Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.19

Earl 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.19 Earls Pumping Station

Type of site:	CSO site
Description of proposals:	The site is located in the London Borough of Lewisham and in the proximity of the London Borough of Southwark boundary. The site would intercept overflow from the Earl Pumping Station CSO.

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 aquifer into the lower aquifer. Dewatering would be required and contamination has been identified at the site. Effluent from dewatering would be treated before being released into the river to ensure that water quality would be maintained.
- Surface water run-off from the site during construction would create a potential pollution pathway. Appropriate site drainage as outlined in the *CoCP* would be in place to manage general site run-off and would eliminate this pollution pathway.
- No in-river works are proposed at the site therefore, river water quality would be maintained during construction.
- The modification works would facilitate the control of the Earl Pumping Station CSO during operation, reducing the discharge frequency from 26 to 4 times per year. The total volume of discharge would be reduced from approximately 539,000m^3 to 51,000m^3 consequently leading to a reduction of sewage derived litter from 135t to 13t. The proposals would lead to an enhancement in river water quality.

In summary, measures in the *CoCP* would eliminate potential pollution pathways and ensure that river water quality would be maintained during construction. Interception of the Earl Pumping Station CSO would enhance river quality once operational.

Further information 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 include:

- Introduced shrub and amenity grassland would be cleared from site. This would have limited bearing on the objective as the removed vegetation is considered to be

of low ecological value and would not cause changes to the local breeding bird populations.

- Measures outlined in the *CoCP* would ensure that lighting as well as noise and vibration resulting from the construction would not disturb breeding bird populations.
- London plane trees adjacent to the site would be protected by tree protection measures as described in the *CoCP.*
- No in-river activity would be taking place during construction. Consequently aquatic biodiversity would not be affected during this phase of the development.
- Once operational there would be positive effects on aquatic biodiversity due to the reduced amount of sewage and sewage derived litter entering the ecosystem. Improved dissolved oxygen levels and lower sediment nutrient levels would improve habitat quality and consequently enhance species diversity. Specifically fish and invertebrate populations would be enhanced during operation.

In summary, terrestrial ecology would be maintained throughout the development. As no in-river works are proposed at the site there would be no changes in aquatic ecology during the construction. Interception of the CSO would enhance habitat quality and be beneficial to aquatic ecology. Consequently, the proposals would support the objective by maintaining and enhancing 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 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 10,000t CO_2e. During the construction phase approximately 370t CO_2e and 730t CO_2e would result from logistics and construction (TBM, plant and machinery operation, lighting and welfare facilities) respectively.
- In operation lighting would be provided at the staircase and shaft surface for

maintenance activities. This would minimise energy requirements during operation.

- During operation the site would make use of passive ventilation which would maximise the efficiency of ventilation points and minimise energy requirements.

In summary, the proposals would support the objective as energy requirements would be minimise and efficiency maximised.

Further details can be found in the *Environmental Statement*, the *Energy and Carbon Footprint Report* and the *Design Principles.*

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 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 tidal Thames. Flood defences are in place and would not be affected by the construction.
- Appropriate site drainage and attenuation to the London Mayor's standard would assure that there would be no increase in surface water flood risk.
- Groundwater flood risk would not be increased by the development. Monitoring would be in place during construction and operation.
- The existing storm relief sewer would be maintained during construction. Sewer flows would be intercepted and diverted to the main tunnel in operation. Consequently there would be no increased sewer flood risk.
- The site is not located within the Central Activity Zone or within an area of deficient open space. The development would not lead to an increase in hard standing. No urban heat island effect would arise from the proposed development and resilience to future temperature changes would be given consequently supporting the proposals.

In summary, the proposals would support the objective. Flood risk has been taken into account resulting in no increased risk from tidal, fluvial, groundwater, surface water or sewer flooding. The proposals would be resilient to future changed in temperature.

Further information 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 internal diameter of 17m and a depth of 51m would be constructed leading to 50,000t of excavated materials mainly consisting of chalk (23,000t) and diaphragm wall/pile spoil (11,000t). 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.
- Approximately 890t of construction waste would arise from the development. It is estimated that 8t of welfare waste would arise per year. Arising waste would be managed through measures set out in the *CoCP*, including the application of a site waste management plan to maximise re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy.
- A depot building, canopy and two small buildings would be removed from the site. There is a high risk of asbestos being present in these structures which would be managed and removed in compliance with the HSSE standard. This would ensure that potential impacts are managed and would be beneficial to the environment, communities and workers operating on site.
- Operational waste at the site is considered to be minimal and would mainly arise from routine maintenance.

In summary, excavated materials and arising waste would be derived from landfill through re-use, recovery, recycling and beneficial use where possible. The removal of buildings at high risk of asbestos would be managed in compliance with HSSE standard, and would be beneficial to the environment and communities as well as to workers on site. Consequently the proposals would support the objective.

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 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).

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 30,000L of water would be used daily during the peak construction period (2018-2019). This is mainly accounted for by 15,000L/d for shaft 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 water resource management plan. Consequently, the resource would be sustainably resourced.
- 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 information can be found in the *Environmental Statement* and the *CoCP*.

Population, human health and equality

Ensure the 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 noise. Particular issues of relevance to the site appraisal include:

- Construction at this site would last approximately 4 years. The site would operation on standard and extended working hours. Measures set out 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.
- Health, safety and well-being within the community would not be compromised through vibration resulting from the construction.
- Measures set out in the *CoCP* seek to minimise noise from the construction. However, there would be significant noise effects on several receptors during construction. As no further on-site mitigation would be possible, measures such as secondary glazing and compensation would be in place to off-set such effects, where applicable. Whilst this would ensure health and safety, the well-being of affected receptors could be affected.
- The site is located within the London Borough of Lewisham AQMA. Measures in the *CoCP* would ensure that emission and dust from the construction are minimised so that health and safety within the community would maintained.
- Recreational users would benefit from the development during operation as interception of the CSO would reduce pathogens in the tidal Thames. The risk of exposure would be reduced from 104 days to 16 days. Consequently this would ensure safety, health and well-being of river users in the community and therefore support the objective.
- 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 as they would ensure health and safety within the community. Noise resulting from the construction could reduce the well-being of some receptors as no further on-site mitigation would be possible and relocation may be required. Recreational river users would profit from reduced pathogen levels in the water during operation. Extensive public consultation has helped 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:

- A maximum of 40 workers would be employed at any one time at this site during construction. This employment opportunity would support the objective for a strong and stable economy.
- Three businesses which are situated on site would need to be displaced. Compensation schemes would be available where applicable. The proposals would support the objective under the assumption that the business would be successfully relocated.

In summary, the proposals would support the objective as they would create employment opportunities and would assist the successful relocation of businesses.

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 objectives. However, significant noise effects would remain on some receptors. There would be temporary changes to the character of the site and the townscape. Particular issues of relevance to the site appraisal include:

Environmental effects

- No significant effects relating to vibration have been identified as measures embedded in the CoCP would mitigate these. Consequently the objective would be supported.
- The proposals would seek to minimise all significant adverse environmental effects. However, significant adverse effects relating to noise during construction would arise at some receptors in the surrounding area. No further on-site mitigation would be possible, but compensation would be in

place to off-set such effects, where applicable.

- The site lies within in AQMA designated by the London Borough of Lewisham. Measures in the CoCP would ensure that significant effects relating to air quality would not arise.
- Effects arising from lighting would be minimised to a non-significant level through measures set out in the CoCP.
- Consequently the proposals would support the objective as they minimise significant adverse environmental effects where possible. However, some receptors would experience significant adverse effects relating to noise during construction.

Landscape and townscape

- Construction activity and the presence of construction equipment such as site hoarding and welfare facilities would lead to changes in the setting of the site and the surrounding residential and commercial areas. These changes would be temporary and restricted to the duration of the construction.
- Townscape would be enhanced once operational as poorly maintained buildings would be demolished and the site carefully designed. The proposals would therefore support the objective.

Historic environment

- The site lies within a locally designated Archaeological Priority Area. There are no nationally designated heritage assets on the site or the near proximity and changes to the site would be minimal. Therefore there would be no changes on the historic character or setting of above ground heritage settings resulting from the development.
- Adverse effects on buried assets would be mitigated through measures outlined in the *CoCP* such as archaeological watching briefs and targeted archaeological investigation and recording to form preservation by record.

In summary, the proposals would minimise significant adverse environmental effects relating. However, significant adverse noise effects during construction would remain at some receptors as no further on-site mitigation would be possible. The townscape of the site and surrounding area would be temporarily altered during construction but enhanced in operation. The development would not result in changes to the historic environment. The proposals set out measures to form preservation by record should buried historic assets be encountered during construction. Consequently the proposals would support the objectives.
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:

- Development on this site would make efficient and sustainable use of existing brownfield and would eliminate the need for development on greenfield. Consequently the proposals would support the objective.

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 not support the objective. Particular issues of relevance to the site appraisal include:

- Approximately 68 HGV movements per day would be required during the peak construction period which is estimated to last 4 months. On average is has been estimated that 18 HGV movements would be necessary during the construction. Measures set out in the *CoCP* such as the provision of a transport management plan would ensure that detrimental impacts associated with transport on communities and the environment would be minimised.
- Vehicles would access the site via a new access Yeoman Street and would exit over a new access created on Croft Street. Through the one-way effects on traffic would be alleviated.
- The PTAL for the site has been classified as 3, indicating a moderate level of accessibility via public transport. Measures in the *CoCP* such as only allowing vehicles required for the construction on site would promote sustainable transport 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 would promote public transport and would include measures to minimise detrimental impacts associated with additional traffic resulting from the construction.

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

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