Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.23

Beckton Sewage Treatment Works

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

Hard copy available in

Box **48** Folder **B**
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Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Appendix B: Site-specific appraisal

B.23 Beckton Sewage Treatment Works

Type of site:	System modification
Description of proposals:	The site is located within the London Borough of Newham and comprises land that forms part of Thames Water's Beckton Sewage Treatment Works. The proposal is for modification works at this site.

Water quality
Maintain and enhance river water quality

Appraisal

The proposals would support the objective during construction but would not support the objective on a local level during operation. Particular issues of relevance to the site appraisal include:

- The site does not lie within a source protection zone. Potential contamination has been identified in the vicinity of the site. The proposed siphon tunnel inlet and outlet shafts would penetrate the upper and lower aquifer. Dewatering would be required and contamination has been identified on site. Effluent from dewatering would be discharged to the sewage treatment works. Consequently, there would be no pathway for contaminants into the tidal Thames.
- Surface water run-off would be discharged into the existing sewer system for treatment, consequently, there would be no effects on river water quality.
- No in-river works are proposed at the site, therefore, river water quality would be maintained during construction.
- Once operational the spill volume and duration from the Tideway CSO would be increased and the proposals would not support the objective on a site level. However, it needs to be considered that these effects would allow for a significant decrease in the spill volume, frequency and duration at a project wide level which would lead to considerable improvements of the river water quality.

In summary, the proposals would support the objective of maintaining river water quality during the construction period. However, there would be an increase in spill frequency and volume resulting from the development at the site during operation. Whilst this would not support the objective at a site level it would help enhance river water quality at a project-wide level.

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

Biodiversity
Maintain and enhance biodiversity

Appraisal
The proposals would support the objective, albeit with some restrictions during operation. Particular issues of relevance to the site appraisal include:

- The site is located within the Greenway and Old Ford SINC. Vegetation (introduced shrub, scrub, scattered trees, wasteland habitat and grassland) would be cleared of the site for the construction. The temporary loss of habitat would not result in changes to the functionality of the habitat on site or within the SINC. Cleared vegetation would be re-instated after completion of the works.
- The temporary habitat loss would not affect populations of notable species. Measures set out in the *CoCP* would further ensure that notable species would not be disturbed by lighting and noise and vibration.
- During construction there would be no effects on aquatic ecology as no in-river works are proposed.
- The augmented spill volume and duration of discharges at the sewage treatment works would lead to a reduction in water quality and would consequently lower local aquatic habitat quality. Feeding habitat for fish would be particularly affected. Further, local fish mortality relating to low dissolved oxygen concentrations could be increased. However, no decrease in relative abundance freshwater and saltwater species abundance is expected. Consequently, aquatic biodiversity would be maintained.

In summary, terrestrial biodiversity would be maintained during construction and operation. There would be no changes to aquatic biodiversity during the construction period as no in-river works are proposed at the site. Habitat quality would be reduced through and the risk of fish mortality related to low dissolved oxygen concentrations. However, no changes in species abundance are expected. Consequently, the proposals would support the objective, albeit some restrictions regarding aquatic habitat quality during operation.

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_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. 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*.

The following broad issues are anticipated to arise at the site:

- Greenhouse gas emissions resulting from construction materials at the site would be approximately 12,500t CO_2e. During the construction phase approximately 230t CO_2e and 3,000t CO_2e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.

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

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

- The site is at high risk from flooding from the River Thames and Barking Creek. Tidal and fluvial flood defences are in place and would not be altered through the development, consequently there would be no increase in tidal and fluvial flood risk.
- The current risk of surface water flooding at the site is low and would not be increased during construction or operation. The development would not result in an increase of hard standing and the site would be drained as per existing conditions.
- Monitoring of groundwater levels is proposed during construction and operation. The current risk of flooding is low and would not be increased as a result of the construction.
- The sewerage system would remain operational during construction and connections to the sewer would be made in stages to ensure that the risk of sewer flooding would remain low.
- The site is not located within the Central Activity Zone or an area deficient of open space. Further, there would be no increase in hard standing and the site is located adjacent to the tidal Thames, alleviating urban heat effect and maximising resilience and adaptability to future temperature changes.

In summary, the proposals would support the objective as they have taken flood risk into account and would not result in an increased flood risk from any source. Resilience and adaptability to future temperature changes would be given due to the location of the project.

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

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:

- Siphon tunnel inlet and outlet shafts with approximate internal diameters of 9m and 7m and depths of 32m and 30m respectively would be excavated. This would lead to an estimated 38,000t of excavated material consisting mainly of lambeth (25,000t). The material would be managed in accordance with the *Excavated material and waste strategy* (see *Environmental Statement* Vol 3 Appendix A) seeking to maximise re-use of materials.
- An estimated 830t of construction waste would be generated, which would be managed through measures set out in the *CoCP*, including the application of a site waste management plan to promote re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy.
- Approximately 13t of welfare waste would be produced by staff per year. Waste would be managed through measures set out in the *CoCP* as above.
- Operation of the Thames Tideway Tunnel would lead to an increase of 3% in solid waste arising at the Beckton Sewage Treatment Works. This waste would be treated as part of the normal sewage treatment works waste stream, seeking to maximise beneficial use.

In summary, the proposals would promote re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy and divert waste from landfill.

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 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 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 the resources and raw materials section (Appendix A).

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

- It is estimated that 34,500L of water would be used every 24 hours during the peak construction period (2018-2019). This is largely accounted for by 20,000L/d for shaft and tunnel grout/concrete and by 6,000L/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.

Consequently, the volume of water used is considered to be sustainable.

- 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 make use of sustainable supplies of water which would support the objective.

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:

- Construction at the site is anticipated to last 5.5 years and would operate at standard, extended and continuous working hours. Measures embedded in the proposals would ensure that health and safety within the community are not compromised and that well-being is supported.
- There are no receptors in the vicinity of the site which could be affected by noise and vibration resulting from the construction.
- No residential or commercial receptors would experience disturbance to their health, safety or well-being by air quality.
- Public amenity would not be affected as the site is located on an already existing industrial sewage treatment works site.
- 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 site is located on the already existing industrial sewage treatment works site and there are no receptors in the direct vicinity which could be affected by noise and vibration resulting from the construction. Health, safety and well-being would not be compromised by emissions or dust from the development. Extensive public consultation has helped to encourage quality and sustainable communities.

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

Economy

Promote a strong and stable economy

Appraisal
The site is located within the Beckton Sewage Treatment Works site. Modification works would not lead to any changes in the local economy.

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

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. Particular issues of relevance to the site appraisal include:

Environmental effects

- There would be no significant adverse environmental effects relating to air quality, noise and vibration or lighting resulting from the development as measures embedded in the proposals seek to minimise arising effects.

Landscape and townscape

- There would be no effects on landscape and townscape during construction or operation as the proposed works would be taking place on an existing industrial site.

Historic environment

- There is potential for buried heritage assets to be present on site. Preliminary site based field evaluation, targeted archaeological excavation and/or archaeological watching briefs would form preservation by record should assets be encountered during the construction.
- There would changes to the Bazalgette Northern Outfall Sewer as a pump-out discharge chamber and a discharge structure would be built connecting to this sewer. An English Heritage Level 1 basic visual record would form preservation by record.

In summary, no significant adverse environmental effects relation to air quality, noise and vibration or lighting would arise from the development at the site. The townscape would remain unchanged as construction would take place on an existing industrial site. Buried and above ground heritage assets would be preserved by record.

Further details 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:

- Modification works to the existing sewage treatment works site would make efficient and sustainable use on already developed industrial land. This would consequently support the proposals.

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. However, accessibility via public transport to the site is low. Particular issues of relevance to the site appraisal include:

- Approximately 50 HGV movements per day would be required during the peak construction period which would last 5 months. It has been estimated that 20 HGV movements per day would take place averaging over the entire construction phase. Measures outlined in the *CoCP* such as provision of a traffic management plan would minimise detrimental impacts on communities and the environment.
- The PTAL for the site has been classified as 2, indicating a low level of accessibility via public transport. Measures set out in the *CoCP* such as only allowing cars required for the construction on site, seek to promote the use of public transport.

In summary, the proposals would support the objective as they minimise detrimental impacts associated with additional traffic where possible.

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

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