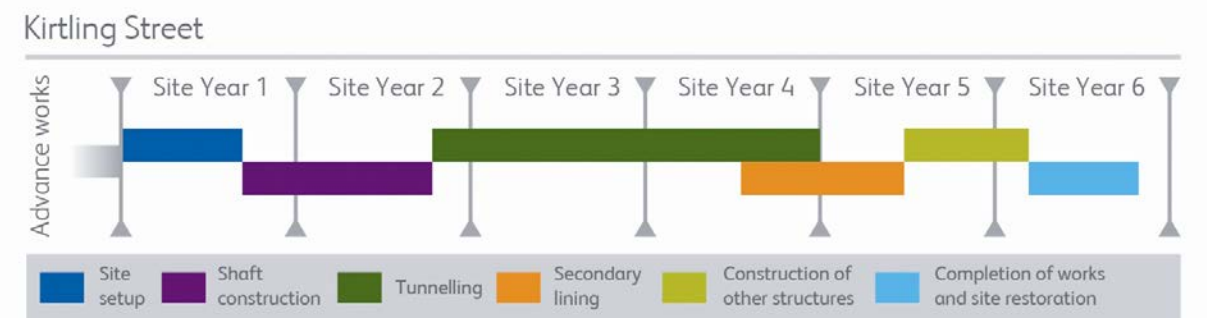
c. site years 2 to 4: tunnelling (approximately 26 months)

d. site years 4 to 5: secondary lining (approximately 11 months)

e. site years 5 to 6: construction of other structures (approximately eight months)

f. site year 6: completion of works and site restoration (approximately five months).

Figure J.10 Construction timeline



J.4.9 Connection of utilities and diversion of minor utilities may be carried out in advance of the main activities listed above.

J.4.10 Tunnelling and secondary lining works would be a continuous operation 24-hours a day, seven days a week. The main activities during this period would take place below ground or within an enclosure.

J.4.11 All other construction would occur during standard working hours from 8am to 6pm Monday to Friday and 8am to 1pm Saturdays. Construction activities may occasionally be required outside of these hours during key construction activities subject to agreement with the local authority.

J.4.12 Heavy goods vehicle (HGV) movements would be limited to standard working hours. In exceptional circumstances HGV and abnormal load movements could occur up to 10pm on weekdays for large concrete pours and later at night in agreement with the local authority.

J.4.13 Barge loading and transport away from the site would take place on a continuous 24-hour, seven days a week basis as barge movements are linked to high tides.

J.4.14 Further information in relation to working hours and site-specific restrictions are contained within the *Code of Construction Practice (CoCP)* Parts A and B, which accompany the application.

J.4.15 Construction vehicles would access the site via Kirtling Street and the northwestern part of the street would be closed to traffic. Construction vehicles would leave the site either onto the northeastern corner of Kirtling Street or south onto Cringle Street, turning left out of the site. Construction vehicles would also access workshops, storage areas and offices located to the south of Cringle Street, via a combined entrance and exit, turning right into and out of that part of the site.

J.4.16 It is anticipated that an average of 36 heavy goods vehicles would access the site per day for the majority of the construction period. This would rise to approximately 96 HGVs per day over an estimated 14-month period during tunnelling.

J.4.17 The Construction phases plan is provided in Annex J. 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

J.4.18 The site boundary would be established and secured with hoarding as appropriate. New access from Kirtling Street would be constructed and the Thames Path would be diverted.

J.4.19 A new concrete batching plant would be provided on the southern part of Kirtling Wharf. Existing structures would be removed from the southern area, which is currently at a raised level and it would be lowered to create a broadly level site. The area would be paved and contoured to allow the collection of run-off. Augured piles would be drilled for the tall structures (silos, batching plant, aggregate storage bins, and conveyor). Components would be prefabricated offsite in steel sections, and they would be brought to site and fabricated/erected. Once the batching plant is operational on the southern part of the site, the existing batching plant on the northern part would be removed.

J.4.20 All other buildings, including an industrial warehouse, depot, and office buildings would require demolition. The substation on Cringle Street

would remain in place and would be protected. A jetty sufficient to house two conveyors and to serve up to three barges would be constructed.

Shaft construction

J.4.21 The 30m diameter main tunnel shaft would be constructed by diaphragm wall construction techniques and have a cast *in situ* secondary lining. The diaphragm wall would support the excavation through the water-bearing Terrace Gravel and Lambeth Group geological layer. The diaphragm walls would extend below the shaft base into the Thanet Sands.

J.4.22 The first stage in the construction of each panel of diaphragm wall would be the excavation and setting of inner and outer guide walls. These guide walls would provide secure supports between which the diaphragm walls would excavated. During excavation the trench would be filled with bentonite for ground support; on completion of excavation cycle, steel bar reinforcement cages would be lowered in before concrete is pumped into the wall and the bentonite displaced. This process is repeated for each diaphragm wall panel that creates the full circle of the shaft. Diaphragm wall excavated material would be processed as required and loaded onto a lorry for transport offsite.

J.4.23 The size of the diaphragm wall panels would require an extended working day to complete the concrete pour.

J.4.24 The main tunnel shaft excavation would commence once the diaphragm walls are complete. The guide walls would be broken out, and the soil within the diaphragm walls excavated to expose the walls. The excavator within the shaft would load shaft skips, hoisted by crawler crane, and deposit the excavated material within the handling area. Excavated material would be put into skips within the shaft working area, hoisted by crawler crane from the shaft and deposited in a suitable storage area. After any required treatment, the material would be loaded onto a lorry for transport offsite. A steel reinforced concrete base plug would be formed at the base of the shaft.

J.4.25 It is anticipated that dewatering of the Lambeth Group geological formation would be required. Dewatering wells would be drilled from the surface on the periphery of the shaft (a process known as ‘external dewatering’) and groundwater extracted by pumps. It is anticipated that ground treatment may be required within the Lambeth Group to facilitate the tunnel boring machine (TBM) breakout of the shaft.

Tunnelling

J.4.26 On completion of the shaft construction, the site layout would be reconfigured to support the tunnelling works. The reconfigured layout would include:

a. excavated material storage areas including conveyors

b. precast concrete tunnel lining storage areas including gantry cranes

c. materials laydown areas for pipes, ventilation ducting, temporary tunnel railway track, power cable drums and other TBM consumables

d. an acoustic enclosure over the shaft and gantry crane area to reduce potential noise impacts (erected after TBM assembly)

e. workshops/stores

f. grout batching plant.

J.4.27 The two tunnels would be constructed concurrently; however, due to the confines of the shaft, the TBMs would be launched sequentially. In order to enable the timely launch of the TBMs, a sprayed concrete lined chamber could be constructed.

J.4.28 The first TBM (to Chambers Wharf) would mainly drive through Lambeth Group geology and enter Thanet Sands and Seaford Chalk towards the end of the drive. This drive would pass through the proposed shaft at the Blackfriars Bridge Foreshore site. This would allow access to inspect and maintain the TBM. The second TBM to Carnwath Road Riverside would mainly drive through London Clay.

J.4.29 The TBM sections would be delivered to site by road and assembled within the shaft serviced by large mobile or crawler cranes. An acoustic enclosure would be installed over the shaft area after TBM assembly and launch but before commencing tunnelling works.

J.4.30 Once launched, the TBM would cut the ground by rotating the cutterhead while hydraulic shove rams propel it forward. Precast concrete segmental tunnel linings would be installed as the TBM progresses. The excavated material would be transported to the surface by conveyor. A temporary railway built behind the TBM within the tunnel would bring material to the TBM as it proceeds including precast concrete segments.

J.4.31 Excavated material would be transported to awaiting barges via the temporary jetty (or to a temporary stockpile if barges are unavailable) for onward disposal offsite. The TBMs would be received at the Carnwath Road Riverside and Chambers Wharf shafts where they would be dismantled.

Secondary lining of tunnel and shaft

J.4.32 Secondary lining is an additional layer of concrete placed against the inside of a tunnel's primary concrete segmental lining for watertightness and to improve the overall structural durability. For assessment purposes, it was assumed that the main tunnel would have reinforced concrete secondary linings.

J.4.33 Concrete would be batched on the surface and pumped or skipped to the tunnel. The underground railway would be used to transport the concrete and reinforce the area of the pour. The tunnel enclosure installed over the shaft and gantry crane area during tunnelling would remain *in situ* during secondary lining.

J.4.34 The secondary lining of the main tunnel would be constructed by installing steel reinforcement, erecting a cylindrical shutter within a short length of tunnel and pumping concrete into the gap between the shutter and the primary lining. Once the concrete hardens sufficiently, the shutters would be removed and erected in the next section of tunnel.

J.4.35 It is assumed that the lining of the main tunnel 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 it. The shutter would be assembled at the bottom of the shaft; sections of reinforcement would be installed and lining cast progressively up the shaft.

J.4.36 Any reinforced concrete structures internal to the main tunnel shaft and the roof slab would be constructed progressively in a similar manner from the shaft bottom. In some cases, precast concrete members may be used.

Construction of other structures

J.4.37 Air management structures comprising underground chambers, ducts, and an integrated electrical and control kiosk and ventilation column would be constructed on the site.

Completion of works and site restoration

J.4.38 The temporary conveyors and jetty would be dismantled and removed. On completion of the construction works, the permanent works area would be finished in accordance with the landscaping requirements. The Thames Path would be reinstated along its existing alignment.

Operation and maintenance

Structures

J.4.39 The principal structures would comprise:

a. a main tunnel shaft

b. ventilation structures including a below-ground air treatment chamber and above-ground ventilation column combined with an electrical and control kiosk

c. a concrete batching plant.

J.4.40 The Site works parameter plan is submitted for approval and defines zones for the location of permanent structures and minimum and maximum heights above ground. All permanent structures would be located on Kirtling Wharf. The zone within which the main tunnel shaft would be located is denoted by the blue line on the Site works parameter plan and allows some flexibility for its position to be moved a short distance. The shaft would not extend above ground.

J.4.41 The two zones within which permanent above-ground structures may be located (denoted by the two purple lines on the Site works parameter plan) are at the western and eastern edges of the site in order to minimise the impact on users of Kirtling Wharf. The zones are alternative locations for the combined ventilation column and the electrical and control kiosk. Both zones would allow flexibility for movement of the structure in a north-south direction, while keeping it out of the way of the operational wharf. The Site works parameter plan defines a maximum and minimum height of 6.0m and 4.0m.

J.4.42 The zone within which all permanent site structures would be located (denoted by the green line on the Site works parameter plan) allows a

small degree of flexibility for the location of the structures as the design develops, while minimising the impact on the future operation of Kirtling Wharf.

J.4.43 The concrete batching plant would be on Kirtling Wharf and the tallest structures predominantly located to the west of the wharf, as denoted on the Site works parameter plan. The zones in which structures would be located and maximum height limits are noted as follows:

a. water tanks with maximum heights of 10.0m and a wedge pit for below ground storage of aggregates

b. tanks bays and a substation with maximum heights of 5.0m

c. offices and welfare and blowing shed (for housing equipment to pump aggregates from barges) with maximum heights of 5.0m

d. aggregate storage bins, cement silos, concrete plant, water tanks, conveyor, and hopper with a maximum height of 30.0m and a further wedge pit; an additional blowing shed would be provided well within the maximum height of this zone.

J.4.44 The indicative Landscape plan shows improvements to the Thames Path in the form of the resurfacing of Kirtling Street, tree planting and signage.

Access

J.4.45 The works would be accessed for maintenance via an existing entrance to the concrete batching works off Kirtling Street as shown on the Access plan. This is detailed further in the Transport and traffic subsection below. An area of permanent hardstanding would be provided for access purposes. This area would surround the permanent infrastructure and allow the site to continue to operate as a wharf.

J.4.46 Access covers requiring regular access would be finished at ground level. Access covers requiring infrequent access (typically once every ten years) may be buried.

J.4.47 Site visits would be required approximately every three to six months to carry out inspections of the air treatment chamber and combined ventilation column and electrical and control kiosk. It is likely that this would involve a visit by staff in a small van.

J.4.48 It is anticipated that once every ten years, a major internal inspection of 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 main tunnel shaft. This process would take several weeks and temporary fencing would be erected around the working area.

J.4.49 The area within the limits of permanent access is required to provide Thames Water with the rights to use the land for access to the permanent works for operational and maintenance activities. The area within the limits of permanent access incorporates the short length of access road between the limits of permanent works and the Kirtling Street public highway.

J.4.50 Permanent access to the concrete batching plant would also be via the existing access on Kirtling Street and a widened existing access on Cringle Street.

Scheme development

J.4.51 The proposed Kirtling Street site was identified and assessed through a robust, qualitative, and iterative site selection process. The proposals underwent extensive pre-application consultation and engagement since the site was proposed following phase one consultation. This helped to minimise potential impacts and achieve a quality design.

J.4.52 Following selection as a preferred site, this site was subsequently included in phase two consultation, and remained the preferred site since. The role, design and site boundary were refined as a result of consultation and design development.

J.4.53 At phase one consultation, the adjacent Tideway Walk site was proposed as a combined site to intercept the Heathwall Pumping Station CSO and the South West Storm Relief CSO, to receive the main tunnel drive from Barn Elms, and drive the main tunnel to King's Stairs Gardens. However, planning permission was granted for mixed-use residential development on the Tideway Walk site in March 2011 for the Riverlight development and construction works commenced. As a result, a site selection review was undertaken.

J.4.54 Following this review, the Kirtling Street site was preferred as a main tunnel site. It was proposed to use the nearby Heathwall Pumping Station site to intercept the Heathwall Pumping Station and the South West Storm Relief CSOs; this is also the application proposal. A review of drive strategy was also undertaken as a result of similar changes emerging across the other sites arising from phase one consultation and on-going design development.

J.4.55 Consultation was subsequently undertaken through two rounds of review with the Design Council CABE in May and June 2011, two drop-in sessions with local businesses and the community in August 2011, phase two consultation, and Section 48 publicity. Informal consultation took place with local resident groups, businesses, landowners, the London Borough of Wandsworth, and other strategic stakeholders.

J.4.56 The following considerations were relevant in arriving at the decision to use the Kirtling Street site:

a. It is a brownfield land in a predominantly industrial area.

b. It has adequate space to accommodate the tunnelling activities required for a double drive site.

c. The large river frontage would provide good arrangements for jetties and barges that would enable transport of materials by river.

d. The use of the site would avoid the loss of greenfield land at Battersea Park (a Grade II* registered park and garden).

e. The main shaft would be located adjacent to the river and it is therefore unlikely that the alignment of the main tunnel would pass under any significant buildings.

f. Kirtling Wharf is a safeguarded wharf and the proposed use would be consistent with this designation and not affect the potential for future use.

J.4.57 Several other shortlisted sites were identified. As noted by the Greater London Authority (GLA) in its phase two consultation response, the sites to the south of Nine Elms Lane are not practical given the distance from the river and the emerging redevelopment of the sites. The main tunnel would also need to be aligned away from the river, which would create potential conflict with the foundations of permitted redevelopments and potentially the proposed Northern Line extension. The use of river transport in these locations would require the transfer of material across Nine Elms Lane adjacent to residential properties. In addition, all of these sites now have planning permission for mixed-use redevelopment.

J.4.58 The site in Battersea Park was considered less suitable because there was a more suitable, previously-developed site available elsewhere. This site was also objected to by stakeholders, including English Heritage.

J.4.59 The GLA recommended further consideration of sites within the Battersea Power Station site due to the uncertainty and long-term timescales surrounding the site. English Heritage, however, objected to the use of these sites. In addition, once the site had been put in control of administrators, the subsequent owners of the Battersea Power Station site announced their intention to take forward the existing outline permission. They have submitted a number of reserved matters applications to the London Borough of Wandsworth for approval. Construction of the first phase is anticipated to commence in 2013. Those parts of the Battersea Power Station site recommended by the GLA are to be developed in earlier stages than the phases on the Kirtling Street site. The *Final Report on Site Selection Process,* which accompanies the application, provides more details on site selection.

J.4.60 The initial proposals at the Kirtling Street site presented to the Design Council CABE proposed to locate the shaft and a ventilation column on the northeastern parcel adjacent to the river. The proposals were developed further to include a diverted Thames Path along the riverfront in front of the shaft and between the shaft and Kirtling Wharf. The Design Council CABE was supportive of the designs presented and commented that the initial proposals *"clearly recognised that Nine Elms is to change beyond recognition over the coming decades".*

Figure J.11 Design Council CABE sketch review proposals

J.4.61 The site boundary was subsequently extended for phase two consultation to accommodate movement of the shaft into Kirtling Wharf. This followed engagement with the local community and businesses and on-going engineering design development. This change was proposed for several reasons:

a. Outline permission was granted in August 2011 for the Battersea Power Station redevelopment which includes part of the Kirtling Street site, including the part of the site where the shaft was proposed. As a result of the change to the shaft location, this northeastern parcel of the site and the other areas of the Kirtling Street site that form part of the Battersea Power Station redevelopment site would only be required temporarily during construction and the permitted redevelopment could be accommodated.

b. The new shaft location would avoid conflict between the main tunnel and the piled foundations of the Riverlight development and also optimise the alignment of the main tunnel.

c. The new location would relocate the shaft further away from the nearby houseboat communities.

d. The wider river frontage created enables the construction of jetties and conveyors around the proposed shaft and would provide better river access for barges (potentially for large, sea-going vessels). This would support river transport of construction materials.

J.4.62 It was also confirmed at phase two consultation that Kirtling Street was now proposed to drive the main tunnel in two directions simultaneously, following the review of drive strategy: to Chambers Wharf in the east and to Carnwath Road Riverside in the west. The reasons for this are summarised in the Meeting the need subsection below.

J.4.63 The final proposed designs maintain the basic arrangement presented at phase two consultation, but were refined through further engagement and on-going engineering design development. In particular:

a. Parameters were developed to ensure that the proposed permanent works maintain the viability of Kirtling Wharf for waterborne freight-handling use, and accommodate planning permissions and possible future diversions of the Thames Path.

b. Design principles and indicative landscaping were developed to ensure improvement and reinstatement of the Thames Path.

c. The site boundary within the river was further refined as the transport strategy was developed and navigational requirements were considered.

d. A new concrete batching plant would be provided, on the southern part of Kirtling Wharf prior to the removal of the existing batching plant on the wharf. This concrete batching plant would be retained following construction. It was anticipated prior to Section 48 publicity that the concrete batching plant would be temporarily provided and then reinstated by others following construction.

J.4.64 The background to the design and refinements to the design are further detailed in the Good design subsection below. The principal issues that arose from pre-application consultation and Section 48 publicity for Kirtling Street are given below:

a. Respondents including the London Borough of Wandsworth, the GLA and local residents expressed concern over the effects of construction activities on existing and future residential amenity and businesses (including any temporary relocation). This issue was taken into account in the *CoCP* as the proposals developed and is addressed in the subsections below.

b. Respondents including the council and GLA expressed concern over impacts on local regeneration in the Vauxhall/Nine Elms/Battersea Opportunity Area including the Northern Line extension, and conflict with the implementation of the existing Battersea Power Station planning permission partly on the site. This issue was accounted for in the design, in particular through consultation with the London Borough of Wandsworth and is addressed in the Good design and Land use including open space, green infrastructure and green belt subsections below.

c. Respondents, including the council, stated that the existing batching operation should be retained on at least part of the wharf to minimise the transport of building materials by road for the wider redevelopment of the area. This issue was accounted for and is addressed in the Good design subsection below.

d. The GLA expressed concerns over any navigational impacts from jetties or barge movements on river users including Nine Elms Pier and Cringle Dock waste transfer station. This issue was accounted for is addressed in the Good design and Traffic and transport subsections below.

J.4.65 The *Consultation Report,* which accompanies the application, provides more details of consultation responses received and how they influenced the proposals.

J.5 Site-specific planning considerations

J.5.1 This section provides an analysis of the key planning considerations associated with the proposed works at Kirtling Street, considering the issues and factors identified in the NPS and other relevant issues particularly those arising from construction as set out in para. J.4.64 above.

Meeting the need

J.5.2 The proposed site at Kirtling Street would successfully meet the specific need to provide a drive site to construct the central section of the main tunnel, driving it in two directions simultaneously: to Chambers Wharf in the east and Carnwath Road Riverside in the west. These works would make a fundamental contribution to the delivery of the project, in accordance with the NPS.

J.5.3 The necessary works and scale of the NSIP infrastructure present a series of complex engineering constraints that necessitate specific site attributes and require robust engineering design solutions. Key considerations include the size of the site required, the underlying geological conditions, the tunnel alignment and transport considerations.

J.5.4 The Kirtling Street site was identified and selected following a comprehensive and iterative site selection process, which was subject to extensive consultation and engagement. The site selection methodology used was subject to consultation with local authorities and key pan-London stakeholders, and consultation feedback was fully considered in its development. The general approach and principles behind the methodology were broadly supported by consultees.

J.5.5 The proposed use of Kirtling Street attracted both in-principle support from some stakeholders, including the GLA and the Port of London Authority, subject to some concerns being addressed, and opposition from others, principally those living in proximity to the site and developers with interests in the area, as detailed in the *Consultation Report*.

J.5.6 A broad consensus exists amongst stakeholders that there is a need to tackle the unacceptable discharges from CSOs along the tidal Thames. The *Core Strategy* states that*: "the council supports the implementation of the Thames Tideway Sewer Tunnel scheme".* The Greater London Authority stated in the *London Plan* that: "*the development of the Thames Tideway Sewer Tunnels to address London's combined sewer overflows should be supported in principle".*

J.5.7 Concerns in relation to the use of the Kirtling Street site centred on the need to minimise local construction impacts and to accommodate the regeneration of the area.

J.5.8 As discussed in the Scheme development subsection above, several shortlisted sites were identified in the Battersea area with the potential to serve as a main tunnel drive site; however, they are less suitable than the proposed Kirtling Street site. No other feasible and preferable alternative sites were put forward during the pre-application process by stakeholders.

J.5.9 The determination of main tunnel sites is closely linked to the tunnel drive options. Section 4 of the *Planning Statement* provides detail of the development of the tunnel options and strategy. In summary, all the tunnelling drive options require a main tunnel site in the Battersea area for the reasons discussed below.

J.5.10 Tunnelling operations inherently contain a degree of risk and it is fundamentally important to reduce risk where possible for safety and programme reasons. Geology is an important factor in the location of main tunnel sites because of the need to use the most suitable type of TBM for the expected geology. An important reason a main tunnel site was needed in the Battersea area was due to the change in geology from London Clay to Lambeth Group Geology.

J.5.11 Another important consideration for large scale tunnelling projects relates to the length of a tunnel drive and the distance between the potential sites in the Battersea area and the closest zones to the east and west with potential to accommodate drive sites.

J.5.12 Kirtling Street would be suitable for use as a double drive site, whereas the other potential main tunnel construction sites along the route were either unsuitable to drive TBMs (as opposed to receive) or to act as double drive sites. Relevant considerations include constraints on the size of sites and the ability to transport excavated material by river. Further detail is provided in Section 4 of the *Planning Statement* and the *Final Report on Site Selection Process.*

J.5.13 Therefore considering the geology, distance to other potential sites to the east and west, and the unsuitability of other potential main tunnel construction sites along the route of the tunnel, a double drive site is needed in the Battersea area, and Kirtling Street is suitable for this purpose.

Good design

J.5.14 Good design relates to creating attractive, usable, durable and adaptable places and contributing to sustainable development (NPS para. 3.5.1). This section explains how good design would be achieved at this site. The *Design and Access Statement,* which accompanies the application, provides further details.

J.5.15 The key components of the permanent works for which approval is sought are: a drop shaft on Kirtling Wharf; a ventilation column on Kirtling Wharf; and a re-provided batching plant on Kirtling Wharf. The key parameters for the works are detailed in the Operation subsection. The Landscape plan for the site is indicative (save for the layout of above-ground structures, which is illustrative).

J.5.16 The details of landscaping and the detailed design of the access arrangements are reserved through Requirement to be submitted for approval to the London Borough of Wandsworth. Details of the concrete batching plant including external appearance and lighting would also be submitted to the council for subsequent approval. These details would be in accordance with the plans and documents identified in Table J.1 and the *Design Principles* document, which accompanies the application.

J.5.17 The amount, layout and scale of the proposed development at Kirtling Street are primarily dictated by the function it needs to perform. At Kirtling Street the key functional consideration is the need to drive the main tunnel in two directions. The nature of the development is such that the required structures would be predominantly below ground; however an above-ground structure would be required to ventilate the tunnel.

J.5.18 The key design objective of the permanent works at Kirtling Street was to successfully restore the site on completion of the works to enable future industrial/mixed-use re-development by others and to ensure that Kirtling Wharf remains viable for waterborne freight-handling use.

J.5.19 Early site analysis and subsequent engagement identified that it was important for the design to respond to the following key opportunities and constraints.

J.5.20 The key opportunities at the site are as follows:

a. Improve the public realm of the Thames Path.

b. Improve way-finding in the area.

c. Tie in any public realm with public realm of other developments in the area.

d. Clear sites for development by others for uses in the *Site Specific Allocations Document*.

J.5.21 The key constraints at the site are as follows:

a. The shaft must be located to optimise the alignment of the main tunnel.

b. The shaft must be of sufficient size to launch TBMs.

c. The safeguarded wharfs must be able to continue as a waterborne freight-handling use following completion of construction.

d. Relocation of existing third-party infrastructure must be kept to a minimum.

e. Impacts on allocations in the *Site Specific Allocations Document* must be kept to a minimum.

f. The future Northern Line extension to Nine Elms and Battersea must be accommodated.

g. Any effects on amenity of existing and future residents must be kept to a minimum.

h. The Thames Path must be retained.

i. Any effects on nearby listed buildings must be kept to a minimum.

j. Any effects on the River Thames and Tributaries Site of Importance for Nature Conservation must be kept to a minimum.

J.5.22 The design of the proposals for the site evolved through extensive consultation as detailed in the Scheme development subsection above, including two rounds of review with the Design Council CABE in May and June 2011.

J.5.23 The initial proposals at the Kirtling Street site presented to the Design Council CABE attracted a favourable response. It commented that the initial proposals "*clearly recognised that Nine Elms is to change beyond recognition over the coming decades*". It also identified an opportunity to improve way finding on the Thames Path through improved signage. It stated that: "*it is critical that an open dialogue with developers such as Treasury Holdings (former developers of the Battersea Power Station redevelopment) takes place at an early stage*" and *that, "the relationship with the Tideway Walk (Riverlight) development should be fully tested to ensure future residents are not adversely affected by site operations*".

J.5.24 The site boundary was subsequently extended for phase two consultation to accommodate moving the shaft into Kirtling Wharf. The reasons for this are detailed in the Scheme development subsection. This allowed the shaft to be repositioned to accommodate the newly permitted Battersea Power Station redevelopment while not requiring the main tunnel to deviate further from the river. The ventilation column was also proposed to be positioned within the industrial context of the existing wharf. This is discussed further below under the principle design objectives.

J.5.25 It was also confirmed at phase two consultation that following the review of drive strategy, Kirtling Street was proposed to drive the main tunnel in two directions simultaneously: to Chambers Wharf in the east and Carnwath Road Riverside in the west.

J.5.26 There were no significant design developments at this site following phase two consultation. Parameters were developed to confirm the location of the permanent structures, in order to not restrict permanently the viability of Middle Wharf. The visualisations were updated to confirm the intent to permanently re-provide the batching on Kirtling Wharf. It had been anticipated prior to Section 48 publicity that it would be temporarily re-provided and reinstated by others following construction. Further detail on design developments is provided under the key design aspirations below.

J.5.27 A visualisation of the proposed above-ground development is provided in Figure J.12.

Figure J.12 Aerial view of the Kirtling Street site

J.5.28 Based on the analysis of opportunities and constraints and in response to feedback from stakeholder consultations, the principal objectives that influenced the design of the proposals at this site include:

a. Allow redevelopment of the site as part of local regeneration.

b. Maintain Kirtling Wharf for waterborne freight-handling use.

c. Enhance the attractiveness of the adjacent Public Right of Way and retain flexibility for diversion in the future.

d. Minimise the impact of the permanent structures.

e. Manage the impacts of construction.

Allow redevelopment of the site as part of local regeneration

J.5.29 The site boundary was extended at phase two consultation to accommodate the movement of the shaft into Kirtling Wharf, away from an area with planning permission for mixed-use development. This relocation is defined on the Site works parameter plan and was supported by the London Borough of Wandsworth, subject to caveats. It also moved the construction of the shaft further away from the houseboats at Nine Elms Pier.

J.5.30 Design principle KRTST.8 requires that at the end of construction, those parts of the site that are not public highway or concrete batching plant to be secured with high quality, secure hoardings. This land would then be available for development by others.

J.5.31 These design changes minimised impacts on the regeneration of the wider area and on adjacent land uses.

Maintain Kirtling Wharf for waterborne freight-handling use

J.5.32 A new concrete batching plant would be provided on the southern part of Kirtling Wharf prior to the removal of the existing batching plant. The new plant would be retained following construction. This location would accommodate shaft construction on the north of the wharf (this is discussed further under the Minimising impacts of construction subsection below).

J.5.33 The shaft would be finished flush to ground level and operation of the concrete batching plant and wharf would be able to take place over the shaft following construction.

J.5.34 As defined on the Site works parameter plan, the integrated ventilation column(s) and the electrical control kiosk(s) would be located within a defined zone at the western or eastern edge of the site within Kirtling Wharf. Design principle KRTST.10 states that the combined ventilation and electrical and control kiosk structure should preferably be located within the eastern zone identified on the Site works parameter plan. These measures would maintain the overall viability of the wharf for waterborne freight-handling and the current batching plant use.

J.5.35 Design principle KRTST.3 requires the electrical and control kiosk and ventilation column to be combined in a single structure to minimise land take on the wharf. The project's signature design ventilation column would therefore not be used. Design principle KRTST.4 requires the project works to be positioned to enable the successful functioning of the safeguarded wharf.

J.5.36 This range of measures would ensure that Kirtling Wharf is maintained for waterborne freight-handling use.

Enhance the attractiveness of the adjacent Public Right of Way and retain the flexibility for a diversion in the future

J.5.37 The Thames Path currently runs west along the River Thames up to the northeastern edge of the Kirtling Street site (from the west) where it leaves the river and passes through the site along Kirtling Street, crossing over Cringle Street down to Nine Elms Lane/Battersea Park Road. It returns to the river by Chelsea Bridge beyond the Battersea Power Station. Strategic and local planning aspirations seek to provide a path running continuously along the riverside; however, the safeguarded Kirtling Wharf and Cringle Dock conflict with this aspiration. Due to differing objectives regarding diverting the Thames Path and maintaining the safeguarded wharf, an adaptable solution was developed.

J.5.38 Proposals prior to phase two consultation showed a permanent diversion of the Thames Path up to Kirtling Wharf (from the west) around the main tunnel shaft. At that time the shaft was proposed on the northeastern site parcel of the Kirtling Street site (adjacent to the east of the current proposed shaft location on Kirtling Wharf) (see Figure J.11). This parcel is

not subject to a safeguarded wharf designation that would restrict such a diversion.

J.5.39 The proposals no longer include a permanent diversion of the Thames Path in this location as the now permitted Battersea Power Station redevelopment includes proposals for the Thames Path diversion along with mixed-use development.

J.5.40 Following the temporary diversion required during the project construction works, the Thames Path would be reinstated back to its current route along Kirtling Street, prior to permanent diversion by others. The indicative Landscape plan shows improvements to the Thames Path in the form of the resurfacing of Kirtling Street, tree planting and signage. Design principle KRTST.7 requires that the materials and design of any reinstatement works outside Kirtling Wharf to be consistent with the Riverlight development in order to support a coherent public realm in the area. The full details of operational landscaping would be submitted for approval to the London Borough of Wandsworth.

J.5.41 The proposed design was also developed to retain flexibility should the planning designations on Kirtling Wharf and the adjacent Cringle Dock be changed. The layout of the permanent structures defined on the Site works parameter plan was designed to be adaptable by ensuring the positioning of the structure enables any future diversion of the Thames Path across Kirtling Wharf and Cringle Dock. Design principle KRTST.9 also requires the location of the project's permanent structures to not compromise the future provision of a riverside Thames Path (by others).

Minimise the impact of permanent structures

J.5.42 As defined on the Site works parameter plan, the above-ground structure (the integrated ventilation column(s) and electrical control kiosk(s)) would be within a defined zone at the western or eastern edge of the site. The structure would be located within the industrial setting of Kirtling Wharf and would be small in scale compared to the conveyors and structures that are typical of wharfs and the adjacent Cringle Dock waste transfer station.

J.5.43 The details of the external finishes of the ventilation columns and kiosks must be in accordance with the design principles. These require materials to be high quality and long lasting; the design life of the major civil engineering components including buildings is 120 years.

J.5.44 The concrete batching plant would be restricted to a location within the safeguarded Kirtling Wharf (the site of the existing concrete batching plant), as defined on the Site works parameter plan. Zones were developed to define the maximum heights of the structures, as detailed above. The zones focus the tallest structures towards the west of the wharf adjacent to the large Cringle Dock waste transfer station structure. This includes the overhead conveyors that would maintain a position similar to the existing conveyors to be replaced at the wharf.

J.5.45 Details of the external appearance and lighting of the batching plant would be submitted to the local planning authority for approval.

Manage the impacts of construction

J.5.46 Throughout the consultation period and through numerous design developments Thames Water sought to limit construction impacts. Key scheme development changes to manage construction impacts at this site are detailed below.

J.5.47 The location of the main tunnel shaft is now proposed to be on Kirtling Wharf for a number of reasons, including moving the construction works further away from the nearby houseboats.

J.5.48 A new concrete batching plant would be provided on the southern part of Kirtling Wharf, prior to the removal of the existing batching plant on the wharf. This concrete batching plant would be retained following construction. This would minimise impacts on the existing Cemex business but would also maintain the provision of a local source of aggregate and concrete within the Vauxhall Nine Elms Battersea regeneration area. The plant would be supplied by waterborne transport, which would significantly reduce the number of HGV vehicle movements throughout the regeneration area. The retention of the existing business is supported by both the London Borough of Wandsworth and the GLA. Thames Water has agreed Heads of Terms with Cemex on a proposed lease, collaboration agreement and the replacement of the existing concrete batching plant.

J.5.49 It is proposed in the *Transport Strategy*, which accompanies the application, that a significant proportion of the construction and excavated materials would be transported by barge, in accordance with NPS guidance favouring this form of transport, where possible and cost-effective. At least 90 per cent of material excavated from the main tunnel and sand and aggregates imported for its secondary lining at Kirtling Street would be transported by river. It is not proposed to transport material excavated from the shaft to avoid constraining the construction programme while the required infrastructure to enable river transport is implemented. River transport would significantly reduce HGV vehicle movements on the local road network.

J.5.50 The site boundary within the river was further refined as the *Transport Strategy* developed. Following preliminary navigational assessment, the site boundary was drawn to allow the proposed jetties to be used during construction to be located to allow operations at Cringle Dock waste transfer station to be maintained, while minimising impacts on the houseboats at Nine Elms Pier to the east as far as possible.

J.5.51 In addition, specific measures in the *COCP* Part B would be applied to manage construction impacts. An enclosure would be constructed to cover the main tunnel shaft during the tunnel construction and secondary lining phases, which would have cladding with a specified sound reduction value. The concrete batching plant, grout plant, conveyors to load barges and storage/handling areas would be enclosed with structures with suitable acoustic attenuation materials. Further measures are discussed in the subsections below.

Conclusion

J.5.52 The design of the proposals at Kirtling Street was carefully developed through a collaborative process of design review and extensive consultation.

J.5.53 The proposals were designed to ensure that they meet the functional requirement to drive two tunnels from this site and provide long-term maintenance access. The site layout was also developed to maintain the viability of the safeguarded wharf while ensuring that the site and local area can be regenerated in line with planning policies and existing permissions. The permanent above-ground structures would be located within the industrial context of Kirtling Wharf. The proposals were designed to enhance the attractiveness of the Thames Path and also retain adaptability for the potential diversion and enhancement of the Thames Path along the riverside in the future. Construction impacts would be managed so as to minimise impacts on neighbouring land uses.

J.5.54 The functional and aesthetic elements were combined to create a sustainable, attractive, durable and adaptable space (in line with NPS paras. 3.5.1 to 3.5.3).

Water resources and flood risk

J.5.55 The project would require the construction of a shaft and connection tunnel through the upper and lower aquifer. The upper aquifer is classified by the Environment Agency as a secondary A aquifer. The lower aquifer is classified as a principal aquifer. The Kirtling Street site is within the Source Protection Zone 1 of a Thames Water abstraction site, which is subject to a policy to safeguard groundwater resources from potentially polluting activities. The Thames Water abstraction is a major public water supply located 0.15km to the southwest of the site. There are also other abstraction sites nearby.

J.5.56 The construction of the main tunnel shaft would require the drawdown of groundwater levels ahead of construction. This would require substantial dewatering of the underlying lower aquifer from which Thames Water and several other private individuals abstract water for approximately eight months.

J.5.57 As a result of the lowering of groundwater levels, there is potential for effects on local abstraction sites, as stated in the *Environmental Statement* (Vol 14, Section 13). The construction site would be on land close to an un-remediated former gas works; therefore there is potential for land contamination. There is known groundwater contamination within the lower aquifer in this location and dewatering has the potential to move these contaminants and draw contamination into the Source Protection Zone 1 and towards the major public water supply.

J.5.58 The *CoCP* Part A requires a precautionary approach involving targeted risk-based audits and checks of water quality monitoring to be applied to abstraction licences thought to be at risk. Monitoring arrangements for dewatering permits would be developed in liaison with the Environment Agency. The *CoCP* Part B requires dewatering activities or ground treatment to not affect water quality in the source protection zone.

J.5.59 In order to ensure that there are no significant impacts for abstraction sources, mitigation measures comprise lowering pumps, deepening boreholes or, in the case of abstraction site 28/39/39/141 providing an alternative supply. These options would be discussed with the licence holder and mitigation measures agreed. Abstraction site 28/39/42/72 is one of several sources operated by Thames Water and the flexibility within its supply network may mean that another source could be used for a short period, rather than providing a new supply.

J.5.60 The foreshore part of the site is located within the River Thames and classified as functional floodplain (Flood Zone 3b, where water must flow or be stored in times of need). The inland part of the site is located behind the River Thames flood defences within Flood Zone 3a (1 in 100 event).

J.5.61 The Flood Risk Assessment was undertaken in accordance with Section 4.4 of the NPS and is included in the *Environmental Statement*. It shows that the proposed development would be appropriate for the area as flood risk to the project would remain unchanged. Flood risk would be managed through appropriate design measures and the development would not increase flood risk on the surrounding areas. Therefore, no significant flood risk effects are likely.

J.5.62 In accordance with the *CoCP* Part A (Section 8), all site drainage during construction would be drained and discharged to mains foul or combined sewers. Where this is not practicable, the site would be drained so that accumulating surface water would be directed to holding or settling tanks or separators 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.

J.5.63 During construction, including tunnelling under the river wall, the *CoCP* Part A requires the maintenance of continuous flood defence provision to the statutory flood defence level, for both permanent and temporary works.

J.5.64 The temporary jetty required within the foreshore has the potential to reduce the availability of flood storage within the tidal Thames. The impact of the removal of flood storage was modelled on a project-wide basis and results show that the proposed project-wide works (both temporary and permanent works) would not have a detrimental impact on the flood storage or tidal levels within the tidal Thames.

J.5.65 Permanent site drainage would comply with the National Standards for Sustainable Drainage Systems under the Floods and Water Management Act 2010, in accordance with design principle SDRN.01.

J.5.66 There would be no increase in the total impermeable area as a result of the proposed works. Surface water run-off from the operational site would be discharged through the wharf's existing drainage system.

J.5.67 The site would remain at residual risk of tidal flooding in the event of a breach in the local flood defence wall along the edge of the River Thames or overtopping of the defence wall as a result of a failure of the Thames

Barrier. However, a breach or failure of flood defences would not compromise the long-term operational function of the main tunnel.

J.5.68 Stakeholders identified concerns over the potential for scour as a result of the temporary jetty. A site-specific Requirement requires monitoring for scour to be undertaken and any appropriate mitigation measures implemented. Possible mitigation options include riprap or rock fill, articulated concrete blocks, gabion mattresses and grout filled mattresses.

J.5.69 A range of measures and requirements are proposed to mitigate any effects on groundwater resources in line with the NPS (paras. 4.2.9 to 4.2.12). The potential for temporary adverse impacts on groundwater assets during construction would be minimised as far as possible.

J.5.70 Flood risk from all sources has been managed as far as possible through design and the measures incorporated in the *CoCP*. The criteria in NPS para. 4.4.10 would be satisfied and no significant flood effects are likely from the proposed development.

J.5.71 The works at this site would play a fundamental role in the delivery of the project which, once operational, would have a significant beneficial impact on water quality in the tidal Thames. It would reduce the risk of exposure to pathogens, reduce sewage derived litter and make an important contribution towards compliance with the Urban Waste Water Treatment Directive and the Water Framework Directive.

Air quality, emissions, dust and odour

J.5.72 The entire borough of Wandsworth is designated as an Air Quality Management Area. The closest sensitive receptors to the site would be residential occupiers of adjoining houseboats and anticipated newly constructed properties.

J.5.73 The *CoCP* Part A includes all reasonable measures to minimise impacts, including requiring the use of the measures in the GLA and London Councils' Best Practice Guidance *The Control of Dust and Emissions from Construction and Demolition* (2006). Others measures include those in relation to vehicle and plant emissions, measures to reduce dust formation and re-suspension, measures to control dust present and measures to reduce particulate emissions. These would be observed across all construction and demolition activities at the site. The *Environmental Statement* (Vol 14, Section 4) states that the measures in the *CoCP* would manage dust impacts that would otherwise occur within 50m of the site and otherwise cause a significant impact. It also reports that no significant impacts would arise from emissions (ie, from road traffic, tugs for river barges and construction plant).

J.5.74 The concrete batching plant on Kirtling Wharf would replace the existing batching plant, would be built to modern specifications and standards and changes in, air quality, emissions, dust would be negligible. A proposed requirement would ensure that details of dust suppression measures are submitted to LBW for approval.

J.5.75 The consideration of odour impacts, operational air quality, and odour and dust impacts is set out in the project-wide section of the *Planning Statement*.

J.5.76 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.

J.5.77 When the tunnel system is empty, clean air would be drawn into the system at specific sites by extracting air at other specific sites to keep the air in the system 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 release. Depending of the level of filling, it would then pass through the passive carbon filters. These filters clean the air and remove any odours before it is released.

J.5.78 At this site a passive ventilation system would be installed allowing movement of air into and out of the main tunnel. During a typical year, it would treat all the air displaced from the shaft, which would occur only when the shaft is drowned by the rising wastewater in the tunnel. During extreme, infrequent storm events (approximately once in 15 years), the air 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. Therefore all regulatory requirements would be met and there would be no nuisance odours or loss of amenity due to odours.

J.5.79 Appropriate measures are proposed to ensure that the proposals would not lead to any significant deterioration, substantial changes or breaches in air quality, emissions and dust during construction or operation in line with the NPS (paras. 4.11.4 to 4.11.5).

J.5.80 All reasonable measures have been taken to ensure that there would be no significant loss of amenity from odour during construction or operation in line with the NPS (paras.4.3.11 to 4.3.15).

Biodiversity and geological conservation

J.5.81 The site is on partly vacant, previously-developed land with the exception of the foreshore area. The temporary jetty within the foreshore area would enable river transport in order to reduce road based transport. There are no implications for geological conservation arising from the works at this site.

J.5.82 There are no internationally or nationally designated ecological sites in the vicinity of the site. The adjacent Battersea Power Station Site of Importance for Nature Conservation for nesting birds is permitted for mixed-use redevelopment. The project would not impact on the birds nesting in the power station.

J.5.83 The largely industrial, onshore area to be lost due to proposed site clearance is not of high value. All construction work and permanent structures would be situated on the previously developed area, apart from the temporary jetty.

J.5.84 The foreshore area of the site is located within the designated River Thames and Tidal Tributaries Site of Importance for Nature Conservation (metropolitan importance).

J.5.85 The foreshore habitat that would be temporarily lost from the legs of the jetty would be minimal. Disturbance from barge movements at this location is already high due to the adjacent waste transfer station. Part of the site is also safeguarded for waterborne freight-handling use.

J.5.86 The temporary jetty was designed to extend far enough into the river channel for only limited dredging to be required. There would be disturbance and compaction of approximately 1ha of foreshore outside the jetty area while the jetty and conveyors are established and removed by a jack-up barge. In order to minimise impacts, the *CoCP* Part B includes a requirement to restore the areas of foreshore used for the temporary works to similar condition and materials. The contractors' environmental management plan required in the *CoCP* Part A includes an ecology and landscape management plan, which would detail the approach to managing effects on ecological receptors. These measures would ensure that there would be no significant impacts on aquatic ecology.

J.5.87 During the operational phase, the new concrete batching plant on Kirtling Wharf would involve an estimated maximum of 14 barge movements a week from the existing jetty. Barge movements associated with the existing concrete batching plant are unrestricted and the neighbouring site is an established safeguarded wharf for waterborne freight-handling. This would not have significant impacts on biodiversity interests.

J.5.88 The site and surrounding area are heavily industrialised. Appropriate measures and mitigation would be applied to minimise impacts on biodiversity and geological interests (in line with NPS para. 4.5.6).

Landscape and visual impacts

J.5.89 The landscape quality within the site is poor and is characterised by the industrial and commercial uses. The site area is dominated by existing industrial buildings and hardstanding and has little vegetation cover or public amenity. The site is set amongst a wider industrial area adjacent to the busy Nine Elms Lane.

J.5.90 The surrounding landscape on the south bank is dominated by industrial and commercial uses undergoing transformation into mixed-use schemes. By contrast, the north bank of the River Thames is generally made up of established residential areas including a boat club.

J.5.91 The construction activities proposed are large scale. In order to minimise impacts, the *CoCP* Part B requires the use of hoardings with artwork on the public facing sections and the use of low level directional lighting, where possible.

J.5.92 Nevertheless the scale of the construction works, including the large jetties, would intensify the industrial character of the site. The riverside location has river transport benefits, which also makes it more visible.

J.5.93 The construction works would likely cause unavoidable, temporary impacts on nearby viewpoints including residential developments on the north and south banks of the River Thames; the Thames Path in front of the Riverlight development; and on the character of nearby areas. Impacts on part of the Riverlight development would be at night as well as during the day due to 24-hour lighting and continuous loading of barges during tunnelling.

J.5.94 The NPS recognises in para. 1.4.4 that NSIPs are likely to take place in mature urban environments and have adverse townscape and visual effects in a built-up environment with many possible receptors. Large scale construction works are commonplace in world cities such as London, and the surrounding Nine Elms area is set to become one of the largest regeneration sites in London. The adjacent Battersea Power Station site alone is anticipated to commence a 13-year construction programme for major redevelopment including 3,800 residential units. The construction effects of the project should be viewed in this context.

J.5.95 Part of the site is an established batching plant and a designated safeguarded wharf. The site is also adjacent to an established waste transfer station (which is also a safeguarded wharf) and Cringle Dock waste transfer station. The waste transfer and dock facilities are a 24-hour operation due to the reliance on the tides for barge movements. The construction effects should also be viewed in this 24-hour industrial context.

J.5.96 While the majority of the permanent tunnel-related structures would be underground, the design parameters and principles for the above-ground structures were carefully developed to ensure they are sensitive to their surroundings and as visually attractive as possible.

J.5.97 The permanent works would be located within the safeguarded Kirtling Wharf, which is adjacent to the safeguarded Cringle Dock waste transfer station.

J.5.98 The concrete batching plant would be on the safeguarded Kirtling Wharf and would replace the existing batching plant in a similar location. The plant would be slightly higher than the existing as batching plant would be provided in a smaller area. The layout defined on the Site works parameter plan would focus the tallest structures towards the west of the wharf adjacent to the large Cringle Dock waste transfer station structure. The layout would also be set back from the river frontage compared to the existing plant to reduce its visual prominence in views of the riverside. It would be located on the safeguarded Kirtling Wharf and would not lead to any significant adverse change in the character of the site or visual impact. A Requirement would ensure that details of the external appearance and lighting would be submitted to the London Borough of Wandsworth for approval.

J.5.99 The 4m to 6m ventilation column would fit within this industrial context and be of minor scale compared with the existing and proposed batching plants, including conveyors and structures for waste storage. Following construction, improvements would be made to the Thames Path in the form of tree planting, wayfinding and resurfacing, as shown on the indicative Landscape plan.

J.5.100 Overall, it is anticipated that there would be a benefit on the local character and views, following construction, due to the demolition of dilapidated buildings.

J.5.101 The proposals were carefully designed to minimise harm to the landscape, including all reasonable mitigation (in line with NPS para. 4.7.13). Temporary unavoidable adverse landscape and visual impacts during construction would be minimised as far as possible. The proposed landscape scheme would enhance the setting of the Thames Path following construction.

Land use including open space, green infrastructure and green belt

J.5.102 The site is on partly vacant, previously-developed land with the exception of the foreshore area. The temporary use of the foreshore area would enable river transport in order to reduce road-based transport. Potential conflicts with land use designations and planning application proposals were taken into account through on-going design development of the permanent layout and configuration of the construction works. The Land use plan is provided in Annex J.

J.5.103 The foreshore area in this location is not accessible to the public as reported in the *Open Space Assessment,* which accompanies the application. The proposed jetties would not significantly affect recreational use of the river as the waterfront in this location is subject to barge movements associated with the two operational safeguarded wharfs in and adjacent to the site.

J.5.104 The project would require the relocation of the Brooks Court office units and the London Duck Tours vehicle storage facility during construction. The London Duck Tours storage facility forms part of the permitted Battersea Power Station site and is therefore already subject to relocation. The site of the Brooks Court office units is allocated for mixed-use development in the Development Plan, which suggests that the site will come forward for redevelopment over the *Core Strategy* plan period.

J.5.105 A new concrete batching plant would be provided on the southern part of Kirtling Wharf, prior to the removal of the existing batching plant, which would be retained following construction. This is in line with the safeguarded nature of the wharf and comments from consultees, including the London Borough of Wandsworth, to the effect that the batching plant should be retained to minimise the transport of building materials for the regeneration area by road. It would also allow the owners to undertake the planned modernisation of the plant, which would have environmental benefits. Thames Water has agreed Heads of Terms with Cemex (the owners of Kirtling Wharf) on a proposed lease, collaboration agreement

and the replacement of the existing concrete batching plant. The parameters for the concrete batching plant were designed to maintain the capacity of the existing operation, although it would be laid out over a smaller area. The *CoCP* Part B also requires access to the Cemex concrete batching plant via Kirtling Street with egress via Cringle Street to be maintained throughout the construction period.

J.5.106 As detailed in the Planning context subsection above, the site and surrounding area is industrial in nature but is set to undergo major transformation. Local land use policy encourages regeneration of the area while maintaining a balance between a new residential neighbourhood and water-based freight uses.

J.5.107 With the exception of Kirtling Wharf, the remainder of the site is allocated for mixed-use development. Some parts of the site have received permission for redevelopment as part of the Battersea Power Station redevelopment.

J.5.108 The proposed permanent works were relocated to accommodate the mixed-use development which was approved as part of the outline planning permission for the Battersea Power Station redevelopment. The proposals would maintain Kirtling Wharf as a viable waterborne freight-handling use in line with planning policy, comments from the GLA and the London Borough of Wandsworth, and as detailed in the Good design subsection.

J.5.109 Parts of the Kirtling Street site would be directly affected due to the outline planning permission for the wider Battersea Power Station redevelopment (the vacant former petrol station, and the depot) and northeastern site parcel (vacant warehouse) of the Kirtling Street Site (areas (a) and (c) as listed in para J.2.1 of this appendix). These are planned to be constructed in the later phases (in 2018 and 2021) of the approved Battersea Power Station construction programme. This programme has already been delayed by approximately one to two years as the former owners were placed in the control of administrators. Further delays due to the project would therefore be marginal and dependent on the progress of the Battersea Power Station programme.

J.5.110 The proposed works would accommodate the permitted and allocated development following construction, but there would be temporary unavoidable displacement of use during construction.

J.5.111 Following changes in scheme design, no existing or proposed land uses would be precluded on a permanent basis in line with the NPS (para. 4.8.5).

Noise and vibration

J.5.112 The site is within an industrial area and adjacent to the busy Nine Elms Lane. Both Kirtling Wharf and Cringle Dock waste transfer station wharves are established 24-hour operations due to the reliance on the tides for the movement of barges. A level of background noise consistent with these uses is therefore to be expected. More recently houseboats have been established at a nearby former industrial pier.

J.5.113 The surrounding Nine Elms area is set to become one of the largest redevelopment sites in London. Major construction is set to take place over the coming decades including the construction of significant associated infrastructure such as the proposed Northern Line extension.

J.5.114 New residential developments are anticipated to emerge, alongside existing wharves. The adjacent Riverlight development has commenced a major, approximately six-year construction programme for the construction of six residential towers. The adjacent Battersea Power Station site is anticipated to commence a 13-year construction programme for major redevelopment including 3,800 residential units.

J.5.115 Local and *London Plan* policy seeks to regenerate the area while maintaining the existing water-based freight uses. It affords safeguarded wharves protection requiring adjacent or opposite developments of a sensitive nature to be designed to minimise the potential for conflicts of use and disturbance. Therefore higher noise insulation performance is usually required for nearby sensitive uses.

J.5.116 The NPS recognises that NSIPs are likely to take place in mature urban environments and to lead to noise disturbance during construction in the short term.

J.5.117 For practicality and safety reasons, main tunnel construction needs to take place over extended periods of time, including working on a 24-hour, seven days a week basis.

J.5.118 It is proposed to take advantage of the suitability of the site to employ river based transport to significantly reduce road-based transport movements associated with project construction, as set out in the *Transport Strategy*. Although loading would contribute to noise effects, barges would provide significant local benefits by removing HGVs off the local road network.

J.5.119 In order to manage noise impacts arising from construction on existing and future residents, the *CoCP* includes all practicable on-site noise mitigation measures that could be adopted. Specific measures in the *CoCP* Part B are detailed below.

J.5.120 Building openings would be designed to be away from sensitive noise receptors and would be kept closed when not in use at night. Night-time movement of vehicles on-site would be restricted. Material would be compacted during demolition using machinery that generates the lowest practicable vibration levels whilst achieving the required level of compaction. Specifically, the use of large twin-drum vibrating rollers would only occur on occasions where vibration levels can be controlled to less than the impact criteria. These measures would significantly reduce the level of noise arising from the construction.

J.5.121 In order to manage noise during tunnelling, the *CoCP* Part B also requires an enclosure to be constructed to cover the entire main tunnel shaft during the tunnel construction and secondary lining phases. It would be clad to a specified sound reduction value. The concrete batching plant, grout plant, conveyors to load barges and storage/handling areas would also be enclosed with a structure of suitable acoustic attenuation materials.

J.5.122 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 were 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 project noise insulation and temporary re-housing policy and the Thames Tideway Tunnel project compensation programme (included in 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.

J.5.123 The noise levels predicted at Riverlight blocks A to C and at Battersea Power Station blocks PS, O1 and RS4 exceed the noise insulation thresholds given in the Thames Tideway Tunnel noise insulation and temporary re-housing policy and as such these properties may be eligible for noise insulation under this policy. These properties should be designed and built with high levels of noise insulation because of their proximity to safeguarded wharves (see para. J.5.115 above) and the Riverlight development, in particular, has commenced construction in full knowledge of the plans for the Thames Tideway Tunnel project. However, it may be possible that further measures are required and these may be eligible under the noise insulation policy.

J.5.124 The standard noise insulation measures would not be effective or appropriate for houseboats at Nine Elms Pier and Tideway Village. Therefore there is potential for significant noise impacts on these dwellings. The houseboats may, however, be eligible to apply for temporary re-housing or for compensation under the Thames Tideway Tunnel project compensation programme, which was established to address claims of exceptional hardship or disturbance. Residents of the houseboats who would be eligible for temporary re-housing would be re-housed only during those periods when noise levels exceed the thresholds given in the above policy. It is assumed that residents would return to their houseboats in the intervening period, and therefore, the effects of temporary re-housing would be short term.

J.5.125 Depending on the timing of construction of adjacent developments there are other properties that may be eligible for noise insulation or to apply for compensation through the Thames Tideway Tunnel Compensation Programme. No significant impacts are identified as a result of vibration. No impacts are anticipated as a result or noise or vibration, during operation.

J.5.126 The permanent concrete batching plant would be on the safeguarded Kirtling Wharf, adjacent to the safeguarded Cringle Dock waste transfer station, and would replace the existing batching plant on the wharf with modern equipment. The plant would be modern and fully enclosed and operation would not result in significant changes in noise or significant adverse impacts. A proposed requirement would ensure that an Operational phase management plan, including details of maximum noise levels and mitigation measures and hours of operation for the concrete batching plant would be submitted to LBW for approval. In addition, the *London Plan* and the council's planning policies provide for the continued safeguarding of the wharves and are clear in defining that the onus is on the developments next to safeguarded wharves to minimise potential conflict through design to ensure they do not prejudice the operation of safeguarded wharves.

J.5.127 The works would be in the context of wider construction works in an area of established wharf use. The project demonstrates good design and the *CoCP* includes all practicable on site noise mitigation that could be adopted in accordance with paras. 4.9.8 and 4.9.9 of the NPS.

Historic environment

J.5.128 The site does not contain any nationally designated heritage assets. The Grade II* listed Battersea Power Station is approximately 160m to the west, and incorporates a Grade II listed water pumping station, approximately 100m to the west. The power station site is to be redeveloped into a largely residential district.

J.5.129 Most of the site is located within an Archaeological Priority Area, in recognition of the archaeological potential of the Thames floodplain, as is the entire area of the River Thames within Wandsworth.

J.5.130 The *Environmental Statement* (Vol 14, Section 7) identifies moderate potential for prehistoric activity or settlement, buried heritage assets, early medieval (Saxon) fish traps, and high potential for medieval 18th and 19th century remains.

J.5.131 Pursuant to a Requirement, a *Site-specific Archaeological Written Scheme of Investigation* would be submitted to and approved by the local planning authority before development commences. There are also provisions for dealing with unexpected finds. These measures would ensure that any impacts on heritage assets can be managed and mitigated. An approach to recording evidence has been developed and agreed with English Heritage.

J.5.132 The NPS recognises in para. 1.4.4 that NSIPs are likely to take place in mature urban environments and that adverse construction effects on archaeology and cultural heritage are likely to arise. Construction works similar to the project proposals are commonplace in London and therefore impacts on heritage assets, which are unavoidable, should be viewed in this context.

J.5.133 The permanent above-ground ventilation structure would be 4m to 6m high and located within the existing setting of Kirtling Wharf and adjacent

to the Cringle Dock waste transfer station. It would be small in scale compared to surrounding industrial structures.

J.5.134 The new concrete batching plant would be located on the hardstanding of the safeguarded Kirtling Wharf, adjacent to the large Cringle Dock waste transfer station. It would replace the existing batching plant and would not have any substantial effects on heritage.

J.5.135 The construction and operation of the proposed works would have no impact on the nearby listed buildings or their settings, which are set to undergo significant transition and redevelopment. Similarly, the proposed works would not significantly detract from views from the Churchill Gardens and Dolphin Square Conservation Areas to the north of the river, which are largely screened from the site by mature trees on the embankment.

J.5.136 The potential for adverse impacts has been minimised as far as possible and the proposals were developed to avoid unnecessary damage and to ensure that any unavoidable losses would be recorded and unexpected finds assessed accordingly (in line with NPS para. 4.10.18).

Light

J.5.137 At night, the area receives relatively high levels of light spill from river traffic, street lighting and riverside developments. The active batching plant on-site is currently lit by security lighting. The adjacent waste transfer station receives 24-hour barge movements which require navigational lighting. Street lights also line the adjacent Kirtling Street.

J.5.138 Kirtling Street is a main tunnel construction site and for practicality and safety reasons tunnel construction needs to take place over extended periods of time, including working on a 24-hour, seven days a week basis. The need for extended working hours does mean that artificial lighting would be required for extended periods during the tunnel construction and secondary lining phases.

J.5.139 The *CoCP* Part B requires a site-specific lighting plan with low level directional lighting where possible and would ensure that artificial lighting would be appropriately controlled.

J.5.140 The minimal operational lighting associated with the tunnel would be within the wharf, which already has operational lighting, and would comply with the design principles. The principles require light pollution to be minimised during operation by means of capped, directional and cowled lighting units.

J.5.141 The new concrete batching plant would not lead to substantial changes in artificial light. There is a Requirement for details of external lighting to be submitted to the local planning authority for approval.

J.5.142 The *Daylight/Sunlight Assessment,* which accompanies the application, states that the site was scoped out after the screening assessment as there would be no material impacts on sunlight or daylight from construction or the permanent works.

J.5.143 All reasonable measures are proposed to minimise effects in line with the NPS (para. 4.12.7) and to ensure that the proposals would not lead to any significant impacts on amenity during construction or operation due to artificial light or any material loss of light to properties.

Traffic and transport

J.5.144 The NPS (para 4.13.6) advises that new NSIPs may give rise to substantial impacts on surrounding infrastructure. In line with the decision making criteria, Thames Water sought to mitigate impacts as far as possible.

J.5.145 The *Environmental Statement* and *Transport Assessment* consider the likely transport effects at this site in respect of both the construction and operational phases.

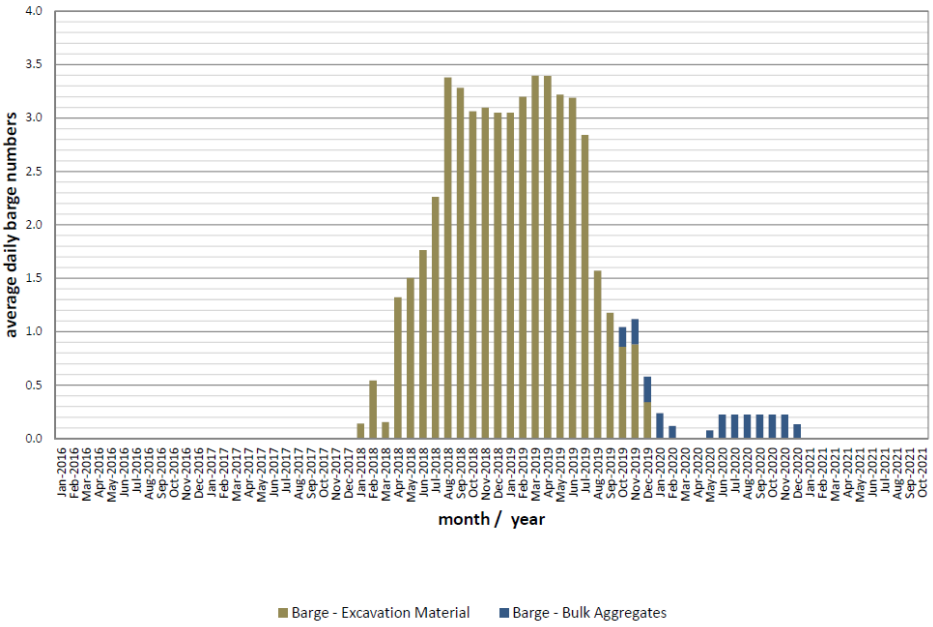
J.5.146 The site is adjacent to the north of Nine Elms Lane, which is characterised by high levels of traffic. Nine Elms Lane (A3025) is part of the Transport for London Road Network and a key HGV route, that runs northeast to Vauxhall and southwest to Battersea (TFL data published 2010 suggests a daily average flow of 500 to 1,500 HGVs per day). It connects to the A3, which is part of the Strategic Road Network. The Public Transport Accessibility Level of the site is 3, rated as ‘moderate’ (1 is the lowest accessibility and 6b is the highest).

J.5.147 There would be a maximum of 235 workers on-site at any one time. The *CoCP* Part A requires a travel plan to be produced by the contractor to encourage workers to use public transport. A site-specific construction workforce travel plan would be submitted to and approved by the local planning authority prior to commencing main CSO works. No worker parking would be allowed and parking on surrounding streets restricted.

J.5.148 The *Transport Strategy* sets out the project-wide approach to managing transport. In line with NPS para. 4.13.10, waterborne transport is proposed, where cost-effective, as a measure to reduce road transport. It is proposed that at least 90 per cent of material excavated from the main tunnel and sand and aggregates imported for main tunnel secondary lining at Kirtling Street would be transported by river. Thames Water does not propose to transport material excavated from the shaft by river because this is on the critical path of the project as a whole. It would be unacceptable to constrain the construction programme while the required infrastructure to enable river transport is constructed.

J.5.149 It is anticipated that 1,000 tonne barges would be used at this site. The peak number of barge movements would be associated with main tunnel construction. In year 3 of construction, the daily average would likely be four barges (eight barge movements). The use of barges would provide significant benefits by avoiding 90,250 HGV visits (180,500 movements) on the local road network, as stated in the *Transport Strategy*.

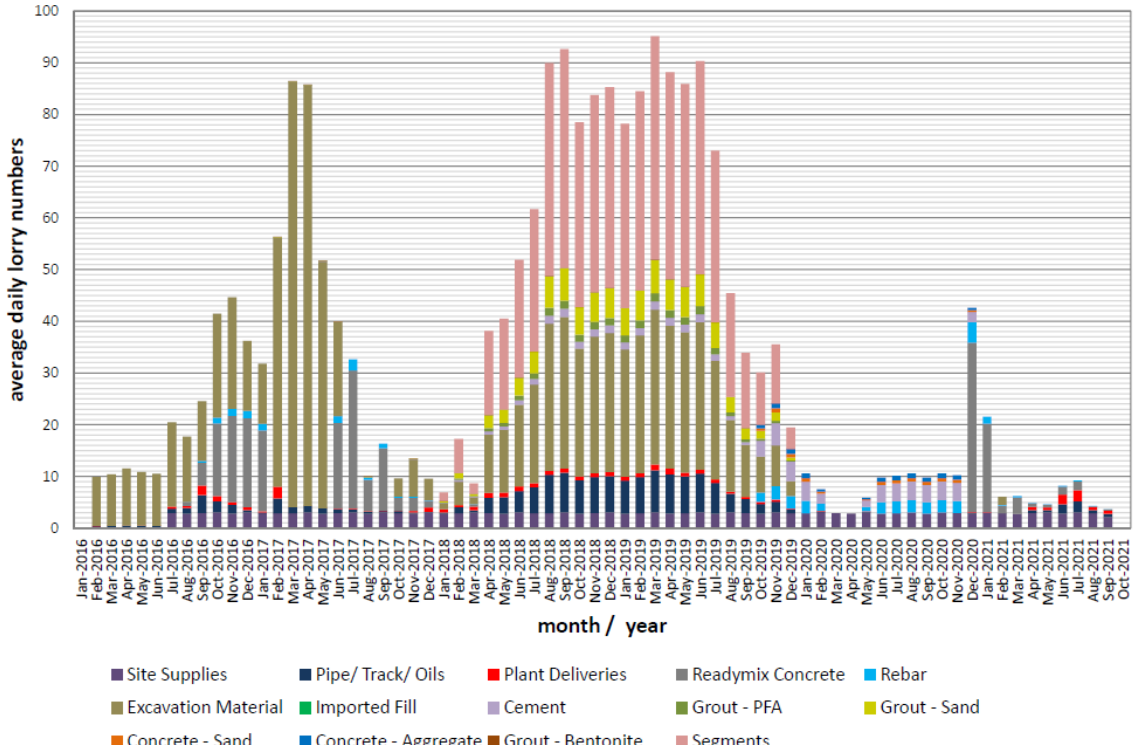
Figure J.13 Estimated construction barge profile



J.5.150 The site boundary was adjusted following preliminary navigational assessment in order to position the temporary jetties to avoid impacting barge movements in and out of Cringle Dock and to keep construction activities as far as possible from houseboats at Nine Elms Pier. The *CoCP* Part A requires a site-specific river transport management plan to be produced by the contractor, in consultation with the Port of London Authority and Maritime and Coastguard Agency. A proposed requirement would ensure that works in the river shall not commence until a detailed Method Statement and Navigational Risk Assessment has been submitted to and approved in writing by the Port of London Authority.

J.5.151 For the remaining HGV movements required, an average peak of 192 movements (96 two-way trips) per day is expected in site year 3 of construction. At other times in the construction period, vehicle flows would be lower than this peak figure.

Figure J.14 Estimated construction lorry profile



J.5.152 During construction, vehicle movements would take place during the typical day shift of ten hours on weekdays (8am to 6pm) and five hours on Saturdays (8am to 1pm) with up to one hour before and after these hours for mobilisation and demobilisation of staff. Construction activity would occur 24 hours a day for some periods during which construction vehicle movements would only occur during the ten and five-hour periods stated above. Mobilisation and demobilisation may include: loading, unloading, arrival and departure of workforce and staff, and movement to and from the place of work. In exceptional circumstances, HGV and abnormal load movements could occur up to 10pm for large concrete pours and later at night in agreement with the London Borough of Wandsworth. In addition to the significant reduction in HGV movements due to the river transport proposals, all reasonable measures are proposed to manage the remaining road-based movements needed and potential effects on pedestrians. Measures are detailed in the *CoCP* and include HGV management and control measures such as designated vehicle routes to sites for construction vehicles. The *CoCP* Part A addresses project-wide travel planning measures, including the need for a project-wide travel plan, initial travel surveys during construction and a monitoring framework at each site, while the *CoCP* Part B addresses site-specific measures.

J.5.153 As part of the Battersea Power Station development on-street parking along Kirtling Street and Cringle Street would already be removed. The *CoCP* Part B would require a bus stand bay to be relocated from Cringle Street to enable HGV access through the local roads. As far as can be established this stand is not regularly used by TfL buses. This would provide adequate road width to allow construction vehicles to travel to the site access points.

J.5.154 Junction works would be undertaken to improve the junction of Kirtling Street and the A3205. Pursuant to a Requirement, the details of those works would be submitted to the local highway authority for approval.

J.5.155 In order to maintain traffic flow on Nine Elms Lane, the *CoCP* Part B states that there would be no direct access to and from the Kirtling Street site from Nine Elms Lane (A3205), between the Kirtling Street and Cringle Street junctions. As identified on the Access plan, the Kirtling Street site would operate with four accesses during the construction period. The northern and northwestern section of Kirtling Street would be closed and form part of the construction site. This 131m section would only provide vehicular access to the Kirtling Street site and the neighbouring concrete batching plant.

J.5.156 This would result in a diversion for the Thames Path. The diversion would run from the northeastern corner of Kirtling Street, southbound along Kirtling Street, via Cringle Street to Nine Elms Lane (A3205), continuing westbound along Nine Elms Lane (A3205).

J.5.157 In order to maintain local traffic flow, the *CoCP* Part A requires appropriate control systems to be implemented to prevent congestion around the worksite and its access routes. No queuing outside of the site would be allowed unless otherwise agreed by the relevant authorities.

J.5.158 The *CoCP* Part B requires construction traffic to utilise a one-way system on Kirtling Street and Cringle Street. In order to maintain access for local traffic, Kirtling Street and Cringle Street would be kept open for two-way movements for general (non-construction) traffic, except where it is shown stopped up on the Access plan. The site access onto the southern side of Cringle Street would operate as right turn in and right turn out only for construction vehicles. The site exit on the northern side of Cringle Street would operate as left turn out only.

J.5.159 As the exit from the site onto Kirtling Street is by the entrance to the Riverlight development, the contractor would be required to put measures in place to manage potential conflicts with vehicles entering and exiting the development and pedestrians and cyclists on the Thames Path diversion.

J.5.160 The *CoCP* Part B also requires access to the Cemex concrete batching plant to be maintained throughout the construction period via Kirtling Street with exit via Cringle Street.

J.5.161 Based on the proposed measures, the *Transport Assessment* states that the Kirtling Street junction with Battersea Park Road/Nine Elms Lane (A3205) and the Cringle Street junction with Nine Elms Lane (A3205) would operate within capacity. The changes from construction traffic on road network delay at this junction would be negligible for both peak periods.

J.5.162 The *Environmental Statement* (Vol 14, Section 12) states that the only significant impacts would be on pedestrian accessibility, the Thames Path, and residents and users of nearby developments, due to the short diversion of the path.

J.5.163 The *CoCP* Part A requires controls to ensure the safety of pedestrians crossing the haul route and requires diversions to be fully accessible and to comply with Disability Discrimination Act requirements as far as practical. Consideration would be given to people with reduced mobility in the operation of the works. All reasonable steps would be taken to minimise the impacts. It also requires the production of a site-specific transport management plan to set out how vehicular access to the site would be managed to minimise the impact on the local area and communicate this to the local borough and other stakeholders. This includes any works on the highway, diversion or temporary closure of the highway or Public Right of Way. The *CoCP* Part A requires controls to ensure the safety of pedestrians crossing the haul route and the *CoCP* Part B requires signposting of the diversion. It also requires the contractor to put measures in place to manage potential conflicts with pedestrians and cyclists on the Thames Path.

J.5.164 The 20m diversion to the Thames Path would include three additional road crossings and cause an estimated approximately 15 second delay to pedestrian journeys. The anticipated maximum delay of a minute for pedestrians crossing the new entrances. During the operational phase, there would be very occasional vehicle trips to and from the site for maintenance activities. Access for light commercial vehicles would be required for inspection and maintenance purposes on a three to six-monthly basis. In addition, once every ten years, a major internal inspection of the tunnel and underground structures would be required. This would involve a small team of inspection staff and two mobile cranes, and might require temporary suspension of on-street parking in the vicinity of the site. Access would be provided at an existing access to the wharf of Kirtling Street.

J.5.165 It is anticipated that the concrete batching plant would generate approximately 50,000 HGV movements per year and 14 barge movements per week. HGV access would be provided at the same location as the access for Thames Water maintenance purposes as stated above and a widened existing access to the wharf from Cringle Street. A proposed requirement would ensure that details of HGV traffic movements and barge unloading are submitted to LBW for approval. The proposed concrete batching plant would be on the safeguarded Kirtling Wharf and would replace the existing batching plant on the wharf. Barge movements associated with the existing concrete batching plant that would be removed are unrestricted in the original 1964 planning permission. The *London Plan* and the council's policies plan for the continued safeguarding of the wharves clearly state that the onus is on developments next to safeguarded wharves to maintain appropriate HGV access to the wharves. Transport impacts during operation would be negligible.

J.5.166 Access would be directly onto a key HGV route from existing accesses to the pumping station or wharf. All reasonable measures would be taken to minimise impacts. Outstanding impacts on pedestrian accessibility are an unavoidable consequence of intercepting the CSOs and would cause only very short delays. No significant impacts are anticipated as a result of operation. In accordance with the NPS (4.13.10) the site would exploit the

benefits of barging during construction to substantially reduce dependence on HGV traffic. Taking into account the measures to minimise impacts, including movement of significant amounts of material by river, the transport impacts would be acceptable.

Waste management

J.5.167 The Waste Strategy was developed to provide a framework for the management of materials and waste that would be produced throughout the construction and operational phases of the project. This ensures that the requirements set out in para. 4.14.6 of the NPS would be satisfied.

J.5.168 No particular site-specific waste issues arise at this site.

Socio-economic

J.5.169 The project-wide socio-economic issues and benefits of the project are detailed in Sections 8 and 9 of the *Planning Statement.*

J.5.170 The immediate (within 250m) and wider local areas (within 1km) surrounding the site predominantly comprise light industrial and warehouse employment premises. There is a small cluster of residential dwellings around the site. There are also recreational land uses within 250m of the site, including the River Thames and Thames Path. In this location the River Thames is used both as a working river and for recreation.

J.5.171 The *Environmental Statement* (Vol 14, Section 10) reports that the local community predominantly comprises white or black residents. It has a high proportion of people aged over 65 years and generally poor health and low life expectancy. Residents are not prosperous on the whole and experience significantly higher than average levels of deprivation within 250m of the site in comparison to Greater London.

J.5.172 This site would be one of the main focal points of construction and job opportunity and is expected to require a maximum workforce of 426 workers. In view of shift patterns, there would be a maximum of 235 workers on-site at any one time. This scale of opportunity would represent a major benefit to the local employment market, including jobs and training opportunities.

J.5.173 Any socio-economic effects on the demand for services arising from the construction workforce at this site would be insignificant compared with the long-term changes in this major regeneration area and the significant increase in residential population.

J.5.174 The proposals would result in the demolition of existing premises on-site, some of which are derelict. Thames Water has agreed Heads of Terms with Cemex on a proposed lease, a collaboration agreement and the replacement of the existing concrete batching plant. This is in line with comments from the London Borough of Wandsworth; it would avoid displacing this local business and enable investment to protect local jobs.

J.5.175 The proposals would require displacement of the Brooks Court office units and the London Duck Tours vehicle storage facility and the temporary diversion of the Thames Path.

J.5.176 The London Duck Tours storage facility forms part of the now permitted Battersea Power Station site and is already subject to relocation. It is understood that there are three current occupiers of the 11 Brooks Court office units including a communications agency, a surveying firm and a government agency. From the nature of the activities involved it is assumed that that the businesses do not critically depend on their location at this site to attract custom. The site is allocated for mixed-use development, which suggests that it is likely that the site would come forward for redevelopment over the *Core Strategy* plan period.

J.5.177 Although the construction period is temporary, the displacement and impact on the businesses is likely to be permanent as once they have been relocated, it is unlikely that any business would return. The effect of relocating on the businesses would involve costs and expenditure associated with the move including but not limited to removal expenses, legal and surveyor fees, taxes, costs of adapting new premises, temporary loss of profits during the period of the move, and any diminution of goodwill following the move (reflected in reduced profits). However, statutory compensation may be available through the Thames Tideway Tunnel compensation programme. Reasonable costs and expenditure incurred in association with the relocation of the businesses may be met by the project and significant impacts are unlikely.

J.5.178 The Thames Path would be temporarily diverted by approximately 20m. The *Equalities Impacts Assessment,* which accompanies the application, states that the diversion could have a differential impact on children, older people, disabled people, pregnant women and those with babies. However, these unavoidable delays would be minimal. All reasonable steps have been taken to minimise the impacts. In order to mitigate the effects, the *CoCP* Part A requires controls to ensure the safety of pedestrians crossing the haul route and requires diversions to be fully accessible and comply with Disability Discrimination Act requirements, as far as practical. It also requires controls to ensure the safety of pedestrians crossing the haul route and the *CoCP* Part B requires signposting of the diversion. The contractor would be required to put measures in place to manage potential conflicts with pedestrians and cyclists on the Thames Path.

J.5.179 The predicted construction noise levels at the worst affected houseboats moored at Nine Elms Pier and Tideway Village exceed the threshold for noise insulation provided by the Thames Tideway Tunnel noise insulation and temporary re-housing policy. However, the standard noise insulation measures available would not be effective or appropriate for houseboats. Residents of the houseboats who would be eligible for temporary re-housing would be re-housed only during those periods when noise levels exceed the thresholds given in the above policy. It is assumed that residents would return to their houseboats in the intervening period, and therefore, the effects of temporary re-housing would be short term.

J.5.180 It has been assumed that houseboat residents who take up the option of temporary re-housing would be re-housed within walking distance (considered to be a search area of approximately 1,600m) of their current

location. Houseboat residents may also be eligible to apply for reasonable costs and expenditure incurred in association with relocation to be met by Thames Water, including but not limited to removal expenses and the costs of securing new accommodation, in accordance with the Thames Tideway Tunnel compensation programme.

J.5.181 The scale of construction activity would represent a major benefit to the local employment market, including jobs and training opportunities. During construction there would be unavoidable impacts on residential amenity. During operation there would be no adverse socio-economic impacts. Once operational, there would be a substantial benefit to the recreational users of the River Thames in this location including the Westminster Boating Base through decreased exposure to pathogens (as a result of the project-wide proposals and the proposed interception works at the nearby Heathwall Pumping Station).

J.6 Overall conclusions

J.6.1 The proposed works at Kirtling Street would successfully meet the need to drive two sections of the main tunnel simultaneously: to Chambers Wharf in the east and Carnwath Road Riverside in the west. It would make a fundamental contribution to meeting the wider need for the project identified in the NPS.

J.6.2 The Kirtling Street site was selected after extensive engagement on a suitable site to meet this need. The site is appropriate and the proposals would directly meet the identified need. The proposals underwent extensive pre-application consultation and engagement since the site was identified following phase one consultation. The feedback received helped to minimise any potential impacts and achieve a quality design.

J.6.3 Given the scale of the problem of untreated sewage being discharged into the tidal Thames and the solution required, some disturbance during the construction period would be inevitable. While Thames Water sought to minimise any disturbance that would be experienced through sensitive design and mitigation, some negative impacts would likely remain including:

a. unavoidable temporary construction noise impacts on existing and anticipated residential uses

b. unavoidable temporary impacts on nearby landscapes and viewpoints

c. unavoidable temporary impacts on pedestrian accessibility on the Thames Path and minor delays to pedestrians

d. potential impacts on any below-ground heritage assets.

J.6.4 For each of these impacts, the project design was refined and practicable mitigation measures identified. The residual impacts are an unavoidable consequence of constructing the project in a dense urban environment.

J.6.5 The proposed works at the Kirtling Street site would make effective and efficient use of a partly vacant industrial site within one of the largest redevelopment areas in London. This would help to concentrate

construction effects into one of the least sensitive parts of the city. The principle of the use of the site received general support from stakeholders. This area also has established waterborne freight-handling use and Thames Water's commitment to the use of river-based transport at Kirtling Street would significantly reduce road-based construction transport. This site would make a fundamental contribution to the efficient delivery of the project as a whole, while minimising environmental and social impacts in London.

J.6.6 The proposed works at the Kirtling Street site and the mitigation measures developed and advanced as part of the application directly accord with the approach required by the NPS. Adverse effects have been minimised as far as possible and opportunities taken to enhance the local environment and leave a positive legacy.

J.6.7 Sections 8 and 9 of the *Planning Statement* consider the implications of the local effects of the works at Kirtling Street and the other sites, and describe 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 Kirtling Street, and the project as a whole, comply with the NPS and that development consent should be granted.

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Annex J: Drawings for Kirtling Street

List of drawings

Kirtling Street: Location plan

Kirtling Street: As existing site features plan

Kirtling Street: Construction phases plans

Kirtling Street: Land use plan

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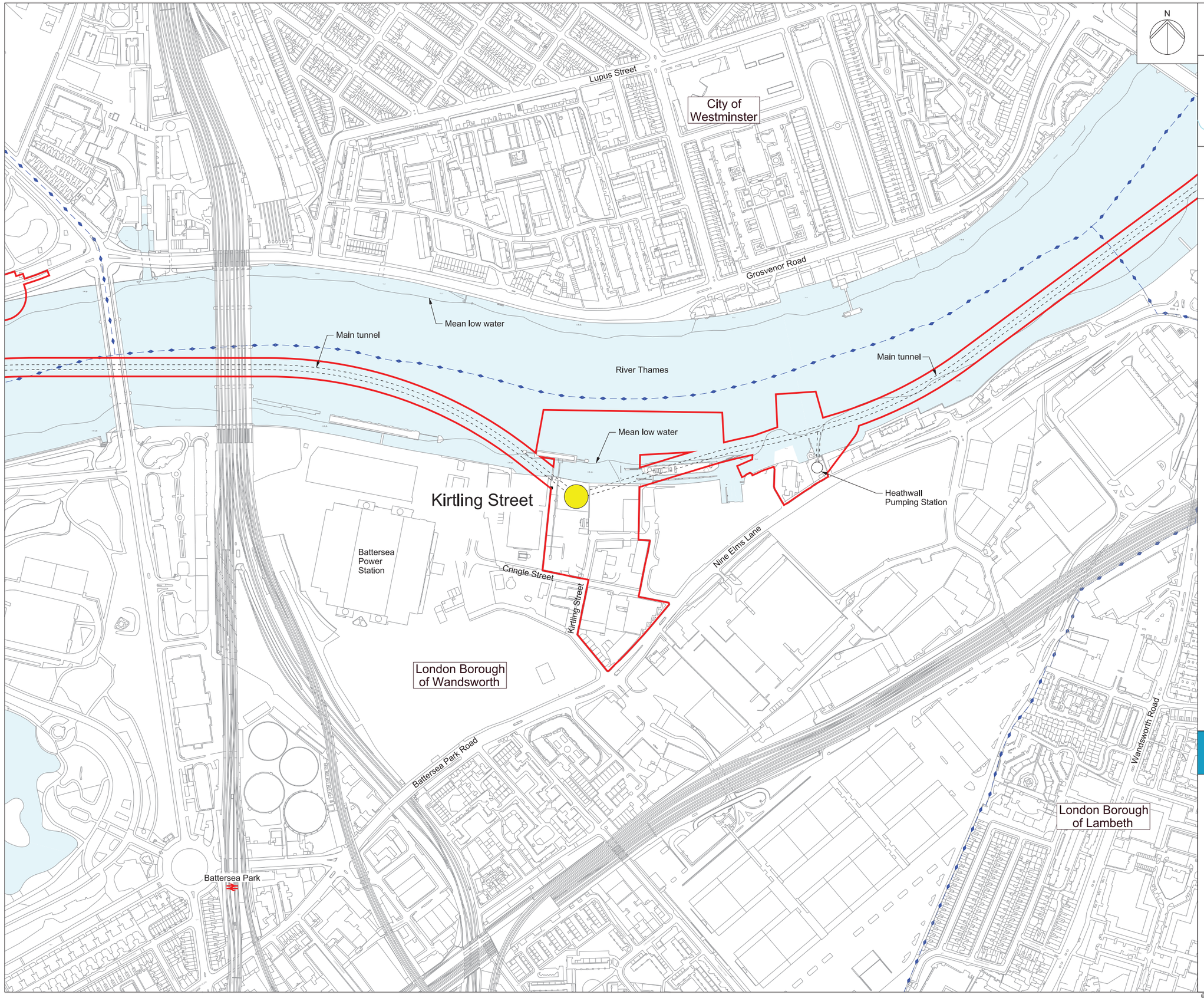


Keyplan:

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

Key:

- Local authority boundary
- Order limits
- Tunnel
- Shaft

Notes:

1. 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

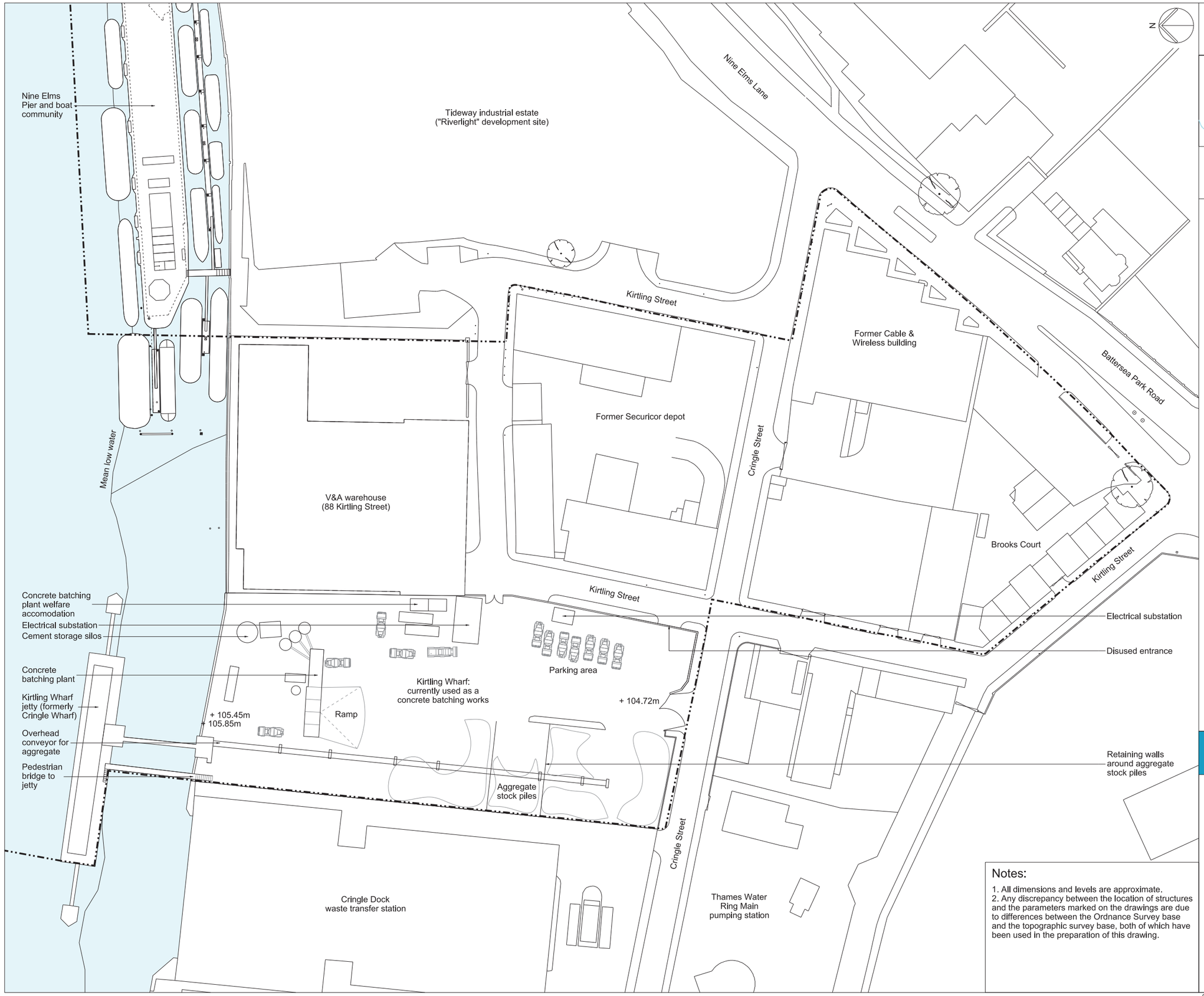
Location
Kirtling Street
London Borough of Wandsworth

Document Information
Application for Development Consent
Location plan

Book of plans - section 15
DCO-PP-13X-KRTST-150001
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Coordinates are to be Ordance 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)

10m 0 40m

Scale 1:500 at A1
1:1000 if reproduced at A3

FOR INFORMATION

Location

Kirtling Street
London Borough of Wandsworth

Document Information

Application for Development Consent

As existing
Site features plan
Book of plans - section 15

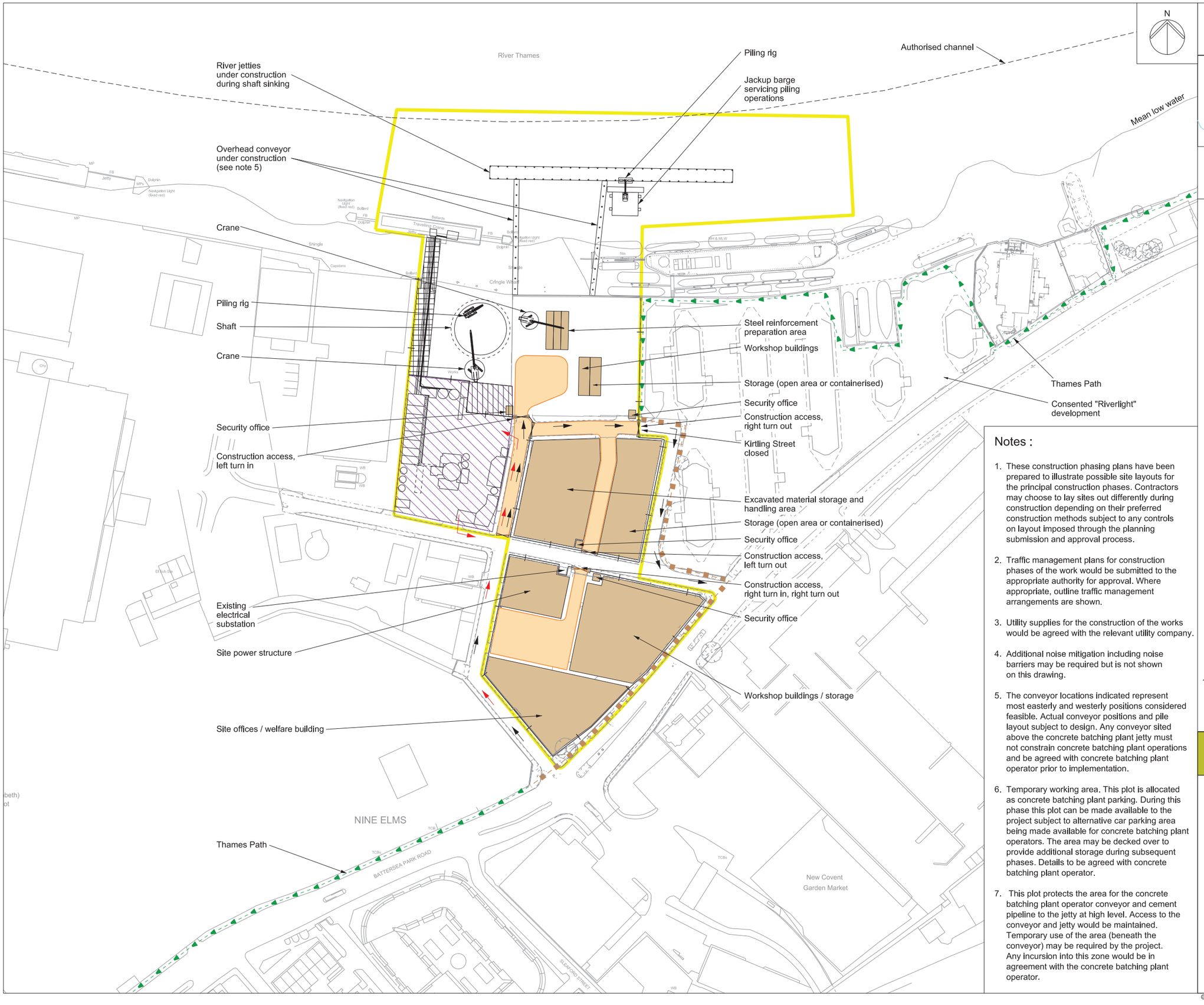
DCO-PP-13X-KRTST-150002
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

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.



N

Keyplan:

Coordinates are to be Ordance 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
- Existing public right of way
- Route of temporary diversion of right of way
- Site access
- Access / haul route
- Concrete batching plant site
- Project traffic
- Concrete batching plant traffic (others)
- See note 6 for details of this plot
- See note 7 for details of this plot

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.
5. The conveyor locations indicated represent most easterly and westerly positions considered feasible. Actual conveyor positions and pile layout subject to design. Any conveyor sited above the concrete batching plant jetty must not constrain concrete batching plant operations and be agreed with concrete batching plant operator prior to implementation.
6. Temporary working area. This plot is allocated as concrete batching plant parking. During this phase this plot can be made available to the project subject to alternative car parking area being made available for concrete batching plant operators. The area may be decked over to provide additional storage during subsequent phases. Details to be agreed with concrete batching plant operator.
7. This plot protects the area for the concrete batching plant operator conveyor and cement pipeline to the jetty at high level. Access to the conveyor and jetty would be maintained. Temporary use of the area (beneath the conveyor) may be required by the project. Any incursion into this zone would be in agreement with the concrete batching plant operator.

10m 0 100m

Scale 1:1000 at A1
1:2000 if reproduced at A3

ILLUSTRATIVE

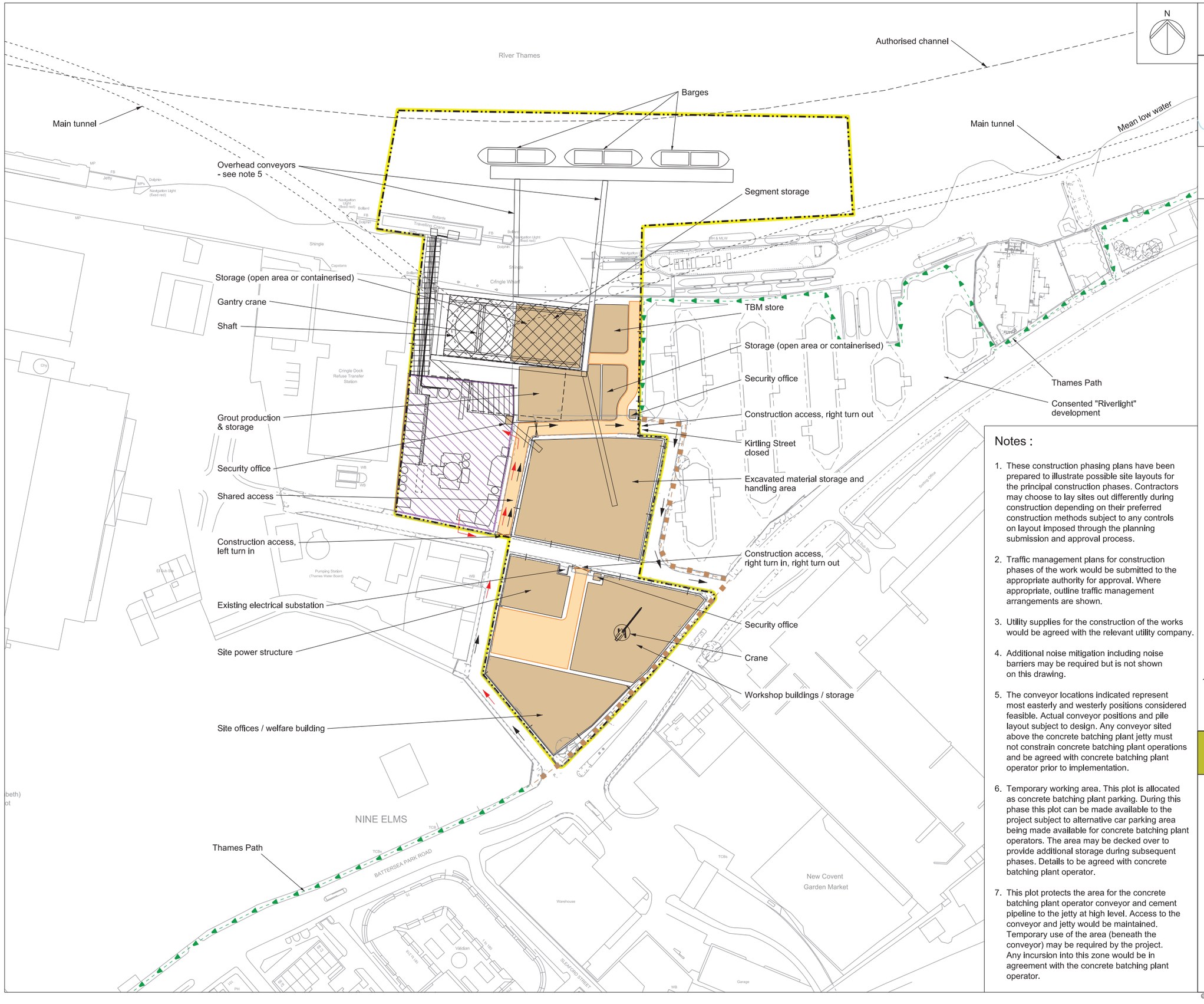
Location
Kirtling Street
London Borough of Wandsworth

Document Information
Application for Development Consent
Construction phases - phase 1
Site setup and shaft construction
Book of plans - section 15

DCO-PP-13X-KRTST-150012
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Coordinates are to be Ordance 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)
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- Existing public right of way
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- Site access
- Access / haul route
- Concrete batching plant site
- Project traffic
- Concrete batching plant traffic (others)
- See note 6 for details of this plot
- See note 7 for details of this plot
- Acoustic enclosure over shaft and gantry crane

Notes :

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10m 0 100m

Scale 1:1000 at A1
1:2000 if reproduced at A3

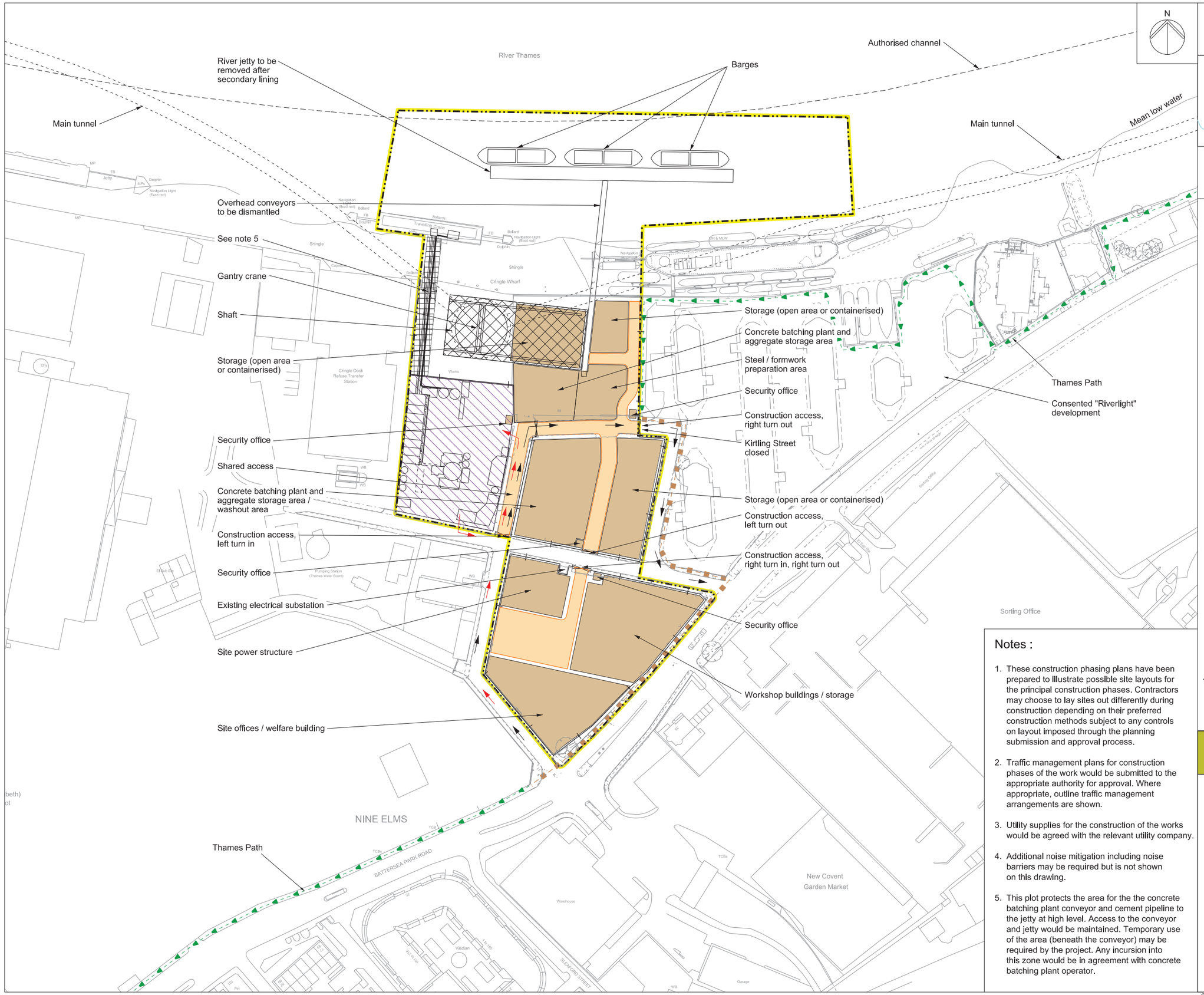
ILLUSTRATIVE

Location
Kirtling Street
London Borough of Wandsworth

Document Information
Application for Development Consent
Construction phases - phase 2
Tunnelling
Book of plans - section 15
DCO-PP-13X-KRTST-150013
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



N

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Keyplan:

Coordinates are to be Ordance 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)
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- Existing public right of way
- Route of temporary diversion of right of way
- Site access
- Access / haul route
- Concrete batching plant site
- Project traffic
- Concrete batching plant traffic (others)
- See note 5 for details of this plot
- Acoustic enclosure over shaft and gantry crane

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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.
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5. This plot protects the area for the the concrete batching plant conveyor and cement pipeline to the jetty at high level. Access to the conveyor and jetty would be maintained. Temporary use of the area (beneath the conveyor) may be required by the project. Any incursion into this zone would be in agreement with concrete batching plant operator.

10m 0 100m

Scale 1:1000 at A1
1:2000 if reproduced at A3

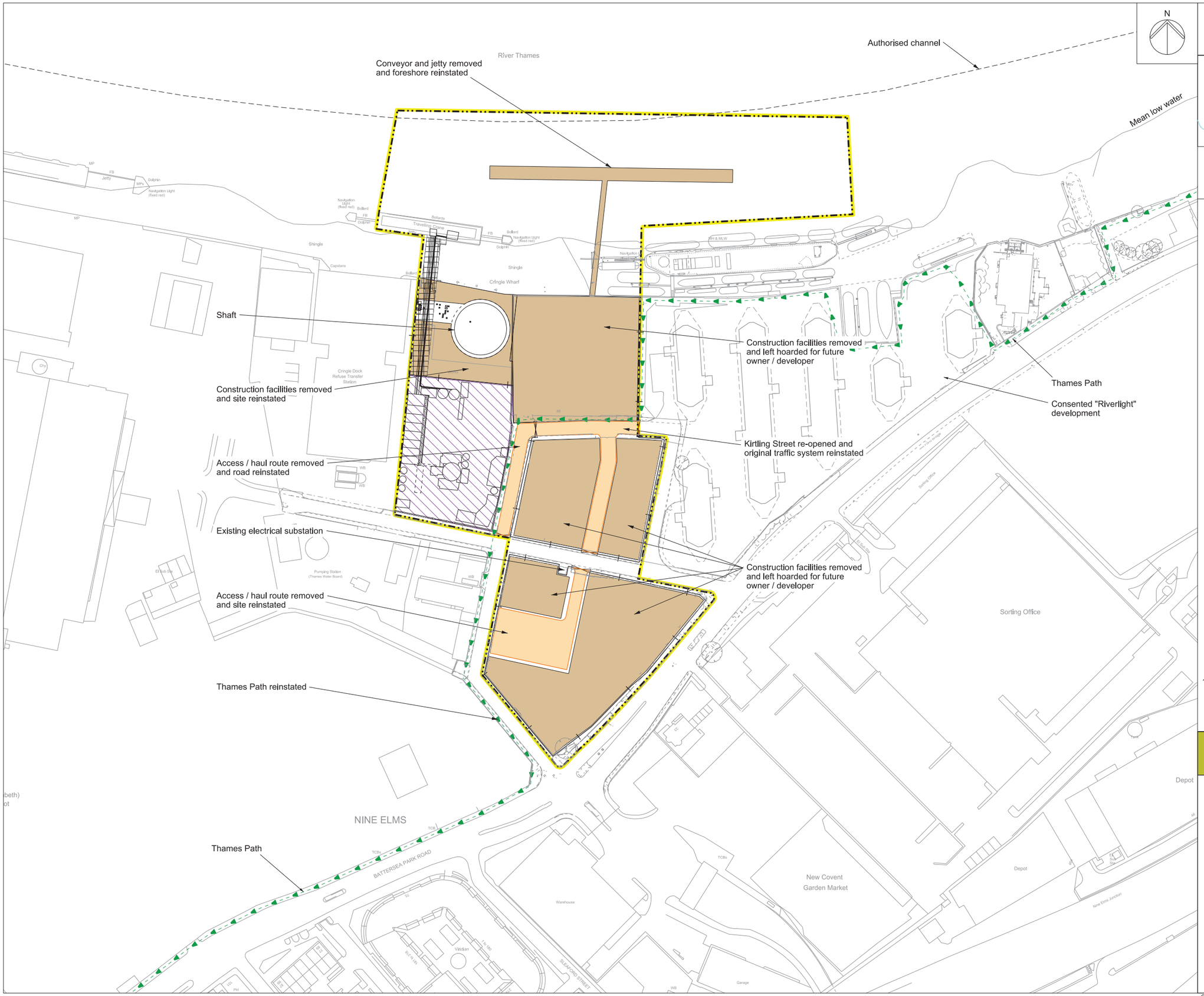
ILLUSTRATIVE

Location
Kirtling Street
London Borough of Wandsworth

Document Information
Application for Development Consent
Construction phases - phase 3
Secondary lining
Book of plans - section 15
DCO-PP-13X-KRTST-150014
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Coordinates are to be Ordance 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
- Existing public right of way
- Site access
- Access / haul route
- Concrete batching plant site
- See note 5 for details of this plot

Notes :

1. This plot protects the area for the the concrete batching plant conveyor and cement pipeline to the jetty at high level. Access to the conveyor and jetty would be maintained. Temporary use of the area (beneath the conveyor) may be required by the project. Any incursion into this zone would be in agreement with concrete batching plant operator.

10m 0 100m

Scale 1:1000 at A1
1:2000 if reproduced at A3

ILLUSTRATIVE

Location
Kirtling Street
London Borough of Wandsworth

Document Information
Application for Development Consent
Construction phases - phase 4
Site demobilisation
Book of plans - section 15
DCO-PP-13X-KRTST-150015
January 2013

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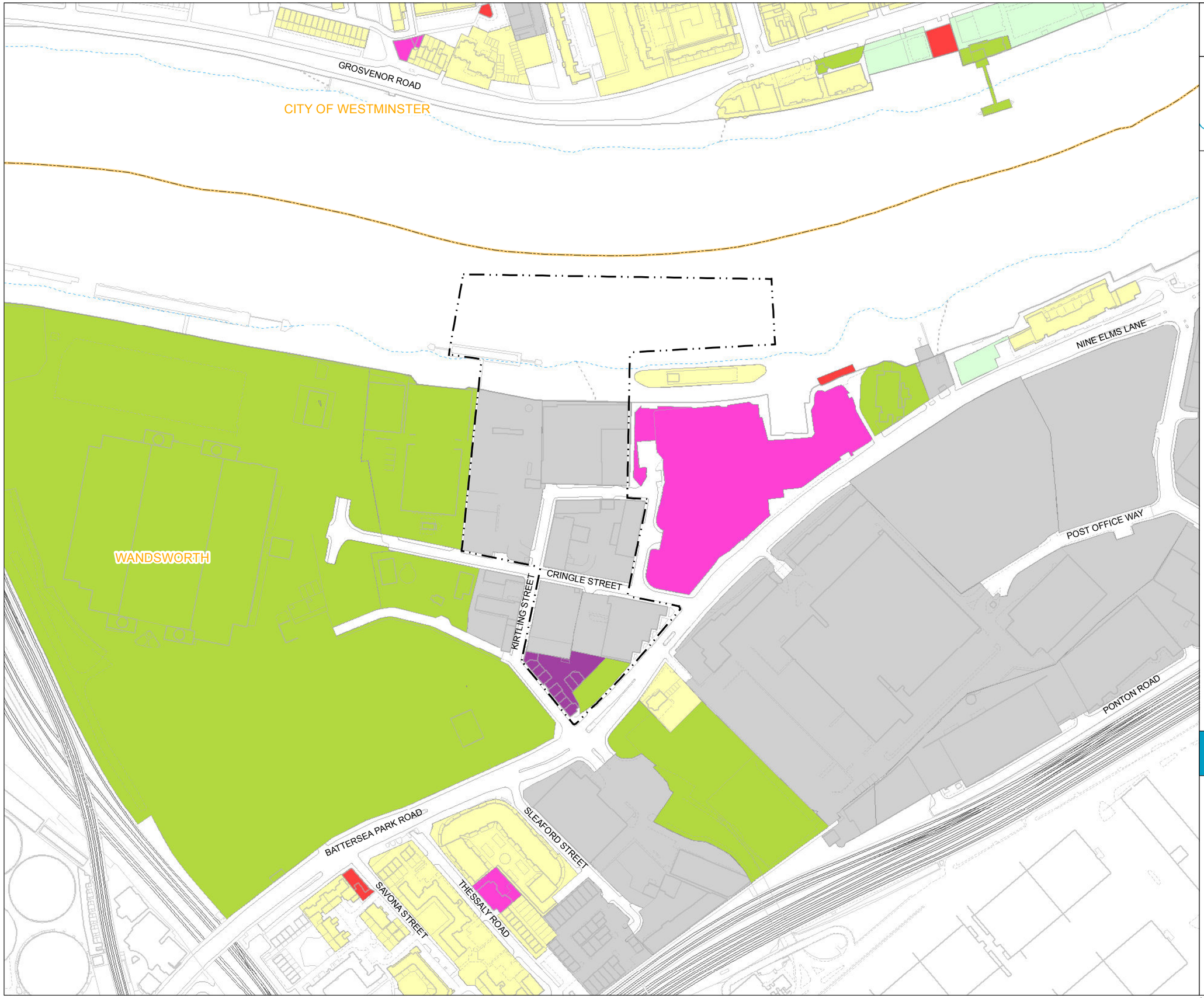

Keyplan:

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 C3-C4 (Dwelling Houses)
- Mixed Use
- Other
- Open Space

50 25 0 50 m

Scale 1 : 3,000 at A3

FOR INFORMATION

Location
Kirtling Street
London Borough of Wandsworth

Document Information
Planning Statement
Land use

1PL03-MG-00804
January 2013

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Thames Water

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Thames Water Utilities Limited
Clearwater Court, Vastern Road, Reading RG1 8DB

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