

**Thames Tideway Tunnel**  
Thames Water Utilities Limited



# Application for Development Consent

Application Reference Number: WWO10001

## Sustainability Statement

Doc Ref: **7.07**

### **Appendix B.1**

#### **Acton Storm Tanks**

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.1 Acton Storm Tanks

<b>Type of site:</b>	CSO site, main tunnel reception site
<b>Description of proposals:</b>	The site is located in the London Borough of Ealing and would lie within the Thames Water operational storm tanks site, and the associated pumping station. The site would receive the main tunnel from Carnwath Road and would connect the Acton Storm Relief CSO to the main tunnel.
<p><b>Water quality</b> Maintain and enhance river water quality</p>	
<p><b>Appraisal</b></p> <p>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 drop shaft would penetrate the upper but not the lower aquifer. No dewatering of the aquifer would be required, therefore no pollution pathway would be created as no efflux would need to be discharged into the river.</li> <li>• Appropriate site drainage as outlined in the CoCP would prevent discharge of pollutants via surface water run-off into the river. Pollutant run-off would be controlled eliminating the risk of river water deterioration.</li> <li>• Two storm tanks would be taken out of service for the construction at the site, leading to a loss of combined foul and storm water storage. This could lead to a small increase in sewage overflow of up to 6,000m<sup>3</sup>. However, the likelihood of a spill with increased volume would be 26% during the construction period. River water quality would consequently be maintained during the construction period. However, it is possible that there would be a small occasional increase in discharge which would lead to temporary deterioration of water quality.</li> <li>• Currently the Acton Storm Relief CSO discharges 312,000m<sup>3</sup> of combined sewage and 79t of sewage derived litter into the tidal Thames per year. The spill frequency would be reduced from 29 times to 0 times per year through interception of the CSO. Therefore, river water quality would be enhanced in operation.</li> </ul> <p>In summary, the proposals would support the objective as river water quality would be maintained during construction and enhanced in operation. However, it must be noted that there is potential for a small increase in discharge volume during construction as a loss of combined foul and storm water storage would be associated with the development.</p> <p>Further information 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:

- Vegetation (scattered trees, scrubs, amenity grassland and tall ruderal vegetation) would be cleared for the construction. Replacement planting along the site would ensure that this loss of habitat would not affect populations of notable species. Re-instatement of habitat of higher value such as species-rich wildflower grassland after completion of the construction would be beneficial to biodiversity.
- Installation of bird and bat boxes would be beneficial to populations of breeding birds and bats. Invertebrate populations would benefit from enhanced habitat quality during operation.
- Notable species would not be disturbed from lighting during the construction period as the *CoCP* sets out measures to minimise light spills.
- There would be no in-river works associated with the development. Consequently aquatic diversity would not be affected during construction.
- Aquatic biodiversity would be positively affected by interception of the CSO. The reduced amount of sewage and sewage derived litter entering the ecosystem would lead to improved dissolved oxygen levels and reduced sediment nutrient levels. Habitat and species diversity would be enhanced in operation.

In summary, the proposals would support the objective. Terrestrial biodiversity would be enhanced throughout the development. Aquatic biodiversity would not be affected during the construction phase as no in-river works are proposed. Interception of the Acton Storm Relief CSO would be beneficial to aquatic biodiversity.

Further information can be found in the *Environmental Statement, Design Principles* 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 the proposals would not 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 20,000t CO<sub>2</sub>e. During the construction phase approximately 120t CO<sub>2</sub>e and 950t CO<sub>2</sub>e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- Energy and emissions are associated with the operation of the site, which is one of only 3 sites across the project to require active ventilation. Accordingly, the site has a relatively high energy demand. This is a necessary process load to ensure effective air management within the tunnel.

In summary, there would be a relatively high energy demand at the site during operation due to the need for active ventilation. Therefore the proposals would not support the objective at a site specific level.

Further information can be found in the *Environmental Statement, Energy and Carbon Footprint 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 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 objective 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 partly within high, medium and low probability flood zones at risk of tidal and fluvial flooding from the River Thames. Existing fluvial flood defences along the banks of the river would remain unchanged during construction, therefore, there would be no increased flood risk resulting from the development. An emergency plan would be in place at the site.
- Measures set out in the *CoCP* such as provision of SuDS ensure that surface water flood risk would not be increased by the development.
- Two storm tanks would be taken out of service for the development which would lead to a reduction in combined foul and water storage capacity at the site. Proposed measures such as active management and use of freeboards of remaining tanks would ensure that sewer flood risk would not be increased.
- The site is not at risk from groundwater flooding. Monitoring would be in place during construction and operation.
- The site does not lie within the Central Activity Zone but within an area deficient of open space. The development at the site would lead to a reduction in hard standing alleviating effects of urban heat. Resilience and adaptability to future changes in temperature would be increased by the development.

In summary, the proposals would support the objective as flood risk has been taken into account in the design of the site resulting in an unchanged risk of flooding from various sources. A decrease in hard standing would maximise resilience and adaptability to future changes in temperature.

Further information 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:

- Excavation of a drop shaft with an internal diameter of approximately 15m and a depth of 31m would lead to 3,200t of excavated materials consisting of London clay (1,900t) and made ground (1,300t). This would be managed in accordance with the *Excavated material and waste strategy* (see *Environmental Statement Vol 3 Appendix A*) which seeks to maximise beneficial re-use of material.
- An estimated 1,600t of construction waste would be generated at the site. Further, approximately 8t of welfare waste would arise per year. Waste would be managed through measures set out in the *CoCP* to promote re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy.
- Operational waste at the site is considered to be minimal, resulting from routing maintenance and would not affect the objective.

In summary, the proposals would divert waste from landfill by promoting re-use, recovery, recycling and beneficial use of excavated material and waste. Consequently, the objective would be supported.

Further information can be found in the *Environmental Statement*, the *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 would be important to work towards the objective through ongoing considerations towards the further design of sites, the major opportunities would 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 39,000L of water would be used every 24 hours during the peak construction period (2020-2021). This is largely accounted for by 28,000L/d for shaft and tunnel grout/concrete and by 8,000L/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 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 make use of sustainable supplies of waster during construction and would not require large amounts of materials during construction. Consequently, the objective would be supported.

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

### **Population, human health and equality**

**Ensure the 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 by ensuring that health and safety within the community is not compromised. However, one receptor would experience noise effects that could only be mitigated through compensation which could lead to a reduction of well-being. The proposals would encourage equality and sustainable communities.

Particular issues of relevance to the site appraisal include:

- The construction would last approximately 3.5 years with standard and continuous hours of operation. The *CoCP* sets out measures to ensure health and safety and support the well-being within the community.
- Mitigation measures incorporated in the *CoCP* would ensure that health and safety would not be compromised through noise and vibration resulting from the development. Despite these measures one receptor in the surrounding area would significantly be affected by noise and vibration during the construction period. As no further on-site mitigation would be possible, measures such as double gazing and compensation would be in place for affected receptors. Whilst this would ensure health and safety, the well-being of the receptor could be affected.
- The site is located within the London Borough of Ealing AQMA. The development would not reduce health and safety through emissions and dust from the construction.
- Interception of the Acton Storm Relief CSO would lead to a reduction in the number of days recreational river users are exposed to pathogens from 116 days to 0 days per year. This would support 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. 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

<p>and sustainable communities.</p> <p>In summary, the proposals would ensure health and safety and support the well-being within the community, albeit with impacts at one receptor. Interception of the CSO would eliminate exposure of recreational river users to pathogens. Extensive public consultation has encouraged equality and sustainable communities.</p> <p>Further information can be found in the <i>Environmental Statement</i> and the <i>CoCP</i>.</p>
<p><b>Economy</b>  <b>Promote a strong and stable economy</b></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>• A maximum of 40 workers would be employed at any one time during construction. This would support the objective by creating employment opportunities.</li> </ul> <p>Further information can be found in the <i>Environmental Statement</i>.</p>
<p><b>Environmental protection and enhancement</b>  <b>Minimise significant adverse environmental effects relating to air quality, noise and vibration, and lighting from construction and operation of the Thames Tideway Tunnel;</b>  <b>Protect and enhance the character of landscapes and townscapes;</b>  <b>Protect and conserve the historic environment.</b></p>
<p><b>Appraisal</b>  The proposals would support the objectives although during construction there would be effects on noise and townscape. Particular issues of relevance to the site appraisal include:</p> <p><b>Environmental effects</b></p> <ul style="list-style-type: none"> <li>• The <i>CoCP</i> sets out stringent measures that seek to minimise significant adverse environmental effects relating to air quality, noise and vibration and lighting from the development.</li> <li>• The development would not lead to significant adverse environmental effects relating to air quality or lighting during construction or operation. Significant effects relating to noise and vibration have been mitigated at most receptors. However, one receptor would experience significant adverse effects during construction. As no further on-site mitigation would be possible, measures would be put in place to off-set effects where applicable.</li> <li>• The proposals have minimised significant adverse environmental effects where possible and as such would support the objective, albeit some impacts would remain.</li> </ul> <p><b>Landscape and townscape</b></p> <ul style="list-style-type: none"> <li>• There would be temporary changes to the site and the townscape of the surrounding area. These alterations would result from the presence of construction activity and equipment such as site hoardings, welfare facilities and cranes. Further, the townscape would be altered through the increased presence of HGVs in the area.</li> </ul>

- The immediate setting of the site and the Warple Way residential TCA would benefit from the infilling of two storm tanks and the introduction of well designed above ground structures. Further, boundary conditions along the site would be improved. The townscape would therefore be enhanced during operation.

**Historic environment**

- No nationally or locally designated historic assets are located on or in the proximity of the site.
- Upstanding remnants of the first sewage works including historic machinery may need to be removed for the construction. Photographic recording would ensure conservation where localised removal is proposed.
- There is some potential for buried heritage assets on site. Preservation by record would be achieved through an archaeological watching brief prior and during construction. Consequently the proposals would conserve heritage assets should these need to be removed.

In summary, the proposals would support the objectives. However, one receptor would experience significant adverse environmental effects relating to noise and vibration during the construction period. Compensation measures are proposed as no further on-site mitigation would be feasible. The character of the site and the surrounding area would temporarily be altered during construction but enhanced during operation. The proposals would ensure protection and conservation of historic above ground and buried heritage assets.

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

**Land use**

**Efficient and sustainable use of land and buildings**

**Appraisal**

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

- The development would be located on previously developed land within the Acton Storm Pumping Station. This would eliminate the need for the use of greenfield and would consequently support the proposals by making efficient and sustainable use of land.

Further information 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 only partly support the objective. Particular issues of relevance to the site appraisal include:

- Materials could not be transported to and away from the site via barge as no river services would be available in the proximity of the site.
- It is estimated that there would be 14 HGV movements on average during the construction period. Approximately 46 HGV movements would be required during

the peak construction period which would last 5 months. Detrimental impacts relating to traffic would be minimised through measures set out in the *CoCP* such as provision of a traffic management plan.

- The PTAL for the site has been classified between 2 and 3, indicating a poor to moderate level of accessibility via public transport. Despite measures set out in the *CoCP* to promote sustainable transport, approximately 49% of workers would drive to the site.

In summary, the proposals would not fully support the objective as sustainable transport such as river services and public transport is limited at the site. Measures set out in the *CoCP* would minimise detrimental impacts associated with the additional traffic.

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

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