27 Beckton Sewage Treatment Works

27.1 Introduction

27.1.1 This section of the non-technical summary presents the preliminary environmental assessment for the Thames Tunnel project at Beckton Sewage Treatment Works (Figure 27.1).

27.1.2 At this site it is proposed that part of the Beckton Sewage Treatment Works be upgraded to cater for additional flows from the Thames Tunnel over and above those from the Lee Tunnel.

27.1.3 The Thames Tunnel would collect combined sewer overflows along the length of the tunnel and would deliver these flows via the Lee Tunnel to Beckton Sewage Treatment Works.

27.1.4 The majority of the works required at Beckton Sewage Treatment Works are currently under construction as part of the Lee Tunnel project. However, some additional works would be constructed under as part of the Thames Tunnel project to cater for the additional volume of flow.

27.1.5 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.

27.1.6 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.

27.2 Site context

27.2.1 The site is shown on Figure 28.1.

27.2.2 The site is located within the London Borough of Newham (Figure 27.1). It is also close to the London Borough of Barking and Dagenham.
27.2.3 The site is located entirely within the operational Beckton Sewage Treatment Works. Approximately twelve and a half hectares comprising two distinct sites of approximately ten hectares and two and a half hectares would be required for the temporary works. The area of land required for the permanent works would be substantially smaller than that required for the construction. The temporary works area is indicated by the red line shown on Figure 27.2. Beckton Sewage Treatment Works is located on the northern bank of the River Thames to the west of Barking Creek.

27.2.4 Access to the site is via Jenkins Lane which joins on to the A13. A green chain route and a recreational permissive footpath (which is a Public Right of Way) are located along the Barking Creek.
27.3 Proposed development

27.3.1 The proposal is to upgrade Beckton Sewage Treatment Works such that it can cater for the additional volume of flow over and above that from the Lee Tunnel.

27.3.2 The overflow from the tunnel, constructed as part of the Lee Tunnel project, would be re-configured. This scheme would reduce the risk of flooding from shafts which are located in areas with low ground levels.

27.3.3 This would require the construction of two shafts and connection tunnel as well as the installation of two additional pumps, associated culverts, pipelines and tunnels.

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

27.3.5 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.

27.3.6 Figure 27.3 shows an indicative plan of the construction works.
27.3.7 Once the works at this site have been built, most of the infrastructure would be below ground and therefore not visible although the top of the two shafts are about 4-5m above ground level (Figure 27.4, Figure 27.5 and Figure 27.6). The valve chamber would be about 2m above ground level and the grit removal gantries would be about 4m above the existing structure and adjacent to existing gantries. A pipeline and a single storey building would also, be visible.
Figure 27.4 Beckton Sewage Treatment Works indicative plan of built development – image 1 of 3

Figure 27.5 Beckton Sewage Treatment Works indicative plan of built development – image 2 of 3
27.4 Assessment

27.4.1 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. Transport
h. Water resources (ground and surface)
i. Flood risk
27.4.2 In the following sections, information about the preliminary assessment of each of these topics is presented. Note that socio-economics was scoped out of the assessment given the location of the site within an operational sewage works which is remote from near neighbours.

27.4.3 As part of the assessment process, consideration has been given to known major developments that may change future environmental conditions. Completion of the Lee Tunnel development to the east and the completion of Barking Riverside have been assumed in the assessment.

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

27.5 **Air quality and odour**

27.5.1 The site is not located within an Air Quality Management Areas although the A13 corridor to the north of the site falls within one of the London Borough of Newham Air Quality Management Areas. The nearest people who may be sensitive to the development are occupiers of commercial premises within 150-200 metres of the site.

27.5.2 Based on this preliminary assessment, it is considered that overall effect on local air quality at the commercial properties from construction road traffic and construction plant is likely to be negligible. The effect is also likely to be negligible at these premises with regard to construction dust.

27.5.3 Preliminary assessment findings indicate that the effects of odours released from the site would have a minor adverse effect.

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

27.6 **Ecology – aquatic**

27.6.1 The sewage outfall at Beckton currently discharges into the brackish zone of the designated River Thames and Tidal Tributaries Site of Metropolitan Importance. The habitat is identified as the UK Biodiversity Action Plan priority habitat ‘mudflat’ and forms one of the most extensive areas of intertidal mudflat in this part of the River Thames. Data shows that fish and invertebrate diversity at the site is low.

27.6.2 There would be no in-river works associated with this site. No further consideration of the impacts associated with construction at this site has therefore been undertaken for aquatic ecology.

27.6.3 During operation, the Thames Tunnel scheme would lead to an increase in the volume of effluent discharge from Beckton Sewage Treatment Works as flows from the Thames Tunnel would be treated here. This could potentially lead to very local changes in water salinity and increase the potential for scour at the outfall. In is however anticipated that the effects on all aquatic ecology receptors: habitats, mammals, fish and invertebrates would be negligible.

27.6.4 No mitigation is required at this site because adverse effects are not considered likely.
27.7 Ecology – terrestrial

27.7.1 The site comprises buildings and hardstanding, semi-improved grassland and scrub. Beckton Lands South Site of Importance for Nature Conservation lies within and adjacent to the site. A section of grassland and scrub in The Greenway and Old Ford Nature Reserve Site of Importance for Nature Conservation is also located within the site. The vegetation on and adjacent to the site has potential to support foraging and commuting bats, nesting and foraging habitat for breeding birds including black redstart, reptiles and wintering birds. Surveys are ongoing and will be reported in the Environmental Statement.

27.7.2 Site clearance would result in the loss of a small area of semi-improved grassland and scrub from the Greenway Old Ford Nature Reserve Site of Importance for Nature Conservation. Based on preliminary assessment findings, this would have a local adverse effect on the designated site and habitats. Effects on other species, which are currently being surveyed, will be assessed and reported in the Environmental Statement.

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

27.7.4 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, such as species specific habitat creation or disturbance minimisation, will be formulated subject to survey results and reported in the Environmental Statement.

27.8 Historic environment

27.8.1 The site mainly contains modern sewage treatment works infrastructure, although there is a 19th century Grade II listed chimney which formed part of the sewage works (of high heritage asset significance). There are no other nationally designated heritage assets in the vicinity of the site. The site lies within a locally designated Archaeological Priority Area and the main potential is for palaeoenvironmental remains, e.g. organic remains of low or medium heritage asset significance, and prehistoric remains, including isolated artefacts (of low heritage asset significance) and occupation evidence and/or structures or trackways (of high heritage asset significance). There is also moderate potential for post-medieval remains of drainage ditches/river walls (northwestern area) and 19th century reclamation and flood defences and an outfall reservoir (of low heritage asset significance).

27.8.2 Construction works would entail deep excavations which would entirely remove the predicted assets within the footprint of each excavation. If any such assets were found to be present then this would comprise a high magnitude of impact and would give rise to a minor adverse effect on palaeoenvironmental remains, a minor to major adverse effect for prehistoric remains (depending the nature and condition of remains), and a minor adverse effect on post-medieval remains.
27.8.3 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.

27.8.4 No direct disturbance to heritage assets is anticipated, or indirect effects on the setting of heritage assets, during the operational phase and consequently a detailed assessment has not been undertaken.

27.9 Land quality

27.9.1 A search of historical and environmental data indicates that the site was first developed in the 1860s as part of Bazalgette’s London Sewer upgrade in the middle 19th Century. It has grown considerably to the modern day layout. The area to the south has a long history of industrialisation including a gas works (some of which is still present to the south of Gallions Reach Shopping Centre) and various other engineering works. Numerous tanks, chimneys, rail sidings and other potentially contaminative activities are present in this area. Previous ground investigations have recorded some soils and groundwater contamination within the Sewage Treatment works site. Desk based surveys have identified a low/medium risk from unexploded ordnance.

27.9.2 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 and the potential for foreshore sediment contamination.

27.9.3 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.

27.10 Noise and vibration

27.10.1 All works are to be undertaken within the existing Beckton Sewage Treatment Works which is over 300m from the closest noise and vibration sensitive locations. No significant effects noise or vibration effects are therefore predicted as a result of the construction and operation of the site.
27.11 **Townscape and visual**

27.11.1 The townscape and visual assessment of construction effects has been scoped out of the assessment due to the nature of the proposed works which would be in keeping with existing activities at the site. The assessment of operational effects has also been scoped out due to the low height of operational structures set amongst existing industrial structures similar in character.

27.12 **Transport**

27.12.1 The site has low public transport accessibility. Vehicle access is direct from the A13 via a grade-separated roundabout and allows access and egress in both directions.

27.12.2 During construction, the number of heavy goods vehicle movements would be consistent with current levels. Given the location of the site, construction activity is considered likely to result in a minor adverse effect on road network operation and delay. Effects on pedestrian facilities and cyclist amenity and safety are expected to be negligible. A negligible effect is also expected on rail, bus and river passenger 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.

27.12.3 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.

27.13 **Water resources - ground water**

27.13.1 Two shafts and parts of the connection tunnels would pass through the upper aquifer and into the surface of the lower aquifer. The main receptors are the lower aquifer, which is defined as being high value and the upper aquifer, which is defined as being of medium value.

27.13.2 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 would ensure that these effects are negligible. Dewatering of the lower aquifer during construction could impact groundwater availability and 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.

27.13.3 At the operational phase, the main potential effects are the obstruction to groundwater flow and the risk from seepage from the shaft and connection tunnels. These are considered to be negligible for the upper aquifer and minor adverse for the lower aquifer at this stage.

27.13.4 Monitoring of groundwater levels and water quality would continue during construction.
27.14 **Water resources – surface water**

27.14.1 The site is located adjacent to the point where the River Thames and the River Roding (also known as the Barking Creek) meet. The Crossness Local Nature Reserve is located within 2 kilometres of the site and is water-dependent.

27.14.2 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 River Roding). 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 within the proposed site that could be affected by construction.

27.14.3 The assessment has not identified potential effects on surface water resources from the proposed construction works at this site as all construction site drainage would drain to the existing sewer system. No mitigation would therefore be required.

27.15 **Flood risk**

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

27.15.2 The proposed works on the site do not include any modifications to the existing flood defence structures, and a residual risk of tidal flooding in the event of a local flood defence breach would remain for the operational site.

27.15.3 The works include a small increase in hard standing area on the site which could cause a small increase in the surface water discharge from the site into the River Thames. It is considered unlikely that this would have any impact on scour protection at the outfall, however if additional protection is required it would be provided.

27.16 **Further information**

27.16.1 Further information regarding preliminary assessment findings for Beckton Sewage Treatment Works can be found in Volume 28 of the Preliminary Environmental Information Report.