

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.9

Cremorne Wharf Depot

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.9 Cremorne Wharf

<p>Type of site:</p>	<p>CSO site, short connection tunnel drive site</p>
<p>Description of proposals:</p>	<p>The site lies in the Royal Borough of Kensington and Chelsea and is located east of Lots Road between the tidal Thames and the Lots Road Pumping Station. The Lots Road Pumping Station CSO would be intercepted and the site would serve as a short connection tunnel drive site.</p>
<p>Water quality Maintain and enhance river water quality</p>	
<p>Appraisal 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 drop shaft would penetrate the upper aquifer but not the lower and no dewatering would be required. Construction of the shaft would consequently not lead to deterioration of river water quality. • The tidal Thames is a high sediment environment and sediment released through upgrade of the existing campshed would be minimal compared to the background levels. • Deterioration of water quality through surface water run-off would be mitigated through measures outlined in the <i>CoCP</i> which would ensure appropriate site drainage, allowing water quality to be maintained during construction. • Once operational, interception of the Lots Road Pumping Station CSO would lead to a reduction spill frequency from 38 times to 4 times per annum. The yearly discharge volume would be reduced from 1,140,000m³ to 92,000m³ and would lead to a reduction sewage derived litter from 288t to 22t. The proposals would enhance water quality during operation. <p>In summary, the proposals would ensure that river water quality would be maintained during construction. Interception of the CSO would be beneficial to water quality.</p> <p>Further information can be found in the <i>Environmental Statement</i> and the <i>CoCP</i>.</p>	
<p>Biodiversity Maintain and enhance biodiversity</p>	
<p>Appraisal The proposals would support the objective. Particular issues of relevance to the site appraisal include:</p>	

- Trees, introduced shrub, hardstanding and buildings of low ecological value would be removed from the site. Populations of notable species would not be affected by this habitat loss or by noise and vibration or lighting from the construction.
- A bat roost has been identified on the pumping station building. The roost would be maintained and protected from disturbance by measures set out in the *CoCP*.
- Bat and bird nesting boxes would be provided and a brown roof would be installed on the replacement building.
- Piling associated with campshed installation would cause some temporary disturbance (noise and vibration) to fish. The proposals seek to minimise disturbance through the use of silent piling techniques and other measures outlined in the *CoCP*. Additional noise and vibration would result from barge movement. Considering existing background noise and vibration and the temporary nature of piling activities, disturbance to fish populations would be minimal.
- No loss or degradation of habitat would be associated with the construction at this site. Aquatic diversity would be maintained during operation, albeit some temporary disturbance to populations.
- Interception of the Lots Road Pumping Station CSO would be beneficial to aquatic diversity as the amount of sewage and sewage derived litter entering the ecosystem would be reduced. This would lead to an improvement in dissolved oxygen concentration and reduced sediment nutrient levels, consequently improving habitat quality and biodiversity. The proposals would therefore support the objective during operation.

In summary, terrestrial biodiversity would be maintained during construction. Installation of bat boxes is expected to enhance bat populations. Aquatic biodiversity would be maintained during construction; however, piling activity could lead to temporary disturbance of fish populations. Interception of the CSO during operation would enhance aquatic biodiversity.

Further information 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 7,400t CO₂e. During the construction phase approximately 180t CO₂e and 1,000t CO₂e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- The carbon footprint would be reduced by 23t CO₂e at the site level through the use of barges to transport materials to and away from the site. The use of river transport would minimise the use of HGVs.
- The site would make use of passive ventilation during operation. Energy requirements for venting would be minimised, and efficiency of ventilation points would be maximised. The proposals would consequently support the objective.

In summary, the carbon footprint at the site would be minimised through the use of river services. Energy efficient ventilation would be in place.

Further details can be found in the *Environmental Statement* and *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 relating to 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).

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

- The site is at high risk of tidal and fluvial flooding from the tidal Thames. The flood defence level would be maintained and the flood risk would not be increased by the proposed development. Further, monitoring and an emergency plan would be in place.
- Surface water flood risk would not be increased through the development as appropriate site drainage as outlined in the *CoCP* would be in place.
- The Lots Road Pumping Station CSO would remain functional during operation and so therefore, sewer flood risk would not be increased.
- There would be no increase in groundwater flood risk.
- The site does not lie within the Central Activity Zone or within an area deficient of open space. Further, there would be no increase in hard standing and the site lies adjacent to the tidal Thames. The risk of urban heat would consequently be minimised and resilience to changing temperatures maximised.

In summary, the proposals would support the objective as they have taken flood risk into account. There would be no increased risk of flooding from any source through the development. As the site is adjacent to the river resilience to changing temperatures would be given.

Further information can be found in the *Environmental Statement*, *Site Selection Report* and

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 are anticipated to support the objective. Particular issues of relevance to the site appraisal include:

- A drop shaft with an internal diameter of 8m and a 42m depth and a short connection would be excavated. This would generate approximately 20,000t of excavated materials, consisting mainly of London clay (15,000t). 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 the beneficial re-use of materials.
- It is estimated that 730t of construction waste would be generated during construction. Approximately 13t welfare waste would be generated at the site. This would be managed through measures set out in the CoCP including a Site Waste Management Plan to maximise re-use, recovery and recycling in accordance with the waste hierarchy.
- The main tunnel would be driven through the CSO drop shaft minimising the volume of excavated materials.
- During construction excavated materials would be transported away from the site via barge. This would reduce detrimental impacts relating to the use of HGVs on the environment and communities.
- Operational waste would result from maintenance of the air management unit and would be negligible.

In summary, excavated materials and waste would be diverted from landfill through beneficial re-use, recovery and recycling in accordance with the waste hierarchy. Detrimental impacts on the environment and community relating to waste arisings would be reduced through the use of barges.

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 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 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 30,000 litres of water would be used every 24 hours during the peak construction period 2019. This is largely accounted for by 20,000L/d for shaft and tunnel grout/concrete and by 7,000L/d for mitigation measures such as dust suppression and washdown. The water requirements are within the available water for London as estimated in Thames Water's Resource Management Plan.
- At this site the main tunnel would be driven through the CSO drop shaft, reducing the volume of materials required for a long connection tunnel.
- An existing campshed would be renovated and upgraded reducing the need for materials at the site level.
- 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 amount of water needed during construction would be sustainable as it lies within the available water for London. The amount of required materials and resources at the site would be minimised through design and upgrade of existing structures. Materials required would be minimal.

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, albeit with some restrictions relating to noise. Particular issues of relevance to the site appraisal has include:

- Construction is estimated to last 3 years and would operate during standard and continuous working hours. The *CoCP* sets out measures to ensure health and safety and support the well-being of the community.
- The proposals seek to minimise noise and vibration resulting from the development. However, there would be significant adverse effects relating to noise at some receptors. 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 is possible that the well-being of receptors would be affected.
- The site lies within the Royal Borough of Kensington and Chelsea AQMA. The proposals would minimise emissions and dust generation through measures set out in the *CoCP* and the use of barges for transport so that health and safety would not be compromised through construction works.
- Interception of the CSO would reduce the number of days recreational river users are exposed to pathogens from 152 to 16 days per year. This would be beneficial to health, safety and well-being of river users.
- An existing council depot would need to be closed and demolished for the construction. The closure would be temporary as the land would be made good after completion of the works (with the exception of land required for permanent structures). The local authority is looking for alternative arrangements to ensure that

services provided from the site would not be compromised.

- 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, health and safety would not be compromised by the development. The well-being of some receptors could be affected should relocation be necessary as no further on-site mitigation would be feasible to avoid significant adverse effects relating to noise. Interception of the CSO would be beneficial to recreational river users as pathogen exposure would be reduced. Consequently the proposals would support the objective.

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:

- Construction at the site would result in a temporary reduction in the supply of employment land. However, employment opportunities would be created on the site. A maximum of 65 workers would be employed at any one time during construction.

Further information 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. However, significant adverse environmental effects relating to noise would remain at some receptors during construction. Further, temporary changes to the townscape and historic environment would be inevitable during construction.

Environmental effects

- No significant adverse environmental effects relating to vibration, air quality or lighting would result from the development as mitigation measures set out in the *CoCP* would minimise arising effects.
- Some receptors would experience significant adverse environmental effects relating to noise during construction. No further on-site mitigation would be feasible as all practical measures have been incorporated into the design of the site. Measures would be in place to off-set such effects where applicable. The proposals have minimised significant adverse environmental effects where possible and as such would support the objective, albeit some effects would remain.

Landscape and townscape

- The character of the site and the surrounding area would be altered during construction. These temporary changes would result from the presence of construction activity and equipment such as site hoardings, welfare facilities and cranes.
- Changes to the site and townscape would be temporary and limited in operation. New structures would lie within the safeguarded wharf and the replacement depot buildings would have a similar footprint as the current structure. Consequently, effects would be restricted to the construction phase. The proposals would support the objective in operation.

Historic environment

- The site lies adjacent to the Thames Conservation Area. The Grade II listed Lots Road Pumping Station is located within the site. An electrical and control equipment unit would be housed within the pumping station during construction. Cable ducts would enter the building below-ground. Preservation by record would be ensured through English Heritage Level 2 structural recording and photographic survey. The building would be monitored during construction and significant damages would be repaired following the conclusion of the works.
- The historic environment would be temporarily altered due to the presence of construction activity and equipment. The improved design and materials used for the replacement depot building and general landscape would enhance the historic environment during operation.
- Archaeological watching briefs and/or targeted archaeological excavation would assure that buried assets would be preserved by record if encountered during construction.

In summary, the proposals would minimise significant adverse environmental effects resulting from the development. Some receptors would experience significant adverse effects relating to noise during construction, as no further mitigation, apart from compensation, would be possible. The character of the site and townscape would be altered during construction. However, these changes would be temporary. The historic environment would be altered during construction but enhanced in operation. Above and below ground heritage assets would be conserved or preserved throughout the development.

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 make use of previously developed land eliminating the need for development on greenfield.
- An existing campshed would be upgraded minimising making efficient and sustainable use of existing structures.

In summary, the proposals would support the objective as they make efficient and sustainable use of previously developed land and existing structures.

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 materials would be transported to and away from the site via barge. The use of river transport services would minimise detrimental impacts on the environment and community associated with transport resulting from the construction and the use of HGVs.
- It is estimated that 24 HGV movements per day would be necessary during the peak construction period which would last 6 months. On average it is estimated that 10 HGV movements per day would be necessary during the construction phase. Measures set out in the *CoCP* would minimise associated detrimental impacts.
- The PTAL for the site has been classified as level 3, indicating moderate accessibility by public transport. Measures in the *CoCP* such as only allowing vehicles necessary to undertaking works on site would minimise detrimental impacts on the environment and communities. These measures would ensure that the workers would not travel to site by car.
- The objective refers to impacts associated with transport during the construction period and is therefore not applicable during operation.

In summary, the proposals would support the objective by promoting sustainable transport such as the use of river services and public transport. Measures set out in the *CoCP* would minimise detrimental effects on the environment and community associated with additional road traffic.

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

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