

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.20

Deptford Church Street

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.20 Deptford Church Street

Type of site:	CSO Site
Description of proposals:	The site lies within the London Borough of Lewisham and is situated to the west of Deptford Church Street, north of Crossfield Street and south of Coffey Street. The site would intercept and divert flows from the Deptford Storm Relief CSO.
Water quality Maintain and enhance river water quality	
Appraisal The project would support the objective. Particular issues of relevance to the site appraisal include: <ul style="list-style-type: none"> • The site lies within a source protection zone. The CSO drop shaft would penetrate the upper and lower aquifer. Contamination has been identified at the site. Dewatering of aquifers would be required, however, internal dewatering of the shaft would minimise the amount of effluent. Discharge of effluent into the river would be controlled through measures set out in the <i>CoCP</i> such as settlement of suspended solids and further treatment where required. This would eliminate the potential for deterioration of river water quality. • Pollution of the river through surface water run-off during construction would be mitigated through appropriate site drainage as described in the <i>CoCP</i>. • River water quality would be enhanced during operation. Interception of the Deptford Storm Relief CSO would reduce the discharge frequency from 36 to 4 times per year. The yearly discharge volume would be reduced from 1,470,000m³ to 163,000m³, consequently leading to a reduction from 371t to 41t of sewage derived litter entering the river. <p>In summary, the proposals would support the objective. Mitigation measures described in the <i>CoCP</i> would ensure that river water quality is maintained during the construction period. Interception of the CSO during operation would result in an enhancement of water quality.</p> <p>Further information can be found in the <i>Environmental Statement</i> and the <i>CoCP</i>.</p>	
Biodiversity Maintain and enhance biodiversity	
Appraisal The proposals would support the objective of maintaining and enhancing biodiversity. Particular issues of relevance to the site appraisal include: <ul style="list-style-type: none"> • The site lies within the St Paul's Churchyard and Crossfield Street Open Space SINC. A small area of habitat (trees, amenity grassland, semi-improved grassland and ruderal vegetation) would be cleared for construction. This would include the removal of the notable species 'fiddle dock'. Site clearance would have limited bearing on the objective as replanting would be in place after completion of the 	

works, avoiding long-term effects on the SINC.

- Measures set out in the *CoCP* would ensure that notable species would not be affected through light spills.
- Habitat temporarily lost during construction would be reinstated during operation and no change in populations of bats or breeding bird species is anticipated due to the temporary loss of foraging habitat.
- The kiosk at the site would be furnished with a brown roof, which would provide foraging habitat for breeding birds.
- The proposals would have no impact upon aquatic ecology during construction as there are no river works associated with the site.
- Interception of the CSO would limit the amount of sewage and sewage derived litter entering the River Thames. Dissolved oxygen concentration would be improved and sediment nutrient levels reduced. This would lead to an enhancement of habitat quality which would be beneficial to fish and invertebrate populations.

In summary, the proposals would support the objective as terrestrial and aquatic biodiversity would be maintained during construction. Installation of a brown roof would be beneficial to breeding birds during operation. Interception of the CSO would improve aquatic habitat quality and would be beneficial to fish and invertebrate populations.

Further information can be found in the *Environmental Statement*, the *CoCP* and *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 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 will be implemented through project-wide initiatives, and not specifically at the site level. Energy Management Plans will be implemented through the *CoCP*, which, alongside Thames Water's proposals to account for carbon emissions throughout the construction process, will 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 11,000t CO₂e. During the construction phase approximately 300t CO₂e and 700t CO₂e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- Operational lighting would be restricted to low level lighting at the kiosk doors activated by a directional motion control switch, minimising energy requirements.

- The site would make use of passive ventilation in operation. Energy requirements for venting would be minimised and efficiency of ventilations points maximised.

In summary, the proposals would support the objective as they minimise energy requirements and 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 proposals support the objective. Particular issues of relevance to the site appraisal include

- The site lies within mostly the 'low' and 'medium' probability flood zones at risk from tidal and fluvial flooding from the tidal Thames. The south-east corner of the site lies in an area of 'high' risk.
- The site is at low risk from fluvial flooding from the Ravensbourne River (Deptford Creek) and flood defences run along the banks of Deptford Creek. Potential settlement as a result of the tunnelling works close to the site (from the connection tunnel from the Greenwich Pumping Station site) is not estimated to cause the flood defences to fall below the Environment Agency's statutory flood defence level. Crest levels would be monitored throughout construction and repairs made as required. Consequently, there would be no increase in tidal or fluvial flood risk tidal Thames or the Ravensbourne River resulting from the development.
- Surface water would be drained to the drainage network during construction. Additional surface water flood risk would be managed through SuDS. During operation measures, such as brown roofs, permeable hard standing and underground storage would be in place to keep surface water run-off at greenfield rates.
- The current Deptford Church Street CSO and sewers in the proximity of the site would be maintained during construction allowing sewer flood risk to be maintained at current risk levels. In operation the CSO would intercept and divert flows into the main tunnel.
- Groundwater flood risk is considered to be low. Internal dewatering of the drop shaft would mitigate against increased flood risk at the site. Monitoring is proposed during construction and operation.
- There would be an increase in permanent hard standing resulting from the development. However, the site is not located within the Central Activity Zone or within an area deficient of open space. Consequently, the urban heat effect would not be increased at the site level. Permeable hard standing would maximise resilience and adaptability to increased rain fall.

In summary, the proposals would support the objective as they have taken flood risk into account. The development would consequently not lead to an increase in flood risk from any source. Permeable hard standing would maximise resilience and adaptability to future change in rainfall.

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

- A drop shaft with an approximate internal diameter of 17m and a depth of 48m would be excavated at the site. Construction of the drop shaft and the short connection tunnel would lead to approximately 48,000t of excavated material consisting mainly of chalk (12,000t), made ground (11,100t) and diaphragm walls/pile spoil (10,100t). The excavated material would be managed in accordance with the *Excavated material and waste strategy* (see *Environmental Statement Vol 3 Appendix A*) promoting beneficial re-use of material.
- The Greenwich connection tunnel would be driven through the CSO drop shaft at the site, reducing the amount of excavated material arising.
- It is estimated that 900t of construction waste would arise during the construction phase. Further, approximately 10t of welfare waste would arise at the site per year. This material would be managed through application of a site waste management plan as outlined in the *CoCP* which would promote the re-use, recovery, recycling and beneficial use of materials.
- Operational waste at the site would likely be limited to that associated with routine maintenance and is not deemed to have any bearing on the objective.

In summary, the proposals would support the objective as the *Excavated material and waste strategy* (see *Environmental Statement Vol 3 Appendix A*) and measures outlined in the *CoCP* would promote re-use, recovery, recycling and beneficial use of excavated material and waste. Operational waste would be limited.

Further information can be found in the *Environmental Statement*, the *CoCP* and the *Excavated material and waste strategy* (see *Environmental Statement Vol 3 Appendix A*).

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 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 will 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 a project wide level, at the site level, the proposals would support the objective. The following broad considerations are relevant to the sustainability at the site level:

- It is estimated that 30,000L of water would be used every 24 hours during the peak construction year, 2018. This would largely be accounted for by water required for

tunnel and shaft grout/concrete (15,000L/d) and mitigation measures such as washdown and dust suppression (11,000L/d). The amount required for construction would be within the available water for London, as estimated in Thames Water's water resource management plan and is therefore considered to be sustainable.

- At the site the Greenwich connection tunnel would be driven through the CSO drop shaft, reducing the volume of resources and raw materials required for a long connection tunnel.
- 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 would make sustainable use of water. It has been possible to minimise the amount for required resources and raw materials at the site level.

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

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 as they ensure health and safety within the community and seek to support well-being. However, there would be some restrictions relating to noise and the temporary loss of public open space. The proposals would encourage equality and sustainable communities. Particular issues of relevance to the site appraisal include:

- Construction at the site is expected to last approximately 3.5 years and would operate during standard and extended working hours. Measures set out in the CoCP would ensure that health and safety within the community would not be compromised and that well-being would be supported.
- The CoCP outlines measures to minimise noise resulting from the construction. However, some receptors in the surrounding area would experience significant adverse 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 where applicable. Whilst this would ensure health and safety it could reduce well-being.
- Measures embedded in the proposals would ensure that health, safety and well-being would not be affected through vibration resulting from the construction.
- The site is located within the Lewisham AQMA. Measures outlined in the CoCP such as washdown and dust suppression would ensure that health and safety within the community would not be affected.
- During construction 0.4ha of the public Crossfield Street open space would be lost. This would temporarily limit well-being within the community. However, the open space would be improved through landscape changes and careful design of the area once construction is complete.
- St Joseph's Catholic Primary School currently uses the park as a fire assembly point. This would need to be relocated during construction and would be returned to the new reinstated landscaped area of open space in operation.
- The number of days recreational river users are exposed to pathogens would be reduced from 144d to 16d per year through interception of the Deptford Church Street CSO. This 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 support the objective as health and safety would not be compromised through the development. However, it is possible that well-being of some receptors would be affected as relocation could be required due to noise resulting from the construction. There would be a temporary loss of amenity space which would be reinstated during operation. Recreational river users would benefit from the reduction of pathogens in the river through interception of the CSO.

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:

- A maximum of 40 workers would be at any one time on site. This would support the objective as employment opportunities would be created.

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 objective, albeit some restrictions to noise and to temporary changes in townscape and historic environment during construction. Issues of particular relevance to the site appraisal include:

Environmental effects

- Measures set out in the *CoCP* would minimise adverse environmental effects relating to noise and vibration. However, there would be some receptors in the surrounding area that would experience significant adverse environmental effects relating to noise during the construction period. No further on-site mitigation would be possible. Compensation would be in place to off-set such effects where applicable.
- There would be no significant adverse environmental effects relating to air quality during construction as the proposals include measures to ensure mitigation to not significant levels.
- Light spills would be minimised through measures outlined in the *CoCP*. Consequently no significant adverse environmental effects would arise at the site.
- Significant adverse environmental effects relating to air quality, noise and vibration or lighting are not expected to arise during operation.

Landscape and townscape

- There would be temporary changes to the character of the site and the surrounding area resulting from the presence of construction activity and equipment such as welfare facilities, site hoardings and cranes.
- The setting would further be altered through the clearance of trees and amenity grassland and the removal of a brick wall, boundary fencing and a knee high rail from the site.
- In operation hard surfacing, grassed areas and new planting would be provided. Removed trees would be replaced by native species. Above ground structures would be well designed. The site and the surrounding area, specifically the setting of the St Paul's Conservation Area, would benefit from these changes.
- Consequently, the proposals would support the objective as the townscape would be enhanced during operation, albeit with some temporary alterations during construction.

Historic environment

- The site lies within the locally designated St Pauls Conservation Area. No nationally designated heritage assets are located on the site. The Grade I listed St Paul's church and Grade II listed churchyard walls are located north of the site. The Grade II listed Railway Viaduct is located south of the site.
- An early-mid 19th century boundary wall of low heritage asset significance runs through the eastern part of the site and would be removed during construction. Further a 19th century cobbled and curbed entrance would partly be removed. The structures would be recorded through an English Heritage Level 1 visual record to form preservation by record.
- St Pauls Church and the Railway Viaduct would be monitored throughout the construction and if necessary repaired after works have been completed using appropriate conservation techniques.
- The historic setting of assets and conservation areas would be temporarily altered through presence of construction activity and presence.
- In operation the proposals would be beneficial to the historic setting of historic assets and conservation areas in the proximity of the site.
- Although no buried heritage assets of significance have been identified, should any be encountered the site control measures detailed in the *CoCP* such as use of a watching brief and archaeological investigation would be followed. This would form preservation by record.

In summary, the proposals would support the objective. Significant adverse environmental impacts during construction would be reduced where possible. The townscape and historic environment would be enhanced during operation, however, they would be temporarily adversely affected through the presence of construction activity and equipment. 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. Issues of particular relevance to the site appraisal include:

- The site comprises an area of public open space which would be temporarily removed during construction. However, the area would be reinstated during operation. Consequently, the proposals would make efficient use of land and support the objective.

Further information 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. Issues of particular relevance to the site appraisal include:

- The PTAL for the site is classified as level 4, denoting moderate accessibility levels via public transport. Measures in the *CoCP* including the requirement to prepare a green travel plan and only allowing vehicles necessary to the works on site to enter would help to minimise detrimental impacts on local communities.
- There would be an average of 18 HGV movements per day during the construction period with 64 movements per day during the peak construction period (7 months). Measures outlined in the *CoCP* such as provision of a transport management plan would ensure that detrimental impacts arising from additional road traffic would be minimised where possible.
- 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 as they minimise detrimental impacts associated with additional road traffic where possible and promote the use of public transport.

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

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