

Thames Tideway Tunnel
Thames Water Utilities Limited



Application for Development Consent

Application Reference Number: WWO10001

Sustainability Statement

Doc Ref: **7.07**

Appendix B.6

King George's Park

APFP Regulations 2009: Regulation **5(2)(q)**

Hard copy available in

Box **48** Folder **B**
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**Thames
Tideway Tunnel**



Creating a cleaner, healthier River Thames

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Appendix B: Site-specific appraisal

B.6 King George's Park

Type of site:	CSO site
Description of proposals:	The site is located within the London Borough of Wandsworth and comprises the northern end of King George's Park. The Frogmore Storm Relief - Buckhold Road CSO would be intercepted at the site.
<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 no dewatering would be required. Consequently to deterioration of water quality would be expected from the discharge of effluent into the river. • There would be no in-river works associated with the site. Contaminated run-off via surface water drains could create a contamination pathway and affect river water quality. However, measures outlined in the <i>CoCP</i> would be in place which would control pollutant run-off and would ensure that water quality would be maintained during construction. • Once operational interception of the Frogmore Storm Relief - Buckhold Road CSO would lead to a reduction in the spill frequency from 21 times to 1 time per year. The yearly discharge volume would be reduced from 86,000m³ to 1,500m³ and would reduce the amount of sewage derived litter from 22t to less than 1t per year. This would enhance river water quality and would therefore support the objective. <p>In summary, river water quality would be maintained during construction and enhanced through interception of the CSO in operation.</p> <p>Further details 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> <ul style="list-style-type: none"> • The site lies within the King George's Park Area Site of Importance for Nature Conservation. Effects on diversity of notable species resulting from the removal of trees, amenity grassland and shrubs would be mitigated against through advanced planting adjacent to the site and provision of bat and bird nesting boxes throughout 	

the park. Further, the removed habitat would be reinstated after completion of the works and a brown roof installed on operational structures. Consequently terrestrial diversity would be enhanced throughout the development.

- Lighting required during construction would be controlled by measures outlined in the *CoCP* to minimise light spills and disturbance of notable species.
- Aquatic diversity would be maintained during construction as no in-river works would be required. In operation there would be beneficial effects on aquatic biodiversity due to the reduced amount of sewage and sewage derived litter entering the ecosystem. Improved dissolved oxygen levels and sediment nutrient levels would improve habitat quality and consequently enhance species diversity. Therefore, the proposals would support the objective.

In summary, terrestrial ecology would be enhanced through the development. Aquatic diversity would not be affected during construction as no in-river works would be required. Interception of the CSO would lead to an enhancement in aquatic diversity once operational.

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 21,000t CO₂e. During the construction phase approximately 58t CO₂e and 321t 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 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 is located within a high probability flood zone as it is at risk of fluvial flooding from the River Wandle and is not protected by flood defences. A flood depression area would provide a flood conveyance route. The risk of tidal flooding from the River Thames is low. Fluvial and tidal flood risk would not be increased through the development.
- Groundwater flood risk would not be changed through the development as sheet pile walls would prevent groundwater inflows. Groundwater levels would be monitored during construction and operation.
- There is a high risk of surface water flooding at the site. Additional surface water flood risk would be managed through the use of SuDS including a swale. Surface water run-off would be attenuated to existing greenfield runoff rates.
- The risk of sewer flooding would be maintained at the current level as the sewer would stay in place and functional during construction.
- There would be an increase in hard standing resulting from the development. However, the *Design Principles* outline the use of Bredon gravel where possible and practicable in order to minimise resulting urban heat effects and maximise resilience and adaptability to future temperature changes.

In summary, there would be no increased flood risk from any source resulting from the development as the proposals have taken flood risk into account. The use of Bredon gravel would maximise resilience and adaptability to temperature changes in the future.

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

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 drop shaft with an approximate internal diameter of 9m and a depth of 21m would be excavated, leading to an estimated 5,200t of excavated materials. These would

mainly consist of London clay (3,000t) and made ground (2,000t) and 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.

- Approximately 251t of construction waste would be generated, which would be managed through measures set out in the *CoCP*, including the application of a site waste management plan to maximise re-use, recovery and recycling in accordance with the waste hierarchy.
- Approximately 8t of welfare waste would be produced by staff per year during construction. This would be managed through measures set out in the *CoCP* including a site waste management plan to maximise re-use, recovery and recycling. Waste management at the site would consequently support the objective.
- Operational waste at the site is considered to be minimal, resulting from routine maintenance and would not affect the objective.

In summary, the proposals would divert waste from landfill through re-use, recovery, recycling and beneficial use in accordance with the waste hierarchy.

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

The following broad considerations are relevant to the sustainability at the site level.

- It is estimated that 15,000L of water would be used every 24 hours during the peak construction period construction in 2017. This is largely accounted for by water required for shaft grout/concrete (7,500L/d) and mitigation measures such as washdown and dust suppression (6,000L/d). The water requirements are within the available water for London as estimated in Thames Water's Resource Management Plan. Consequently, the resource would be sustainably sourced.
- 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 required for the construction is considered to be sustainable. During operation there would be no large demands for resources and raw materials. Further information can be found in 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. Particular issues of relevance to the site appraisal include:

- The construction would last approximately 2.5 years and would operate to standard working hours.
- Measures set out in the *CoCP* would ensure that safety, health and well-being of communities would not be affected by noise and vibration during construction or operation.
- The site is located within the London Borough of Wandsworth AQMA. Effects resulting from construction activities would be minimised through stringent measures outlined in the *CoCP*. This would ensure health and safety and support well-being within the community.
- Around 1% of the total area of King George's Park would be temporarily lost during construction. The public realm would be reinstated and carefully designed once the construction has been completed. The temporary loss of public realm would have limited bearing on the objective.
- Pedestrians would be diverted from the existing pedestrian path during construction. The diversion would lead to an increased journey time. These changes would be temporary and would not compromise health and safety within the community as appropriate signage would be in place. However, some residents may experience a reduction of their well-being resulting from the increased journey time.
- Interception of the CSO in operation would be beneficial for recreational river users. Exposure to pathogens would be minimised from 76 days to 4 days per year. Health and safety of river users would consequently be ensured and their well-being supported through operation of the development.
- 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, safety, health and well-being within the community relating to air quality, noise and vibration would be ensured and supported. Interception of the CSO would reduce the number of days recreational river users would be exposed to pathogens. There would be a small, temporary loss of public realm during construction. Extensive public consultation has helped to encourage equality and sustainable communities.

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 appraisal

include:

- A maximum of 40 workers would be employed at any one time at this site during construction. This new employment opportunity would support the objective for a strong and stable economy.

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. 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 from the development. Stringent measures outlined in the CoCP would ensure that effects are minimised.
- In accordance with the *CoCP* and *Design Principles* construction lighting would minimise light spills. During operation there would be motion activated low level lighting in place. No significant adverse environmental effects would arise relating to lighting. Consequently the proposals would support the objective.

Landscape and townscape

- The character of the site and the surrounding area would be altered through the presence of construction activity and equipment. However, these changes would be of a temporary nature.
- Advanced planting and reinstatement of trees after construction along with the introduction of a high quality area of hard surfaced public realm and high quality designed above ground structures would enhance the townscape in operation. Consequently, the proposals would support the objective, albeit with temporary adverse effects during construction.

Historic environment

- The site lies within a locally designated Archaeological Priority Area; however, there are no nationally designated heritage assets on the site or within the surrounding area.
- Archaeological environmental sampling and preliminary archaeological evaluation follow by targeted investigation and watching brief would ensure preservation by record should buried heritage assets be found on site.
- Some above ground heritage assets such King George's Park planting and landscaping features would be preserved through the application of English Heritage level 1 basic visual record. In addition, assets such as an ornament gateway and parts of a railing would be removed and re-instated or relocated where practicable. Therefore, the proposals would support the objective.

In summary, no significant adverse environmental effects would arise relating to air quality,

noise and vibration or lighting during construction. There would be changes to the current character of the site and the surrounding area; however, adverse effects would be restricted to the construction period. The townscape would be enhanced during operation. There are no nationally designated assets on site and assets of lower value or potentially present buried assets would be preserved accordingly.

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

Land use

Efficient and sustainable use of land and buildings

Appraisal

The proposals would not support the objective, insofar as the development would require Greenfield land and result in the permanent loss of a small area of land. It must be regarded, however, that the overall footprint of development within the park is modest and the permanent development would provide high quality public realm.

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

- There would be no river services available in the close proximity of the site. Therefore materials would need to be transported to and away from the site via HGVs which would not minimise detrimental effects related to transport of construction materials.
- There would be approximately 16 HGV movements per day generated during the peak construction period which would last 4 months. On average there would be 8 HGV movements per day resulting from the construction. Measures set out in the *CoCP* such as provision of a traffic management plan would ensure that detrimental impacts arising from construction traffic would be minimised.
- The PTAL has been classified as 4, indicating a moderately good level of access via public transport. No workers are expected to travel to site by private car unless agreed with the local authority. This would help minimise detrimental effects arising on the community and the environment relating to additional traffic. Therefore the proposals would support the objective.

The proposals would support the objective by promoting public transport for construction workers. However, as no river services would be available it would not be possible to minimise effects relating to the transport of materials.

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

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