

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.17

Chambers Wharf

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.17 Chambers Wharf

Type of site:	Main tunnel drive site
Description of proposals:	The site is located on the southern bank of the River Thames in the London Borough of Southwark. The site would receive the main tunnel from Kirtling Street and the Greenwich connection tunnel from Greenwich Pumping Station, and would drive the main tunnel to Abbey Mills Pumping Station.
Water quality Maintain and enhance river water quality	
<p>Appraisal</p> <p>The proposals would support the objective. Particular issues of relevance to the site appraisal include:</p> <ul style="list-style-type: none"> • 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 during operation. Efflux from dewatering discharged into the tidal Thames could lead to deterioration of water quality as there is known local contamination. However, settlement of suspended solids and further treatment as outlined in the CoCP would ensure that the pollution pathway would be eliminated and river water quality maintained during construction. • A temporary cofferdam would be built in the foreshore. The water pumped out from behind the cofferdam would be treated by measures set out in the CoCP to ensure that contamination and pollutants would be removed before being discharged into the river. Appropriate site drainage as outlined in the CoCP would prevent contamination through surface water run-off. • Piling within the foreshore would release sediment from the river bed. The tidal Thames is a high sediment environment with up to 40,000t (20,000m³) of sediment passing the site four times per day during spring tide. An estimated 241t (120.5m³) would be released at this site, which would be negligible compared with natural fluctuation. • Temporary changes in water flow and debris accumulation could result from the construction of the cofferdam. These effects would be local, temporary and of aesthetic nature and would therefore have limited bearing on the objective. • There would be no direct benefits on river water quality resulting from this development at this site as it would not intercept a CSO. However, the construction works at this site play a central role in the construction of the Thames Tideway Tunnel and would therefore play an important role in minimising the sewage spills on a project wide level and enhancing water quality of the tidal Thames including the Chambers Wharf area. <p>In summary, the proposals would support the objective. River water quality would be</p>	

maintained at a site level during construction. The operational development would support the objective on a project wide level and would improve the water quality in the tidal Thames and therefore within the local area.

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:

- There would be a small loss of terrestrial habitat during construction. The removed habitat would be of low ecological value and would not lead to changes in habitat quality or changes in populations of notable species.
- Measures outlined in the *CoCP* would ensure that lighting in place would minimise light spills and would therefore not disturb the natural behaviour of notable species on site.
- Removal of foreshore habitat during construction and creation of new foreshore in operation is not expected to lead to changes in bird populations. Terrestrial biodiversity in the vicinity would be maintained during construction and operation and so the objective would be supported.
- There would be a temporary loss of approximately 9,300m² of intertidal and subtidal habitat during construction. The landtake would lead to a reduction in habitat for fish and invertebrates during construction. The habitat would be reinstated and re-established after removal of the cofferdam. The proposals would not support the objective during construction as they would lead to a local reduction in biodiversity although this loss of habitat would be of a temporary nature.
- The operational development would help improve the overall water quality of the tidal Thames and would lead to an improvement in habitat quality along the river.

In summary, the proposals would support the objective by maintaining terrestrial ecology diversity during operation and construction. Aquatic ecology diversity would be reduced during construction due to a temporary loss of foreshore habitat. In operation the development would support the objective by improving habitat quality along the tidal Thames.

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 CO₂ 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 120,000t CO₂e. During the construction phase approximately 5,500t CO₂e and 19,000t CO₂e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- Approximately 90% of materials would be transported to and away from the site using barges. The use of barges would reduce the carbon footprint by 1,500t CO₂e at the site level.
- Lighting during operation would be restricted to a low level light at the kiosk door. The light would be activated by a motion control switch which would be linked to the door opening. This would minimise energy wastage.
- During operation the site would make use of passive ventilation. Consequently it would support the objective by minimising the energy requirements for venting, and maximising the efficiency of ventilation points.

In summary, the proposals would support the objective. The carbon footprint would be reduced at site level through the use of barges. Efficient lighting and passive ventilation would maximise energy efficiency.

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 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 within a high probability flood zone and is at risk of tidal and fluvial flooding from the river Thames. There would be no changes in the defence height resulting from the construction. Cofferdam walls would be raised to existing flood defence levels. Consequently fluvial and tidal flood risk would not increase.
- The risk of flooding from groundwater is low and not anticipated to increase through the development. Monitoring is proposed during construction and operation.
- The risk from sewer flood at the site is low and would remain unchanged as no CSO would be intercepted at the site.
- The site lies within the Central Activity Zone and there would be an increase in hard

standing. The risk of urban heat is reduced as the site is located adjacent to the tidal Thames and not within an area deficient of open space, meaning that resilience to changes in temperatures would be given.

In summary, the proposals would support the objective as flood risk has been taken into account in the site design and there would be no changes in the risk of fluvial, tidal, groundwater, surface water or sewer flooding. The proposals would maximise adaptability and resilience 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:

- The construction at this site would lead to approximately 925,000t of excavated materials, largely consisting of chalk (700,000t) and imported fill (150,000t). The material 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.
- Approximately 8,500t of construction waste would be generated. Further, it is estimated that 58t/year of welfare waste would arise during construction. This 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.
- A building and several structures would need to be removed from the worksite. There is high potential of asbestos being present as this has already been recorded in existing waste on site. As defined in the *CoCP* and in compliance with the HSSE standard, asbestos would be managed and removed in a manner that would not pose a risk to the local community. The removal of asbestos from the site would be beneficial for the environment and the community as well as for workers employed on site.
- Excavated materials and waste would mainly be transported away from the site via barge. This would greatly reduce the impacts on the environment and communities arising from the use of HGVs.
- Operational waste would result from routine maintenance. The amount generated would have limited bearing on the objective.

In summary, the proposals would support the objective by maximising the amount of waste diverted from landfill and by minimising impacts on communities and environment through the use of barges. Removal of buildings and structures at high risk of containing asbestos would minimise any future potential impacts on community, environment and site workers.

Further details can be found in 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 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 substantial 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 to some extent 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 103,500L of water would be used every 24 hours during the peak construction period which would last approximately six years. This is largely due to the large amount of water needed for concrete and grout for tunnel construction (56,000L/d). Further, water is required for mitigation measures such as washdown and dust suppression (15,000L/d). 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 and therefore the proposals would support the objective.
- The operation of the site is not anticipated to present a large demand for materials, with the exception of those required in routine maintenance.

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

Population, human health and equality

Ensure health and health, 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 with some restrictions relating to noise and vibration. The proposals would encourage equality and sustainable communities.

Particular issues of relevance to the site appraisal include:

- The construction would last approximately 6 years at this site. Standard, extended and continuous working hours would be needed. Continuous working hours would be in place during the construction of the tunnel. The *CoCP* includes measures such as a noise enclosure over the shaft during tunnelling works.
- Vibration effects arising from piling would be mitigated through measures set out in the *CoCP*, such as by using low vibration piling methods. It is possible that some receptors would experience adverse effects resulting from vibration.
- Some residential and non-residential receptors would be affected by noise as it would not be possible to completely mitigate these effects. 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 it could have an impact on the well-being of these receptors.
- The site is located within the London of Southwark AQMA. Mitigation measures in

the *CoCP* would ensure that health and safety would not be comprised through air quality effects resulting from the construction. Through measures such as dust suppression and use of barges effects on local air quality would be at a minor level.

- 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 ensuring that health and safety within the community would not be affected. However, some receptors would experience significant adverse effects relating to noise and vibration during the construction period. As further on-site mitigation would not be feasible, compensation measures would be put into place where applicable. Extensive public consultation has helped to encourage 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:

- Up to 165 workers would be employed at any one time at this site during construction. The proposals would support the objective for a strong and stable economy by creating employment opportunities.

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 objective. However, significant adverse environmental effects relating to noise and vibration would remain at some receptors during construction. The townscape and historic environment would be altered during construction but with beneficial effects during operation.

Environmental effects

- During construction adverse environmental effects relating to vibration would be addressed through measures set out in the *CoCP*. However, it is possible that the suggested methods could not be applied at the site and significant effects would remain at some receptors. Compensation would be in place where applicable.
- During construction significant adverse environmental effects relating to noise would remain at some receptors. These effects could not be further mitigated through on-site measures. Measures would be in place to off-set such effects, where applicable.
- No significant adverse effects relating to air quality would arise from the construction

as these would be addressed through measures in the *CoCP* and through the use of barges.

- No significant adverse environmental effects relating lighting would arise at the site.
- The proposals would support the objective as they have embedded measures which seek to minimise significant adverse environmental effects. However, some receptors would experience adverse environmental effects during construction relating to noise and vibration that could not be further mitigated.

Landscape and townscape

- During construction, the character of the site and the surrounding area would be altered through the presence of construction activity and equipment. This change would however be of temporary nature.
- Derelict structures would be demolished, whilst after construction, the area would be re-instated. In the long term the townscape would be enhanced through the removal of existing poorly maintained structures.
- The proposals would therefore support the objective as they would enhance the townscape when viewed in the long term.

Historic environment

- The site lies within the Borough, Bermondsey and River Archaeological Priority Zone. Grade II listed buildings are situated in the surrounding area.
- There is potential for buried assets on site. Preservation by record would be formed through archaeological investigation and recording should assets be found.
- The character of the historic environment would be altered during construction. However, this effect would be temporary. The existing wharf would be removed which would lead to an improvement in the historic setting after construction consequently supporting the objective.

In summary, the proposals would support the objective as it would minimise significant adverse environmental effects. However, during construction significant effects relating to noise and vibration would remain at some receptors as no further on-site mitigation would be feasible. The townscape and historic environment would temporarily be altered through the presence of construction activity and equipment. In operation changes at the site would be beneficial to the townscape and historic environment.

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:

- The site would be located on previously developed land and would consequently avoid the need to develop on greenfield making efficient and sustainable use of land.
- A temporary cofferdam would be built into the foreshore but would be removed once the construction has been completed with no long terms loss of these habitats.

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 the materials would be transported to and away from the site via barge. The use of HGVs would be minimised and detrimental impacts on communities and the environment relating to transport mitigated.
- It is estimated that 110 HGV movements would be required per day at the site during the peak construction period which would last 3 months. On average 40 HGV movements per day would be necessary during the construction period. The *CoCP* sets out measures to minimise detrimental impacts relating to additional road traffic such as provision of a transport management plan.
- The PTAL for the site has been classified as 3, indicating a moderate level of accessibility via public transport. It is estimated that none of the workers would travel to site by car. Measures in the *CoCP* such as only allowing vehicles necessary for undertaking works on site would help minimise additional road traffic and associated detrimental effects.

In summary, the proposals would support the objective as a large amount of materials would be transported via barge and measures in the *CoCP* would promote public transport. Detrimental impacts on communities and the environment would be minimised through measures such as the requirement for a transport management plan.

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

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