Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.22

Abbey Mills 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.22 Abbey Mills Pumping Station

Type of site:	Main tunnel reception site
Description of proposals:	The site is situated to the east of Prescott Channel, west of Abbey Creek and Channelsea River, and south of The Greenway. This site would receive the main tunnel from Chambers Wharf and would connect the Thames Tideway Tunnel to the Lee Tunnel.

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 zone. The shaft would pass through the upper and lower aquifer. Dewatering of the lower aquifer would be required and contamination has been identified at the site. Efflux from dewatering would be treated through measures in the *CoCP* such as settlement of suspended solids to minimise contaminants within the discharge ensuring that river water quality be maintained during construction.
- Pollution occurring from surface water run-off into the river during construction would be mitigated through measures in the *CoCP*. Surface water run-off would be discharged into the sewerage system, removing the potential for pollutant pathways to the tidal Thames.
- Construction of the connection to the Lee Tunnel would require the Lee Tunnel being unavailable for up to 44 weeks. This would result in a temporary increase in spills from the Abbey Mills CSO which would lead to detrimental effects on water quality. Whilst the proposals would not support the objective the effects would be short term.
- Once operational, the Lee Tunnel would intercept Abbey Mills CSO reducing spill frequency to zero in the typical year. In operation of the Thames Tideway Tunnel spills would increase to one spill event occurring every ten years. However, if compared with the current baseline there would be a decrease in spill frequency. The proposals would therefore support the objective.

In summary, the proposals would overall support the objective. Whilst the objective would not be supported during the entire construction period, it would be supported in operation.

Further details 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:

- Immature trees, scrub, amenity grassland and ruderal vegetation would be cleared for construction. The removed vegetation is considered to be of low habitat and would not result in changes to local habitat ability. The loss would be temporary as replanting is proposed after the construction has been completed.
- The temporary loss of habitat would not affect populations of notable species. Bat and bird breeding boxes would be provided and would be beneficial local bat and kestrel populations in operation.
- Measures set out in the *CoCP* would ensure that disturbance from lighting and noise and vibration would be minimised and would not be detrimental to populations of notable species. Consequently, the proposals would support the objective by maintaining terrestrial biodiversity during construction and enhancing bat and kestrel populations in operation.
- An increased spill frequency during 44 weeks of the construction would affect local water quality and could have adverse effects on habitats and species. The *CoCP* includes measures, such as use of an oxygenator should dissolved oxygen levels drop under a critical level, to minimise adverse effects. The proposals would not support the objective during this period as there is potential for detrimental effects on biodiversity.
- No substantial effects would occur on aquatic biodiversity during operation. The objective would be met by the proposals as aquatic biodiversity would be maintained.

In summary, the proposals would support the objective. Terrestrial biodiversity would be maintained during the construction phase. Bat and bird nesting boxes would enhance diversity during operation. An increase in spill frequency during the construction phase could lead to detrimental effects on aquatic biodiversity; however this would only occur over a short period. Aquatic biodiversity would be maintained during operation.

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

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*.

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 40,000t CO_2e. During the construction phase approximately 550t CO_2e and 2,000t CO_2e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- The ventilation strategy has been designed to minimise energy requirements. Active ventilation would be installed at this site, consisting of six fans. These would be provided by the Lee Tunnel project and the Thames Tideway Tunnel project would link in to these venting air ducts. This would support the objective by maximising energy efficiency through the sharing of equipment.

In summary, the proposals would support the objective as the energy requirements for active ventilation would be minimised and energy efficiency maximised.

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 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 is at low risk of fluvial flooding from the Channelsea River and Bow Beck River system and a low risk of tidal flooding from the tidal Thames and the tidal Bow Beck River system. Flood defences are in place and would be maintained. Further, there has been an increase in flood defences associated with the Lee Tunnel due to land raising. Consequently the proposals would not result in an increased fluvial or tidal flood risk.
- Surface water run-off would be infiltrated into the ground in the landscaped area to the south of the site. No increase in surface water or groundwater flood risk would result from the proposed development.

- The site is not located within the Central Activity Zone or within an area deficient of open space. There would be no increase in hard standing and the site is adjacent to rivers, therefore, the risk of urban heat would be minimised and resilience and adaptability to future changes in temperature maximised.

In summary, the proposals would support the objective as flood risk has been considered in the site design and no increase in flood risk would result from the development. Resilience and adaptability to future changes in temperature would be maximised.

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 shaft with an approximate diameter of 20m and a depth of 66m would be excavated. The amount of excavated material is estimated at 328,000t and would mainly consist of chalk (287,000t). 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 material.
- During construction approximately 3,000t of construction waste would arise. In addition, 9t of welfare waste would be generated per year. This would be managed through measures in the *CoCP*, including application of a site waste management plan to maximise re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy.
- Operational waste would be minimal and result from maintenance of the air management unit and would consequently have limited bearing on the objective.

In summary, the proposals would support the objective as they promote re-use, recovery, recycling and beneficial use.

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 substantial 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 43,000L of water would be used every 24h during the peak construction period (2020-2021). This is largely accounted for by 28,000L/d needed for shaft and tunnel grout/concrete and by 11,000L/d for mitigation measures such as washdown and dust suppression. The water requirements are within the available water for London as estimated in the Thames Water's Resource Management Plan. Consequently, the volume of water required would be considered sustainable.
- The operation of the site is no anticipated to present a large demand for materials, with the exception of those required for routine maintenance.

In summary, the proposals would support the objective as they would make sustainable use of water.
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 are anticipated to support the objective. The proposals would encourage equality and sustainable communities. Particular issues of relevance to the site appraisal include:

- Construction at the site would last for approximately four years and operation would be during standard, extended and continuous workings hours. Measures outlined in the *CoCP* would be in place to ensure that health and safety within the community would not be compromised and that well-being would be supported.
- Measures included in the *CoCP* would ensure that noise and vibration resulting from the construction would be minimised to a level that would ensure health and safety and support the well-being within the community.
- The site does not lie within an AQMA. Measures outlined in the *CoCP* would ensure that health and safety would not be compromised by emission and dust resulting from the construction.
- Currently recreational users of the river Thames are exposed to pathogens up to 224 days per year. This figure would be reduced through the development in combination with the Lee Tunnel and would ensure 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 and sustainable communities.

In summary, the proposals would support the objective by ensuring that health and safety within the community would not be compromised through the construction. During operation the health, safety and well-being of recreational river users would be ensured through reduction of pathogens in the tidal Thames. Extensive consultation has ensured equality and sustainable communities.

Further details 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:

- The construction site is expected to require a maximum workforce of approximately 45 workers at any one time. This would support employment and contribute towards the objective.
- The Three Mills Studio is located in close proximity to the site. Mitigation measures would ensure that its business would not be adversely affected from the construction.

In summary, the proposals would support the objective through employment of workers at the site and by ensuring that surrounding businesses would not be adversely affected by the development.

Further information 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 objectives. Particular issues of relevance to the site appraisal include:

Environmental effects

- There would be no significant adverse environmental effects relating to air quality or noise and vibration arising from the development.
- Light spill would be minimised through measures outlined in the *CoCP* and would not have significant adverse environmental effects.

Landscape and townscape

- The townscape character of the area would be affected due to construction activity

and equipment such as hoardings, cranes and welfare facilities. However, these effects would be temporary and no alterations would remain once the site is operational.

- The proposals would therefore support the objective over the long term as no changes would be made to the current townscape or character of the site.

Historic environment

- The site lies within the Three Mills Conservation Area and the Lee Valley Archaeological Priority Area. Several listed buildings are located north of the site, however, there are no above ground heritage assets located on site.
- Preservation by record would be formed through measures outlined in the *CoCP* should they be encountered during construction.
- The surrounding historic character and setting of above ground heritage assets would be adversely affected due to the presence of construction activity and equipment. This effect would be temporary and the character of the Abbey Mills Pumping Station area would be restored after construction. Consequently, the proposals would support the objective.

In summary, the proposals would support the objectives. There would be no significant adverse environmental effects relating to air quality, noise and vibration or lighting arising from the development. Current townscape and historic environment would be restored after construction. Consequently no permanent changes would remain.

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:

- Development on this site would make efficient and sustainable use of previously developed land. The proposals would therefore support the objective.

Further details can be found in the *Environmental Statement* and *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:

- Barges are not proposed to be used at the Abbey Mills Pumping Station site due to difficulties in ensuring a reliable day-to-day operation at a location with a very limited tidal window for movements, so materials would have to be transported to and away from the site by HGV. However, routing would be planned in such a manner that it would minimise impacts on the community, which would

consequently support the objective.

- It is estimated that 140 HGV movements would be required per day at the site during the peak construction period which would last 4 months. It is estimated that 34 HGV movements would be required per day on average over the entire construction period.
- The PTAL for the site has been classified as 3 to 4, indicating a moderate to good 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.
- The objective refers to impacts associated with transport during construction and is therefore not applicable during operation.

In summary, the proposals would support the objective as they have embedded measures to minimise detrimental impacts associated with additional road traffic and would promote the use of public transport for workers travelling to the site.

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

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DCO-DT-000-ZZZZZ-070700