

**Thames Tideway Tunnel**  
Thames Water Utilities Limited



# Application for Development Consent

Application Reference Number: WWO10001

## Sustainability Statement

Doc Ref: **7.07**

### **Appendix B.18**

#### **King Edward Memorial Park Foreshore**

APFP Regulations 2009: Regulation **5(2)(q)**

Hard copy available in

Box **48** Folder **B**  
January 2013

**Thames  
Tideway Tunnel**



Creating a cleaner, healthier River Thames

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## Appendix B: Site-specific appraisal

### B.18 King Edward Memorial Park Foreshore

<b>Type of site:</b>	CSO Site
<b>Description of proposals:</b>	The site is located in the London Borough of Tower Hamlets. The site would comprise part of the foreshore with the rest of the site located partly located within a multi-purpose sports area and King Edward Memorial Park. The site would intercept the North East Storm Relief CSO.
<p><b>Water quality</b> Maintain and enhance river water quality</p>	
<p><b>Appraisal</b> The proposals would support the objective. Particular issues of relevance to the site appraisal include:</p> <ul style="list-style-type: none"> <li>• The site does not lie within a source protection zone. The proposed shaft would pass through the upper and lower aquifer. The lower aquifer would be dewatered internally and ground water discharged into the tidal Thames. The potential for contamination has been identified. Settlement of suspended solids and further treatment of effluent as outlined in the <i>CoCP</i>, where required, would ensure that no pollutants would enter the tidal Thames and river water quality would be maintained.</li> <li>• Pollutant runoff would be managed against through appropriate site drainage in accordance with the <i>CoCP</i>. Consequently, this contamination pathway would be eliminated.</li> <li>• Construction of a cofferdam into the foreshore would be necessary. Water would be pumped during the construction of the cofferdam leading to a potential pollution pathway. Measures set out in the <i>CoCP</i> would ensure that pollutants and contaminants are removed from effluent before being discharged into the river.</li> <li>• Piling within the foreshore would release sediment from the river bed. The River Thames is a high sediment environment with up to 40,000t (20,000m<sup>3</sup>) of sediment passing the site four times per day during spring tide. It is estimated that 75t (37.5m<sup>3</sup>) of sediment would be released at this site through piling activity. This additional amount would be negligible compared to natural fluctuation.</li> <li>• Temporary changes in water flow and debris accumulation could result from the construction of the cofferdam. These effects would be local, temporary and of aesthetic nature and would therefore have limited bearing on the objective.</li> <li>• Once operational the interception of the North East Storm Relief CSO would be lead to a reduction of spill frequency from 31 to 4 times per annum. The yearly discharge volume would be reduced from 782,000m<sup>3</sup> to 85,000m<sup>3</sup> consequently leading to a reduction in sewage derived litter from 200t to 21t per year.</li> </ul>	

In summary, the proposals would support the objective as river water quality would be maintained during construction and enhanced in operation.

Further details can be found in the *Environmental Statement* and in the *CoCP*.

## Biodiversity

### Maintain and enhance biodiversity

#### Appraisal

The proposals would support the objective regarding terrestrial biodiversity but would not fully support the objective regarding aquatic diversity. Particular issues of relevance to the site appraisal include:

- Scattered trees, amenity grassland, shrubs, hard standing and buildings would be cleared from the site. This is considered to be habitat of low ecological value. Lost habitat would be reinstated after construction along with bat and bird nesting boxes. The habitat loss would therefore be temporary and of limited scale. Further, a large proportion of habitat in King Edward Memorial Park would not be affected so that notable terrestrial species would not be affected during construction.
- Trees adjacent to the site would be protected by measures in the *CoCP*.
- Provision of bat and bird boxes would be beneficial for populations of notable species. An increase in populations is expected after construction due to the enhancement of habitat. This gain in biodiversity would support the objective.
- The site is located within the River Thames Intertidal Tributaries SINC. There would be a temporary loss of approximately 1,900m<sup>2</sup> of mostly subtidal habitat during construction. Further changes to a larger area of habitat would be possible resulting from consolidation and sedimentation. This would result in a loss of feeding, resting and nursery habitat for fish. Fish populations would experience disturbance from waterborne noise and vibration during construction.
- There would be a permanent loss of 1,700m<sup>2</sup> and 400m<sup>2</sup> of intertidal and subtidal habitat respectively. This would have adverse on local fish populations as feeding and resting habitat would be lost. The proposals would therefore not support the objective to maintain diversity at a site level. Compensation on a project wide level is discussed in Volume 3 of the *ES*. The proposals would however support the objective on a project-wide level.
- In operation there would be a direct positive effect on aquatic biodiversity due to the reduced amount of sewage and sewage derived litter entering the ecosystem. This reduction would lead to an improvement in dissolved oxygen concentration and reduce sediment nutrient levels, consequently improving the quality of habitats and enhancing biodiversity. The proposals would therefore support the objective.

In summary, terrestrial biodiversity would be maintained during construction and enhanced in operation through provision of bat and bird nesting boxes, and a net increase in trees. Consequently the proposals would support the objective. Installation of a cofferdam during construction would lead to a temporary loss of habitat, and there would be a permanent loss of habitat at the site level which would be compensated on a project-wide level. Enhancement of water quality would be beneficial to habitat quality and species diversity. The proposals would not fully support the objective when considering aquatic ecology as habitat would be lost. However, remaining habitat would be enhanced.

Further information can be found in the *Environmental Statement* and the *CoCP*.

## Climate change mitigation

Maximise energy efficiency and minimise the carbon footprint of the project

### Appraisal

This objective is most appropriately appraised at the project level, as opposed to the site level. This is because whilst there are variations in energy and CO<sub>2</sub> emissions between sites, in general, these are representative of the different types of site proposed (eg, drive site, CSO interception). The individual sites do not provide an appropriate measure of how far this sustainability objective has been achieved for each site. This is detailed within the *Energy and Carbon Footprint report*.

Procedures to maximise energy efficiency and minimise the carbon footprint of the scheme would be implemented through project-wide initiatives, and not specifically at the site level. Energy Management Plans would be implemented through the *CoCP*, which, alongside Thames Water's proposals to account for carbon emissions throughout the construction process, would assist in the management of emissions arising from the sites.

Energy and emissions are discussed in the thematic appraisal within the climate change mitigation section (see Appendix A). Additional details are also provided within the *Energy and Carbon Footprint report*.

Whilst predominantly addressed at the project-wide level, at the site level it is anticipated that the proposals would broadly support the objective. The following broad issues are anticipated to arise at the site:

- Greenhouse gas emissions resulting from construction materials at the site would be approximately 21,000t CO<sub>2</sub>e. During the construction phase approximately 640t CO<sub>2</sub>e and 1,300t CO<sub>2</sub>e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- The carbon footprint would be reduced at a site level as approximately 90% of materials would be transported to and away from site via barges. The use of river transport would minimise the need for HGV. The carbon footprint would be reduced by 170t CO<sub>2</sub>e.
- No lighting would be provided after completion of the works, as the park is closed at night. Lighting would be restricted to a low level light at the kiosk activated by a directional motion control switch. This would support the objective by minimising energy requirements.
- The site would make use of passive ventilation in operation. Energy requirements for venting would be minimised and efficiency of ventilation points maximised. The proposals would consequently support the objective.

In summary, the carbon footprint would be minimised through use of river services for material transport. Energy efficient lighting and ventilation would be provided. Thus the proposals would support the objective.

Further information can be found in the *Environmental Statement*, the *Energy and Carbon Footprint Report*, the *CoCP* and the *Design Principles*.

## Change adaptation and flood risk

Maximise resilience and adaptability to change;  
Take account of flood risk in the design of sites

### Appraisal

The objective on resilience and adaptability to climate is predominantly considered at a

project-wide level due to relevant changes in population and climate occurring at regional level rather than specifically at a site level (see Appendix A).

However, at the site level, the proposals would support the objectives to maximise resilience and adaptability to change, and take account of flood risk in design. Particular issues of relevance to the site appraisal include:

- There is at high flood risk from tidal and fluvial flooding from the River Thames. Flood defence height would be maintained and defences built around the foreshore to ensure that there would be no increase in tidal and fluvial flood risk.
- There would be no increase in surface water flood risk as the appropriate site drainage as outlined in the *CoCP* would be in place.
- As the CSO would be maintained during construction there would be no increase in sewer flood risk.
- The site is currently not at risk from groundwater flooding. This would remain unchanged. The proposals have taken all flood risk sources into account and incorporated measures that would avoid an increase in risk.
- The site lies within an area deficient of open space but is not located within the Central Activity Zone. The development would not lead to an increase in the urban heat effect as the site is located adjacent to the river. Effects on the urban heat would be given as resilience to future changes in temperature would be maximised. The proposals would therefore support the objective.

In summary, there would be no increase in flood risk from any source due to the development and adaptability and resilience to flood risk would be maximised. The proposals have taken flood risk into account and maximise resilience to future temperature changes.

Further details can be found in the *Environmental Statement*, the *Site Selection Report* and the *CoCP*.

## Excavated materials and waste management

Minimise waste arisings and its impacts on the environment and communities and to promote re-use, recovery, recycling and beneficial use

### Appraisal

The proposals would support the objective. Particular issues of relevance to the site appraisal include:

- A drop shaft with an approximate internal diameter of 20m and a depth of 60m would be excavated at the site. This would lead to an estimated 130,000t of excavated materials, mainly consisting of chalk (21,000t) and imported infill (61,000t). The material would be managed in accordance with the *Excavated material and waste strategy* (see *Environmental Statement* Vol 3 Appendix A) that seeks to maximise the beneficial re-use of material.
- It is estimated that a total of 3,500t of construction waste would arise. Approximately 8t of welfare waste would arise per year. This would be managed through measures in the *CoCP* including the site waste management plan to maximise re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy.
- Excavated materials and waste would be transported away from the site via barge during construction. This would reduce detrimental impacts on the environment

and on communities relating to increased HGV traffic.

- Operational waste would result from maintenance of the air management unit and would be negligible. The objective would not be affected.

In summary, excavated materials and waste would be diverted from landfill through beneficial re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy. Detrimental impacts relating to waste arising would be reduced through transport via barge.

Further details can be found in the *Environmental Statement, Excavated material and waste strategy* (see *Environmental Statement Vol 3 Appendix A*) and the *CoCP*.

## Resources and raw materials

Promote the sustainable use of resources

### Appraisal

The objective to promote the sustainable use of resources is most appropriately appraised as a project-wide issue, rather than specifically at the site level. Whilst it will be important to work towards the objective through ongoing considerations towards the further design of sites, the major opportunities will arise by taking interventions across the project as a whole.

A significant volume of materials would be required to support construction. The concrete specification required is central to the durability of the tunnel and therefore the scope for promoting the sustainable use of resources is limited by engineering requirements. A range of measures are proposed at the project level which support the objective and which would assist to promote the sustainable use of resources. Further details are available in the project-wide appraisal within the resources and raw materials section (see Appendix A).

The following broad considerations are relevant to the sustainability at the site level.

- It is estimated that 30,000L of water would be used every 24 hours during the peak construction period (2018). This is largely accounted for by water required for shaft grout/concrete (15,000L/d) and mitigation measures such as washdown and dust suppression (11,000L/d). The water requirements are within the available water for London as estimated in Thames Water's Resource Management Plan. Consequently, the volume of water used is considered to be sustainable and would support the objective.
- The operation of the site is not anticipated to present a large demand for materials, which the exception of those required in routine maintenance.

Further information can be found in the *Environmental Statement* and the *CoCP*.

## Population, human health and equality

Ensure health and safety, and support the well-being of communities in which the project operates;

Encourage equality and sustainable communities

### Appraisal

The proposals would support the objective. The proposals would encourage equality and sustainable communities. Particular issues of relevance to the site appraisal include:

- Effects relating to vibration would be mitigated through implementation of low

vibration piling to ensure health, safety, and well-being.

- Mitigation measures outlined in the *CoCP* would mitigate noise effects. However, some receptors in the surrounding area would experience significant adverse effects relating to noise. As no further on-site mitigation would be possible measures such as secondary glazing and compensation would be in place for affected receptors. Whilst this would ensure health and safety, it could affect the well-being of affected receptors.
- The site is located within the London Borough of Tower Hamlets Air Quality Management Area. Mitigation measures embedded in the *CoCP* and the use of river services would ensure that health and safety would not be compromised by construction work.
- There would be a small loss of public realm during construction. However, the proportion of the park temporarily lost would be small and have limited bearing on the objective.
- Interception of the CSO in operation would be beneficial for recreational river users. Exposure to pathogens would be minimised from 124 days to 16 days per year. Consequently safety, health and well-being in of river users would be ensured and the proposals supported.
- A children's playground would need to be relocated within the park during construction and reinstated once works have been completed, therefore not affecting the well-being within the community.
- Encouraging equality and sustainable communities is predominantly addressed at the project-wide level. However, extensive public consultation has been undertaken to take into account the community's views on the proposals at the site. This has been considered in conjunction with engineering, environmental, planning and cost issues to achieve a balance between vying interests. Consequently, it is considered that the proposals support the objective of equality and sustainable communities.

In summary, the proposals would support the objective as they ensure health and safety within the community. Well-being would also be supported. In operation there would be beneficial effects to the health, safety and well-being of recreational river users.

Further information can be found in the *Environmental Statement* and the *CoCP*.

## Economy

Promote a strong and stable economy

### Appraisal

The proposals would support the objective. Particular issues of relevance to the site appraisal include:

- A maximum of 40 workers would be employed at any one time at this site during construction. This employment opportunity would support the objective for a strong and stable economy.

Further details can be found in the *Environmental Statement*.

## Environmental protection and enhancement

Minimise significant adverse environmental effects relating to air quality, noise and vibration, and lighting from construction and operation of the Thames Tideway

**Tunnel;**  
**Protect and enhance the character of landscapes and townscapes;**  
**Protect and conserve the historic environment.**

**Appraisal**

The proposals would support the objective. Particular issues of relevance to the site appraisal include:

**Environmental effects**

- Significant adverse environmental effects relating to vibration would be mitigated through measures such as implementation of low vibration piling.
- Some receptors would experience significant adverse effects relating to noise during construction, as no further on-site mitigation would be possible. Measures would be in place to off-set such effects where applicable.
- No significant adverse environmental effects would arise relating to air quality as they would be limited through measures outlined in the *CoCP* and by the use of river transport.
- As outlined in the *CoCP* and the *Design Principles* light spill would be minimised and directed away from sensitive receptors, during construction. No lighting would be needed during operation. There would be no significant adverse effects arising from the development, consequently the objective would be supported.
- The proposals would support the objective as they seek to minimise significant adverse environmental effects, albeit with some restrictions relating to noise.

**Landscape and townscape**

- The site is located within the Wapping Wall Conservation Area. The site and the surrounding area would temporarily be affected due to construction activity and the presence of construction equipment. Parts of the river wall and several trees small and mature trees would need to be removed. Memorial benches and the band stand would also be removed during the construction. However, these features would be reinstated once works have been completed. The proposals would not support the objective during construction but the townscape would be conserved in the long-term.
- The townscape would be enhanced in operation as there would be a gain of public realm and the Thames Pathway would be maintained. The new area would be carefully designed to fit in with the existing townscape. Consequently, the proposals would support the objective.

**Historic environment**

- The site lies within a locally designated Archaeological Priority Area. There are no nationally designated heritage assets on site; however, some Grade II listed assets are located in the near proximity of the site.
- Effects on potentially buried assets would be mitigated by targeted investigation and recording, including environmental sampling within the area of the temporary cofferdam and foreshore work grounds.
- Temporary removal of trees, benches and bandstand would affect the historic environment and the setting of King Edward Memorial Park during construction. An English heritage level 1 survey would be conducted to ensure adequate reinstatement after construction. Therefore, the historic environment would be accurately reinstated in operation.

- Localised demolition of the river wall would be required. An English Heritage level 2 standing structure recording and photographic survey would form preservation by record.
- The historic environment and setting of King Edward Memorial Park would be enhanced through the improved design within the park. This would also have beneficial effects on the setting of the nearby Grade II listed buildings. The proposals would therefore support the objective.

In summary, significant adverse environmental effects relating to air quality and vibration would be mitigated. No further on-site mitigation is available during construction to reduce effects relating to noise and some receptors would be significantly affected, however, compensation measures would be in place where applicable. Townscape and historic environment would be altered during construction but would be enhanced through gain of public realm and careful design in operation. Historic assets would be protected and conserved throughout operation.

Further details can be found in the *Environmental Statement*, the *CoCP* and *Design Principles*.

## Land use

Efficient and sustainable use of land and buildings

### Appraisal

The proposals would not support the objective as when considered at the site level, development on green field land would be contrary to the objective. However, during design evolution, the amount of green space required for construction has been reduced. The following is relevant to the appraisal:

- The proposed development would make use of an area of King Edward Memorial Park. It must be recognised however that the use of the site was preferred through site selection due to the need to intercept CSOs as close to the source as possible, limiting tunnelling requirements. Alternative options would involve intercepting using multiple sites, which might require a greater area of land overall.

When considered in isolation, the development proposals would not support the objective, however have been a number of other factors which promote development at the site. Further details can be found in the *Environmental Statement* and the *Site Selection Report*.

## Sustainable transport

Minimise the detrimental impacts associated with the transport of construction materials and waste on communities and the environment, by prioritising the use of sustainable transport

### Appraisal

The proposals would support the objective. Particular issues of relevance to the site appraisal include:

- River services would be used to transport materials to and from the site. This would reduce detrimental impacts on communities and the environment associated, as the need for transport via HGV would be minimised.
- It is estimated that 82 HGV movements would be required per day at the site during the peak construction period which would last 5 months. It is estimated that approximately 24 HGV movements per day would be required on average over the construction period. Measures outlined in the *CoCP* such as provision of a travel

management plan would minimise detrimental impacts associated with additional traffic on communities and the environment.

- The PTAL for the site has been classified as 3, indicating a moderate level of accessibility via public transport. Measures in the *COCP* such as only allowing vehicles necessary to undertaking works on site would discourage workers to travel to site by car and would consequently minimise additional road traffic.

In summary, the proposals would promote sustainable transport by making use of river services, minimising the number HGV's required, and encouraging public transport. This would minimise detrimental effects associated with additional traffic on communities and the environment.

Further details can be found in the *Environmental Statement* and the *CoCP*.

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