14 Cremorne Wharf Depot

14.1 Introduction

14.1.1 This section of the non-technical summary presents the preliminary environmental assessment for the Thames Tunnel project at Cremorne Wharf Depot (Figure 14.1).

14.1.2 At this site it is proposed that the existing Lots Road pumping station combined sewer overflow would be linked to the proposed main tunnel through a shaft and an underground connection tunnel. Currently, the existing combined sewer overflow discharges approximately 38 times a year. The total volume of this discharge is 1,135,000m³ each year.

14.1.3 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.

14.1.4 The environmental topics which have been assessed for this site are listed in the ‘Assessment’ section (0). Preliminary assessment findings are then presented topic by topic.

14.2 Site context

14.2.1 The site is shown as site number 9 on Figure 28.1.

14.2.2 The site is located within the Royal Borough of Kensington and Chelsea (Figure 14.1). It is also close to the London Borough of Hammersmith and Fulham and opposite the London Borough of Wandsworth.

Figure 14.1 Cremorne Wharf Depot site location
14.2.3 The site is located on the site of an existing council depot, which would be partially demolished. Part of the site also extends into the foreshore. Approximately half a hectare is required for the temporary construction works. This is indicated by the red line shown on Figure 14.2. The area of land required for the permanent works would be substantially smaller than that required for construction.

14.2.4 To the north of the site is Chelsea Wharf (a commercial and residential building) and to the east is the River Thames. A site cleared for the Lots Road Power Station redevelopment is to the south of the site and the Lots Road pumping station building is located to the west. The Thames Path is a public right of way and runs along Lots Road to the northwest of the site.

**Figure 14.2 Aerial photograph of Cremorne Wharf Depot**

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

14.3 **Proposed development**

14.3.1 The proposal is to intercept the existing combined sewer overflow. With the Thames Tunnel in place, instead of untreated sewage discharging at current volumes directly into the River Thames, flows would be diverted into the proposed main tunnel. For a typical year, this would reduce discharges from the combined sewer overflow to four times a year and flows to an average of approximately 91,600m$^3$ once a year.

14.3.2 In order for this interception to be achieved, construction works at this site would take approximately three years.
14.3.3 A shaft with an internal diameter of approximately 8m and approximately 45m deep would be constructed. From the base of this shaft there would be an underground connection tunnel which would join up with the main tunnel. Through an interception chamber, flows from the existing Lots Road pumping station combined sewer overflow would be diverted into the connection tunnel and into the main tunnel, located deep underneath the River Thames.

14.3.4 Most of the construction would take place from 8am to 6pm, Monday to Friday. Limited works may be required beyond these hours.

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

14.3.6 Figure 14.2 shows an indicative plan of the construction works.

Figure 14.3 Indicative plan of construction works for Cremorne Wharf Depot

14.3.7 Once the works have been built, a number of permanent features would remain (Figure 14.4). There would be an area of hardstanding 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.
14.3.8 There would be two 4m high ventilation columns. Most of the time, air would be drawn into the tunnel via these columns to ensure that the air within the main tunnel is continuously circulated. From time to time when the tunnel is filling up, air may be expelled via filters and out through the ventilation columns.

14.3.9 In the case of Cremorne Wharf Depot, the ventilation columns would be positioned at the southwestern edge of the site allowing the site to be returned to depot use after construction is complete. A replacement depot building would be built and the roof would be vegetated (green roof) to contribute towards local ecology. Control equipment would be located within the existing pumping station building.

Figure 14.4 Cremorne Wharf Depot indicative plan of built development
14.4 **Assessment**

14.4.1 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

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

14.4.3 As part of the assessment process, consideration has been given to known major developments that may change future environmental conditions. For example, the Lots Road Power Station redevelopment is located next to the Cremorne Wharf Depot site to the west. It is assumed that construction at this site will start in 2011 and be substantially complete by 2015. This development will provide 420 apartments, retail, business and community uses and riverside and creekside public open space which may change future environmental conditions.

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

14.5.1 The Cremorne Wharf Depot site is located within the Royal Borough of Kensington and Chelsea 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 at Chelsea Wharf and on Lots Road as well as the future occupiers of the new Lots Road Power Station development. Other sensitive uses in the vicinity of the site are office and commercial premises and users of Cremorne Gardens and the river (such as the local canoe club).

14.5.2 Based on this preliminary assessment, it is considered that the overall effect on local air quality from construction road traffic, river barges (optional – see Figure 14.3) and construction plant is likely to be minor adverse at the residential properties and negligible at the commercial/office premises, leisure facilities and public gardens. In terms of construction dust, there is likely to be a minor adverse effect at the residential and commercial/office properties and a negligible effect elsewhere, taking account of the dust control measures in the Code of Construction Practice.

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

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

14.6 Ecology – aquatic

14.6.1 The foreshore adjacent to the site falls within the designated River Thames and Tidal Tributaries Site of Metropolitan Importance. The site is located approximately 400m upstream of Battersea Bridge, on the north bank of the Thames. The Chelsea Creek discharges into the Thames at this point, and around this there is a small area of mudflat made up of exposed silt and mud. A survey has been undertaken at the site to understand the aquatic ecology present within the river at this location (Figure 14.5). A diverse assemblage of fish species occurs in the river at this location. Invertebrate species are limited to those that are pollution-tolerant.

14.6.2 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 it is anticipated that during construction, blanketing of feeding areas and reduced visibility from increased suspended sediment would give rise to a minor adverse effect. All other effects on fish, habitats, mammals and invertebrates are considered to be negligible.

14.6.3 It is anticipated that during operation, the permanent loss of an area of river habitat is considered to have a minor adverse effect on both habitats and fish and a negligible effect on invertebrates. Other effects on invertebrates, from improved water quality, would all be minor beneficial in the longer term of operation. The reduction in fish mortality that would result from improved oxygenation of the water is considered a moderate
beneficial effect. There is also considered to be a moderate beneficial effect through increased distribution of rare and/or pollution sensitive fish species. The effect on mammals would be negligible.

14.6.4 Measures are included within the Code of Construction practice to manage construction effects, and no further mitigation during construction is considered to be possible at this stage of the assessment. For the operational phase consideration will be given to providing compensation for the loss of habitat, for example through creating habitat elsewhere, and reported in the Environmental Statement.

Figure 14.5 Aquatic ecology survey at Cremorne Wharf Depot - autumn 2010

14.7 Ecology – terrestrial

14.7.1 The site comprises buildings and hardstanding, a tree and the river wall, and an area of foreshore habitat. The site is likely to be of value to invertebrates, bats, black redstart, and wintering birds and the river wall is likely to have some botanical interest. Surveys are ongoing and results will be reported in the Environmental Statement.

14.7.2 Based on preliminary assessment findings, no significant effects on designated sites are anticipated during construction (aquatic ecology effects are considered in section 14.6). Site clearance and works within the river would result in the loss of one tree which would have a site level adverse effect. The effects on bats, black redstart, river wall invertebrates and botanical interest, and wintering birds will be assessed and reported in the Environmental Statement.

14.7.3 It is anticipated that operational activity would be limited to occasional maintenance works, which are considered unlikely to have significant effects on terrestrial ecology. A brown roof is proposed on the replacement depot building which would contribute to local biodiversity, however this is considered unlikely to result in significant terrestrial ecology effects.
14.7.4 In addition to measures in the Code of Construction Practice, measures to address adverse effects during construction are likely to include reinstatement and replacement of habitat. Subject to survey results, mitigation for potential effects associated with the presence of notable species may be required. Further measures, such as species specific habitat creation, will be formulated subject to survey results if required and reported in the Environmental Statement.

14.8 Historic environment

14.8.1 The site is located on industrial land on the north bank of the River Thames adjacent to the locally designated Thames Conservation Area (which is of high heritage asset significance). The site contains no nationally designated heritage assets. It lies adjacent to the Grade II listed Lots Road Pumping Station (of high heritage asset significance). There are no other nationally designated heritage assets within the immediate vicinity of the site.

14.8.2 There is little of heritage value within the site itself, with the existing 19th century river wall and brick outfall tunnel being of low heritage significance. A historic map of the site is presented in Figure 14.6. 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 the remains of post-medieval industrial buildings and 19th century houses and industrial processing (of low heritage asset significance). There is moderate potential for previously unrecorded prehistoric remains (of medium or high heritage asset significance).

Figure 14.6 Historic environment – Ordnance Survey 2nd edition 25”: mile map of 1896–98
14.8.3 A section of a brick outfall tunnel would be dismantled, constituting a medium magnitude of impact, resulting in a minor adverse effect. Construction works would entail deep excavations which would entirely remove the assets within the footprint of each excavation. If any such assets were present, this would comprise a high magnitude of impact and would give rise to a minor adverse effect for paleaeoenvironmental remains and remains of industrial buildings/houses. There would be a moderate to major adverse effect for prehistoric remains (if present).

14.8.4 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. Any 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.

14.8.5 Effects from the operation of the Thames Tunnel infrastructure on the historic setting of heritage assets in the surrounding area, including the listed Lots Road Pumping Station and the Thames Conservation Area, will be assessed and presented in the Environmental Statement. Any mitigation requirements will also be presented.

14.9 **Land quality**

14.9.1 A search of historical and environmental data indicates that a number of nearby historical contamination sources. Overall the search highlights that the site was in industrial use since the late 19th Century and was utilised as a rubber works, wharf and more recently as a waste facility. The surrounding river frontage has a history of industrial/commercial development including a power station and wharves since the late 19th Century. Ground investigations have recorded contamination of soils and groundwater at the site. Desk based surveys have identified a medium/high risk from unexploded ordnance.

14.9.2 Based on the preliminary assessment, 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. There would be a negligible effect on the built environment as it is considered unlikely that contaminants contained in subsurface materials would affect buried structures. Preliminary assessment findings indicate no need for mitigation during the construction phase.

14.9.3 During operation it is anticipated that there would be a negligible effect on future users and the built environment. The assessment identified no need for mitigation during the operational phase.
14.10 **Noise and vibration**

14.10.1 The site is dominated by road traffic noise. The nearest locations to the site which are sensitive to noise and vibration are residential dwellings along Lots Road to the north of the site.

14.10.2 Significant noise effects arising from construction activities are predicted at residential properties on Lots Road, at Chelsea Wharf and at the Lots Road Power Station redevelopment (proposed development). Significant vibration effects arising from construction have been identified at residential properties on Lots Road. No significant effects as a result of the operation of the site are predicted.

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

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

14.10.5 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.

14.11 **Socio-economics**

14.11.1 The site is occupied by an existing council waste transfer depot and is designated as employment land; as a site for waste management; and as a safeguarded wharf (although since March 2011 waste management and wharf activities have not taken place with the site used for dustcarts and road salt). Fronting the site is a Thames Water owned pumping station, the Thames Path and a national cycle route running along Lots Road, residential and commercial properties and the Cremorne Riverside Activity Centre. The site is currently used for the storage of civic amenity equipment and stores.

14.11.2 Based on preliminary assessment findings, during construction there are considered to be moderate adverse effects on the amenity of nearby residents. There are considered to be minor adverse effects arising from the displacement of the council’s operations, the loss of employment land, and users of the Cremorne Riverside Activity Centre. Amenity effects on users of the Thames Path and national cycle route are considered to be negligible. There are no anticipated operational effects as a result of the works at Cremorne Wharf Depot.

14.11.3 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.
14.12 **Townscape and visual**

14.12.1 The site is located within the Cremorne Wharf council depot, to the west of Battersea Bridge and adjacent to the Thames Conservation Area (Figure 14.7). The surrounding townscape is a mixture of industrial and residential premises including some newly built developments along the riverfront. The townscape of the site is in a poor condition.

14.12.2 Based on the preliminary assessment, during the construction phase the presence of cranes and the intensity of construction activity is likely to have a moderate adverse effect on the River Thames - Chelsea and Battersea Reach character area and Thames Conservation Area. There would be a minor adverse effect on seven areas including two reaches of the River Thames. Once the scheme is operational, due to the replacement of the council depot building there are likely to be minor beneficial townscape effects including Battersea Residential, Battersea Square and Thames Conservation Area. There would be negligible to minor beneficial effects on the site itself due to the replacement of the depot building to a better design quality. The above assessed levels of significance are dependent on the design and will be reported in the Environmental Statement.

*Figure 14.7 Panoramic view south west from Battersea Bridge*

14.12.3 In terms of visual amenity and based on preliminary assessment findings, during the construction phase there are anticipated to be moderate adverse visual effects on viewpoints including views from Battersea Bridge, Asburnham Road, St Mary’s Church and Vicarage Crescent. This is due to the visibility of the cleared site, hoardings and construction activity. There would be a minor adverse effect on the view from at Albert Bridge due to limited visibility of the cleared site and cranes. Once operational there would be minor beneficial effects on seven viewpoints including Vicarage Crescent, Chelsea Harbour and Battersea Bridge due to the visibility of the new well designed council depot building.

14.12.4 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 is being employed to reduce adverse effects and promote beneficial effects. It is likely that there would be no significant adverse effects during operation and therefore no further mitigation is proposed.
**14.13 Transport**

14.13.1 The Cremorne Wharf Depot site has moderate public transport accessibility with numerous bus routes within the local area. The closest London Underground station is Fulham Broadway, approximately 2km away. Vehicle access is proposed from Lots Road.

14.13.2 During construction, the number of heavy goods vehicle movements would be comparatively low. Construction activity is considered likely to result in a minor adverse effect on road network operation and delay. Effects on pedestrian facilities are expected to be minor adverse due to a footpath diversion increasing journey time, while effects on cyclist amenity and safety are considered to be negligible. A negligible effect is expected on public transport and river services within the area. 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.

14.13.3 The project is being designed to limit the effects on the transport networks as far as possible and no further mitigation is proposed at this site. Mitigation is not required for the operational phase.

**14.14 Water resources - ground water**

14.14.1 The proposed shaft and connection tunnel would pass through the upper aquifer and the underlying non aquifer. The shaft would not reach the lower aquifer (Chalk) beneath. The interception infrastructure would penetrate the upper aquifer. The main receptors are the upper aquifer, which is defined as being of medium value and the lower aquifer, which is defined as being high value.

14.14.2 Construction effects on the upper aquifer would be limited to physical obstruction to groundwater flow and this is anticipated to be negligible. No dewatering is proposed at the site so no effects are anticipated on the lower aquifer. The site contains low levels of contamination in groundwater, this will be dealt with using a risk based approach and the application of appropriate remediation ahead of construction.

14.14.3 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 due to the inclusion of design measures to reduce groundwater effects.

14.14.4 Monitoring of groundwater levels and quality would continue throughout construction and operation.

**14.15 Water resources – surface water**

14.15.1 The site is located immediately behind the flood defences at Cremorne Wharf. Chelsea Creek lies approximately 55 metres to the south of the site.
14.15.2 The section of the River Thames closest to the site lies within Thames Middle waterbody. 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. The Chelsea Creek is not assessed under the Water Framework Directive, but it is a tributary of the Thames Upper waterbody, which has a target status of Good by 2017. The Battersea Park Local Nature Reserve is located within the vicinity of Cremorne Wharf Depot and is water dependent.

14.15.3 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.

14.15.4 Once operational, the scheme would reduce the number of discharges from the Lots Road Pumping Station combined sewer overflow to a predicted level of four spills per year on average once the tunnel is operational.

14.15.5 This reduction would be a beneficial effect on water quality. The number of risk days for river users being exposed to pathogens would be reduced by up to 152 days of risk of exposure per year. The tonnage of sewage derived litter can be expected to be reduced from approximately 286 tonnes to 20 tonnes per year.

14.16 Flood risk

14.16.1 The main source of flood risk to the site is the tidal River Thames. The site is located within the ‘high probability’ flood zone, however it is protected by flood defences aligned along the northern edge of the site.

14.16.2 The site could also be at risk of surface water flooding due to runoff generated by the land surrounding the site. The presence of structures within the foreshore could impact flow within the River Thames. In addition, the work required to construct the tunnel beneath the site could potentially affect the local flood defences. Further studies are being completed to assess these potential impacts and will be reported in the Environmental Statement.

14.16.3 The current level of protection afforded by the defences would be maintained on the site. The effects of changes in scour and the way sediments are deposited as a result of the work 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.

14.17 Further information

14.17.1 Further information regarding preliminary assessment findings for Cremorne Wharf Dept can be found in Volume 15 of the Preliminary Environmental Information Report.