Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.2

Hammersmith Pumping Station

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.2 Hammersmith Pumping Station

Type of site:	CSO site, short connection tunnel drive site
Description of proposals:	The site is situated east of Chancellor's Road and south of Distillery Road within the London Borough of Hammersmith and Fulham. The Hammersmith Pumping Station CSO would be intercepted at the site.

Water quality

Maintain and enhance river water quality

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

- The site does not lie within a source protection. The drop shaft would penetrate the upper but not the lower aquifer. No dewatering would be required. Consequently there would be no pathway for contamination resulting from dewatering.
- Appropriate site drainage as outlined in the *CoCP* would eliminate a pollution pathway resulting from surface water run-off. River water quality would therefore be maintained during the construction period.
- Interception of the Hammersmith Pumping Station CSO would reduce the number of discharges from the Hammersmith Pumping Station CSO from 51 to between 1 and 3 spills in a typical year. The yearly discharge volume would be reduced from 2,210,000m^3 to 104,000m^3 leading to a reduction in sewage derived litter from 557t to 26t per year. River water quality would be enhanced in operation.

In summary, the proposals support the objective by maintaining river water quality through the elimination of pollution pathways during construction. Interception of the CSO would reduce spill frequency and volume and the amount of sewage derived litter entering the tidal Thames. Water quality would be enhanced during operation.

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

Biodiversity

Maintain and enhance biodiversity

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

- Three trees would be removed for construction at the site. This would reduce the potential nesting habitat for birds and foraging habitat for bats, however it is anticipated that these would be replaced as part of any new development, so that the habitat in the area would not be reduced overall. Bat and bird nesting boxes would be provided to enhance habitat opportunities for notable species. It is

anticipated that bat populations in particular would profit from these. A brown roof would be installed on permanent ventilation structures once the site is operational.
- The *CoCP* outlines that construction lighting should minimise light spills to minimise disruption to notable species. The proposals would support the objective as biodiversity would be maintained and bat populations enhanced through provision of bat boxes.
- No in-river works would be required at this site. Therefore there would be no changes in aquatic biodiversity resulting from the development during the construction period.
- Interception of the Hammersmith Pumping Station CSO would lead to improved habitat quality and would enhance aquatic diversity. The reduction of sewage and sewage derived litter entering the ecosystem would improved dissolved oxygen concentrations and reduce sediment nutrient levels.

In summary, terrestrial ecology would be maintained throughout construction and operation of the development. Local bat populations would be enhanced through the provision of bat boxes. Aquatic biodiversity would not be affected during construction as no in-river works are proposed during this period. Interception of the CSO would lead to enhanced aquatic habitat quality and 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_2 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 6,700t CO_2e. During the construction phase approximately 240t CO_2e and 800t CO_2e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- The site would make use of passive ventilation during operation. This would minimise energy requirements for venting and maximise efficiency of ventilation points.

- Low level, energy efficient lighting would also be installed for maintenance during operation.

In summary, the proposal would support the objective during operation as energy requirements would be minimised and efficiency maximised.

Further details can be found in the *Environmental Statement, Energy and Carbon Footprint Report.*

Change adaptation

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 climate change, and take account of flood risk in design. Particular issues of relevance to the site appraisal include:

- The site is located within a high probability flood zone at tidal and fluvial flood risk from the river Thames. Existing flood defences would be monitored and repaired if necessary to maintain the existing crest level. Development at the site would not lead to an increased flood risk.
- The site has been derelict for 10 years, and therefore the proposals could be expected to lead to a minor increase in the level of impermeable surfacing by the introduction of new hardstanding. Oversize pipes or tanks would be used to store surface water during tide locking conditions before being discharged into the River Thames. Existing surface water sewers would be reinstated once the construction has been completed and attenuation would be provided to meet the Mayor's essential standards in operation. Surface water risk would not be increased by the development.
- The risk of sewer flooding would remain unchanged during construction and operation. The pumping station and CSO would remain operational during construction. Sewer flows would be re-redirected to the CSO and the pumping station should the main tunnel be unavailable during construction.
- Groundwater would be monitored during construction and operation. The current flood risk is considered to be low and would not be increased through the development.

In summary, the proposals have taken flood risk into account and measures would be in place to ensure that there would be no increase in flood risk from any source resulting from the development. Consequently, the proposals would support the objective as they have taken flood risk into account.

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 drop shaft with an approximate internal diameter of 11m and a depth of 33m would be constructed at the site. Excavation of the shaft and tunnel would lead to an estimated amount of 18,000m3 of excavated material. This volume has been reduced through design development as the shaft has been reduced in diameter from 25m to 11m. The excavated materials would mainly consist of London clay (29,000t) and would be dealt 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 1,000t of construction waste would be generated during construction. Approximately 9t of welfare waste would be generated at the site. Arising waste would be managed in accordance with the site waste management plan as required by the *CoCP* to promote the re-use, recycling, recovery and beneficial re-use of materials aligning with the waste hierarchy.
- Operational waste is considered to be minimal, resulting from routine maintained and would have limited bearing on the objective.

In summary, the objective would be supported during construction as waste has been minimised through design development. Waste arisings would be managed in accordance with the waste hierarchy maximising re-use, recycling, recovery and beneficial re-use of materials, consequently diverting these from landfill.

Further information can be found in the *Environmental Statement, Excavated material and waste strategy* (see *Environmental Statement* Vol 3 Appendix A), *Site Selection Report* 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 material specification 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 the resources and raw materials section (Appendix A).

Whilst largely addressed at the project-wide level, the proposals would support the objective at the site level. The following broad considerations are relevant to the sustainability at the site level:

- It is estimated that 32,000 litres of water would be used every 24 hours during the peak construction period between the years of 2018 and 2019. This is largely accounted for by 20,000L/d required for shaft and tunnel grout/concrete and approximately 9,000L/d needed for mitigation measures such as dust suppression and washdown. The requirements for water usage through construction are shown to be within the available water for London as estimated in Thames Water's water resource management plan. Consequently, the resource would be sustainably sourced.

- The design development has allowed to minimise the internal diameter of the drop shaft from 25m to 11m and consequently reduced the amount of raw materials and resources needed.
- The operation of the site is not anticipated to present a large demand for materials.

In summary, the proposals would support the objective by minimising the demand for resources and raw materials. Water would be sustainably used and within the available water for London.

Further information can be found in the *Environmental Statement, Site Selection Report* 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, albeit some restrictions relating to noise resulting from the development. Particular issues of relevance to the site appraisal include:

- Construction at the site would last approximately three years. Standard, extended and continuous working hours would be required. The *CoCP* sets out measures that would be enforced to ensure health and safety and support the well-being within communities.
- Mitigation measures embedded in the proposals and the *CoCP* would minimise noise and vibration. However, some receptors would experience significant effects relating to noise during construction. 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, well-being could be reduced.
- The site is located within the London Borough of Hammersmith and Fulham AQMA. Mitigation measures embedded in the *CoCP* would ensure that health and safety would not be compromised by emissions and dust resulting from the construction.
- Interception of the CSO would reduce the number of days that recreational river users are exposed to pathogens from 200d to 12d per year. This would ensure health and safety and support the well-being of river users during operation.
- Encouraging equality and sustainable communities is predominantly addressed at the project-wide level. However, extensive public consultation has been undertaken to consider the community's views on the proposals at the site. The outcomes have been assessed 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. However, negative adverse effects relating to noise during construction would remain at the some receptors. Measures to off-set such effects would be in place, but could reduce the well-being of affected receptors should relocation be required. Recreational river users would benefit from interception of the CSO in operation. Extensive public consultation has helped to encourage equality and sustainable communities.

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 45 workers would be required at any one time during the construction period.
- An access agreement would be negotiated to ensure that the proposed works at the site would not impact the activities of St George, the developer responsible for Fulham Reach.

In summary, the proposals would support the objective to promote 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 objectives with some restrictions relating to noise and the temporary presence of construction activity and equipment. Particular issues of relevance to the site appraisal include:

Environmental Effects

- The *CoCP* outlines stringent measures to minimise significant adverse environmental effects relating to noise and vibration. Some receptors would experience significant adverse environmental effects relating to noise during construction, despite embedded mitigation measures. The proposals have minimised significant adverse environmental effects where possible, but where they remain measures would be in place to off-set such effects.
- No significant adverse environmental effects would result from the development relating to air quality and lighting as mitigation measures would be in place.

Landscape and Townscape

- Changes to the character would be minimal as the development would be located on an existing pumping station with industrial activity.
- The surrounding area and townscape would temporarily be affected through the presence of construction activity and equipment such as site hoardings, welfare facilities and cranes.
- Above ground structures would be located on the Hammersmith Pumping Station. There would be no long-term changes to the townscape and setting of the surrounding area resulting from the development.

Historic Environment

- The site is located within the Fulham Conservation Area, however no nationally designated heritage assets are located on site.

- Construction would require the removal of a screen house, steps and a section of the boundary wall of the 1960's Hammersmith Pumping Station. An English Heritage Level 1 visual recording would ensure preservation by record.
- The site lies partly within an Archaeological Priority Area (APA) with some potential for buried heritage assets. Preliminary site-based field evaluation and targeted archaeological excavation and/or an archaeological watching brief would ensure preservation by record of these assets.
- The historic environment would temporarily be altered due to the presence of construction activity and equipment. The site would be improved in its appearance during operation which would lead to an enhancement of the setting of the Fulham Reach Conservation Area.

In summary, the proposals seek to minimise significant adverse environmental effects relating to air quality, noise and vibration, and lighting. Despite embedded mitigation measures significant effects relating to noise during construction would remain at some receptors. The townscape and historic environment would be altered during construction. As permanent above ground structures would be located within the Hammersmith Pumping Station there would be no changes to the setting in operation. The proposals consequently support the objectives; however, some effects would remain.
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 proposals would make use of existing Thames Water owned property and would be partially situated on an area of brownfield land currently being redeveloped (Fulham Reach). The land would be given back to the developer upon completion. The proposals would therefore make efficient and sustainable use of previously developed land and allow re-use of land following construction.
- The existing pumping station building would be retained during operation and used to house the electrical control equipment.

In summary, the proposals would make efficient and sustainable use of previously developed land and an existing building. Land located outside of the Hammersmith Pumping Station would be returned to the developer after construction allowing re-use of land.

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

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:

- It is estimated that 42 HGV movements would be generated per day during the peak construction period which would last 3 months. On average there would be 16 HGV movements per day during the construction phase. Detrimental impacts on communities and the environment would be minimised through measures

outlined in the *CoCP* such as provision of a traffic management plan.

- The PTAL for the site has been classified between 5 and 6b, indicating excellent accessibility by public transport. Measures outlined in the *CoCP* such as only allowing vehicles necessary for construction would help minimise detrimental effects on communities and the environment. It is estimated that no workers would travel to site by car. This would support the objective by prioritising sustainable transport methods.

In summary, the *CoCP* outlines measures to promote public transport and minimise detrimental effects on communities and the environment associated with the construction at the site.

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

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