17 Heathwall Pumping Station

17.1 Introduction

17.1.1 This section of the non-technical summary presents the preliminary environmental assessment for the Thames Tunnel project at Heathwall Pumping Station.

17.1.2 At this site it is proposed that the existing Heathwall Pumping Station combined sewer overflow and the South West Storm Relief combined sewer overflow would be linked to the proposed Thames Tunnel through a drop shaft. The two combined sewer overflows together currently discharge approximately 46 times a year at approximately 882,800m³ per year. 227,900m³ from the South West Storm Relief and 654,900m³ per year from Heathwall Pumping Station, 12 and 34 times respectively.

17.1.3 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.

17.1.4 The environmental topics which have been assessed for this site are listed in the ‘Assessment’ section (17.4). Preliminary assessment findings are then presented topic by topic.

17.2 Site context

17.2.1 The site is shown as site number 12 on Figure 28.1.

17.2.2 The site is located within the London Borough of Wandsworth (Figure 17.1). It is also close to the London Borough of Lambeth, to the east, and the City of Westminster, opposite the river.

Figure 17.1 Heathwall Pumping Station site location
17.2.3 The site is located in Thames Water’s Heathwall Pumping Station and adjacent Middle Wharf, which is a safeguarded wharf by the River Thames and was formerly occupied by a concrete batching works. Approximately 0.9 hectares is required for the temporary construction works. This is indicated by the red line shown on Figure 17.1. The area of land required for the permanent works would be substantially smaller than that required for construction.

17.2.4 The site is bounded to the north by the River Thames, to the south by Nine Elms Lane, the west by the Tideway Industrial estate (now a redevelopment site) and to the east by open space.

17.2.5 Access to the site is from Nine Elms Lane. The Thames Path Public Right of Way runs around the site along its southern boundary before re-joining the Thames.

*Figure 17.2 Aerial photograph of Heathwall Pumping Station*

*Note: The red line boundary is approximate in this image. Part of the neighbouring Kirtling site is also shown at the bottom of the photo*
17.3 Proposed development

17.3.1 The proposal is to intercept two existing combined sewer overflows. 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 Thames Tunnel. For a typical year, this would reduce combined flows from the combined sewer overflows at this site to an average of approximately 66,400m$^3$ in five overflow events a year.

17.3.2 In order for this interception to be achieved, construction works at this site would take approximately three years.

17.3.3 The boundary wall between the Thames Water compound and Middle Wharf would be demolished and the Middle Wharf site levelled. Interception of the existing outfalls would require the river wall to be permanently realigned and a temporary dry construction working area would be constructed through the foreshore in front of Heathwall Pumping Station, using a ‘cofferdam’ structure.

17.3.4 A shaft with an internal diameter of approximately 16m and approximately 46m deep would be constructed in Middle Wharf. From the base of this shaft there would be a short underground connection tunnel which would join up with the main tunnel. Through two separate interception chambers (one intercepting each overflow), flows would be diverted down the shaft and into the connection tunnel and then into the main tunnel, located deep underneath the River Thames. The interception chamber for the Heathwall Pumping Station overflow would be located within the realigned river wall in what is currently foreshore. The South West Storm Relief would be intercepted onshore to the west of the shaft. For engineering purposes, the Heathwall interception chamber would have an intermediate shaft which would then feed into the main shaft via an underground culvert.

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

17.3.6 In order to manage and mitigate 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.

17.3.7 Figure 17.3 shows an indicative plan of the construction works.
17.3.8 Once the works at this site have been built, a number of permanent features would remain (Figure 17.4). There would be a permanent area of new land created within the foreshore and 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.

17.3.9 The line of the existing river wall would be built out around a new raised structure in the foreshore in front of Heathwall Pumping Station, which would form a new area of public realm. The Thames Path would be re-routed along the riverside through Middle Wharf and in front of Heathwall Pumping Station.

17.3.10 The shaft in Middle Wharf would be finished off at existing ground level and there would be covers on the top of the shaft to allow access for inspection and maintenance. The interception chamber for the South West Storm relief would be finished off at approximately 0.8 metres above the existing ground level, with covers for access. The other interception chamber would be raised above ground level to ensure it would not be at risk of flooding.

17.3.11 Two ventilation columns, approximately 4m high, would be located close to the shaft in Middle Wharf. 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 main tunnel is filling
up, air may be expelled via filters and out through the ventilation columns at Heathwall Pumping Station (and at other sites along the route of the tunnel).

17.3.12 Three ventilation columns, approximately 5m high, would be positioned on the river structure above the Heathwall interception chamber to vent different sections of the chamber.

17.3.13 All control equipment would be housed inside the existing Heathwall Pumping Station building.

**Figure 17.4 Heathwall Pumping Station indicative plan of built development**

17.4 **Assessment**

17.4.1 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

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

17.4.3 As part of the assessment process, consideration has been given to known major developments that may change future environmental conditions. The site is located within an area of regeneration, and there are several known developments either underway or which would be under construction or complete by the time Thames Tunnel construction at this site commences. Developments include the Battersea Power Station redevelopment, development of Tideway Walk, the American Embassy, a redevelopment of Nine Elms Pier, and the Nine Elms Parkside mixed use redevelopment of the Royal Mail sorting office.

17.4.4 Further information on the topic specific methodology for conducting the assessment is given in section 4 of this non-technical summary.

17.5 Air quality and odour

17.5.1 The Heathwall Pumping Station site is located within the London Borough of Wandsworth Air Quality Management Area. Local monitoring data indicates there are currently exceedences of air quality standards in the vicinity of the site. The nearest people who may be sensitive to the development are occupiers of residential dwellings, the nearest of which are the houseboats moored close to the site as well as the future dwellings in the new Tideway Walk and Nine Elms Parkside developments, all adjacent to the site. There are also occupiers of offices along the riverside in Nine Elms Lane and to the south of the site and the industrial premises to the west of the site who may be sensitive to the development.

17.5.2 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 commercial and industrial premises. In terms of construction dust, this is likely to have a minor adverse effect on residential dwellings within 10m of the site and a negligible effect elsewhere, taking account of the dust control measures in the Code of Construction Practice.

17.5.3 Preliminary assessment findings indicate that the effects of odour from air released from the ventilation column, which might occur from time to time when the tunnel is filling, is likely to be negligible.

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

17.6 Ecology – aquatic

17.6.1 The site is located within the designated River Thames and Tidal Tributaries Site of Metropolitan Importance. There is a large area of gravel foreshore exposed at low tide, which is underlain mostly by pebbles. There is a vertical river wall. The site is of medium value for fish species (Figure
17.5), but has limited pollution-tolerant invertebrate diversity of low to medium value.

17.6.2 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 the loss and disturbance of river habitat would have minor adverse effects. The loss of habitat for fish, because of disturbance and compaction, is also considered to be a minor adverse effect. All other construction effects on mammals, fish and invertebrates would be negligible.

17.6.3 It is anticipated that during operation, the permanent loss of habitat would be a minor adverse effect. The reduction in nutrient levels entering the river would have a moderate beneficial effect on fish through reduced mortality. Increased diversity and abundance of invertebrates would be a minor beneficial effect. In the longer term of operation an increased distribution of pollution-sensitive fish would be a moderate beneficial effect and there would be a minor beneficial effect through an increased distribution of invertebrates. Effects on mammals would be negligible.

17.6.4 The presence of structures, both during construction and operation, within the river may have an effect on migrating fish through altered river flows. This will be assessed and reported in the Environmental Statement.

17.6.5 No measures beyond those identified in the Code of Construction Practice are viable for the construction phase as the extent of the physical works in the river have been reduced as far as practicable. For the operational phase consideration will be given to compensation for the loss of habitat, for example through habitat creation elsewhere, and reported in the Environmental Statement.

**Figure 17.5 A single European perch found at a survey site approximately 1km downstream from Heathwall Pumping Station**

17.7 **Ecology – terrestrial**

17.7.1 The site mainly comprises buildings and hardstanding with foreshore habitat and trees adjacent to the site. The foreshore has potential for
foraging and resting wintering birds, and foraging and commuting bats, while there is potential for nesting black redstart on the buildings. Surveys are ongoing and will be reported in the Environmental Statement.

17.7.2 Based on preliminary assessment findings, no significant effects on designated sites are anticipated during construction (aquatic ecology effects are considered in section 17.6). The effects on bats, black redstart and wintering birds will be assessed and reported in the Environmental Statement.

17.7.3 It is anticipated that operational activity would be limited to occasional maintenance works, which are considered unlikely to have significant effects on terrestrial ecology.

17.7.4 In addition to measures in the Code of Construction Practice, measures to address adverse effects during construction are likely to include replacement of habitat. In addition species specific measures for wintering birds, black redstarts and bats may be required subject to survey results. This will be reported in the Environmental Statement.

17.8 **Historic environment**

17.8.1 The site does not contain any nationally designated heritage assets, nor are there any in the immediate vicinity. The site has no historic value in terms of above ground structures. 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) and remains of post-medieval 18th–19th industrial buildings and docks, which would be 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.

17.8.2 Construction works would entail deep excavations which would entirely remove any assets within the footprint of each excavation. If such assets were present, this would comprise a high magnitude of impact and would give rise to a minor adverse effect on palaeoenvironmental and prehistoric remains, a minor or moderate adverse effect for post-medieval remains, and a moderate or major adverse effect for prehistoric settlement evidence and Saxon fish traps.

17.8.3 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.
17.8.4 Effects on the historic environment arising from the operation of the Thames Tunnel infrastructure at Heathwall Pumping Station, 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 presented in the Environmental Statement.

17.9 Land quality

17.9.1 A search of historical and environmental data indicates contaminative on site uses including an unidentified industrial works and the presence of a tank with unknown contents. In addition to the Heathwall Pumping Station, the site also comprises a wharf and jetty. The wharf at Heathwall is Middle Wharf and was formerly a concrete batching works but since being purchased by Thames Water has been cleared. It is still though, a designated safeguarded wharf. A waste transfer station at Cringle Dock is located 350m to the west. Historically the surrounding area has been, and still is, predominantly industrial with pockets of commercial properties. Notably, there was an extensive gas works located approximately 25m south of the site.

17.9.2 Historic industrial activities both on and adjacent to the site could have affected the soils beneath the site. Although previous ground investigations do not show the presence of significant soil or groundwater contamination at the site. Some contamination of groundwater has been identified to the west (near Kirtling Street). Desk based surveys have identified a medium to high risk from unexploded ordnance.

17.9.3 Based on preliminary assessment findings, there could be a slight adverse effect on construction workers due to the potential for exposure to contaminated soils or other materials, although any exposure risk would be short-term limited to the construction period. There would be a negligible effect on built structures within or close to the site, such as the existing Pumping Station, as it is considered unlikely that contaminants contained in subsurface materials would affect buried structures.

17.9.4 During operation there would be a negligible effect on future users and on built structures, including the new Thames Tunnel infrastructure from contamination.

17.9.5 Therefore no mitigation is proposed during the construction or operational phases.

17.10 Noise and vibration

17.10.1 The site is subject to distant road traffic noise along Nine Elms Lane to the south. The nearest locations to the site which are sensitive to noise and vibration are Elm Quay, an apartment complex to the east, the proposed Tideway Wharf residential units to the west and residential houseboats to the north west.
17.10.2 Based on preliminary assessment findings, significant noise effects arising from construction activities are predicted at residential properties at Elm Quay and Tideway Wharf (proposed development). No significant effects from vibration during construction of the site are predicted.

17.10.3 During construction, the contractor would be required to follow best practice (as described in the Code of Construction Practice) at all times to reduce noise and vibration effects upon the local community, for example, through suitable siting of equipment on site. To address the significant noise effects predicted at this site, further measures might include the use of localised screens and enclosures to reduce noise from particularly noisy, static operations.

17.10.4 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.

17.10.5 There would be no significant effects from noise or vibration during operation.

17.11 **Socio-economics**

17.11.1 The Thames Path, open space and residential properties surround the site (Figure 17.5) and are used for walking, cycling, and passive recreation.

17.11.2 During construction there would be moderate adverse effects on the amenity of nearby residents. Amenity impacts on users of the Thames Path and open space would result in negligible effects.

17.11.3 Once operational, there would be a minor beneficial effect resulting from the gain in publicly accessible space associated with the re-routing of the Thames Path and creation of a new area of public realm adjacent to the path in the foreshore.

17.11.4 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.

17.11.5 No mitigation is required for operational effects on socio-economics.
17.12  **Townscape and visual**

17.12.1  The townscape within the site is poor with good potential for enhancement. Townscape components within the site include a complex of cabins, a stretch of river wall, a jetty, and an electrical substation. The surrounding townscape of the south bank of the river is dominated by industrial and commercial buildings, undergoing transformation into residential-led mixed use schemes. In contrast the north bank is generally made up of established residential areas.

17.12.2  At this stage of the assessment, it is considered that the intensity of construction activity and the presence of the cofferdam (the structure required to create a dry working area in the foreshore) would have a moderate adverse effect on the character of the site and a minor adverse effect on four character areas, including the River Thames – Nine Elms Reach, St. George’s Wharf and Pimlico Residential, opposite the river. Once operational, preliminary assessment findings indicate minor beneficial townscape effects including The River Thames – Nine Elms Reach, Battersea Industrial and Pimlico Residential, and a negligible to minor beneficial effect on the character of the site itself due to the creation of riverside public realm and the screening of some existing structures.

17.12.3  In terms of visual amenity, during the construction phase preliminary assessment findings indicate minor adverse effects on viewpoints, including views from Grosvenor Road, Vauxhall Bridge and the Thames Path due to the visibility of the cofferdam, cranes and construction activity. Once operational, there would be a minor beneficial visual effect on four viewpoints due to the integrated design of the new river wall and above ground structures, the high quality public realm area proposed, and the screening of the existing pumping station.
17.12.4 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 beneficial effects during operation and therefore no mitigation is required.

17.13 Transport

17.13.1 The Heathwall Pumping Station site has moderate public transport accessibility, being located within close proximity of local bus stops along Nine Elms Lane, and Vauxhall Underground, Rail and bus station just over 1km from the site. The site is on the north side of Nine Elms Lane from which there would be two site access points.

17.13.2 During construction, the number of heavy goods vehicle movements would be comparatively low. However, construction activity is considered likely to result in a minor adverse effect on road network operation and delay. Effects on pedestrian and cyclist amenity and safety are considered to be minor adverse and a negligible effect is expected on public transport and river passenger services. During the operational phase there would be very occasional vehicle trips to and from the site for maintenance activities and these would have a negligible effect on the surrounding transport networks.

17.13.3 The project is being designed to limit the effects on the transport networks as far as possible. At this location, mitigation measures would be required during the construction phase which would involve providing safe crossing points for pedestrians and undertaking a safety audit of the site access points. Mitigation is not required for the operational phase.

17.14 Water resources - ground water

17.14.1 The shaft and connection tunnel would pass through the upper aquifer, which is of medium value, through the underlying London Clay (which is not an aquifer) and into the top of the lower chalk aquifer beneath, which is of high value. Associated interception infrastructure would sit in the upper aquifer and extend into the London Clay. There are a number of nearby public abstractions, which are of very high value.

17.14.2 Construction and operational effects on the upper aquifer would be limited to physical obstruction to groundwater flow. This is anticipated to have a negligible. Dewatering of the lower aquifer during construction could impact on groundwater availability and induce groundwater movement. This is subject to further assessment and will be reported in the Environmental Statement.

17.14.3 Monitoring of groundwater levels and quality would be undertaken during construction.
17.15 Water resources – surface water

17.15.1 The site is partially located within the River Thames foreshore. The River Thames at this point is classified as being of ‘moderate’ quality status, with a status objective of ‘good’ by 2027. Battersea Park Local Nature Reserve is located within 2km of the site and is water dependent.

17.15.2 Construction effects would be controlled via the Code of Construction Practice. With this in place it is anticipated that effects on water resources from surface water runoff and contaminants entering the drainage system would not be significant. No further mitigation would therefore be required to address effects on surface water quality.

17.15.3 There is also potential for changes in river flows due to the presence of structures in the foreshore. This could lead to scour of the flood defences. Once the temporary cofferdam is removed, some natural foreshore restoration would occur, thus reducing the degree of scour. Studies on this effect are underway and the need for mitigation during construction and operation will be considered and reported in the Environmental Statement.

17.15.4 Once operational, the scheme would reduce the number of discharges from the Southwest Storm Relief Sewer combined sewer overflow to a predicted level of one spill per year once the tunnel is in place. The scheme would also reduce the number of discharges from the Heathwall Pumping Station combined sewer overflow to a predicted level of approximately 66,400m³ in five spills a year once the tunnel is in place.

17.15.5 This reduction would have a beneficial effect on water quality. The number of risk days for river users being exposed to pathogens would be reduced by up to 164 days per year. In addition, the tonnage of sewage derived litter could be expected to be reduced from 200 tonnes to 16 tonnes per year.

17.16 Flood risk

17.16.1 The main source of flood risk to site is from the tidal River Thames. The part of the site located within the foreshore is designated as the ‘functional floodplain’ which currently floods twice a day with the rising tide. The eastern part of the site is located within the ‘high probability’ flood zone, although it is protected by existing flood defences.

17.16.2 The eastern part of the site may also be at risk from localised surface water flooding due to runoff generated by the land to the south of the site.

17.16.3 The presence of structures within the foreshore could impact on flows within the River Thames and the works required to construct the tunnel beneath the site have the potential to affect local flood defences. Further studies are being completed to assess these potential effects.
17.16.4 In order to protect the site from flooding, defences would be constructed during both the construction and operational phases to provide a level of protection equal to the existing defences along the river frontage. The effects of changes in scour and deposition as a result of the construction of the foreshore structure would be reduced through careful design of this structure.

17.17 Further information

17.17.1 Further information regarding preliminary assessment findings for Heathwall Pumping Station can be found in Volume 18 of the Preliminary Environmental Information Report.