

**Thames Tideway Tunnel**  
Thames Water Utilities Limited



# Application for Development Consent

Application Reference Number: WWO10001

## Sustainability Statement

Doc Ref: **7.07**

### **Appendix B.15**

#### **Blackfriars Bridge 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.15 Blackfriars Bridge Foreshore

<b>Type of site:</b>	CSO site
<b>Description of proposals:</b>	The site is located within the City of London. It would intercept and divert flow from the Fleet Main CSO and control and the northern Low Level Sewer No.1.
<b>Water quality</b> Maintain and enhance river water quality	
<b>Appraisal</b> The proposals would support the objective. Particular issues of relevance to the site appraisal include: <ul style="list-style-type: none"> <li>• The site is not located within a source protection zone. The shaft would extend through the upper aquifer into the lower aquifer. Dewatering of the lower aquifer would be required. No contamination of underlying groundwater has been identified at the site or the vicinity of the site. Settlement of suspended solids and further treatment of effluent as outlined in the <i>CoCP</i> would ensure that no pollutants would enter the tidal Thames and river water quality would be maintained.</li> <li>• Pollutant runoff would be mitigated through appropriate site drainage in accordance with the <i>CoCP</i>. Consequently this contamination pathway would be eliminated.</li> <li>• Piling within the foreshore would release up to 145t (72.5m<sup>3</sup>) in addition to 210m<sup>3</sup> (420t) released through dredging into the river. The tidal Thames is a high sediment environment with approximately 40,000t of sediment passing the site up to four times per day with tidal movements at spring tide. The contribution from the site is considered negligible in comparison to natural fluctuation.</li> <li>• Changes in waterflow due to construction of in-water structures could lead to an altered accumulation of debris during construction. These changes would be temporary and of aesthetic nature. River water quality would not be affected during construction and the objective consequently supported.</li> <li>• Once operational the interception of the Fleet Main CSO would lead to a reduction of spill frequency from 21 to 54 times per year. The yearly discharge volume would be reduced from 521,200m<sup>3</sup> to 37,000m<sup>3</sup> consequently leading to a reduction in sewage derived litter by 93%. The proposals would therefore support the objective of enhancing water quality.</li> </ul> <p>In summary, river water quality would be maintained during construction as contamination pathways resulting from dewatering and pollutant run-off would be eliminated through stringent measures outlined in the <i>CoCP</i>.</p> <p>Further details can be found in the <i>Environmental Statement</i> and the <i>CoCP</i>.</p>	

## Biodiversity

### Maintain and enhance biodiversity

#### Appraisal

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

- No notable terrestrial species or the potential for their presence was identified at this site. Consequently there would be no effects on terrestrial biodiversity during construction or operation. Replacement planting would be in place for trees removed during construction. Further, bat boxes would be attached to mature trees on site.
- The site is located within the River Thames and Tidal Tributaries Site of Metropolitan Importance (SMI). There would be a temporary landtake of 1,950m<sup>2</sup> associated with the construction of a cofferdam, which would comprise 0.0001% of the SMI. Local fish populations would be affected by the temporary loss of feeding, resting and nursery habitat.
- There would be a permanent landtake of 6800m<sup>2</sup>, predominantly subtidal habitat. At site level the landtake would not affect on biodiversity due to its small size. Compensation measures for habitat loss are considered at a project wide level in Volume 3 of the *Environmental Statement*. Once operational there would be positive effects on aquatic biodiversity due to the reduced amount of sewage and sewage derived litter entering the ecosystem. Improved dissolved oxygen levels and sediment nutrient levels would improve the quality of habitats and consequently enhance species diversity. The proposals would support the objective.

In summary, there would be no effects on terrestrial biodiversity during construction or operation. A temporary landtake during construction would result in a loss of feeding, resting and nursery habitat for fish populations. The permanent habitat loss during operation would be compensated at a project wide level. Consequently, local fish populations would be affected by loss of habitat associated with the development. However, it must be noted that habitat quality would be enhanced through interception of the CSO.

Further details 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. 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 45,000t CO<sub>2</sub>e. During the construction phase approximately 1,000t CO<sub>2</sub>e and 1,100t CO<sub>2</sub>e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- Location of the site would facilitate the use of river services so that 90% of materials would be transported on barges rather than on HGVs. The use of river services would reduce the carbon footprint of the project by 630t CO<sub>2</sub>e.
- Interception of the CSO at this site, combined with interception at two further sites, would allow control of 10 CSOs along the northern embankment. This would greatly reduce the need for materials and energy, consequently minimising the carbon footprint on a project wide level.
- Energy efficient lighting would be provided on new realm.
- During operation the site would make use of passive ventilation, consequently minimising the need for energy and maximising efficiency of ventilation points. This would support the objective.

In summary, the proposals would support the objective by minimising the carbon footprint through site selection and the use of river services during construction. In operation energy efficient lighting and passive ventilation would maximise energy efficiency.

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

## 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 change 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:

- The site lies at risk from tidal and fluvial flooding (flood zone 3a and 3b). During construction the cofferdam would be built to the same height as current flood defences. The permanent site would be defended from flooding to the same standard of protection, as before the construction works. Furthermore, there would be no increase in surface water, groundwater and sewer flooding probability.
- New public realm would be raised to current flood defences during operation.
- The site is located within the Central Activity Zone and an area deficient of open space. There would be an increase in hard standing from the development. However, the site is located adjacent to the River Thames which would reduce the

risks of urban heat, consequently maximising resilience and adaptability to future temperature changes.

In summary, the proposals would support the objective. Flood risk has been taken into account in the design of the sites and the development would not lead to an increased risk of flooding from any source. The location of the site would alleviate urban heat effects and maximise resilience and adaptability to future changes in temperature.

Further details can be found in the *Environmental Statement* 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 shaft with an internal diameter of approximately 24m and a maximum depth of 53m would be excavated. This would lead to an estimated 160,000t of excavated materials with the majority consisting of imported fill (87,000t), London Clay (34,000t) and Lambeth (21,000t). The materials would be managed in accordance with the *Excavated material and waste strategy* (see *Environmental Statement Vol 3 Appendix A*) that seeks to maximise beneficial re-use of materials.
- An estimated 5,800t of construction waste would be generated. This would be managed through measures set out in the *CoCP*, including the application of a site waste management plan to maximise re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy.
- Approximately 14t of welfare waste would be produced per year during construction. This waste would be managed through measures outlined in the *CoCP* including provision of a site waste management plan.
- The use of barges for the transport of the material from the site would reduce the number of HGVs required at the site. Therefore, impacts on the environment and communities associated with arising waste would be minimised.
- Operational waste would result from maintenance of the air management unit and would be negligible. This therefore would not affect the objective.

In summary, the proposals would support the objective by diverting a large amount of waste from landfill through promotion of re-use, recovery, recycling and beneficial use in accordance with the waster hierarchy. Impacts on the environment and communities would be minimised through the use of river transport. Water arising during operation is considered to be minimal and would have limited bearing on the objective.

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 materials required are 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 within Appendix A the resources and raw materials section.

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

- It is estimated that 28,000L of water would be used every 24h during the peak demand period (2018-2019). This is largely accounted for by 15,000L/d for shaft grout/concrete and 9,000L/d for mitigation measures such as washdown and dust suppression. The water requirements are within the available water for London as estimated in Thames Water's Resource Management Plan. The volume of water used is considered to be sustainable.
- Interception at this site, alongside with interception of two further CSOs, makes control of 10 CSOs possible without further construction works. The proposals at this site therefore support the objective by minimising the amount of materials needed on a project wide level.
- The operation of the site is not anticipated to present a large demand for materials, with the exception of those required in routine maintenance.

In summary, the proposals would support the objective by making use of sustainable supplies of water during construction. Interception at this site, along with others, allows the control of several CSOs making construction at these sites redundant and consequently minimising the need for materials. During operation the amount of required materials would be minimal.

Further information can be found in the *CoCP* and the *Site Selection Report*.

### **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 objectives. Particular issues of relevance at a site level include:

- Construction work at this site would last approximately 5.5 years. Standard working hours would be used, however, extended standard hours would be needed during major concrete pours. The *CoCP* sets out measures to ensure that health and safety would not be compromised through air quality or noise and vibration effects and that the well-being within the community would be supported.
- A temporary diversion of approximately 400m would be in place during the construction period. This would divert pedestrians away from the Thames Path and past a busy road junction. However, measures laid out in the *CoCP*, such as appropriate signage, would ensure safety of pedestrians.
- Once operational there would be a gain of public amenity space (0.04ha) from the

extension of the river wall into the foreshore. Further, a lift would be provided between the Thames Path and Blackfriars Bridge allowing for step free access supporting the well-being of the community.

- CSO interception would reduce the number of days recreational river users are exposed to pathogens from approximately 84 days to 16 days and consequently be beneficial to health, safety and well-being of river users.
- 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. The outcomes have 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 that health and safety within the community would not be affected through air quality or noise and vibration associated with the construction. A safe footpath diversion would be in place during construction. Benefits on health, safety and well-being of the community would result during operation as public amenity space would be gained and pathogen exposure of recreational river users would be reduced. Extensive public consultation has helped to encourage equality and sustainable communities.

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

## Economy

### Promote a strong and stable economy

#### Appraisal

The proposals would support the objective under the assumption that business would successfully relocate in proximity of the site. Particular issues of relevance to the site appraisal include:

- Blackfriars Millennium Pier, including business located at the pier, would need to be permanently relocated. The pier would be relocated at a short distance from its current location. Furthermore, a mooring business would need to be displaced by approximately 100m. Compensation measures would be in place for relocation costs where applicable.  
In the assumption that business would successfully relocate, the proposals would support the objective.
- Access to a specialist sports facility would be blocked and member clubs would need to be relocated. Should no adequate options be available to the clubs for relocation they would be able to apply for the compensation scheme. In the assumption that member clubs would successfully relocate, the proposals would support the objective.
- A maximum of 70 workers would be employed at any one time at this site. This employment opportunity would help support the objective for a strong and stable economy.
- To promote a stable economy in the future services would be provided in the undercroft area. This would facilitate business use of the facilities in the future and



would therefore support the objective.

In summary, the proposals would support the objective under the assumption that

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

**Environmental Protection and Enhancement:**

**Minimise significant adverse environmental effects relating to air quality, noise & 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 relating to significant adverse environmental effects. The proposals would not support the objective relating to townscape and the historic environment. The proposals would protect and conserve historic assets. Particular issues of relevance for the site appraisal include:

**Environmental effects**

- The site is located within the City of London AQMA. Measures set out in the *CoCP* and the use of river services would mitigate significant adverse environmental effects relating to air quality during the construction period.
- No significant adverse environmental effects relating to lighting or noise and vibration would result from the development as the proposals seek to minimise these through measure embedded in the *CoCP*.

**Landscape and townscape**

- Construction at this site would temporarily alter the character of the site and the surrounding townscape. These changes would result from construction activity and structures such as site hoarding and welfare facilities.
- New public realm during operation would alter the site and the surrounding townscape. As these changes would be permanent the proposals would not support the objective.
- However, removal of existing structures which detract from the current setting of the Whitefriars Conservation Area would be an improvement to the immediate river side setting during operation.
- The proposals would consequently not support the objective as temporary and permanent changes would result from the development. New public realm would be carefully designed to suit the townscape and changes would be beneficial at Whitefriars Conservation Area.

**Historic environment**

- The site lies within an Archaeological Priority Area (APA) designated by the City of London. The site contains several Grade II listed structures including the Embankment river wall and a number of cast iron lamp standards and benches. Also within the site is the President ship which is listed on the National Register of Historic Vessels and is also a member of the National Historic Fleet. Some structures, such as the lamps and benches, would need to be removed during construction and would be reinstated once completed. In addition a standing

structure recording and photographic survey to English Heritage survey level 3 would be conducted in order to form preservation by record and consequently conserve historic assets.

- No heritage assets of high significance are anticipated which would require a mitigation strategy of permanent preservation in situ. If buried heritage assets of potentially high significance would be found on site, they would be protected or preserved by record, as set out in the CoCP. The proposals would consequently support the objective during construction.
- The historic environment would be altered during construction and operation. This would consequently not support the objective.

In summary, the proposals would support the objective by minimising significant adverse environmental effects relating to air quality, noise and vibration and lighting. During construction there would be temporary changes to the townscape and the historic environment due to the presence of construction activity and equipment. The introduction of new public realm would permanently alter the townscape and the historic environment. Consequently the proposals would not support the objective in this respect. The proposals would protect and conserve historic assets on site.

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

## Land use

### Efficient and sustainable use of land and buildings

#### Appraisal

The proposals would not support the objective. Particular issues of relevance to the site appraisal include:

- The site is located upon the foreshore of the River Thames and includes sections of the Victoria Embankment slip road up to Blackfriars Bridge and areas of the pavement along Victoria Embankment and Paul's Walk. Even though the site makes use of some previously developed land it would be necessary to extend the foreshore into the river. Consequently the proposals are not considered to make efficient and sustainable use of brownfield land and existing buildings.

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:

- Approximately 90% of materials would be transported to and away from the site along the river by barge. The need for HGVs would be minimised and detrimental impacts on communities and the environment reduced through the use of river services.
- It is estimated that 92 HGV movements would be generated during the peak construction period which would last approximately 3 months. On average there would be 22 HGV movements per day during the construction period. Measures set

out in the *CoCP* such as provision of a traffic management plan would reduce detrimental effects arising from road traffic associated with the construction.

- The PTAL for the site has been classified as 6b, indicating an excellent level of accessibility via public transport. Measures in the *CoCP* such as only allowing vehicles necessary to undertaking works on site would help minimise additional road traffic and therefore minimise detrimental effects on communities and environment. It is not anticipated that workers would travel to site by car.
- The objective refers to impacts associated with transport during the construction period and is therefore not applicable during operation.

In summary, the proposals would support the objective as they promote sustainable transport such as river services and public transport. Detrimental impacts associated with HGV traffic from the site would be minimised through measures set out in the *CoCP*.

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

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