26 Abbey Mills Pumping Station

26.1 Introduction

26.1.1 This section of the non-technical summary presents the preliminary environmental assessment for the Thames Tunnel project at Abbey Mills Pumping Station (Figure 26.1).

26.1.2 At this site it is proposed that the Thames Tunnel would be connected to the Lee Tunnel, which is currently under construction. The discharges from the combined sewer overflows, collected by the Thames Tunnel along the length of the tunnel, would be transferred via the Lee Tunnel to Beckton Sewage Works. There would be no new combined sewer overflow interception at Abbey Mills as part of the Thames Tunnel; the Abbey Mills combined sewer overflow is being intercepted by the Lee tunnel.

26.1.3 The Thames Tunnel shaft at Abbey Mills would be the reception point for the tunnel boring machine driven from Chambers Wharf to Abbey Mills.

26.1.4 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.

26.1.5 The environmental topics which have been assessed for this site are listed in the ‘Assessment’ section (26.4). Preliminary assessment findings are then presented topic by topic.

26.2 Site context

26.2.1 The site is shown as site number 18 on Figure 28.1.

26.2.2 The site is located within the London Borough of Newham (Figure 26.1). It is also close to the London Borough of Tower Hamlets.
26.2.3 The site is located entirely within the operational Thames Water Abbey Mills Pumping Station site. Approximately two and a half hectares would be required for the temporary works. This is indicated by the red line shown on Figure 26.2. The permanent works area would be considerably smaller, comprising only the top of the shaft. The site is located on the River Lee between Prescott Channel to the west and by Channelsea River and Abbey Creek to the south east.

26.2.4 Road access to the site would be from the A11 via Abbey Lane, Gay Road and the existing road within the site. A network of Public Rights of Ways, cycleways and footpaths border the site.
26.3 Proposed development

26.3.1 The proposal is to connect the Thames Tunnel to the Lee Tunnel at Abbey Mills. There is no new combined sewer overflow interception at Abbey Mills as part of the Thames Tunnel proposal.

26.3.2 In order to receive the tunnel boring machine from Chambers Wharf a shaft would be sunk at Abbey Mills. The main tunnel shaft would have an internal diameter of 20m and would be approximately 67m deep. During construction ground water would be removed in order to prevent flooding of the shaft and connection tunnel.

26.3.3 Construction works at this site would take approximately 4 years. Access to the site would be from Abbey Lane and Gay Road and would make use of the existing on site roads. An option to transport material from the site by barge has been retained within the current site design.

26.3.4 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.

26.3.5 Most of the construction would take place from 8am to 6pm, Monday to Friday although limited works would be required beyond these hours, for example for extended concrete pours.

26.3.6 In order to safeguard 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.

26.3.7 Figure 26.4 shows an indicative plan of the construction works.
26.3.8 Once the works at this site have been built, most of the structures would be below ground, including the shaft and connection tunnel. In addition, a number of structures constructed for the Lee Tunnel would be used by the Thames Tunnel. However, new ventilation columns and ventilation structures would be visible (Figure 26.4). The ventilation column would be approximately eight meters in height; the air inlet one meter and the high pressure release vent four meters above ground level. These structures would allow air to be released when flows in the tunnel rise into the shaft, compressing the air in the shaft.

26.3.9 Once the project is built and operational, access for maintenance purposes would be required every three to six months. Once every ten years more substantial maintenance work would be required. Maintenance access would use existing site roads.
26.4 Assessment

26.4.1 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

26.4.2 In the following sections, information about the preliminary assessment of each of these topics is presented.
26.4.3 As part of the assessment process, consideration has been given to known major developments that may change future environmental conditions. For the purposes of this assessment, it is assumed that the Lee Tunnel, between Abbey Mills and Beckton Sewage Treatment Works, and the completion of the Sugar House Lane development will have been completed when Thames Tunnel construction commences.

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

26.5 **Air quality and odour**

26.5.1 The site is located close to one of London Borough of Newham’s Air Quality Management Areas. 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 dwellings (in Riverside Road), users of the allotments adjacent to the western site boundary, the London School of Performing Arts and commercial/office premises on Three Mills Island.

26.5.2 Based on this preliminary assessment, it is considered that the overall effect on local air quality from construction road traffic and construction plant are likely to be minor adverse at the residential properties and negligible at the London School of Performing Arts, the allotments and commercial/office premises. In terms of construction dust, this is likely to have a minor adverse effect at the closest residential properties and allotments, and a negligible effect at the London School of Performing Arts and commercial/office premises, taking account of the dust control measures in the Code of Construction Practice.

26.5.3 Preliminary assessment findings indicate that the effects of odours released from the ventilation column is likely to be negligible at all receptors.

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

26.6 **Ecology – aquatic**

26.6.1 There are no in-river works at this site. Combined sewer overflow interception is being undertaken as part of the Lee Tunnel scheme and so site-specific operational aquatic ecology effects would not occur as a direct result of the works at this site. It is currently considered that no aquatic ecology receptors would be affected by the proposed works at Abbey Mills.
26.7 Ecology – terrestrial

26.7.1 The site comprises hard-standing, cleared areas and limited vegetation (Figure 26.5). Buildings, trees, amenity grassland and foreshore habitat are present adjacent to the site. The site has the potential to be of value to notable species. In addition, water vole and otter may be present in close proximity to the site. Surveys are ongoing and the results will be presented in the Environmental Statement.

Figure 26.5 Marginal vegetation at Abbey Mills

26.7.2 There are two designated sites in proximity to the site as well as the River Thames and tidal tributaries Site of Nature Conservation Importance partially within the site. However, no habitat would be lost from these sites and due to the localised nature of the proposed works no other effects are anticipated. Based on preliminary assessment findings, the loss of habitat on site would have a minor adverse effect. Effects on other species, currently being surveyed, will be assessed and reported in the Environmental Statement.

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

26.7.4 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. Any further measures that are required, such as species specific habitat creation or disturbance minimisation, will be formulated subject to survey results and reported in the Environmental Statement.
26.8 Historic environment

26.8.1 Neither the site nor immediate vicinity contains any nationally designated heritage assets. A group of listed buildings forming part of the 19th-century Abbey Mills Pumping Station are located approximately 130m away (Figure 26.6).

26.8.2 The site lies within the locally designated Three Mills Conservation Area (of high heritage asset significance) and within an Archaeological Priority Area. 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 evidence of prehistoric settlement (of moderate or high heritage asset significance). There is also moderate potential for later medieval marshland reclamation remains, such as drainage ditches and river walls (of low heritage asset significance).

26.8.3 Construction works would entail deep excavations which would remove any assets within the footprint of each area of construction. If any such assets were found to be present, then this would give rise to a minor adverse effect for palaeoenvironmental remains, a moderate or major adverse effect for prehistoric settlement remains, and a minor adverse effect for later medieval and post-medieval remains.

26.8.4 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. 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.

Figure 26.6 Abbey Mills Pumping Station
26.8.5 No direct disturbance to heritage assets is anticipated during the operational phase, nor are indirect effects on the setting of above ground heritage assets anticipated given that the operational structures would be small scale in nature, set within the wider industrial context of the pumping station.

26.9 Land quality

26.9.1 A search of historical and environmental data indicates that no potentially contaminating activities (other than the pumping station) that have existed on-site. The historical mapping has identified a number of potentially contaminating off site uses. Previous industrial activities in close to the site include various engineering works, chemical works, oil works and a gas works. Previous ground investigations have recorded soil and groundwater contamination at the site. Desk based studies have identified a medium/high risk from unexploded ordnance.

26.9.2 Based on preliminary assessment findings, 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. The preliminary assessment therefore identified no need for mitigation during the construction phase. The Environmental Statement will consider information from ground investigations.

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

26.10 Noise and vibration

26.10.1 The noise environment is dominated by road traffic. The nearest locations to the site which are sensitive to noise and vibration are the residential dwellings on Riverside Road to the north of the site. Figure 26.7 shows a photograph of local dwellings near to the Abbey Mills site.

26.10.2 Based on this preliminary assessment, no significant noise or vibration effects arising from construction activities are predicted at any of the receptors considered in the assessment. No significant effects as a result of the operation of the site are predicted.

26.10.3 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.

26.10.4 It is anticipated that no mitigation would be required to address noise and vibration effects.
26.11 Socio-economics

26.11.1 The site comprises land within Thames Water’s Abbey Mills Pumping Station. Allotments, the Three Mills Studios, residential dwellings, and watercourses surround the site.

26.11.2 During construction, there are likely to be minor adverse effects on residents and allotment users and negligible effects to the amenity of occupants and employees of the Three Mills Studio. There are not anticipated to be any socio-economic effects arising from the operation of the site.

26.11.3 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 effects which have been identified in this preliminary assessment.

26.12 Townscape and visual

26.12.1 The site is located within the Three Mills Conservation Area and is surrounded by a predominantly industrial townscape with some residential areas to the east and northwest. The site is dominated by areas of hard standing surrounding the operational pumping stations.

26.12.2 Based on preliminary assessment findings, during the construction phase due to site clearance works and construction activity there would be a moderate adverse townscape effect on Three Mills Green character area and a minor adverse effect on the character areas at the site, Three Mills Studio and the Three Mills Wall River Residential Area. Once operational preliminary findings indicate there would be negligible effects on all townscape areas.
26.12.3 In terms of visual amenity, preliminary assessment findings indicate that during the construction phase there is likely to be a major adverse effect on one viewpoint: the view from Three Mills due to the visibility of cranes, hoardings and construction activity. There would moderate adverse effects on five viewpoints including from Gay Road and Three Mills Green. There would be minor adverse visual effects on viewpoints including from Abbey Lane, The Greenway and Three Mills Studio due to the visibility of cranes. Once operational there would be negligible effects on all viewpoints.

26.12.4 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. For the operational phase, a process of iterative design and assessment has been employed to maximise beneficial effects. The level of benefits during operation will depend on the final architectural and landscape design and will be reported in the Environmental Statement.

26.13 Transport

26.13.1 The site has good public transport accessibility being located within close proximity of a number of bus services on Stratford High Street and Pudding Mill DLR Station located just over 1km from the site. The site is on the south side of Abbey Lane and construction vehicle access is proposed via the A11 and A12, and the A11 and A1202.

26.13.2 During construction, the number of heavy goods vehicle movements would be moderate. The nature of the construction site layout at this location is considered likely to result in a minor adverse effect on road network operation and delay. Effects on pedestrian amenity and safety and cyclists are expected to be minor adverse. A negligible effect is expected on public transport services. During the operational phase there would be occasional vehicle trips to and from the site for maintenance activities but these would have a negligible effect on the surrounding transport networks.

26.13.3 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 take the form of a review of signal timings, road markings and pedestrian facilities at the Stratford High Street / Abbey Lane junction as well as a road safety audit. Mitigation is not required for the operational phase.

26.14 Water resources - ground water

26.14.1 The proposed reception shaft would pass through the upper and lower aquifers. Both the upper and lower aquifers are sensitive environmental receptors. The lower aquifer is of high value and abstractions from it of very high value, while the upper aquifer is considered to be of medium value.
26.14.2 Construction effects on the upper aquifer would include physical obstruction to flow and creation of a pathway for pollution. The application of a risk based approach to remediation of identified contaminated groundwater will ensure that potential effects are negligible. 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.

26.14.3 Once operational, effects of obstruction of ground water flow and seepage to and from the shaft on the upper aquifer would be negligible and effects on the lower aquifer minor adverse.

26.14.4 Shaft construction techniques will determine if further assessment is required to understand the interaction with a nearby private abstraction source. Monitoring of groundwater levels and water quality would continue during construction.

26.15 Water resources – surface water

26.15.1 The site is located adjacent to the Channelsea River at the point the sections of the Channelsea River known as the Prescott Channel and the Abbey Creek join (Figure 26.8).

Figure 26.8 Channelsea River

26.15.2 The section of the River Thames closest to the site lies within a zone of the river defined by the Environment Agency as the Thames Middle waterbody (including the Channelsea River). This is currently classified under the Water Framework Directive as being at moderate potential status, with a status objective of good potential by 2027. There are no designated water-dependent conservation sites in proximity to the proposed site that could be affected by construction.

26.15.3 The assessment has not identified potential effects on surface water resources from the proposed construction works as all construction site drainage would drain to the existing drainage system. No mitigation would therefore be required.
26.16 Flood risk

26.16.1 The main source of flood risk to the site is the Channelsea River and the Prescott Channel. The site is located within the ‘high probability’ flood zone, although it is protected by flood defences which run along the river banks.

26.16.2 The shaft would be situated on higher ground within the centre of the site, where ground levels are significantly above design flood levels. The risk of the operational site flooding from tidal events is therefore negligible. The proposed works include some changes to ground levels and redefinition of the flood defence line around the south of the site.

26.16.3 Surface water drainage would be managed by a formal drainage system, to ensure no increase in runoff to surrounding areas. If runoff from extreme rainfall events is discharged directly to the Channelsea River and/or Prescott Channel then appropriate scour protection would be provided.

26.17 Further information

26.17.1 Further information regarding preliminary assessment findings for Abbey Mills can be found in Volume 27 of the Preliminary Environmental Information Report.