

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Planning Statement

Doc Ref: **7.01**

Appendix X

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

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Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Planning Statement

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Appendix X: Abbey Mills Pumping Station

X.1 Introduction

- X.1.1 A worksite is required to receive the main tunnel drive from Chambers Wharf and connect the main tunnel to the Lee Tunnel, which would transfer flows to Beckton Sewage Treatment Works for treatment. The proposed development site is known as Abbey Mills Pumping Station, which is located in the London Borough of Newham. The location of the site is illustrated in Annex X.
- X.1.2 This assessment is structured as follows:
- a. Section X.2 provides a brief description of the Abbey Mills Pumping Station site.
 - b. Section X.3 sets out the planning context for works in this location.
 - c. Section X.4 describes the site-specific development for which consent is sought and how the proposals evolved through consultation.
 - d. Section X.5 analyses the principal site-specific planning considerations and how the proposals comply with relevant planning policy.
 - e. Section X.6 provides an overall conclusion of the site-specific assessment for the proposed works at the site.

X.2 Site description

- X.2.1 Abbey Mills Pumping Station, located in the Stratford and New Town ward of Newham, is a strategic sewage pumping station on an extensive site, comprising a series of older and more modern pumping stations and associated infrastructure. An aerial photograph of the site is provided in Figure X.1 overleaf.
- X.2.2 The new development would be concentrated within the southern and western areas of the pumping station site, near the Lee Tunnel project works and the existing Station F pumping station.
- X.2.3 The site is bounded to the north and northeast by operational infrastructure and buildings associated with the pumping station, to the east and southeast by the Channelsea River and Abbey Creek, to the west by the Prescott Channel, Three Mills Lock and allotments, and by Riverside Road to the northwest.
- X.2.4 The pumping station is bounded to the north by a green corridor, 'the Greenway', which runs along the top of a man-made embankment above the Northern Outfall Sewer. The surrounding land to the north of the site is predominantly residential with allotments immediately abutting the site.
- X.2.5 Land use in the wider area is predominantly industrial. Beyond the Channelsea River and Abbey Creek to the east is an area of disused land and the Channelsea Business Centre on Canning Road and there is a gas works to the south.

Figure X.1 Aerial photograph of Abbey Mills Pumping Station



- X.2.6 The land to the west of the site, known as Three Mills Island, comprises a landscaped grassed area and various warehouses including Three Mills Studio. Three Mills Green is designated as green space and a local park. The area to the northwest of the site is residential.
- X.2.7 The River Lee is tidal to the south of Three Mills Lock as well as Channelsea River to the south and east of the site, and non-tidal to the north of Three Mills Lock.
- X.2.8 The key features of the site are illustrated in Annex X.

X.3 Planning context

- X.3.1 In developing the proposals and mitigation measures for the development at Abbey Mills Pumping Station Thames Water¹ 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.
- X.3.2 In this case the local development plan comprises the *London Plan* (2011), the London Borough of Newham's *Core Strategy* 2011 and the London Borough of Newham's saved *Unitary Development Plan (UDP)* 2001 Policies.
- X.3.3 The site falls within two local planning authority boundaries comprising London Borough of Newham and the London Legacy Development Corporation (replacing the London Thames Gateway Development Corporation). The London Legacy Development Corporation is the

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

- planning authority that would determine any future details submitted to comply with the development consent order (DCO) Requirements.
- X.3.4 Under the Town and Country Planning Act 1990, Abbey Mills Pumping Station constitutes operational land that is specifically used or held for the purposes of carrying out Thames Water's statutory undertakings.
- X.3.5 Policy INF3 in the *Core Strategy* provides explicit support for the project, which is designated under *Core Strategy* spatial designation U2, which passes through Abbey Mills Pumping Station.
- X.3.6 The Abbey Mills Pumping Station is located within a network of green space. Three Mills Green to the west of the site is also within the green space network and is identified as a local park. The Greenway, to the north of the site, is designated Metropolitan Open Land and Abbey Mills Pumping Station falls within an area of search for a new area of Metropolitan Open Land, although this has not yet been defined further or adopted.
- X.3.7 The Greenway and sites to the north and south of the site along the River Lee corridor are part of the Lee Valley Regional Park for which the Lee Valley Regional Park Authority is responsible. The authority has published the Lee Valley Regional Park Plan 2000, which sets out policies and objectives for the park. The plan is not a development plan for the purposes of considering planning applications, although some of its proposals and policies were included in the London Borough of Newham's *UDP*.
- X.3.8 As defined in the *Core Strategy* and saved *UDP* policies, the site falls within the Three Mills Conservation Area, and the Lee Valley Archaeological Priority Area. There are no listed buildings within on the site itself, however there are several listed buildings located north of the site within the pumping station complex, including the original Grade II* listed original pumping station, Station A.
- X.3.9 The majority of the site is not designated for nature conservation, but the surrounding watercourses (Prescott Channel, Channelsea River and Abbey Creek) are designated as Sites of Importance for Nature Conservation and form part of the London-wide Blue Ribbon Network. The part of the site that extends into the Prescott Channel is therefore within the Site of Importance for Nature Conservation.
- X.3.10 The main flood risk to the site is from the tidal River Thames, River Lee and tributaries (Prescott Channel and Channelsea River) which are located adjacent to the site. The site lies within the 'high probability' flood zone, although it is protected by flood defences.
- X.3.11 A number of relevant planning applications have been submitted within the last five years. The Lee Tunnel and Beckton Sewage Treatment Works Extension scheme comprises a sewage storage and transfer tunnel (the 'Lee Tunnel') between Abbey Mills Pumping Station and Beckton Sewage Treatment Works, and an extension to Beckton Sewage Treatment Works. Planning permission 08/01159/LTGDC and its subsequent amendments is currently being implemented at Abbey Mills Pumping Station.

- X.3.12 A number of other minor planning and listed building consent permissions are in place at Abbey Mills Pumping Station.

X.4 Description of development

Overview

- X.4.1 The proposed development at Abbey Mills Pumping Station would connect the main tunnel to the Lee Tunnel, which is currently under construction. The discharges from the CSOs, collected by the Thames Tideway Tunnel would be transferred via the Lee Tunnel to Beckton Sewage Works. The Abbey Mills CSO would be intercepted by the Lee Tunnel. There would be no new combined sewer overflow interception at Abbey Mills Pumping Station as part of the project as the Abbey Mills CSO would already have been intercepted by the Lee Tunnel.
- X.4.2 The works plan for this site, included in the *Book of Plans*, shows the main tunnel (Work No. 1d) and the Abbey Mills Pumping Station main tunnel shaft (Work No. 26a). Work No. 26b is the Abbey Mills Pumping Station associated development, namely works to establish a main tunnel reception site for use in constructing, connecting and operating the main tunnel (east).
- X.4.3 Figure X.2 provides a visualisation of the illustrative proposals at Abbey Mills Pumping Station.

Figure X.2 Visualisation of Abbey Mills Pumping Station



Application for development consent

- X.4.4 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 Site works parameter plan, included in the *Book of Plans*, which defines the zones within which specific elements of the proposals would be located. Table X.1 below lists the application plans of relevance to this site, and their status.

Table X.1 Abbey Mills Pumping Station: Drawings that define the proposed development

Drawing title	Status	Location
Proposed schedule of works	For approval	Schedule 1 of <i>The Draft Thames Water Utilities Limited (Thames Tideway Tunnel) Development Consent Order</i> (the 'Draft DCO')
Access plan	For approval	<i>Book of Plans</i> , Vol 14, Section 27
Site works parameter plan	For approval	<i>Book of Plans</i> , Vol 14, Section 27
Permanent works layout	Illustrative	<i>Book of Plans</i> , Vol 14, Section 27
Proposed site features plan	Illustrative except the above-ground structures, which is indicative	<i>Book of Plans</i> , Vol 14, Section 27
Section AA	Illustrative	<i>Book of Plans</i> , Vol 14, Section 27
As existing and proposed south elevation	Illustrative	<i>Book of Plans</i> , Vol 14, Section 27
As existing and proposed west elevation	Illustrative	<i>Book of Plans</i> , Vol 14, Section 27
Construction phases (Various)	Illustrative	<i>Book of Plans</i> , Vol 14, Section 27
Construction phase 2: Other structures and secondary lining	Illustrative	<i>Book of Plans</i> , Vol 14, Section 27
Highway layout during construction (various)	Illustrative	<i>Transport Assessment Abbey Mills Pumping Station</i> figures
Permanent highway layout (various)	Illustrative	<i>Transport Assessment Abbey Mills Pumping Station</i> figures

- X.4.5 The Nationally Significant Infrastructure Project (NSIP) works (Work Nos. 26a) comprise the construction of a main tunnel shaft with an internal diameter of approximately 20m and depth of 67m. Associated development (Work No. 26b) comprises works to establish a main tunnel reception site for use in constructing, connecting and operating the main tunnel (east) including construction of structures for air management equipment, including filters and ventilation columns and associated below ground ducts and chambers.

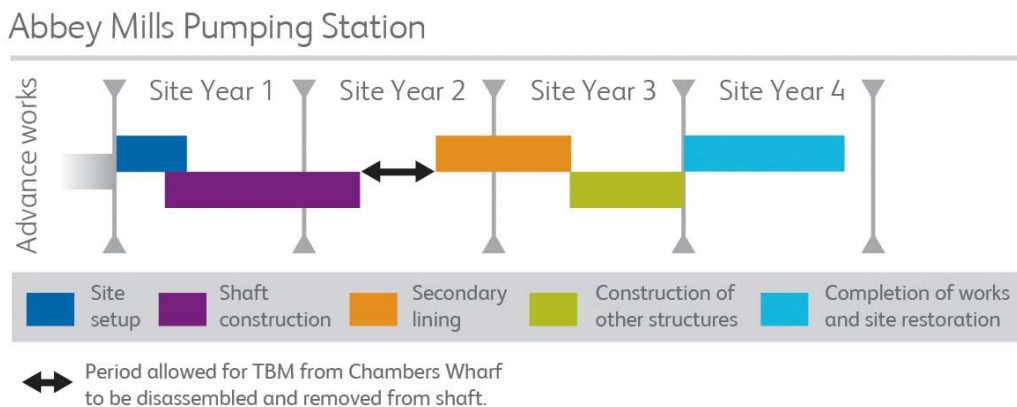
- X.4.6 The full description of the proposed development can be found in Schedule 1 of the *Draft DCO*. Further details temporary construction

works and permanent operational structures are contained below and an extended description can also be found in the *Environmental Statement* (Vol 25).

Construction

- X.4.7 Construction at Abbey Mills Pumping Station is anticipated to take approximately four years and would involve the following stages (with some overlaps):
- site set-up (approximately four months)
 - shaft construction (approximately 15 months)
 - tunnelling/tunnel boring machine (TBM) reception and main tunnel secondary lining (approximately eight months)
 - construction of other structures (approximately seven months)
 - completion of works and site restoration (approximately ten months).
- X.4.8 Connection of utilities and diversion of utilities may be conducted in advance of the main activities listed above.

Figure X.3 Construction timeline



- X.4.9 This site would operate to the standard, extended and continuous working hours for various phases and activities as set out in the *CoCP* Part A and B (Section 4). Standard working hours would be applied to all of the above phases of construction work apart from elements of shaft construction, tunnelling and secondary lining as described below.
- X.4.10 It is assumed that extended hours would be required approximately twice a week during diaphragm walling for a total duration of approximately four months, and once a month during other major concrete pours. Extended working hours are required at this site to allow for major concrete pours for shaft construction including diaphragm wall panels, base slab, roof slab and other large elements.
- X.4.11 Continuous hours would be required during tunnelling for a duration of approximately three and a half months and for secondary lining for eight months although these activities are generally underground. The exact timing of any extended hours of working would be consulted on, and notified to the London Borough of Newham. During these periods only

those activities directly connected with the task would be permitted within the varied hours.

- X.4.12 Construction traffic would access the site from High Street (A11), turning right into Abbey Lane and turning left into the site via an existing entrance from Gay Road. Traffic would leave the site via the same route. Suspension of parking bays and parking restrictions would be required on Abbey Lane and Gay Road during construction.
- X.4.13 Should the contractor(s) decide to use river transport, it would be necessary to divert the existing footpath along the east side of the Prescott Channel and provide a temporary footbridge over the Prescott Channel.
- X.4.14 It is anticipated that an average of 17 heavy goods vehicles (HGVs) would access the site per day for the majority of the construction period. This would rise to approximately 70 HGVs per day over an estimated four month period during the construction of the main tunnel shaft. There may be additional periods during key construction activities when these HGV numbers would need to be exceeded. Further details regarding the number and breakdown of anticipated heavy goods vehicles accessing the site per day is contained within the *Transport Assessment*, which accompanies the application.
- X.4.15 Potential layouts of the construction site are shown on the Construction phasing plans in Annex X. It should be noted that these layouts are illustrative only. The contractor(s) 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

- X.4.16 Prior to the main construction works commencing the site boundary would be established and would consist of close boarded hoarding panels to the heights specified in the *CoCP*. The worksite area would be coordinated with the Lee Tunnel designs and permanent layouts. Welfare and office facilities would also be set up in this phase.

Shaft construction

- X.4.17 The 20m internal diameter main tunnel shaft would then be constructed by diaphragm wall techniques.
- X.4.18 During diaphragm wall excavation the trench would be filled with bentonite for ground support; on completion of the excavation cycle, steel bar reinforcement cages would be lowered in before concrete is pumped into the trench in order to displace the bentonite and form a wall panel.
- X.4.19 This process would be repeated for each diaphragm wall panel in order to create the full circle of the shaft. Diaphragm wall excavated material would be processed as required and then loaded onto lorries for transport off site.
- X.4.20 The shaft excavation would commence after the diaphragm walls are complete. Excavated material would be put into skips within the shaft working area and hoisted by crawler crane from the shaft and deposited in a suitable storage area. After any required treatment, the material would

be loaded onto lorries for transport off site. Once the excavation is complete, a steel reinforced concrete base plug would be formed at the base of the shaft.

- X.4.21 It is anticipated that dewatering would be required. Dewatering wells would be drilled from the surface on within the shaft (a process known as 'internal dewatering') and groundwater extracted via pumps.
- X.4.22 It is anticipated that ground treatment would be required within the chalk beneath the base slab and that treated blocks would be constructed either side of the shaft to facilitate the breaking-in of the TBM.

Tunnel works

- X.4.23 A concrete batching facility would be set up on site for main tunnel and shaft secondary lining works
- X.4.24 The new shaft would be used to receive the TBM driven from Chambers Wharf. A temporary cradle would be constructed to receive the TBM and it would be dismantled. Large mobile cranes would be used to raise the TBM sections from the shaft for removal offsite by road.
- X.4.25 It is assumed that the short section of tunnel connecting the new Abbey Mills Pumping Station shaft to the existing Lee Tunnel shaft would be constructed using sprayed concrete lining techniques and ground treatment (by grouting or ground freezing) as required. Provision is being made within the Lee Tunnel shaft to accommodate the new tunnel connection.
- X.4.26 A tunnel portal with a reception seal would be formed in the shaft lining. The portals would consist of cast *in situ* concrete with a sealing arrangement tied to the shaft lining. External ground treatment would be required, using grouting or ground freezing techniques.
- X.4.27 The breakthrough to the existing shaft would be carried out through a preformed soft eye only once the Lee Tunnel has been temporarily taken out of use (the tunnel connection would require taking the Lee Tunnel out of operation for a period and pumped out. Once broken through and the connection has been made, a temporary bulkhead seal between the two systems would be installed. The Lee Tunnel system would then be reinstated until the commissioning period when a further shut down period would be required.

Secondary lining of tunnel and shaft

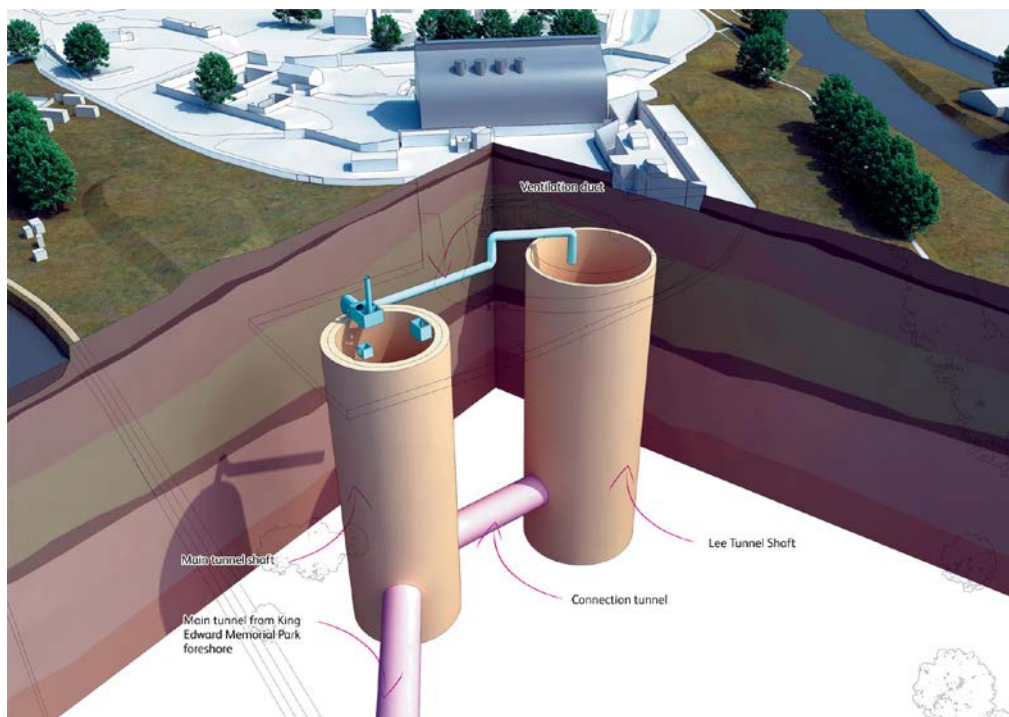
- X.4.28 Secondary lining is an additional layer of concrete placed against the inside of the tunnel's primary concrete segmental lining for watertightness and to improve the overall structural durability. It was assumed that the main tunnel would have a reinforced concrete secondary lining.
- X.4.29 It was assumed that on completion of the tunnelling phase, a batching plant would be mobilised to site. The plant would supply the secondary lining of the main tunnel, the short connection tunnel and the shaft. Concrete would be batched on the surface and pumped or skipped to the tunnel.

- X.4.30 The secondary lining of the 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.
- X.4.31 It is assumed that the lining of the shaft would be made of reinforced concrete placed inside the shaft's primary support. The steel reinforcement would be assembled in sections and a shutter would be used to cast the concrete against. The shutter would be assembled at the bottom of the shaft and sections of reinforcement installed and lining cast progressively up the shaft.
- X.4.32 Any reinforced concrete structures internal to the shaft and the roof slab would be constructed in a similar manner progressively from the shaft bottom. In some cases precast concrete members may be used.

Construction of other structures

- X.4.33 It is assumed that the majority of air management infrastructure required at Abbey Mills Pumping Station would already have been installed as part of the Lee Tunnel project. However, the new Thames Tideway Tunnel shaft would still need to be connected to this and this would require the construction of a ventilation outlet at the top of the shaft and some near surface piping or culverts to allow the ventilation to be connected into the Lee Tunnel infrastructure.
- X.4.34 Figure X.4 below provides an illustration of the key functional components of the proposed works. It shows the proposed ventilation structures in blue, and the main tunnel running through the base of the shaft, and the short connection tunnel to the Lee Tunnel shaft, in pink.

Figure X.4 Functional components diagram



Completion of works and site restoration

- X.4.35 On completion of the construction works the permanent works area would be restored. No additional landscaping works are proposed.

Operation

Main tunnel shaft

- X.4.36 The main tunnel shaft would have an approximate internal diameter of 20m and be approximately 66m deep from ground level to invert of the tunnel.
- X.4.37 The base of the shaft would join up with the main tunnel.
- X.4.38 Ground level access covers would be installed on the top of the shaft for inspection and maintenance purposes.

Ventilation structures

- X.4.39 The ventilation column serving the shaft would have an approximate internal diameter of 1m and be approximately 9m high. The diameter of the ventilation column is dictated by the peak air flow rate. The minimum height of the ventilation column is determined by the results of odour dispersion modelling and the maximum height is influenced by the aesthetics proportions of the columns.
- X.4.40 Air movement in the shaft is also managed by three other ventilation structures. The plan areas and heights of these structures are approximately:
- 2m by 2m by 2m high minimum and 4m by 4m by 4m high maximum
 - 2m by 3m by 2.5m high minimum and 4m by 5m by 4.5m high maximum
 - 4m by 3m by 2m high minimum and 7m by 6m by 5m high maximum

Electrical and control kiosk

- X.4.41 The control kiosk would be approximately 4m by 2m by 3m high (refer to the Permanent works layout plan in *Book of Plans*). An illustration of the completed works is provided in Figure X.2.

Access and movement

- X.4.42 Vehicle access to the site during construction and operation would be from the existing Thames Water entrance off Gay Road.
- X.4.43 Vehicles would travel along The High Street (A11), turn right into Abbey Lane and then left into the site via an existing entrance to the pumping station from Gay Road. Traffic would egress the site via the same route. Further detailed information on traffic and access can be found in the *Transport Assessment*.
- X.4.44 A permanent hardstanding area would be provided around the main tunnel shaft for access purposes. This would be accessed via access roads within the Thames Water site either existing or constructed for the Lee Tunnel.

Typical maintenance regime

- X.4.45 Site visits would be required approximately every three to six months to carry out inspections of the ventilation chamber, ventilation column, and electrical and control kiosk. It is likely that this would involve a visit by staff in a small van. Staff would open access covers to inspect and carry out minor maintenance of below-ground equipment.
- X.4.46 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 drop shaft. This process would take several weeks.
- X.4.47 The tunnel inspection vehicle required for the ten-yearly tunnel inspections would enter the main tunnel via a large access opening in the main tunnel shaft cover slab. A four-person cradle would enter via a separate access opening in the same cover slab. A further access opening would be provided for CCTV surveys and secondary man access if required.

Scheme development

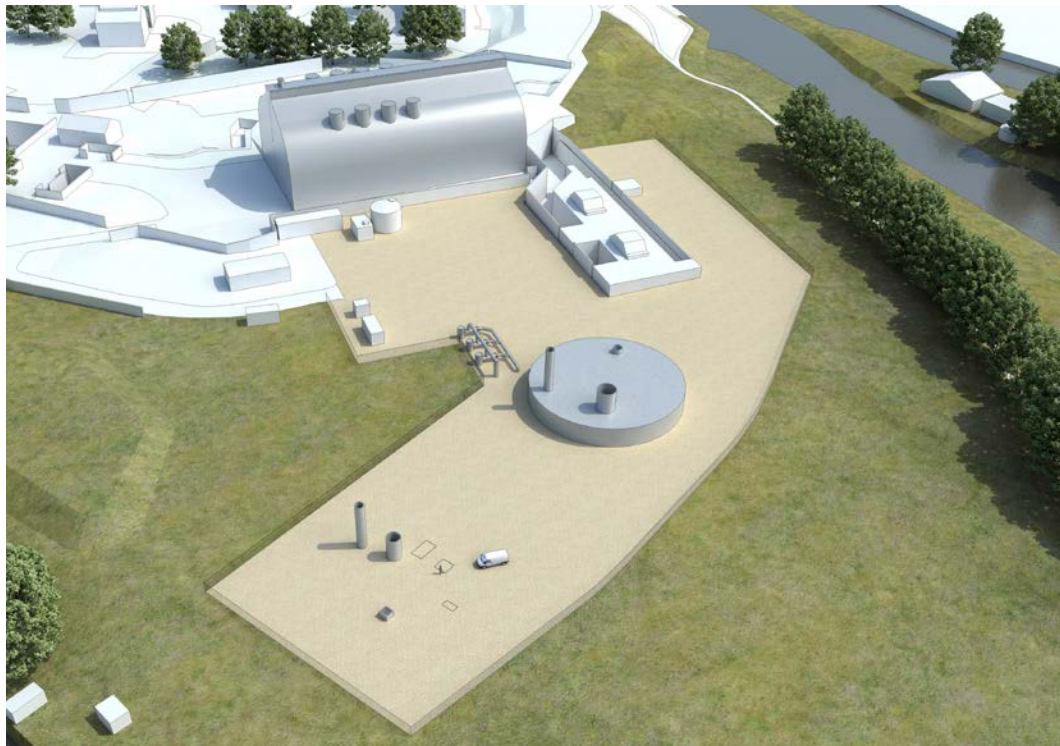
- X.4.48 The proposed Abbey Mills Pumping Station site was subject to over two years of extensive consultation and engagement. The site featured as a preferred site in two full rounds of public consultation and a period of pre-application publicity. Throughout this period the scheme evolved in response to consultation, through engagement with key stakeholders, and through on-going design development. The *Consultation Report*, which accompanies the application, contains detailed information on the consultation process.
- X.4.49 Three sites were originally shortlisted to build the main tunnel: Three Mills Studios, Three Mills Green and Abbey Mills Pumping Station. At phase one consultation, which ran from September 2010 to January 2011, the preferred site to drive the main tunnel to King's Stairs Gardens in the London Borough of Southwark was Abbey Mills Pumping Station. Figure X.5 overleaf illustrates the design presented at phase one consultation.

Figure X.5 Visualisation of the phase one consultation design



- X.4.50 As detailed in the *Final Report on Site Selection Process*, which accompanies the application, one issue of particular note that was considered in significant detail was the direction of drive for construction of the main tunnel. Initially it was intended to drive the tunnel from Abbey Mills Pumping Station to King's Stairs Gardens. However towards the end of phase one consultation there was a change in circumstances at Chambers Wharf in the London Borough of Southwark and the land was put up for sale. The site is a predominantly cleared brownfield site awaiting redevelopment and subsequently Thames Water purchased the property as a potential alternative site to the use of King's Stairs Gardens.
- X.4.51 Following interim engagement and further technical analysis and review of the drive strategy, Chambers Wharf became the preferred site to drive the tunnel to Abbey Mills Pumping Station. One principal reason for this was that Chambers Wharf has better access to the tidal Thames and can facilitate the use of 1,500 tonne barges whereas Abbey Mills Pumping Station has limited access to the River Lee, which experiences significant tidal variations and can only accommodate smaller barges in restricted numbers. Because of the barging constraints at Abbey Mills Pumping Station the proposed use as a main tunnel drive site would lead to increased dependence on road based transport which in this instance would be considered unsustainable and would not be a preferred option.
- X.4.52 Following extensive analysis and design development, Abbey Mills Pumping Station remained the preferred site, but its proposed use changed from a tunnel drive to a tunnel reception site, at phase two consultation which ran from November 2011 to February 2012. Figure X.6 overleaf provides an illustration of the design presented at phase two consultation.

Figure X.6 Visualisation of the phase two consultation design



- X.4.53 The proposed works at Abbey Mills Pumping Station continued to evolve in response to consultation responses and on-going engagement. Following further improvements and the identification of mitigation measures where possible, the site was publicised as Thames Water's proposed site at Section 48 publicity, which ran from July 2012 to October 2012.
- X.4.54 After Section 48 publicity, the shortlisted sites were re-reviewed in response to technical concerns about the Three Mills Green and Three Mills Studios sites. With the benefit of additional information and further design development, it was confirmed that it would be technically difficult to transfer all the flows from the main tunnel via either of these sites under Prescott Channel and connect them to the Lee Tunnel shaft, which is located within the Abbey Mills Pumping Station complex. Therefore it was concluded that these sites should not be on the final short list of sites. This meant that after the review Abbey Mills Pumping Station was the only viable site.
- X.4.55 The principal issues that arose from consultation, Section 48 publicity, and design development are identified below. These are subsequently addressed in the planning assessment in Section X.5 which follows:
- a. Principle of the use of the site: This issue is addressed in the Meeting the need and Land use including open space, green infrastructure and green belt subsections below.
 - b. The need for flexibility in design: This issue is addressed in the Good design subsection below.

- c. Design should be sensitive to the local townscape: This issue is addressed in the Good design, and Landscape and visual (including townscape), and Historic environment subsections below.
- d. The effect of the proposed works on amenity: This issue is addressed in the Air quality, emissions, dust and odour, Noise and vibration, Landscape and visual (including townscape), Light, and Socio-economic subsections below.
- e. The proposals should incorporate public/open/green space and retain any land not required for operational purposes as open space: This issue is addressed in the Land use including open space, green infrastructure and green belt subsection below.

X.5 Site-specific planning considerations

X.5.1 This section provides an analysis of the key planning considerations associated with the proposed works at Abbey Mills Pumping Station. It considers the issues and factors identified in the NPS and other issues such as landscape and visual and heritage matters which arose from consultation and are relevant to the site. The design response to each of these issues was informed by extensive consultation with stakeholders, as set out in the *Consultation Report*, and detailed below.

Meeting the need

X.5.2 The proposed site at Abbey Mills Pumping Station forms a vital component of the project. It would be successful in meeting the specific need of facilitating construction of the main tunnel, and connecting it to the Lee Tunnel which would transfer flows to Beckton Sewage Treatment Works for treatment. The works would make a contribution to the wider need for the project and delivery of the infrastructure as identified in the NPS.

X.5.3 The proposed site was selected through a robust site selection process and was subject to over two years of extensive consultation and engagement. The site selection methodology used to select the site was applied in a transparent, consistent and fair manner across all sites investigated over the route of the tunnel, was subject to consultation with local authorities and key stakeholders. Abbey Mills Pumping Station is the only viable site to connect the main tunnel to the Lee Tunnel shaft.

X.5.4 The proposed use of Abbey Mills Pumping Station attracted a modest number of comments from stakeholders. There is broad consensus that the works are required and that this is an appropriate site, but concerns focused on the possible impacts of construction, the need for mitigation to ensure such impacts are not significant, and the importance of good design.

Good design

X.5.5 The amount, layout and scale of the proposed structures are primarily dictated by the function they need to perform in transferring and directing flows from the Thames Tideway Tunnel into the Lee Tunnel, as well as the layout of the existing pumping station infrastructure and infrastructure that

is currently under construction. The proposals are also a product of the function they need to perform in transferring and directing flows through the site, the need to carry out regular routine maintenance of plant, and the requirements of health and safety legislation.

X.5.6 The design of the proposals for the site evolved through two rounds of consultation and continued engagement with key stakeholders including the Design Council CABE. The detail of the consultation process for the site is reported in the *Consultation Report* and the *Design and Access Statement*, which accompanies the application.

X.5.7 The principal issues that influenced design at Abbey Mills Pumping Station arising from Thames Water's analysis of site opportunities and constraints include:

- a. Design the works with the flexibility to fit with the existing operational pumping station site and the final layout of the Lee Tunnel project works.
- b. Design the project works to be in keeping with the existing site, and to preserve and contribute to the historical use of the site as a strategic sewage pumping station site.
- c. Managing construction impacts.

The need for flexibility

X.5.8 In the application for development consent, Thames Water sought to achieve an appropriate balance between certainty and flexibility. Approval is therefore sought through the application for a scheme framed within defined parameters and design principles.

X.5.9 The design proposals at Abbey Mills Pumping Station require a high level of flexibility. The pumping station is undergoing considerable change and expansion as part of the Lee Tunnel scheme. In order to ensure that the project works are compatible with this scheme and any associated final design amendments (design principle ABMPS.01), the design presented in this application is illustrative, except for the Site works parameter plans, which are for approval.

X.5.10 The Site works parameter plans define the zones within which certain elements of the project would be located, including vertical parameters which limit the height of the proposed structures.

X.5.11 Illustrative designs are also submitted as part of this application to show how the site could look once construction works are complete, but these are not submitted for approval. There is a Requirement to submit design details to the London Legacy Development Corporation, for approval, at a later date. Those elements to be submitted for detailed approval by the corporation must be consistent with the general and site-specific design principles which are set out in the *Design Principles* document submitted for approval as part of the application.

The operational site and its historical use

X.5.12 A key design aspiration for further developing the designs at a later date is to ensure the designs are in keeping with their operational surroundings

and to contribute to the historical use of the site as a strategic pumping station.

- X.5.13 Abbey Mills Pumping Station was constructed in the 1860s alongside the newly constructed Northern Outfall Sewer. The complex of strategically important sewage infrastructure has developed incrementally, such that the site now houses many buildings and an extensive network of above and below ground infrastructure. The Lee Tunnel scheme is currently under construction at the site.
- X.5.14 The project proposals at the site would be the next significant development to take place at this strategically important sewage pumping station, one which would contribute to and preserve its historical use.
- X.5.15 The setting of listed buildings and the character of the Three Mills Conservation Area were also design considerations and informed the siting of the proposed works parameters. The site lies approximately 130m southwest of the Grade II listed industrial buildings around the Grade II* listed Abbey Mills Pumping Station A; however, it is physically and visually separated by modern pumping station buildings and infrastructure.
- X.5.16 The proposed structures would be modest in comparison to the below-ground works and the existing and approved new structures at the sewage treatment works. The appearance of the proposed above-ground structures would be appropriate and in keeping with existing structures, plant and buildings at the site and would not dominate any views into the site from public viewpoints. The project signature design would not be used for ventilation outlets as this would be out of keeping with the operational site (design principle ABMPS.02). Materials shall be robust and comply with Thames Water standard requirements (design principle ABMPS.05).
- X.5.17 The proposed above-ground structures would be integrated around the existing vehicular and pedestrian routes within the site. No additional landscaping works are proposed.

Managing impacts of construction

- X.5.18 The *CoCP* submitted as part of the application sets out how the environmental effects resulting from the construction of the project would be managed. The *Draft DCO* includes requirements that the construction works are to be carried out in accordance with the *CoCP*.
- X.5.19 Design measures to manage impacts of construction traffic are outlined in *CoCP* Part A, which includes the provision of site-specific transport management plans that set out how vehicular access to the site would be managed so as to minimise impact on the local area and communicate this with the local borough and other stakeholders.
- X.5.20 Further specific design measures to minimise temporary construction impacts at this site are outlined in the *CoCP* Part B and include the specification of construction traffic access, tree protection measures, an archaeological watching brief and the maintaining of the footpath around the southern perimeter of the site.

X.5.21 In conclusion, the proposals for Abbey Mills Pumping Station were carefully developed through a collaborative process of design review and extensive consultation. The proposed development took account of both aesthetics and functionality through good design and architecture, as well as appropriate layout and siting, and would enhance the quality of the area. The site-specific *Design Principles* and Requirements were developed with key stakeholders to ensure that the details of landscaping and materials would be submitted to the local planning authority for approval and would be visually attractive, sustainable, usable and durable.

Water resources and flood risk

X.5.22 In terms of ground water resources there are no licensed abstractions from the River Terrace Deposits or upper aquifer within a radius of 1km of the Abbey Mills Pumping Station site, although there are two licensed abstractions from the Chalk or lower aquifer. The nearest abstraction is 0.3km and 0.5km to the east of the site and is for industrial, commercial, public services and cooling purposes. The second abstraction is 0.6km to the north of the site and is for drinking water supply. There are no known unlicensed groundwater abstractions within 1km of the Abbey Mills Pumping Station site. The nearest Source Protection Zone lies approximately 0.6km away to the north. There are no environmental designations relevant to groundwater in the vicinity of the Abbey Mills Pumping Station site.

X.5.23 The Lee Tunnel will be operational by the time the project is under construction at the site. The Lee Tunnel will capture discharges that would have been released from the Abbey Mills CSO.

X.5.24 During the construction period for the project at Abbey Mills Pumping Station, the Lee Tunnel would be taken out of operation for 44 weeks to enable the connection works. During this temporary period there would be discharges from the Abbey Mills CSO. Modelling showed that during this period (assuming typical year rainfall) the CSO would spill 48 times with a total approximate volume of 6,8000,000m³.

X.5.25 The increase in CSO discharges would cause a localised deterioration in water quality in the tidal River Lee downstream of the site. This would not affect long term status of the River Lee under the Water Framework Directive but the effects of the spills would be important at a local scale and could negate the improvements that would have occurred in the tidal River Lee since the operation of the Lee Tunnel. The increase in CSO spills is therefore considered to be a moderate adverse effect.

X.5.26 Measures to protect water quality and resources during construction are detailed in Section 8 of the CoCP Part A, and the project-wide assessment. In accordance with the approach suggested in the NPS, the CoCP covers activities that are subject to pollution control and incorporates good practice.

X.5.27 After taking into account the measures incorporated into the design and CoCP, including adherence to good pollution prevention practice, there would be no adverse impacts on surface water resources, river flows and groundwater resources.

- X.5.28 There would be a slight increase in the frequency, duration and volume of spillages from the Abbey Mills CSO as a result of the operation of the project. This is because penstocks in the Lee Tunnel will close when the tunnels approach capacity to protect the tunnel system from overflowing, and redirect Abbey Mills CSO discharges to the Channelsea River. Under an agreement with the Environment Agency, there would be one spill every ten years from the Abbey Mills CSO, which is an increase from no spills in the base case. However, there is no increase in spill volume, frequency or duration in the typical year as a result of the operation of the project. The slight increase in CSO spillages is not predicted to result in significant effects on water quality in the surrounding water courses.
- X.5.29 In accordance with the NPS, the design of the proposals and appropriate mitigation measures at this site would minimise the risk of any significant impacts on the water environment in this location. Despite the slight increase in CSO spillages at Abbey Mills Pumping Station, once operational the project would have an overall beneficial effect on water quality in the tidal Thames and contribute to the protection and enhancement of biodiversity in the Blue Ribbon Network.
- X.5.30 A Flood Risk Assessment including the sequential and exception test undertaken in accordance with NPS Section 4.4 is included within the *Environmental Statement*. The operational part of the site is located behind the Abbey Creek and Channelsea River flood defences within Flood Zone 3a and therefore the risk of tidal flooding to the operational part of the site is considered to be high. The Abbey Mills Pumping Station site is protected from tidal flooding by the presence of raised man made statutory flood defences along the surrounding watercourses. A secondary flood defence line also exists on the current site, formed by raised land located behind the statutory defence line.
- X.5.31 Following completion of land raising at the site in relation to the Lee Tunnel works, the site would not be inundated with flood water during the worst case combined fluvial and tidal event (for any return period) and as such, the Abbey Mills Pumping Station site should be considered in future to be in Flood Zone 1 and hence not at risk of fluvial or tidal flooding.
- X.5.32 There would not be an increase in flood risk as a result of the proposed development at Abbey Mills Pumping Station. Therefore no flood risk issues arise from the proposals at this location.
- X.5.33 The site therefore meets the decision making criteria set out in the NPS as no adverse effects are expected on water quality or resources.

Air quality, emissions, dust and odour

- X.5.34 As a result of previous exceedances of air quality objectives, the London Borough of Newham has declared an Air Quality Management Area along the main road corridors across the borough. The Abbey Mills Pumping Station site is not in the Air Quality Management Area, although the A11/A118 corridor to the north of the site is. Local monitoring data indicates that the air quality standards for nitrogen dioxide are regularly exceeded in the vicinity of the site.

- X.5.35 The closest sensitive receptors to the development are occupiers of nearby residential dwellings, commercial and retail premises, and users of the allotments.
- X.5.36 Through the measures included within the *CoCP* all reasonable steps have been taken, and would be taken, to minimise detrimental impact on amenity resulting from air quality, emissions and dust as identified in the NPS. With the implementation of the *CoCP* measures, the overall effect on local air quality from construction (ie, effects from construction road traffic, and construction plant), would not be significant at any of the closest sensitive receptors.
- X.5.37 The project-wide air management plan is designed to ensure that the air in the tunnels is kept fresh, that a low pressure is maintained within the tunnels to prevent unwanted releases and that when air is released it is treated. This would be achieved by a combination of forced or active ventilation and treatment and passive air treatment. In addition, at all sites there are to be ventilation structures which would allow air to enter and leave the tunnel system.
- X.5.38 When the tunnels are empty, clean air would be drawn into the tunnels at specific sites by the extraction of air at other specific sites so as to keep the air in the tunnels fresh. This means that odours would not build up while the tunnels are empty. As the tunnels fill, air displaced from the tunnels would initially be extracted and treated at the active ventilation sites before being released and later, depending of the level of filling, would pass through the passive carbon filters. These filters clean the air and remove any odours before it is released.
- X.5.39 It is assumed that the majority of air management infrastructure required at Abbey Mills Pumping Station would already have been installed as part of the Lee Tunnel project. At this site, an active ventilation system and air treatment plant would be utilised. Treated air would then be released through individual vents from each air treatment unit within one common ventilation column structure. An air flow greater than the total capacity of 30m³/s is expected to occur for about 12 hours in a typical year. This excess air from the project shaft would be released through an independent bypass ventilation column on the roof of the shaft, while the excess air from the Lee Tunnel shaft would be released through a separate ventilation column. The ventilation plant would operate continuously while the tunnel system is empty releasing treated air at a reduced rate of 15m³/s. At least 99 per cent of the time, all air released would be treated, which would avoid any effects on amenity from odour and meet the regulatory requirements.
- X.5.40 The construction and operational effects with regard to air quality and odour would be consistent with the NPS policy objectives (at paras. 4.3.11 to 4.3.15 and 4.11.4 to 4.11.5) to minimise detrimental impacts on amenity and nuisance. Appropriate measures are proposed to ensure that the proposals would not lead to a material deterioration of, or change in, air quality or a significant loss of amenity at this location.

Biodiversity and geological conservation

- X.5.41 The site is located adjacent to the designated River Thames and Tidal Tributaries Site of Metropolitan Importance and partially within the Bow Back River Site of Borough (Grade 1) Importance. This section of the River Lee has undergone significant modification with vertical concrete lined banks and no natural channel morphology (ie, the natural river channel shape) which provides a poor quality of habitat, despite its designation.
- X.5.42 In respect of aquatic ecology, no significant effects are predicted on designations, habitats or species either during construction or operation.
- X.5.43 In respect of terrestrial ecology, the site and its surroundings currently comprise buildings, hardstanding, poor semi-improved grassland, amenity grassland, scattered trees, trees and dense shrub, inundated marginal vegetation and mudflat, and cultivated allotment gardens. Whilst there would be some temporary loss of habitat during construction this would be reinstated on completion of works and would not have a significant negative effect on terrestrial habitats or species.
- X.5.44 In accordance with NPS policy, the proposed development would avoid significant harm to biodiversity and geological conservation interests. Thames Water also sought to take advantage of the opportunities to conserve and enhance biodiversity in the proposals for this location. In addition, the *CoCP* includes measures to address adverse effects during construction, including reinstating and replacing trees and planting. In addition, the proposed provision of bat and kestrel boxes on trees upon completion of the works would result in a significant beneficial impact on these species.
- X.5.45 As required by the NPS (para. 4.5.17), the footprint of the proposals is no greater than it needs to be and measures are in place to mitigate any adverse effects and to put in place proposals to enhance the value of long term habitats on the site.

Landscape and visual impacts

- X.5.46 Abbey Mills Pumping Station does not lie within or in proximity to any nationally or locally designated landscapes. However, the local townscape shaped the design development and evolution of the proposed works in this location. The development of the project took account of the *Conservation Area Character Appraisal for the local Three Mills Conservation Area*, as well as *Management Guidelines* produced by the London Borough of Newham.
- X.5.47 Abbey Mills Pumping Station is a strategic sewage pumping station on an extensive site, comprising a series of older and more modern pumping stations and associated infrastructure. The site is undergoing considerable change as part of the Lee Tunnel scheme, the latest in a series of developments at this site. The site is therefore considered to be of limited townscape value at present.
- X.5.48 Measures incorporated in the *CoCP* would reduce the townscape and visual impact of the works as much as possible. Despite this, construction

works would be a prominent feature of the local townscape and views due to the presence of hoardings and construction activity. It is considered that the visibility of construction is an unavoidable consequence of the scale of works required to construct the main tunnel shaft and connect the Thames Tideway Tunnel to the Lee Tunnel.

- X.5.49 The NPS recognises in para. 1.4.4 that NSIPs are likely to take place in mature urban environments, with adverse townscape and visual effects within a built up environment, with many possible receptors. Large scale construction works are commonplace in London and specifically in the London Borough of Newham, with the Olympic Park, Crossrail, and a series of major mixed use redevelopments either completed, under construction, or planned in the vicinity of the site. The construction effects of the project are unavoidable, temporary, have been minimised as far as possible, and should be considered in this context.
- X.5.50 There would be no significant operational effects due to the low height of the above-ground structures and their considered design and siting within the operational Abbey Mills Pumping Station compound. The appearance of the proposed above-ground structures would be appropriate and in keeping with existing structures, plant and buildings at the site, and would contribute to and preserve its historical use.
- X.5.51 The proposals are consistent with the approach required in NPS Section 4.7 as they were designed taking careful account of the landscape characteristics of the area, and through considered construction layout, design and the *CoCP*, the effects of construction would be minimised as far as possible.

Land use including open space, green infrastructure and green belt

- X.5.52 The project works at Abbey Mills Pumping Station would be largely constructed, and entirely operated, on land owned solely by Thames Water in operational wastewater use, which would be consistent with the existing use. Given the long established use of the site the proposed works would be consistent with its historic and current land use, and the use of this site is considered to be acceptable in principle.
- X.5.53 The impact of the proposals on land uses and designations (as identified in the *Core Strategy* and retained policies) was a key consideration in the site selection process and design development. The Land use plan in Annex X illustrates the land uses of the site and the surroundings.
- X.5.54 The project would be in accordance with *London Plan* Policy 5.14 and *Core Strategy* Policy INF3, which provide explicit support for the project. The project is designated under *Core Strategy* spatial designation U2, which passes through Abbey Mills Pumping Station.
- X.5.55 The Abbey Mills Pumping Station is located within a network of green space designated by saved *UDP* Policy OS7. Three Mills Green to the west of the site is also within this green space network and is identified as a local park. The site is within the wider Lee Valley Regional Park boundary. The Greenway, to the north of the site, is designated

Metropolitan Open Land and Abbey Mills Pumping Station falls within an area of search for a new area of Metropolitan Open Land although this has not yet been defined further or adopted.

- X.5.56 Despite falling within this green space designation, the site's location within the operational Abbey Mills Pumping Station complex means it is not publicly accessible, for safety and security reasons and does not provide any open space amenity function. It is therefore not proposed to remove any open space from public use, or provide public access to designated areas within the pumping station compound. The open space assessment undertaken by the London Borough of Newham in preparation of its *Core Strategy* also did not identify or include any assessment of this site as open space. The adjacent allotments and Three Mills Green were however included within the assessment.
- X.5.57 Surrounding land uses were reviewed and considered in the project site selection process and on-going design development. As a result of the design principles and parameters proposed, it is considered that the proposed works would not prevent the continuation of surrounding land uses during construction or operation. Similarly, it is considered that any extant planning permissions, committed developments, or policy allocations for future development would not be significantly impacted as a result of the works in this location.

Noise and vibration

- X.5.58 The nearest receptors that are sensitive to noise and vibration are residential dwellings on Gay Road, Abbey Lane, Riverside Road and Bisson Road to the north, Crows Road to the south and houseboats at Three Mills Water to the west. Three Mills Studios lies to the west of the site.
- X.5.59 In accordance with the NPS, no significant noise or vibration effects are predicted as a result of the construction or operation of the works at this site.
- X.5.60 Furthermore, and in accordance with the NPS, a series of further measures are set out in the *CoCP*, compliance with which is secured through a Requirement. The measures include operating in accordance with best practice, selecting the quietest cost-effective plant available, and optimising plant layout to minimise noise emissions.

Historic environment

- X.5.61 There are a number of heritage assets within and in the vicinity of the Abbey Mills Pumping Station complex.
- X.5.62 The site itself does not contain any nationally designated (statutorily protected) heritage assets such as scheduled monuments, listed buildings, or registered parks and gardens. However, the site lies approximately 130m southwest of a group of Grade II listed industrial buildings surrounding the Grade II* listed Abbey Mills Pumping Station A but is physically and visually separated by more modern and utilitarian pumping station buildings and infrastructure.

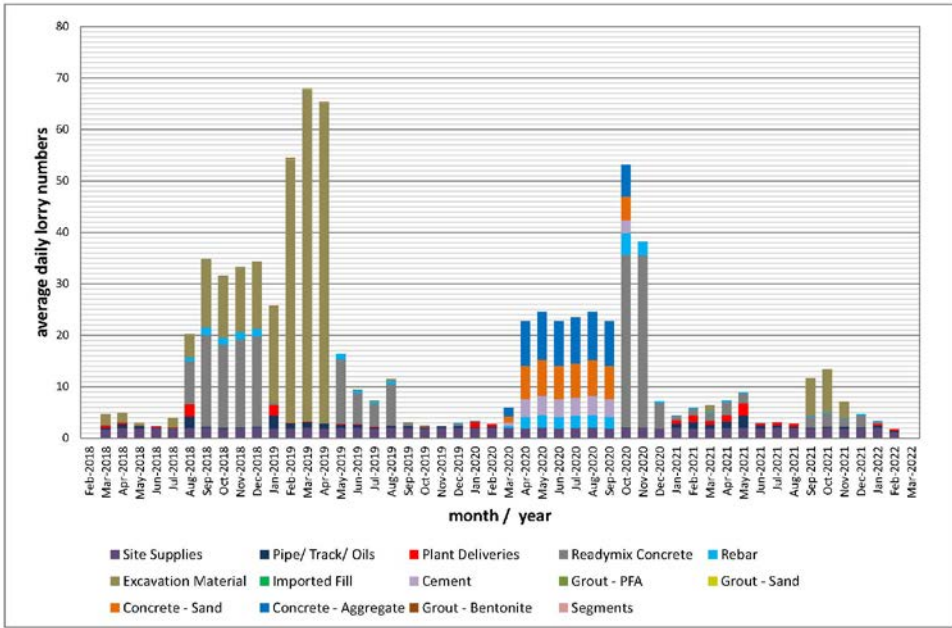
- X.5.63 A group of eight Grade II listed semi-detached cottages at 116 to 130 Abbey Lane, the Grade II listed Channelsea Bridge and the Engine House at West Ham Pumping Station are mainly screened from the site by the Abbey Mills Pumping Station buildings and therefore only form a minor part of the site's setting. The site is around 100m north of the group of seven remaining Bromley gasholders, of which six are listed Grade II and one is Grade II*. There are also two locally listed buildings in the area.
- X.5.64 The site lies within the Three Mills Conservation Area which was designated to protect the character and appearance of the Three Mills complex of 18th century mills, the Abbey Mills Pumping Station complex, and the wider more open landscape between and around these two industrial sites. The Three Mills complex in the west of the Conservation Area has no visual relationship with the site due to the intervening Three Mills Studios, although the open land to the north of the Studios has been landscaped as public realm offering views of the site and Abbey Mills Pumping Station beyond.
- X.5.65 The site is also located within the Archaeological Priority Area covering the Lee Valley, which has potential to contain evidence of prehistoric and later activity.
- X.5.66 The NPS recognises that NSIPs are likely to take place in mature urban environments and to have adverse effects on heritage assets. However, at this site, there would be no significant effects, either direct or indirect, on any of the designated heritage assets during construction or operation.
- X.5.67 While the majority of the proposed structures are underground, the design principles and parameters for the ventilation columns and kiosk were carefully chosen to ensure that they are sensitive to and would not adversely affect the setting of local heritage assets. The design principles were considered in the light of the heritage context and policies in place at the site, as detailed in the *Design and Access Statement*, which accompanies the application.
- X.5.68 Through sensitive design and the provision of improved hardstanding and fencing within the site, the permanent works would have a minor beneficial effect upon the character and appearance of the Three Mills Conservation Area, and upon the settings of nearby heritage assets
- X.5.69 The proposals, therefore, were developed with the benefit of a thorough understanding of the significance of the site and heritage status and characteristics of its neighbours. The design was developed, as far as practical, to minimise adverse effects on the historic environment and to take opportunities to enhance the long term setting of heritage assets in the vicinity.
- Light**
- X.5.70 The screening assessment of effects on sunlight and daylight concluded that there would be no material impact on sunlight or daylight from construction or the permanent works.
- X.5.71 There would be no significant effects from lighting either during construction or operation of the works at Abbey Mills Pumping Station.

Through the measures set out in the *CoCP*, all reasonable steps having been taken to minimise any detrimental impact on amenity from artificial light.

Traffic and transport

- X.5.72 The Abbey Mills Pumping Station site has moderate to good public transport accessibility. The site is located in proximity to a number of local bus services, West Ham Station (for London Underground, Docklands Light Rail, and National Rail services) and Abbey Road Station (for Docklands Light Rail services).
- X.5.73 The site is located within Abbey Mills Pumping Station complex and the proposed construction and operational access is via, Stratford High Street (A118), Abbey Lane, Gay Road and the existing pumping station entrance.
- X.5.74 During construction vehicle movements would generally take place on weekdays between 8am and 6pm and from 8am to 1pm on Saturdays. Up to one hour before and after these hours would be used for mobilisation and demobilisation. Mobilisation may include loading, unloading, and arrival and departure of staff and movement to and from the site. In exceptional circumstances HGV, on agreement with the local authority and abnormal load movements could occur up to 10pm or later for large concrete pours. Thames Water would require contractor(s) to produce a green travel plan to encourage the use of public transport by those working on the project.
- X.5.75 Construction at this site may involve extended working hours (between 6pm and 10pm on weekdays and between 1pm and 5pm on Saturdays) and 24-hour working seven days a week, for a limited period. However, construction vehicle movements would be limited to the hours stated above other than in exceptional circumstances.
- X.5.76 A significant proportion of the construction waste would be reused on site in accordance with NPS policy, the *London Plan* Waste Management Hierarchy and the project-wide Waste Strategy. This would avoid the need for this material to be transported elsewhere by road.
- X.5.77 As shown in Figure X.7 overleaf, an average a peak of 140 daily HGV movements (70 HGVs) is expected during shaft construction works, for approximately one year. At other times in the construction period vehicle flows would be considerably lower than this average peak figure.
- X.5.78 Barges are not proposed to be used at the Abbey Mills Pumping Station site due to difficulties in ensuring a reliable day-to-day operation at a location with a very limited tidal window for movements. However, provision is included in the application for the appointed contractor(s) to use barges if it proves practicable to do so.

Figure X.7 Estimated construction HGV histogram



X.5.79 Measures to reduce transport impacts included in the *CoCP* include heavy goods vehicle management and control measures such as designated routes to sites for construction vehicles. There is also provision for management plans for construction worker journeys to and from the site. In addition to the general measures in the *CoCP* Part A, the following measures were incorporated into the *CoCP* Part B in relation to the Abbey Mills Pumping Station site:

- a. The access to the project site would be through the Thames Water operational land.
- b. Access is from Abbey Lane/Gay Road only.
- c. The site access is to be from Gay Road with only left turn into the site and right turn out.
- d. Sections of on-street parking along Abbey Lane would be suspended.
- e. Double yellow line parking restrictions would be used at some locations on Abbey Lane.
- f. Single yellow line parking restrictions would have extended hours, and additional single yellow line restrictions would be used on Abbey Lane
- g. Site vehicles would not be permitted to wait at any point along Abbey Lane.
- h. Special Types (General Order 2003) (STGO) vehicles and other long loads are required to have a suitable escort along Abbey Lane to forewarn other road users.
- i. The contractor(s) traffic management plan needs to take due consideration of the residents and other users of Abbey Lane from Stratford High Street (A118) to the existing Abbey Mills Pumping Station. It should be noted that Abbey Lane Sure Start Children’s Centre includes services that include those for the blind/partially

sighted. The traffic management plan would include measures including requirements for all suppliers to be notified of risks and controls using Abbey Lane including no waiting constraint. This may include restrictions on delivery hours where practical and strict enforcement of speed limits.

- j. The footpath around the south of the site by Prescott Channel/ Channelsea to be maintained throughout works

- X.5.80 The construction works in this location are not likely to result in any significant impacts on pedestrian routes, cycle routes and facilities, public transport routes and patronage, parking or the highway network.
- X.5.81 During the operational phase, all the functional elements of the development would be located within the operational pumping station site. Access for maintenance vehicles would be via the existing site entrance.
- X.5.82 In accordance with the decision-making criteria in the NPS (paras. 4.13.6 to 10) transport impacts would be successfully managed through committed *CoCP* measures, such that no significant transport impacts are anticipated.

Waste management

- X.5.83 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 NPS para. 4.14.6 would be satisfied, and the Waste Strategy would be secured via a requirement in accordance with NPS para. 4.14.7.
- X.5.84 No particular site-specific waste issues arise at this site.

Socio-economic

- X.5.85 There are no specific socio-economic issues associated with the proposed use of the site at Abbey Mills Pumping Station.
- X.5.86 This site is expected to require a maximum workforce of 45 workers at any one time. These jobs and training opportunities would provide a stimulus to the local economy.
- X.5.87 The site falls partially within a designated green space, but given its location within the operational Abbey Mills Pumping Station complex, for safety and security reasons it is not publicly accessible. There are no users of the site therefore that would experience socio-economic effects.
- X.5.88 There are also no sensitive receptors in the vicinity of the site that would experience significant amenity effects arising from the construction or operation of the works at this site.
- X.5.89 In accordance with the NPS, an *Equalities Impact Assessment* was undertaken. It found that there would be no equalities impacts arising from the proposals at this site.

X.6 Overall conclusions

- X.6.1 The project is proposed to prevent large volumes of sewage discharging into the tidal Thames.
- X.6.2 There is a need to receive the main tunnel drive from Chambers Wharf and connect the project's main tunnel to the Lee Tunnel, which would take flows to Beckton Sewage Treatment Works for treatment. The proposed works would make a fundamental contribution to meeting the wider need for the project identified in the NPS.
- X.6.3 Abbey Mills Pumping Station was selected after extensive consideration and engagement as the appropriate site on which to meet the need. The site is suitable and the application proposals would meet the identified need.
- X.6.4 The permanent site is entirely within Thames Water's operational pumping station and surrounded by plant, machinery, tanks and buildings. The pumping station is undergoing considerable change and expansion as part of the Lee Tunnel scheme.
- X.6.5 The proposed use of Abbey Mills Pumping Station attracted a modest number of comments from stakeholders. There is broad consensus that the works are required and that this is an appropriate site, but concerns focused on the possible impacts of construction, the need for mitigation to ensure such impacts are not significant, and the importance of good design.
- X.6.6 Due to the site's location within a large operational pumping station, and relatively remote from sensitive receptors no significant amenity effects are predicted to arise during the four year construction period. Thames Water sought to minimise any potential disturbance through sensitive design and mitigation measures where required, in accordance with the NPS and relevant local policies.
- X.6.7 There would be a 44 week period during which the Lee Tunnel would be taken out of operation to facilitate the connection between the two tunnels. During this temporary period there would be discharges from the Abbey Mills CSO. The increase in CSO discharges would cause a localised deterioration in water quality in the tidal River Lee downstream of the site. This would not affect long term status of the River Lee under the Water Framework Directive but the effects of the spills would be important at a local scale and could negate the improvements that would have occurred in the tidal River Lee since the operation of the Lee Tunnel.
- X.6.8 The increase in CSO spills is therefore considered to be a significant effect, but is an unavoidable consequence of connecting the two tunnels and delivering the project-wide benefits of the proposed works across the tidal Thames.
- X.6.9 The proposed provision of bat and kestrel boxes on trees on completion of the works would result in a significant beneficial impact on these species.
- X.6.10 The proposed works at the Abbey Mills Pumping Station site and the mitigation measures that were 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 to leave a positive legacy.

- X.6.11 Section 8 of the *Planning Statement* considers the implications of the local effects of the works at Abbey Mills Pumping Station and the other sites, and describes the overall balance between impacts and benefits associated with the project as a whole, against the guidance in the NPS. It concludes that the works at Abbey Mills Pumping Station, and the project as a whole, are compliant with the NPS and that development consent should be granted.

Annex X: Drawings for Abbey Mills Pumping Station

List of drawings

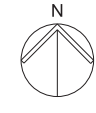
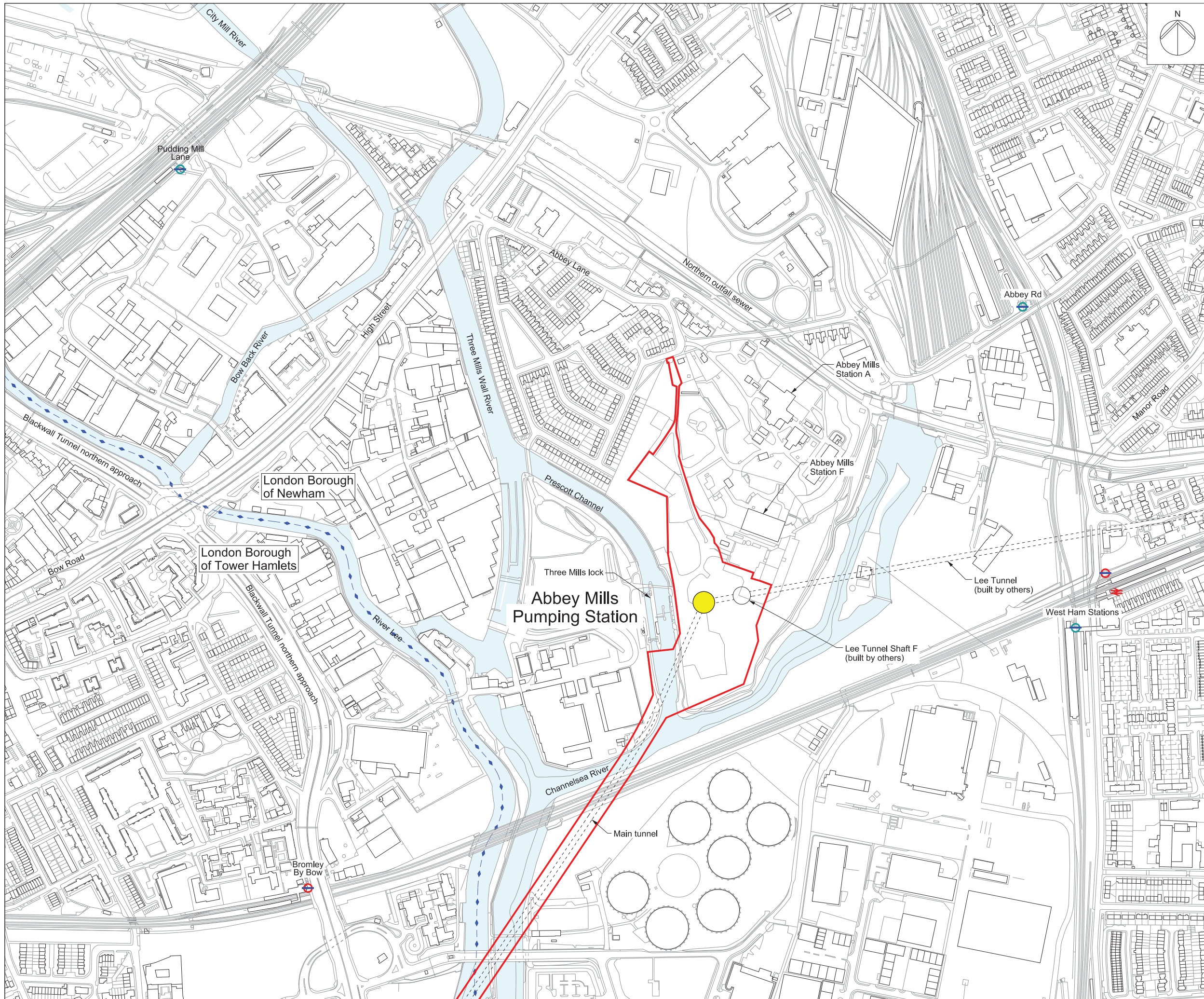
Abbey Mills Pumping Station: Location plan

Abbey Mills Pumping Station: As existing site features plan

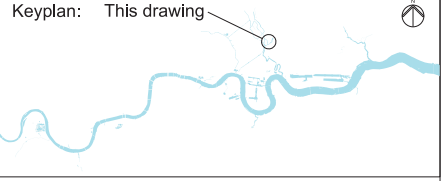
Abbey Mills Pumping Station: Construction phases plans

Abbey Mills Pumping Station: Land use plan

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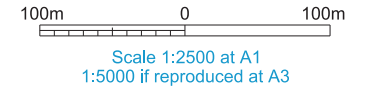
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Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

- Key:**
- Local authority boundary
 - Order limits
 - Tunnel
 - Shaft

- Notes:**
1. The alignment of the tunnels are illustrative within limits of deviation.



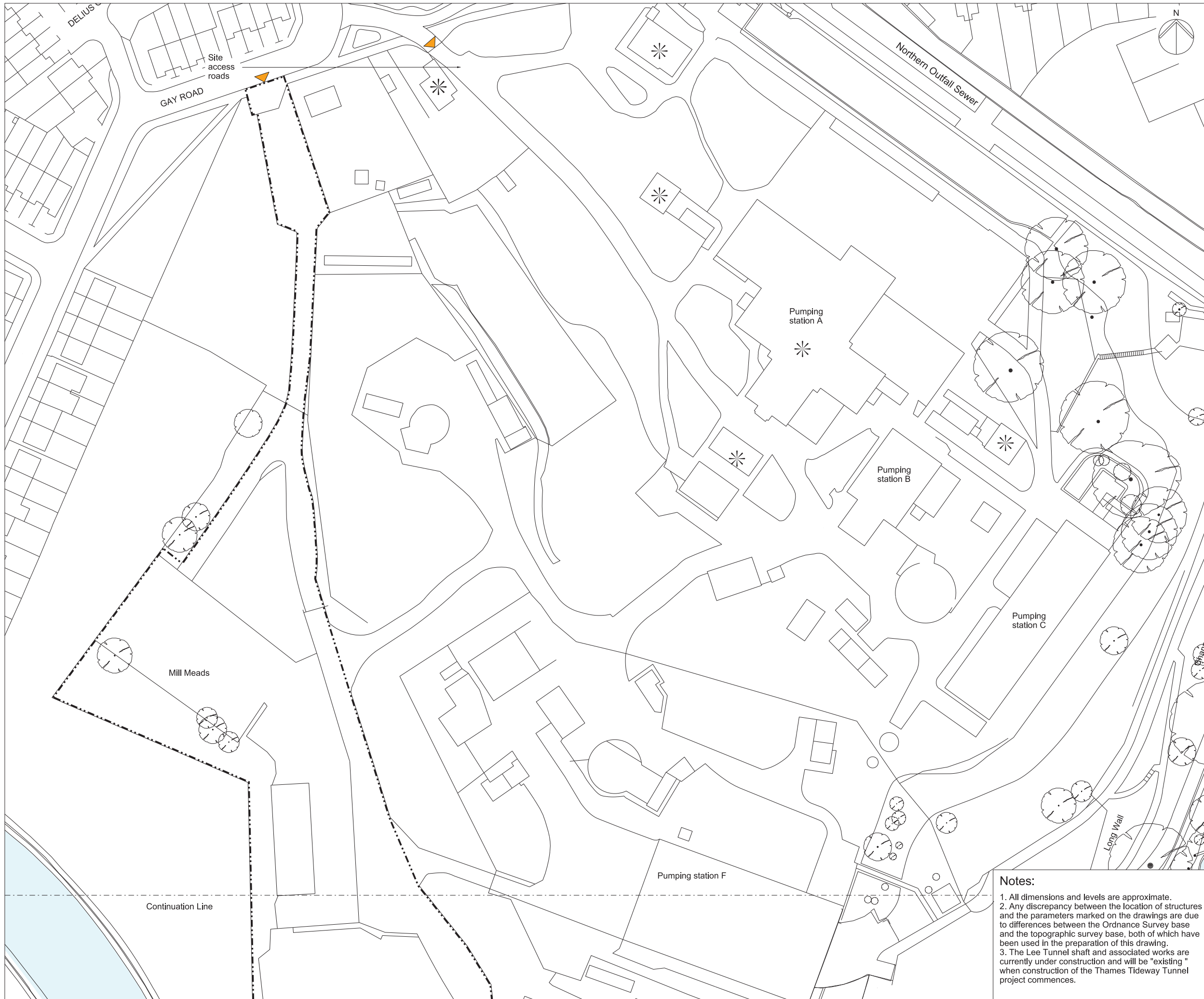
FOR INFORMATION

Location
 Abbey Mills Pumping Station
 London Borough of Newham

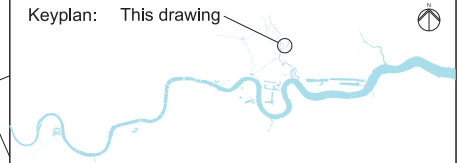
Document Information
 Application for Development Consent
 Location plan

Book of plans - section 27
 DCO-PP-26X-ABMPS-270001
 January 2013



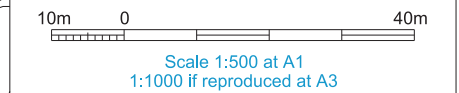
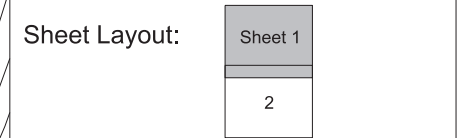


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Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

- Key:**
- Limits of land to be acquired or used (LLAU)
 - + 105.40m Existing levels (shown in metres above tunnel datum)
 - * Listed buildings/structures
 - ⊙ Existing trees within surveyed area (trunk sizes vary)
 - ▶ Thames Water access



FOR INFORMATION

Location
Abbey Mills Pumping Station
 London Borough of Newham

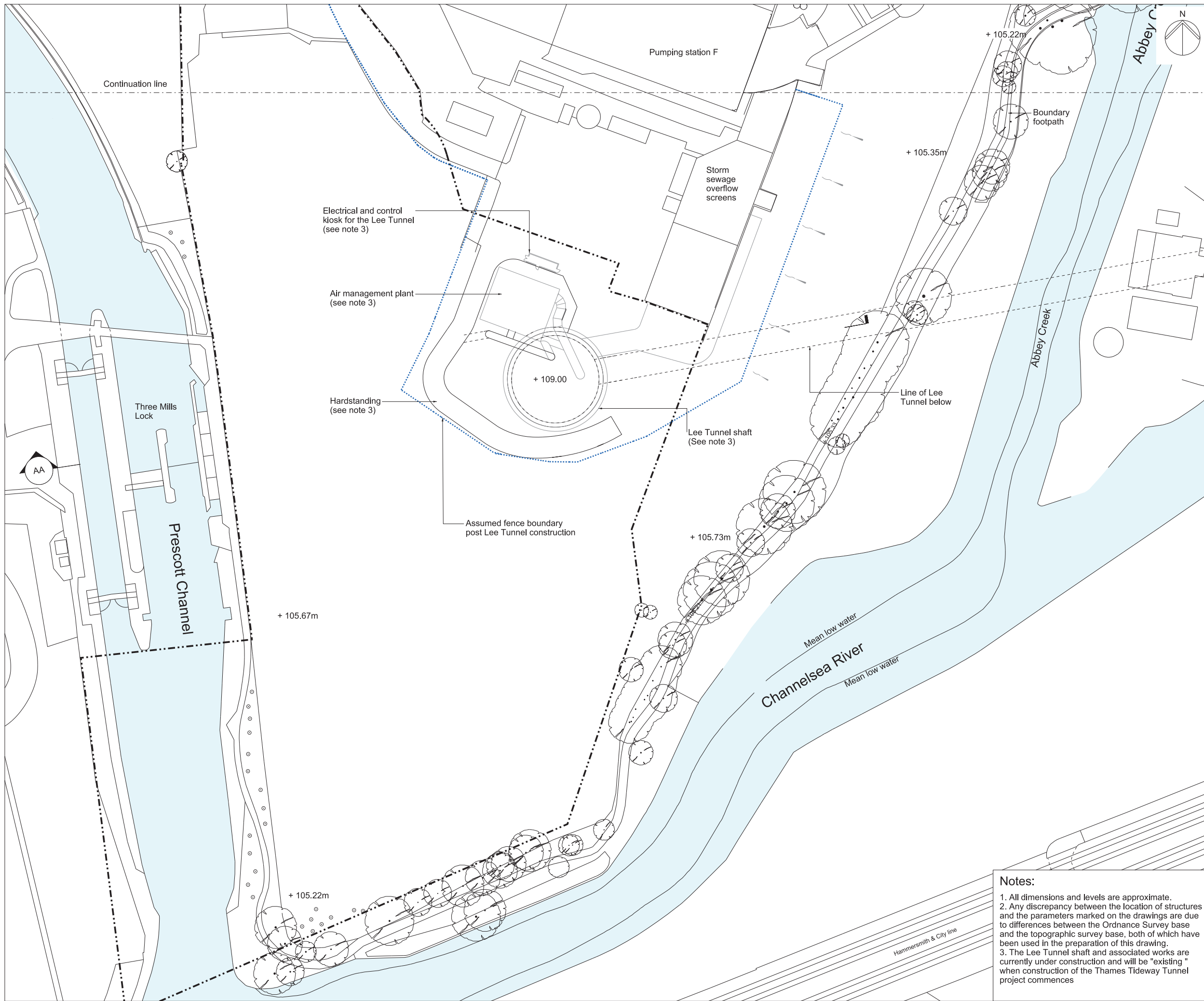
Document Information
Application for Development Consent

As existing
 Site features plan sheet 1 of 2
 Book of plans - section 27
 DCO-PP-26X-ABMPS-270002
 January 2013

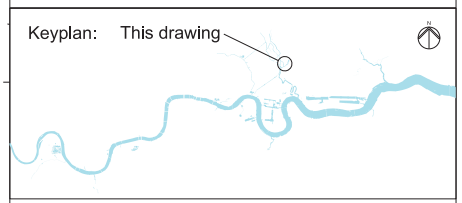


Notes:

1. All dimensions and levels are approximate.
2. Any discrepancy between the location of structures and the parameters marked on the drawings are due to differences between the Ordnance Survey base and the topographic survey base, both of which have been used in the preparation of this drawing.
3. The Lee Tunnel shaft and associated works are currently under construction and will be "existing" when construction of the Thames Tideway Tunnel project commences.

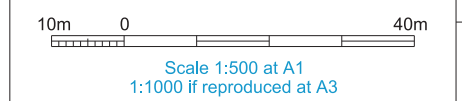
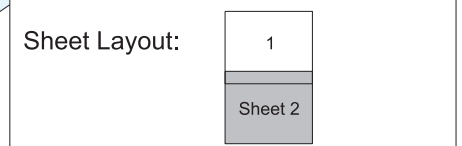


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- Key:**
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 - + 105.40m Existing levels (shown in metres above tunnel datum)
 - ⊙ Existing trees within surveyed area (trunk sizes vary)



FOR INFORMATION

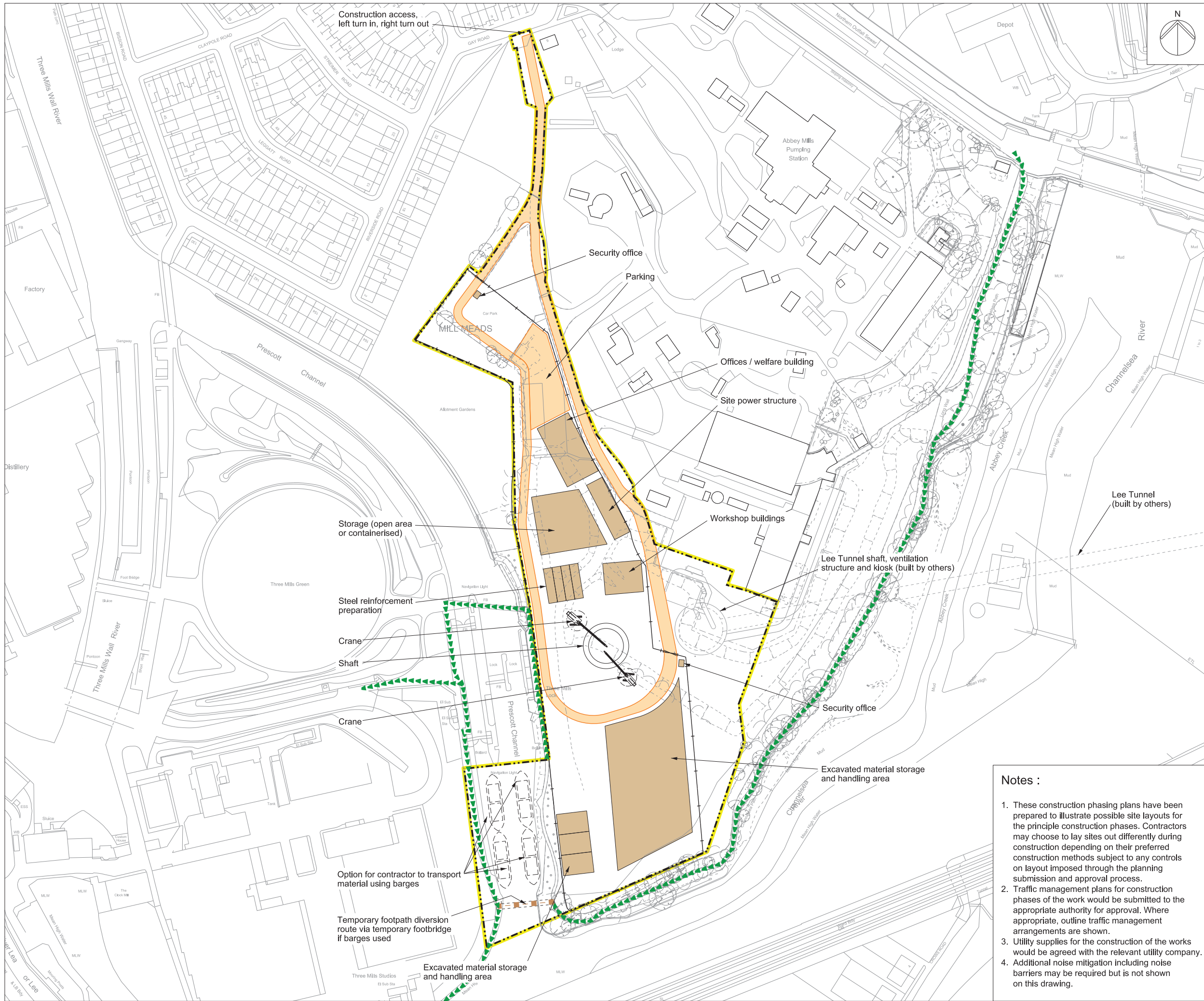
Location
Abbey Mills Pumping Station
London Borough of Newham

Document Information
Application for Development Consent

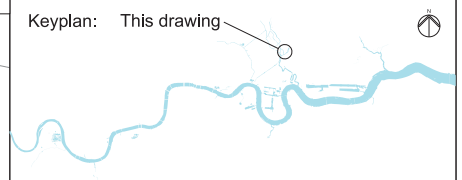
As existing
Site features plan sheet 2 of 2
Book of plans - section 27
DCO-PP-26X-ABMPS-270003
January 2013



- Notes:**
1. All dimensions and levels are approximate.
 2. Any discrepancy between the location of structures and the parameters marked on the drawings are due to differences between the Ordnance Survey base and the topographic survey base, both of which have been used in the preparation of this drawing.
 3. The Lee Tunnel shaft and associated works are currently under construction and will be "existing" when construction of the Thames Tideway Tunnel project commences



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

10m 0 100m
Scale 1:1000 at A1
1:2000 if reproduced at A3

ILLUSTRATIVE

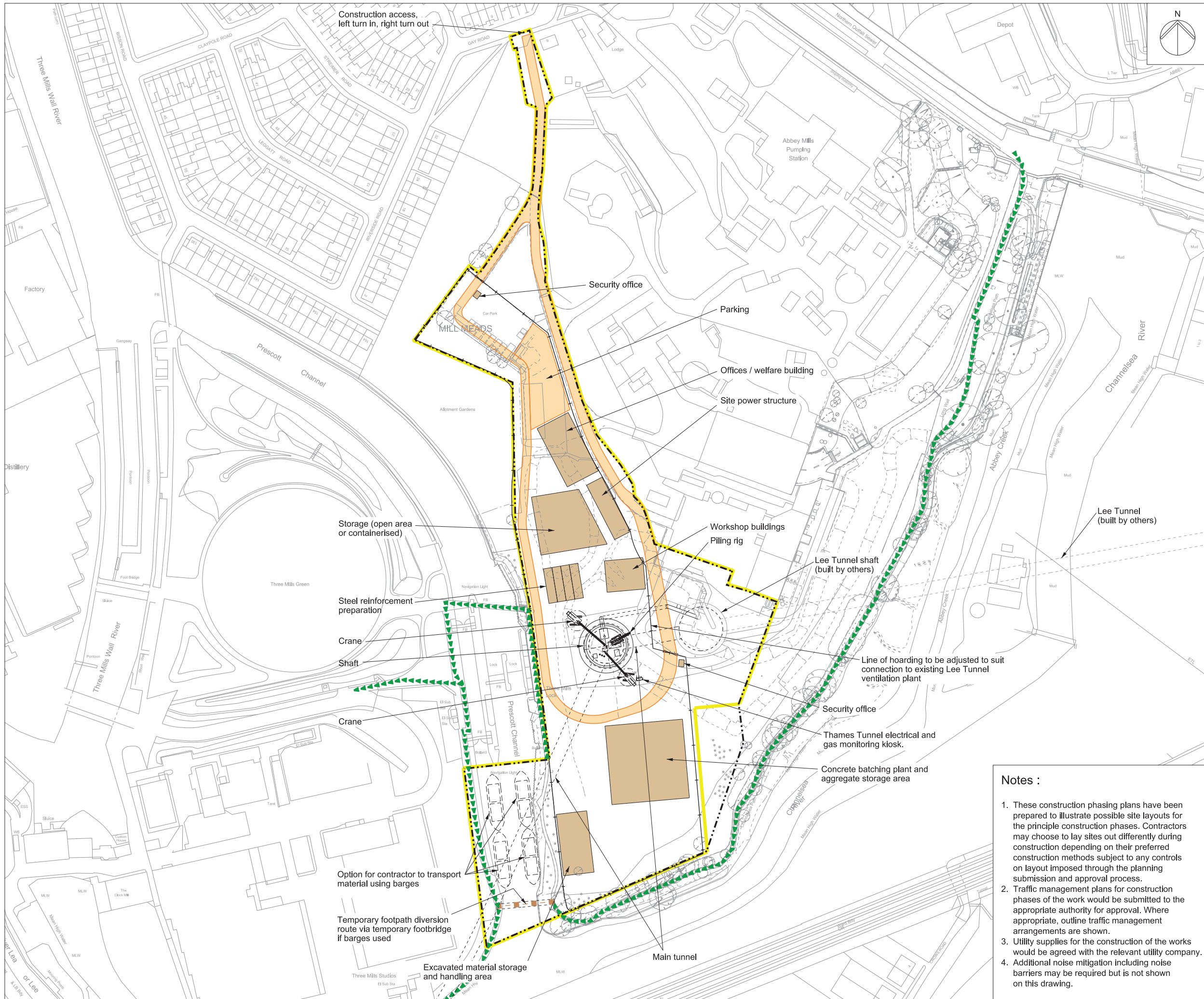
Notes :

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

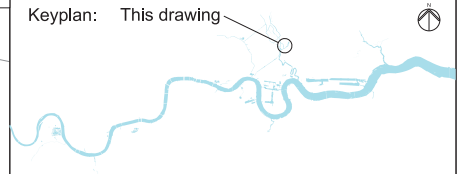
Location
Abbey Mills Pumping Station
London Borough of Newham

Document Information
Application for Development Consent
Construction phases - phase 1
Site setup and shaft construction
Book of plans - section 27
DCO-PP-26X-ABMPS-270012
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames



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

10m 0 100m
Scale 1:1000 at A1
1:2000 if reproduced at A3

ILLUSTRATIVE

Notes :

1. These construction phasing plans have been prepared to illustrate possible site layouts for the principle 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.
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Location
Abbey Mills Pumping Station
London Borough of Newham

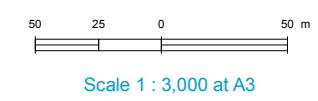
Document Information
Application for Development Consent
Construction phases - phase 2
Other structures and secondary lining
Book of plans - section 27
DCO-PP-26X-ABMPS-270013
January 2013



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- Key**
- Limits of Land to be Acquired or Used
 - Local Authority Boundary
- Land Use**
- Class B1 (Business (Offices except A2) Research and Development, Light Industry)
 - Class B2-B8 (General Industrial / Storage or Distribution)
 - Class C3-C4 (Dwelling Houses)
 - Class D1-D2 (Non Residential Institutions (Community Facilities) and Assembly and Leisure)
 - Other
 - Open Space



FOR INFORMATION

Location
Abbey Mills Pumping Station
 London Borough of Newham

Document Information
Planning Statement
 Land use

1PL03-MG-00805
 January 2013



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Thames Water Utilities Limited

Clearwater Court, Vastern Road, Reading RG1 8DB

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