16 Kirtling Street

16.1 Introduction

16.1.1 This section of the non-technical summary presents the preliminary environmental assessment for the Thames Tunnel proposal at Kirtling Street (Figure 16.1)

16.1.2 At this site it is proposed that the main Thames Tunnel would be tunnelled east to Chambers Wharf and west to Carnwath Road Riverside, with access to the tunnel for construction machinery and workers provided via a shaft.

16.1.3 In the following section a description of the existing site is given. This is followed by a description of the development proposed at this site.

16.1.4 The environmental topics which have been assessed for this site are listed in the ‘Assessment’ section. Preliminary assessment findings are then presented topic by topic.

16.2 Site context

16.2.1 The site is shown as site number 11 on Figure 28.1.

16.2.2 The site is located within the London Borough of Wandsworth (Figure 16.1). It is also close to the London Borough of Lambeth and the City of Westminster.

Figure 16.1 Kirtling Street site location
16.2.3 The site is located to the east of Battersea Power Station, in an area of mixed industrial, commercial and residential uses. The site lies partially within the southern foreshore of the River Thames, and is bounded by a waste transfer station to the west, Nine Elms Lane to the south and the Tideway Walk (Riverlight) development to the east. The site includes a mix of existing uses, including a concrete batching works, industrial warehouse, depot and office buildings. The site is indicated by the red line shown on Figure 16.2.

16.2.4 Access to the site is from Nine Elms Lane or Battersea Park Road via Cringle Street and Kirtling Street. The Thames Path runs adjacent to and through the site.

Figure 16.2 Aerial photograph of Kirtling Street*

*Note: The red line boundary is approximate in this image

16.3 Proposed development

16.3.1 The proposal is to use Kirtling Street as a site for tunnelling in two directions: east to Chambers Wharf and west to Carnwath Road. The site would be for tunnel construction and access purposes only and would not intercept any combined sewer overflows.

16.3.2 In order to tunnel from Kirtling Street, access to the tunnel for construction machinery and workers would be provided via a shaft. The shaft would also provide access to the tunnel for maintenance purposes once operational.

16.3.3 Construction works would last for approximately six years. Due to the space requirements of a tunnelling site, most of the buildings on the site would be demolished. A jetty would be constructed to allow barges to access the site.
16.3.4 The shaft would have an internal diameter of approximately 30m, and 48m deep. Once completed, it would provide access for tunnelling, with the remainder of the construction site used for storage of materials and equipment. A structure would be constructed over the shaft to minimise noise from tunnelling activity.

16.3.5 The tunnel would have an internal diameter of 7.2m, constructed by a tunnel boring machine.

16.3.6 The initial construction works at the site, including site set up and shaft construction, would take place from 8am to 6pm, Monday to Friday with some limited works beyond these hours. The tunnelling works would take place 24 hours a day.

16.3.7 In order to manage and mitigate the effects on the environment during construction, a Code of Construction Practice has been drafted. This sets out measures to be adhered to during the construction works.

16.3.8 Figure 16.3 shows an indicative plan of the construction works.

Figure 16.3 Indicative plan of construction works for Kirtling Street
16.3.9 Once the works at this site have been built, a number of permanent features would remain (Figure 16.4). There would be an area provided to enable access into the shaft and the tunnel for inspection and maintenance purposes. Access for maintenance purposes would be required every three to six months. Once every ten years more substantial maintenance work would be required.

16.3.10 The shaft would be finished at ground level, with covers to allow access and inspection.

16.3.11 There would be a kiosk approximately 1.3m high housing control equipment, and there would be a ventilation column up to 5m high. Most of the time, air would be drawn into the tunnel via this column to ensure that the air within the main tunnel is continuously circulated. From time to time when the main tunnel is filling up air may be released from the tunnel, through below ground filters (to remove odours) and out through the ventilation column at Kirtling Street (and at other sites along the route of the tunnel).

16.3.12 The area around the shaft would be finished with hardstanding to allow crane access to the covers on top of the shaft for maintenance purposes.

Figure 16.4 Kirtling Street indicative plan built development
16.4 Assessment

16.4.1 Based on the existing site and the works proposed, the following environmental topics have been included in the scope of this preliminary environmental assessment:

a. Air quality and odour
b. Ecology – aquatic and terrestrial
c. Historic environment
d. Land quality
e. Noise and vibration
f. Socio-economics
g. Townscape and visual
h. Transport
i. Water resources (ground and surface)
j. Flood risk

16.4.2 In the following sections, information about the preliminary assessment of each of these topics is presented.

16.4.3 In the following sections, information about the preliminary assessment of each of these topics is presented.

16.4.4 As part of the assessment process, consideration has been given to known major developments that may change future environmental conditions. Kirtling Street includes a number of developments: the Battersea Power Station Redevelopment, which would include the demolition of the Grade II Battersea Pumping Station, and the Nine Elms Parkside mixed use redevelopment of the Royal Mail sorting office (if planning permission is granted) would be ongoing during the construction of Thames Tunnel. Development of the Tideway Walk (Riverlight) development and the American Embassy would be almost complete by the time Thames Tunnel construction starts. Redevelopment of the St James and Nine Elms Pier (if planning permission is granted) would be complete by the time construction starts.

16.4.5 Further information on the topic specific methodology for conducting the assessment is given in section 4 of this non-technical summary.
16.5 Air quality and odour

16.5.1 The Kirtling Street site is located within the London Borough of Wandsworth Air Quality Management Area. Local monitoring data indicates that there are currently exceedences of the air quality standards in the vicinity of the site. The nearest people who may be sensitive to the development are occupiers of nearby residential dwellings including the existing houseboats and proposed new residential developments adjacent to the site. There are also the occupiers of the offices along the riverside in Nine Elms Lane and commercial / industrial premises to the east, west and south of the site.

16.5.2 Based on this preliminary assessment, it is considered that the overall effect on local air quality from construction road traffic, river barges and construction plant is likely to be minor adverse at the residential properties (existing and proposed) and negligible at the office, commercial and industrial premises. In term of construction dust, this is likely to have a minor adverse effect at the closest residential properties and office/commercial premises within 50m of the site boundary, and a negligible effect elsewhere, taking account of the dust control measures in the Code of Construction Practice.

16.5.3 Preliminary assessment findings indicate that the effects of odours released from the ventilation structure is likely to be negligible.

16.5.4 Based on this assessment, it is considered that mitigation measures are not required.

16.6 Ecology – aquatic

16.6.1 The site extends into the designated River Thames and Tidal Tributaries Site of Metropolitan Importance (Figure 16.5). There is no marginal vegetation and relatively little intertidal habitat. The vertical river wall does not appear to support communities of macro or microalgae. The site has a relatively high diversity of freshwater and estuarine fish species. It supports mainly pollution-tolerant invertebrates.

16.6.2 Construction effects would be managed in accordance with the Code of Construction Practice. With the Code in place and based on assessment findings at this stage, the loss and disturbance of river habitat would have a minor adverse effect on habitats. There would also be minor adverse effects on fish as a result of the loss of habitat, disturbance due to lighting of the river, death or disturbance from noise and vibration and effects from increased suspended sediment. All other effects on fish, mammals and invertebrates are considered to be negligible.

16.6.3 There is no combined sewer overflow outfall discharge at this site, and so there would be no operational effects on aquatic ecology.

16.6.4 Measures are included within the Code of Construction practice to manage construction effects on aquatic ecology, and no further mitigation during construction is considered to be possible as the extent of the works in the river have been reduced as far as practicable.
16.7 Ecology – terrestrial

16.7.1 The site comprises buildings, hardstanding, foreshore habitat, a small area of short perennial vegetation, spoil piles and introduced shrubs. The site has the potential to provide a foraging and commuting resource for bats, and a nesting and foraging resource for black redstarts and notable wintering birds. Invasive plants may also be present and these would be removed prior to construction where required. Surveys are ongoing will be reported in the Environmental Statement. Battersea Power Station Site of Importance to Nature Conservation, 20m to the east of the site is of local importance.

16.7.2 No significant effects on designated sites are anticipated (aquatic ecology effects are considered in section 16.6). The loss of a small area of vegetation on site would have a site level adverse effect. Effects on bats, black redstarts and wintering birds will be assessed and reported in the Environmental Statement.

16.7.3 Operational activity would be limited to occasional maintenance work, which is considered unlikely to have significant effects on terrestrial ecology.

16.7.4 In addition to measures in the Code of Construction Practice, measures to address adverse effects during construction may include replacement of habitat plus species specific measures for wintering birds, black redstarts and bats may be required subject to survey results.
16.8 Historic environment

16.8.1 The site does not contain any nationally designated heritage assets. The closest statutorily listed buildings to the site comprise the Grade II* listed Battersea Power Station, approximately 160m to the west (an asset of very high asset significance), and the Grade II listed mid-19th century Battersea water pumping station approximately 100m to the west (of high heritage asset significance). The site is occupied by industrial units and yards, including late 19th century/early 20th century buildings of medium heritage asset significance (Figure 16.6). The northern part of the site is located on the southern foreshore of the Thames and includes a pier structure dating to the 1950s.

16.8.2 The site is located within a locally designated Archaeological Priority Area and the main potential in terms of buried heritage is for palaeoenvironmental remains e.g. organic remains such as pollens or plant fossils, of low or medium heritage asset significance, and for the remains of post-medieval 19th century docks and a lead works (of low or medium heritage asset significance). There is also a moderate to high potential for prehistoric remains and for Saxon fish traps, of medium or high heritage asset significance, and moderate potential for isolated, redeposited prehistoric remains of low asset significance.

16.8.3 Based on preliminary assessment findings, demolition of late 19th/early 20th century buildings are likely to give rise to a moderate adverse effect. Construction works would entail deep excavations which would entirely remove the predicted assets within the footprint of each excavation. If such assets were present, this would comprise a high magnitude of impact and lead to a minor adverse effect on palaeoenvironmental remains and prehistoric artefacts, a minor or moderate adverse effect for post-medieval remains, and a moderate or major adverse effect on prehistoric settlement evidence and Saxon fish traps.

Figure 16.6 View from Battersea Power Station looking east towards area of Kirtling Street site
16.8.4 To mitigate the effect on the buildings to be demolished, the structures would be recorded and photographed in line with accepted standards to form preservation by record. The desk-based study of the site suggests that no heritage assets of very high significance are anticipated that might merit a mitigation strategy of permanent preservation in situ. The adverse effects could be successfully mitigated by a suitable programme of archaeological investigation before and/or during construction, drawing on a range of techniques. This would include subsequent dissemination of the results and so achieve preservation by record.

16.8.5 Effects on the historic environment arising from the operation of the Thames Tunnel infrastructure at Kirtling Street will be assessed and presented in the Environmental Statement. Effects could include effects on the historic setting of above ground heritage assets, and effects on buried heritage assets in the foreshore from scouring due to changes in river flows due to new infrastructure in the channel. Any mitigation requirements for operational effects will also be assessed and reported in the Environmental Statement.

16.9 Land quality

16.9.1 A search of historical and environmental data has identified contaminative on site uses, notably two paint and colour works, various other engineering works, depots and a concrete batching works. Historical information has identified numerous industrial and commercial activities including Battersea Power station and a sizable gas works immediately to the south. Historic industrial activities both on and adjacent to the site may have, to some degree, impacted the soils beneath the site. This is supported by previous ground investigations close to the site which have recorded localised soil and groundwater contamination. Desk based surveys have identified a medium-high risk from unexploded ordnance.

16.9.2 There may be a slight adverse effect on construction workers due to the potential for exposure to contaminated soils or other materials if they are present, although any exposure risk would be short-term. Preliminary assessment findings indicate that is likely to be a negligible effect on the built environment as it is considered unlikely that contaminants contained in subsurface materials would affect buried structures. Based on the preliminary assessment findings, mitigation measures during the construction phase are not considered necessary.

16.9.3 During operation there would be negligible effect on future users and the built environment. The assessment identified no need for mitigation during the operation phase.
16.10 Noise and vibration

16.10.1 The site is dominated by traffic noise and noise from industrial units in the area. The nearest locations to the site which are sensitive to noise and vibration are the houseboats moored directly to the north and north east of the site and residential properties at Elm Quay.

16.10.2 Preliminary assessment findings indicate that significant noise effects arising from construction activities are predicted at residential properties at Shelley House, River Lodge, Tideway Wharf (proposed development), Elm Quay and the houseboats at Nine Elms Pier. Significant vibration effects are predicted at residential properties at Tideway Wharf (proposed development). No significant effects as a result of the operation of the site are predicted.

16.10.3 During construction activities, the contractor would be required to follow best practice (as described in the Code of Construction Practice) at all times to reduce noise and vibration effects on the local community for example through suitable siting of equipment on site.

16.10.4 Beyond best practice measures it is anticipated that additional mitigation would be required to address significant noise effects. This could include the use of increased hoarding heights, localised screens and enclosures to reduce noise from particularly noisy, static operations.

16.10.5 The next stage of the assessment will profile the variation in construction noise levels across the programme of work with the aim of refining mitigation design and seeking to reduce the significant effects of construction noise and vibration. Further details of mitigation measures will be provided in the Environmental Statement including the significance of residual effects once mitigation has been taken into account.

16.11 Socio-economics

16.11.1 The site comprises land accommodating a mix of vacant and occupied industrial premises, an office complex (Brooks Court) and a stretch of pavement that forms part of the Thames Path (which would be diverted as a consequence of other developments). Commercial and industrial uses surround the site. House boats are moored to the north of the site (Figure 16.7). The Tideway Walk development is located to the east. The Thames Path is lightly used for walking and cycling.

16.11.2 During construction, there are considered to be moderate adverse amenity effects on some nearby residents and moderate adverse effects arising from the displacement of the businesses at Brooks Court. There are also considered to be moderate or major adverse effects on the concrete batching works depending on the degree to which the proposed construction activity has an effect on the continued operation of the works. Amenity impacts on users of the Thames Path are considered to result in a negligible effect.

16.11.3 In completing the assessment, there is scope for further construction phase mitigation measures to be incorporated in the design with the aim of seeking to reduce significant adverse amenity effects which have been identified in this preliminary assessment.
16.12 **Townscape and visual**

16.12.1 The site is located to the north of Nine Elms Lane and comprises a mix of industrial and commercial premises in a poor condition (Figure 16.8). The surrounding townscape is dominated by industrial and commercial land use which is undergoing transformation into mixed use developments.

16.12.2 Preliminary assessment findings indicate that during the construction phase, the demolition of buildings and use of cofferdams is likely to have a moderate adverse townscape effect on the character of the site and a minor adverse townscape effect on the character of the surrounding area. Once the scheme is operational there are likely to be minor beneficial townscape effects on the character of the site and surrounding area due to the clearance of buildings and the creation of public access on the riverfront.

16.12.3 In terms of visual amenity, during the construction phase there are likely to be moderate adverse effects on some views including from Grosvenor Road and Nine Elms Lane. There would be minor adverse visual effects from locations including Grosvenor Road and Vauxhall Bridge due to the intensity of construction activity, and the presence of cranes and river traffic. Once operational, due to the visibility of cleared buildings and the publicly accessible waterfront there would be moderate beneficial effects on views from Grosvenor Road, the Thames Path and Nine Elms Lane.

*Figure 16.8 View south west from residences along Nine Elms Lane*
16.12.4 Mitigation measures to be employed during the construction phase are being incorporated into the proposals, for example, through use of capped and directional lighting when required. In terms of operation, a process of iterative design and assessment has been employed to reduce adverse effects and maximise beneficial effects. It is likely that there would be no significant adverse effects during operation and therefore no further mitigation is proposed.

16.13 Transport

16.13.1 The Kirtling Street site has moderate public transport accessibility with local bus stops serving Marylebone Station, Waterloo Station, Vauxhall Bus Station and Clapham Junction Station. Vauxhall Underground and bus stations are located 1.1km from the site. The site is on the north side of Nine Elms Lane and construction vehicle access is proposed via Vauxhall Cross in the east and Battersea Park Road in the west with site accesses located on Cringle Street and Kirtling Street (Figure 16.9).

![Figure 16.9 Battersea Park Road](image)

16.13.2 As with all main tunnel drive sites, it is assumed that 90% of excavated material would be transported by barge and all other materials would be transported by road.

16.13.3 During construction, the number of heavy goods vehicle movements would be comparatively high. The nature of the construction site layout at this location means that junction modifications and traffic diversions would be required which is considered likely to result in a moderate adverse effect on road network operation and delay. Effects on pedestrian and cyclist amenity and safety are expected to be moderate adverse due to the loss of footways and local diversions which would increase journey times. A minor adverse effect is expected on bus services and commercial use of the river by neighbouring businesses and there would be a negligible effect on rail services. During the operational phase there would be very
occasional vehicle trips to and from the site for maintenance activities but these would have a negligible effect on the surrounding transport networks.

16.13.4 The project is being designed to limit the effects on the transport networks as far as possible. At this location, mitigation measures during the construction phase are likely to be required and would involve the provision of safe crossing points for pedestrians and traffic signal optimisation to improve pedestrian crossing times and junction capacity. Mitigation is not required for the operational phase.

16.14 **Water resources - ground water**

16.14.1 The proposed shaft would pass through the upper aquifer and penetrate the top of the lower aquifer beneath. Associated interception infrastructure would sit in the upper aquifer. The main receptors are the upper aquifer defined as being of medium value, the lower aquifer defined as being of high value and the nearby public abstractions, is defined as being of very high value.

16.14.2 Construction effects on the upper aquifer would be limited to physical obstruction to groundwater flow and this is anticipated to be negligible. The site contains low levels of contamination in groundwater, this would be dealt with using a risk based approach and appropriate remediation ahead of construction. No soil contamination has been identified. Dewatering of the lower aquifer during construction would impact groundwater availability and could induce groundwater movement. This effect is subject to further assessment and is yet to be quantified but has the potential to result in significant adverse effects.

16.14.3 Once operational the potential effects would be obstruction to groundwater flow and the seepage to and from the shaft. These effects are considered to be negligible at this stage.

16.14.4 Monitoring of groundwater levels and quality would continue throughout construction and operation.
16.15 **Water resources – surface water**

16.15.1 Part of the construction site is located in the River Thames foreshore within the Thames Middle waterbody, as classified under the Thames River Basin Management Plan. There is also the possibility for effects on the upstream Thames Upper waterbody, which has also been considered in the assessment. The Thames Upper and Middle waterbodies are currently classified under the Water Framework Directive as being at moderate potential status, with a status objective of good potential by 2027. Battersea Park Local Nature Reserve is located within 2 kilometres of the site and is water dependent.

16.15.2 There is the potential for effects on surface water resources from the proposed construction works through surface water runoff and exposure of the drainage system to contaminants. After taking into account the measures incorporated into the design and code of construction practice, such effects are expected to be manageable and not significant. No mitigation would therefore be required.

16.15.3 There is also potential for the loss in river bed from the construction to change the river flows, which could lead to scour at the flood defences. The effects would be largely temporary during construction as some natural foreshore restoration would occur after temporary construction structures are removed. Any mitigation that is required will be identified in the Environmental Statement.

16.16 **Flood risk**

16.16.1 The main source of flood risk to the site is the tidal River Thames and the site is located within the ‘high probability’ flood zone, although it is protected by flood defences which run along the river bank.

16.16.2 The site may be at risk of localised surface water flooding due to runoff generated by land to the south of the site. The presence of structures within the foreshore could impact flow within the River Thames and the works required to construct the tunnel could affect the local flood defences, and further studies are being completed to assess potential impacts.

16.16.3 The existing level of protection afforded by the defences would be maintained. The effects of changes in scour and deposition as a result of the temporary structures in the river would be reduced through good practice design. No changes are proposed to the percentage of hard standing on the site and this area would continue to be served by the local drainage system.

16.17 **Further information**

16.17.1 Further information regarding preliminary assessment findings for Kirtling Street can be found in Volume 17 of the Preliminary Environmental Information Report.