**Please note:**

Further details are provided in the Final Report on Site Selection Process (doc ref: 7.05) that can be found on the Thames Tideway Tunnel section of the Planning Inspectorate’s web site.
Site suitability report
C05XQ

Barn Elms
# Thames Tunnel

## Site suitability report C05XQ

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List of abbreviations

AOD above Ordnance Datum
BAP biodiversity action plan
BT British Telecom
CPO compulsory purchase order
CSO combined sewer overflow
DLR Docklands Light Railway
EA Environment Agency
GLA Greater London Authority
HGV heavy goods vehicle
LNR local nature reserve
LPA local planning authority
LU London Underground
m metre/metres
MOL Metropolitan Open Land
ONS Office of National Statistics
ORN Olympic Route Network
PLA Port of London Authority
POS public open space
PTAL public transport accessibility level
SAM scheduled ancient monument
SINC site of importance for nature conservation
SNCI site(s) of nature conservation importance
SSR site suitability report
SSSI site(s) of special scientific interest
SUDS sustainable urban drainage systems
TfL Transport for London
TD tunnel datum
TLRN  Transport for London Road Network
TPA   Thames Policy Area
UDP   unitary development plan
UXO   unexploded ordnance
1 Introduction

1.1 Purpose and structure of the report

1.1.1 The Site selection methodology paper (May 2009 and revised August 2011)\(^a\) outlines the process to be used to create the preferred list of main tunnel sites, and this process also applies to CSO sites. Paragraph 2.3.31 lists the type of general considerations that will be addressed in each site suitability report. Whether a consideration is relevant to the assessment of a site will depend on available information and professional judgement.

1.1.2 This report was prepared through the assessment of information from the perspective of a number of technical disciplines: engineering, planning, environment, property and community. The reports have been prepared on the basis of the information listed in Appendix 1 and this level of information is considered to be appropriate to this stage of assessment.

1.1.3 The Site selection background technical paper provides information on the requirements for different types of sites, their sizes and typical activities/facilities within the sites.

1.1.4 Each site suitability report considers a particular site on its own merits. In addition, an Engineering options report was produced, which relates to main tunnel and connection tunnel options. Information from both of these reports will feed into the technical assessment of how well the site may fit in with tunnel design options, ensuring combinations of sites spread across the length of the tunnel route provide a reasonable spatial distribution of sites (that will best assist with the construction of the tunnel, operation and maintenance). The outcomes are reported in the Phase two scheme development report.

1.2 Background

1.2.1 The process for selecting sites is set out in the Site selection methodology paper. All sites have previously passed through the following parts of Stage 1:

- Part 1A – Creation of the long list of potential main tunnel (and CSO) sites
- Part 1B – Creation of a short list of potential main tunnel (and CSO) sites
  - Table 2.2: Long list of main tunnel (and CSO) sites – an assessment against set considerations and values
  - Table 2.3: Draft short list of main tunnel (and CSO) sites – assessment against a list of more detailed considerations
  - Workshops to consider each site to arrive at a short list of sites.

\(^a\) The amendments made in August 2011 do not change the site selection methodology process. The amendments only related to the introduction of a second phase of consultation (paragraphs 2.3.13-2.4.15) and minor factual updates.
1.2.2 The final part of Stage 1 includes this report. The following is an overall summary of all elements that apply to all the sites on the final short list:

- Part 1C – Creation of the preferred list of main tunnel (and CSO) sites – site data, site visits, site suitability reports, engineering options report and optioneering workshops that are reported in the Phase two scheme development report.

1.2.3 The Site selection methodology paper also contains a provision for a back-check process in paragraph 2.5.6 that states:

“If any sites for any of the main tunnel sites or intermediate sites (or CSO site) are eliminated for any reason, if there are significant changes of circumstances in relation to existing sites or combinations of sites, if new or replacement sites are required or found or if the engineering design develops in unexpected ways then a targeted repeat of stages 1-3 will need to be undertaken in order to fill in any site gaps.”

1.3 Consultation

1.3.1 Thames Water’s approach to engagement and consultation for the Thames Tunnel project is outlined in the Statement of Community Consultation and the accompanying Community Consultation Strategy. Thames Water has engaged regularly with all potentially affected London local authorities, other stakeholders and interested parties on sites and the project.

1.3.2 Phase one consultation has been completed for all the preferred and shortlisted sites along with the three main tunnel route options. The analysis of the consultation responses is set out in the Report on phase one consultation and Interim engagement report. Any relevant site comments were considered at the post phase one consultation optioneering workshops. The outcomes of these workshops are reported in the Phase two scheme development report. After the workshops, engagement on sites has continued with key stakeholders, and the engineering design for sites has also continued in parallel. In autumn 2011, phase two consultation will provide another opportunity for people to comment on sites.

2 Site information

2.1 Site and surroundings

2.1.1 This site is one of the shortlisted sites for West Putney Storm Relief CSO. This section provides an overview of all the site information that will be used by one or more disciplines to assess the site in sections 3 to 9 of this report.

2.1.2 The site C05XQ is situated within the Barn Elms Schools Sports Centre sports pitches located in the London Borough of Richmond upon Thames, close to its boundary with the London Borough of Wandsworth. The site is roughly rectangular in shape and forms part of the wider site area identified for the proposed main tunnel site S17RD. A site location plan is attached as Appendix 2.
2.1.3 The CSO interception working area is positioned in the most south-easterly part of the Barn Elms Schools Sports Centre sports pitches. The site is bounded to the north and west by further sports pitches and facilities, and to the far west by an area designated as a site of borough importance for nature.

2.1.4 Putney Lower Common is located to the southwest, and the Beverley Brook and Beverley Brook footpath borders the south and southeast of the site, which also acts as the borough boundary line between Richmond upon Thames and Wandsworth. The closest residential properties are located adjacent to this area in Horne Way and Stockhurst Close, south of the site. The working area is set at a distance of approximately 55 metres from the nearest rear facade of residential properties, known as Lancaster House and Jay House, within Horne Way. These properties and those in Stockhurst Close are a mix of three- to six-storey flats and two-storey dwellings.

2.1.5 The surrounding area is predominantly characterised by large expanses of protected public open space, land and river based sports and leisure facilities, and residential properties. Within the vicinity of the site to the north is Queen Elizabeth Walk, which is the closest existing road and pedestrian access point, and the London Wetland Centre, which is a designated site of special scientific interest.

2.1.6 To the northeast is an existing Scout hut, a Sea Cadet facility, the Thames Path and the River Thames. This stretch of the Thames has a considerable area of inter-tidal ‘mudflat’ habitat, and looks out towards Bishops Park and Craven Cottage Football Ground, located on the opposite bank of the river, in Hammersmith and Fulham.

2.1.7 The site is covered by various planning and environment designations from the saved policies in the Richmond upon Thames Unitary Development Plan (2005) and the Local Development Framework Core Strategy (2009), including an area of protected Metropolitan Open Land, the Thames Policy Area and an archaeological priority area. All the mapped designations, where data was available, are shown on the planning and environment plans in Appendix 3.

2.1.8 Photographs of the site and surroundings, together with an aerial photograph of the site, are attached as Appendix 4.

2.1.9 There is no existing direct road access to the site. The existing footbridge at the end of the Embankment is inadequate to provide vehicular access to the site. Barn Elms Schools Sports Centre is accessed off Queen Elizabeth Walk, which is approximately 1km northwest of the site and joins the A3003/A306. The site is 1.9km from the South Circular Road (A205). There is no rail network local to the site. There are no existing wharfage/jetty facilities at the site – the site is approximately 80m from the river, with a copse in-between. A transport plan for the site is attached as Appendix 5.

2.1.10 Third-party assets and significant utilities are listed below and are shown on the services and geology plan in Appendix 6:

- Barn Elms Schools Sports Centre playing field
• Tide barrier in the Beverley Brook to the east of the site
• Beverley Brook gas crossing north of the site.

2.1.11 The locations of other third-party assets, such as BT and fibre optic communication cables, are to be confirmed by further studies and utility searches and may not be shown on the services and geology plan.

2.1.12 Information on the geology specific to this site can be found within the services and geology plan which is in Appendix 6. This plan shows that the shaft would be founded in London Clay.

2.2 Type of site

2.2.1 The site C05XQ is being considered as a CSO site to intercept the West Putney Storm Relief Sewer CSO (CS05X).

3 Proposed use of site – construction phase

3.1.1 The proposed construction phase layouts for the CSO site are located in Appendix 7 – Construction phase layout, and are based on a preliminary assessment.

3.1.2 The construction phase layout drawings are illustrative and show:
• the layout as a CSO site
• three potential access points.

3.1.3 These drawings provide initial preliminary schematic layouts that have not been optimised. If the site proceeds to the next stage as a preferred site, construction phase layouts would be optimised to minimise impacts.

3.1.4 Photographs of typical activities associated with the CSO site construction phase are provided in Appendix 7. Potential above-ground construction features include:
• approximately 3m high hoarding around the site boundary
• welfare facilities, temporary structures, approximately 3m high
• grout plant, approximately 3m to 5m high, including silos
• mobile crane, approximately 30m high (maximum and not for full construction duration).

3.1.5 Preliminary data associated with the construction phase are provided in Table 3.1.
Table 3.1  Construction phase data

<table>
<thead>
<tr>
<th>Activity</th>
<th>CSO site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of construction period</td>
<td>2 - 4 years</td>
</tr>
<tr>
<td>Likely working hours, ie, (night/day/weekend)</td>
<td>12 hrs from 7am to 7pm</td>
</tr>
<tr>
<td>Working days</td>
<td>Mon to Sat</td>
</tr>
<tr>
<td>Primary means of transporting excavated material away from site</td>
<td>Road</td>
</tr>
<tr>
<td>Primary means of transporting materials to site</td>
<td>Road</td>
</tr>
</tbody>
</table>

4  Proposed use of site – operational phase

4.1  Introduction

4.1.1 The indicative operational phase layout for the CSO site is located in Appendix 8 – Operational phase layout, and is based on a preliminary assessment.

4.1.2 The generic elevations of structures shown on the operational phase layout are located in Appendix 8 and provide an illustration of typical examples of the permanent structures which are applicable to CSO sites.

4.1.3 The underground infrastructure at this site would likely comprise an interception chamber, double flap valve chamber and a drop shaft with access openings.

4.1.4 The above-ground infrastructure at this site would likely comprise a ventilation column and electrical control kiosk.

4.1.5 Hydraulically, the top structure to the drop shaft would be finished to a minimum level of 104.5m tunnel datum (TD) (4.5mAOD). However, for flood plain reasons, it is envisaged that it would be finished to a minimum level of 105.5mTD (5.5mAOD). Since the mean ground level of this site would be 103.7mTD (3.7mAOD), the top structures would be above ground level. The top structure is to provide access to and egress from the drop shaft and flap valve chamber.

4.1.6 A hardstanding would be provided to the top structures. The site would not be fenced.

4.1.7 Preliminary data associated with the operational phase are provided in Table 4.1.
<table>
<thead>
<tr>
<th>Table 4.1 Operational phase data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of inspections and maintenance and likely working hours, ie, (night/day/weekend) – frequency of visits</td>
</tr>
<tr>
<td>No. of traffic movements</td>
</tr>
</tbody>
</table>

4.2 Restoration and after-use

4.2.1 The portion of the site not occupied by the permanent works would be restored to its original condition on completion of the construction works.

5 Engineering assessment

5.1 Access

5.1.1 This section should be read in conjunction with Section 7.2.

Road

5.1.2 There would be no existing access road to the site. The site would be 1.9km from the South Circular Road (A205) and 1.6km from the A3003/A306.

5.1.3 There are three proposed road access options:

- Option 1 would be off the A306, Rocks Lane
- Option 2 would be off Queen Elizabeth Walk, which leads from the A306 and the A3003
- Option 3 would be off Mill Hill Road (B349)

5.1.4 Each access option is described and assessed below. This is followed an assessment of the operational maintenance access.

Option 1 – Rocks Lane

5.1.5 A new access road would need to be constructed to get from Rocks Lane to the site. The road would utilise the existing vehicle access off Rocks Lane in the southwest corner of Barn Elms Schools Sports Ground. The access road would then pass along the southern region of the sports ground, approximately parallel to the Beverley Brook watercourse. The route of Option 1 would pass to the south of the existing running track and continue parallel to the watercourse to the location of the construction site.

5.1.6 Option 1 would provide a dedicated access route to the construction site and enable segregation from the adjacent third parties. Option 1 would
minimise the risk of conflict between construction vehicles and users of the playing fields. The access route would utilise an existing access to the sports field off Rocks Lane, although this may require widening, the probable removal of a significant tree and relocation of a bus stop. The access route would require the relocation of an existing changing room facility, although the unit appears to be in poor condition. Provision of a new facility elsewhere on the sports ground could be made during the construction works.

**Option 2 – Queen Elizabeth Walk**

5.1.7 An access road would need to be constructed to get from Queen Elizabeth Walk to the site. The access road would follow the boundary of the southern edge of the sports centre car park and follow the existing road through the site to the boathouse to minimise disruption to the playing fields. The final section of the access road would be constructed from the boathouse and follow the eastern boundary of the site. Queen Elizabeth Walk is traffic calmed, and this may need to be modified to improve access.

5.1.8 Queen Elizabeth Walk currently provides access for Barn Elms Schools Sports Ground, an adjacent angling club, Barn Elms Wetland Centre and a small number of residential properties. Option 2 would require the shared use of the existing access between construction vehicles and numerous third parties, including users of the school recreational facilities. It is considered that this access route would have a significantly high risk of conflict between construction vehicles and third parties.

**Option 3 – Mill Hill Road**

5.1.9 A new access from Mill Hill Road would need to be created and a temporary haul road constructed north across Putney Lower Common to Beverley Brook. The road would then cross over the brook via a temporary bridge before turning east and running parallel to the brook to the construction site (as in the Option 1 alignment).

5.1.10 The access via Mill Hill Road would provide a dedicated access route to the construction site and enable segregation from the adjacent third parties. The route, however, would require the crossing of numerous footpaths within Putney Lower Common which may need to be bridged over the access road if a closure cannot be agreed. Tree clearance on either side of Beverly Brook would be required to facilitate construction of the temporary bridge across the watercourse.

**Operational maintenance access**

5.1.11 It is suggested that operational maintenance access could be achieved using Option 2. It is considered that any risk of conflict with third parties associated with a shared access route would be mitigated, using appropriate traffic management and banksman during the infrequent vehicle attendance required during operation.
5.1.12 If Option 1 or Option 3 were used for construction access only, this access route would be removed and the area reinstated upon completion of the works.

**Rail**

5.1.13 There would be no rail network local to this site. Putney railway station and Putney Bridge tube station would be approximately 1.5km away from the site. However, rail access is not considered to be a significant factor for CSO sites.

**River**

5.1.14 River access and jetty/wharfage facilities are not a requirement for CSO sites. In addition, the site would be about 80m from the river, with its direct access not clear – obstructed by a woodland and the Thames Path.

5.2 **Construction works considerations**

5.2.1 The site would be within Barn Elms Schools Sports Centre playing field and no demolition would be required. The area required for construction of the drop shaft and access road could lead to the loss of playing areas.

5.2.2 Data available on third-party assets and significant utilities show that the main items of concern in this area would be the tide barrier in the Beverley Brook and a National Grid Beverley Brook gas main crossing, which runs outside north of the site. The gas main would be approximately 40m from the drop shaft as currently positioned and this should minimise impact. Construction methods would be adopted, as appropriate, to mitigate potential settlement of these assets. There are no neighbouring buildings so mitigating settlement of buildings would be not a consideration for this site.

5.2.3 It is likely that the proposed works can be constructed within the overall construction programme.

5.2.4 The interception chamber and connection culvert to the drop shaft would both be within the site and therefore require no additional consideration. The drop shaft would be very close to the storm relief sewer, hence the connection culvert from the interception chamber would be short.

5.3 **Permanent works considerations**

5.3.1 The top structures to the drop shaft and flap valve chamber would be 2m to 3m above ground level.

5.4 **Health and safety**

5.4.1 If access were through Barn Elms playing fields, measures would be required to ensure the safety of the public using these facilities. This may include fencing off the access road.

5.4.2 There are no other unusual health and safety issues with this site.
6 Planning assessment

6.1 Introduction

6.1.1 The planning assessment builds on the advantages and disadvantages reported in Table 2.3 and covers the following areas:

- Planning applications and permissions
- Planning context
- Planning comments.

6.2 Planning applications and permissions

6.2.1 An initial desktop search of the London Borough of Richmond upon Thames online planning applications database did not identify any planning applications submitted within the last five years applicable to the site area identified for the construction works.

6.2.2 An application was granted consent on 9 December 2010 (reference no. 10/1729/FUL) for the Barn Elms Sport Centre for the "Redevelopment of Barn Elms Playing Fields, including the demolition of the main pavilion and groundsman's mess, new build pavilion, new car parking, refurbishment of tennis courts, pitch improvements, and widening of the existing vehicular site entrance. There is no change of use.".

6.3 Planning context

London Borough of Richmond

6.3.1 The current planning policy context for the site is provided from the saved policies in the Richmond upon Thames Unitary Development Plan, adopted 1 March 2005, and strategic spatial strategy provided in the Local Development Framework Core Strategy, adopted 21 April 2009. The publication version of Development Management DPD (October 2010) has been undergoing public examination since April 2011, with anticipated adoption in late 2011.

6.3.2 There are a number of planning designations which cover the site. Each designation is identified and described below.

Sport and recreation

6.3.3 UDP Proposal Site B5 – Barn Elms Sports Grounds, proposes the "rationalisation of sports use, including provision of public indoor sports hall and upgrading sports pitches, enhancement of landscape".

6.3.4 The justification for the Site B5 proposal is as follows: “To increase local provision for indoor sports for which there is a need, to benefit existing users and make more efficient use of facilities. To integrate the management of sports facilities on the site, to enable improvements in existing facilities and the provision of specialist new facilities to allow increased sports use. Any building must be carefully designed and sited so as not to detract from the open appearance of the land. Proposals for floodlighting will be treated with extreme caution and if considered
acceptable in principle must be designed to have the minimum visual appearance and impact on the open land, to avoid disturbance to wildlife on the site and the adjoining Wildfowl and Wetlands Trust Centre and also to avoid the introduction of light pollution into this otherwise quiet and undisturbed night sky. Existing trees and planting that form part of the historic landscape must be preserved and supplemented by further landscaping and tree planting to enhance the parkland landscape and minimise the visual impact of the building on the open land. The scale will be limited to avoid an unacceptable deterioration in traffic conditions and to this end car parking will be limited and alternative means of transport to the car encouraged. However, if it is considered a proposed facility would lead to significant additional traffic, implementation will be delayed until the development of the Barn Elms reservoirs site has been completed and traffic generation fully assessed.” (Richmond upon Thames Unitary Development Plan, 2005).

6.3.5 A large area of public open space is located immediately adjacent to the west of the site. Although the associated policy is concerned primarily with the retention and improvement of public open space itself, it is important to note that an adverse impact on the visual context or enjoyment of existing public open space is likely to be a consideration of the council and will be relevant to Site Access Option 1. For reference, the associated policies are noted below.

6.3.6 Saved UDP Policy ENV 11, Retention and Improvement of Public Open Space, states the council will resist the loss of public open space and endeavour to increase the enjoyment and visual quality of POS through a high standard of design and by improving access and facilities.

6.3.7 Emerging DPD Policy DM OS 6, Public Open Space, states that public open space will be protected and the improvement of the openness and character of public open space will be encouraged.

Environment

6.3.8 The site is covered by a Metropolitan Open Land designation which extends across the wider surrounding Barnes open space area. Saved UDP Policy ENV 1, Metropolitan Open Land (MOL), Core Strategy Policy CP10, Open Land and Parks, and emerging DPD Policy DM OS 2 seek to protect and conserve openness of MOL by retaining open uses and presume against built development. Emerging Policy DM OS 8, Sport and Recreation Facilities, seeks to protect and enhance sports grounds, including playing fields, and is therefore relevant to the current use of the site and the retention of open uses within designated MOL.

6.3.9 The site is within an area liable to flood. This designation runs across the site east to west and is roughly confined to the southern half of the construction site, which has been identified for the location of the shaft, offices and welfare facilities.

6.3.10 Saved UDP Policy ENV 34, Protection of the Floodplain and Urban Washlands, states that the council will not permit development, including land raising, that either itself, or cumulatively with other development, would increase the impedance flow of floodwater, reduce a site’s capacity
to store water, increase risk of adverse flooding effects to properties, obstruct land required for access or maintenance or adversely affect structures associated with flood defence. Emerging DPD Policy DM SD 6, Flood Risk, states development and land uses will be restricted in affected areas in line with PPS25 and, in addition to the Environment Agency's normal floodplain compensation requirement, attenuation areas to alleviate fluvial and/or surface water flooding must be considered where there is an opportunity.

6.3.11 In addition to the planning designations on site, there are a number of environmental policies adjacent to the site which are identified and described below.

6.3.12 The Barnes Wildfowl and Wetlands Centre is a designated site of special scientific interest (SSSI) and is located along the northern boundary of the site. There are also two other sites of nature importance adjacent to the site. The first is located to the northwest of the proposed shaft location, positioned south of Barn Elms Sports Centre tennis courts; the second extends over the entire stretch of the River Thames, which runs along the eastern boundary of the site. All sites of nature importance are protected from development by the following policy.

6.3.13 Core Strategy Policy CP4, Biodiversity, states the borough’s biodiversity, including SSSIs and other sites of nature importance, will be safeguarded and enhanced. Saved UDP Policy ENV 18, Sites of Special Scientific Interest and Other Sites of Nature Importance, requires developers to demonstrate that proposals will not adversely affect these areas “by way of built form, noise, air pollution, light pollution, surface run-off of water, water quality, changes in level, landscaping and other factors, including those raised in the Local Biodiversity Action Plan”. The policy also states that the council will also consult with Natural England prior to permitting development near SSSIs. Emerging DPD Policy DM OS 5, Biodiversity and new development, states that all new development will be expected to preserve and, where possible, enhance existing habitats, including river corridors, and biodiversity features including trees.

Thames Policy Area

6.3.14 The site is within the Thames Policy Area. Saved UDP Policy ENV 26, Thames Policy Area (TPA), aims to “protect and enhance the special character of the Thames Policy Area” by protecting and enhancing views, vistas and landmarks which are visible both to and from the River Thames and along its banks. The policy requires all new development to have an association with the river, to contain a mix of uses, be of high quality of design, and supported by a design brief and statement assessing the effects new development will have on any existing river-dependent uses. The policy also discourages “land infill and development which encroaches into the river and its foreshore other than in exceptional circumstances, which may include where necessary for the construction of new bridges, tunnels, jetties, piers, slipways etc”. The emerging DPD Policy DM OS 11, Thames Policy Area, continues the same policy direction and content as the saved UDP Policy ENV 26, with minor changes to wording.
6.3.15 The Thames Path runs along the eastern boundary of the site. Core Strategy Policy CP11, River Thames Corridor, seeks to protect and enhance the natural and built environment and the unique historic landscape of the River Thames corridor. The policy justification states that river related recreation on and beside the river is also important and the Thames Path National Trail is of strategic significance.

**Heritage**

6.3.16 The majority of the site is located within an archaeological priority area. Two saved UDP policies are applicable to this designation:

6.3.17 Policy BLT 8, Evaluation of Archaeological Sites, states the council will require early discussion with developers and specialist bodies, as well as archaeological field evaluations, on sites proposed for development that may affect archaeological remains or areas identified for their archaeological potential.

6.3.18 Policy BLT 9, Development of Archaeological Sites, requires that in cases where development will affect sites of archaeological importance, the applicant ensures provision, including funding, for “the remains to be preserved in situ, or in exceptional cases where preservation in situ is not appropriate or feasible, excavated and recorded”.

6.3.19 Emerging DPD Policy DM HD 4, Archaeological Sites, requires the same site evaluation and provisions for recording and preserving archaeological remains stated in the saved UDP policies above.

**Amenity**

6.3.20 The site is in close proximity to residential properties and the following policies are therefore applicable.

6.3.21 Saved UDP Policy BLT16, Un-neighbourliness, and Emerging DPD Policy DM DC 5, Neighbourliness, Sunlighting and Daylighting, state in considering proposals for development, the council will seek to protect adjoining properties from unreasonable loss of privacy, pollution, visual intrusion, noise and disturbance.

**London Borough of Wandsworth**

6.3.22 A number of planning designations and policies adjacent to the site are applicable from the London Borough of Wandsworth Core Strategy, adopted October 2010, emerging proposed submission versions of the Development Management Policies Document (DMPD) and Site Specific Allocations Document (SSAD) published in July 2011 for Examination in Public, as well as saved policies from the Wandsworth Unitary Development Plan, adopted August 2003. Applicable policies are detailed below.

**Environment**

6.3.23 The Putney Embankment Policy Area is located adjacent to the southeast of the site. Core Strategy Policy PL 9, River Thames and the Riverside, states that Putney Embankment’s special recreational character and
function, particularly in connection with river sports, will continue, with facilities and activities which contribute to this character supported and protected.

6.3.24 Saved UDP policies ON4 and ON5, Metropolitan Open Land – Putney Lower Common is located to the west of the site and is designated as MOL. The common would be used to access the site under Site Access Option 3. Policy ON5 seeks to prevent development adjacent or within close proximity that “prejudices the environmental character or visual amenity of the area in terms of height, appearance, boundary treatment or uses”. Common land also carries special statutory protection and any works are likely to require consent from the Secretary of State under the provisions of the Commons Act 2006.

6.3.25 Saved UDP Policy ON7, Green Chains and Links, covers the area along the southern boundary of the site, in-between the Richmond upon Thames and Wandsworth borough boundaries along Beverley Brook. Policy ON7 resists development proposals that would “harm the open nature of any open land, which could contribute to a Green Chain, or links between open spaces, especially between areas of Metropolitan Open Land, and where they would form strategic links with adjoining boroughs”.

6.3.26 Saved UDP policies ON1 and ON3, Public Open Space, are applicable to two areas adjacent to the site: Leaders Gardens and Putney Lower Common. These policies protect the designated areas from development that would result in the complete or partial loss of open space or that would cause harm to its character or appearance.

6.3.27 Core Strategy Policy PL 4 – Open Space and the Natural Environment, and emerging DMPD Policy DMO 1 – Protection and Enhancement of Open Spaces, both seek to protect from inappropriate development and enhance the borough’s MOL, other areas of open space and green chains.

6.3.28 Barnes Common is located approximately 250m to the west of Site Access Option 3 and is a designated local nature reserve. Saved UDP Policy ON8, Nature Conservation, resists development which would harm a local nature reserve or any other site of nature conservation importance unless adequate mitigation measures are included or other material considerations are sufficient to override nature conservation considerations.

6.3.29 A tree preservation area is designated across the existing Putney Hospital site, which is in close proximity to Site Access Option 3. Core Strategy Policy DMO 5, Trees, states planning permission for works to trees will be granted where development proposals would not result in the damage or loss of trees in conservation areas or protected by a tree preservation order (TPO), unless adequate replacement planting is proposed and/or removal would be in the proper interests of good arboricultural practice. All trees should be adequately protected during construction works.

Heritage

6.3.30 Saved UDP policies TBE14 and TEB15, Archaeological Priority Area, cover a designated area adjacent to the south of the site and require
provision for archaeological investigation, evaluation and, where applicable, preservation in situ or excavation of remains, similar to the requirements detailed in Paragraph 6.3.9.

6.3.31 Saved UDP Policy TBE10, Putney Embankment Conservation Area – this area is located adjacent to the southeast of the site. Policy TBE10 protects from development that would cause harm to character, appearance, setting, or that which fails to respect the grain of the conservation area.

6.3.32 Emerging DMPD Policy DMS 2, Managing the Historic Environment – is relevant to both the designated archaeological priority area and conservation area and requires development to sustain, conserve and, where appropriate, enhance the significance, appearance, character and setting of the heritage asset itself and the surrounding historic environment. It also states developments which would disturb archaeological priority areas will need to be assessed and may require an archaeological evaluation report.

6.4 Planning comments

6.4.1 A number of planning designations are applicable both on and adjacent to the sites from both the London Borough of Richmond upon Thames and London Borough of Wandsworth local development plans. These designations have been identified and described in Section 6.3. From these designations, those relating to the preservation and enhancement of areas of metropolitan open land and sites of nature conservation importance, in conjunction with the temporary loss of open space, site allocation for the continued use of the Barn Elms for sport and recreational purposes and residential amenity are of most relevance to the proposed development.

MOL and recreation

6.4.2 C05XQ is located on an area of MOL and sports pitches used for public recreation. The use of the site may conflict with the aims of the associated policies and site allocation for the continued use as Barnes Elms Schools Sports Centre. However, Policy DM OS 2 states that small scale structures for essential utility infrastructure and facilities would be acceptable on MOL, providing it has been demonstrated that no alternative locations are available and they do not have an adverse impact on character and openness. Further to this, one of the aims of UDP Policy B5 is to make more efficient use of the recreational facilities in Barn Elms, which may mean consolidation of facilities on smaller areas of land, such as the creation of indoor facilities. The potential impact on existing service provision and the intention in terms of consolidating facilities would require further investigation in order to properly assess any conflict with policies B5 and open space policy DM OS 8.

6.4.3 Mitigation would be required to protect the amenity value and enjoyment of the remaining areas of playing fields that could be temporarily affected by construction work impacts such as noise, dust and increased traffic movements. The sports pitch facilities currently provided are extensive
and therefore the provision of lost facilities during the temporary construction works may not be required, however this would need to be investigated with the council.

6.4.4  The after-use would include some permanent structures on site. These structures are proposed to be located in the most southerly corner of the site to ensure they do not impede future recreational use, and their footprint would be minimised as far as possible in order to limit the area of permanent green space lost to the Thames Tunnel project works.

**Character and openness**

6.4.5  In general, the site is well screened by dense vegetation and tree coverage along its boundaries, although the proposal may impact on the open character and appearance of the site. However, given that the loss of open space and impact on the open character of the area is largely temporary, it is not considered to cause a significant adverse impact on the area.

6.4.6  Mitigation such as sensitive screening to reduce potential visual impacts of both the temporary and permanent works is likely to be required. Reduction in visual impact is relevant to policies ENV 26 and DM OS 11 in terms of protecting the character of the Thames Policy Area.

**Access**

6.4.7  Access Option 1 would utilise an existing access to the sports field off Rocks Lane, and may involve the removal of a significant tree. It is unclear at this stage whether or not the tree is protected and this will require clarification with the council. Use of this access route would also require the relocation of an existing changing room facility. The provision of a new purpose-built facility could be considered consistent with the aims of UDP Proposal Site B5 – Barn Elms Sports Grounds, and emerging Policy DM OS 8.

6.4.8  The access would also run through an area designated for nature importance, located south of the running track. A fuller assessment of the potential associated impact and suitable mitigation measures is covered in Section 7. This access route provides a greater distance between the construction traffic and residential properties in Horne Way, which are located approximately 80m away when compared to Access Option 3.

6.4.9  Access Option 2 would utilise the existing access to the Wetlands Centre via Queen Elizabeth Walk and then create a new access road through the playing fields to the site. This would require the shared use of the existing access between construction vehicles and a number of third parties. The access would also segregate an existing area of playing fields from both the sports centre and the remaining playing fields to the south, and could inhibit use. During summer/autumn 2011, the Environment Agency has used a similar access arrangement for its improvement works to the Beverly Brook. However, the number of construction vehicles, hours of use and duration of the works is considerably less in comparison to our CSO works.
6.4.10 Access Option 3 would create a new access from Lower Richmond Road, across Putney Common along the western side of the existing (disused) Putney Hospital. A new bridge access would be created across the Beverly Brook to the proposed site on Barn Elms. Although this access is shorter than access Option 1 and does not involve the shared access of Option 2, it would bring construction vehicles into closer proximity with residential properties, in this case residences within Horne Way. The access bridge over Beverly Brook would involve encroachment on a site of nature conservation importance. Overall, it would have little varying impact on the identified planning and environmental designations identified in Section 6.3 when compared to Option 1 and 2, although it is the only access which would impact on common land and is therefore likely to require special consent from the Secretary of State. A number of existing footpaths and rights of way also cross the common and therefore retaining existing rights of way, managing pedestrian access and providing alternative routes where conflict exists would all be necessary considerations associated with this access option. It would also be necessary to avoid the tree preservation area located on and around the Putney Hospital site.

6.4.11 The detailed site layout should consider the most appropriate site access further, as well as potential mitigation measures to avoid conflict between existing users and to reduce potential impact on adjacent residential properties. Temporary Access Option 1 is the preferred option from a planning perspective since this provides a dedicated access which would segregate vehicles from recreational users, it avoids potential third-party conflicts associated with Access Option 2 along Queen Elizabeth Walk, and the potential impacts on rights of way, the Beverly Brook and common land associated with Access Option 3. A fuller transport assessment is included in Section 7.

Nature conservation

6.4.12 The proposal site is in close proximity to the River Thames, a designated site of importance for nature conservation. This is a general designation, covering the entire River Thames. The purpose of Thames Tunnel project is to improve the overall environmental condition of the river which, among other gains, will promote biodiversity. Construction activity, with the appropriate level of mitigation, is considered unlikely to adversely impact on or conflict with the aims of this designation. However, a more detailed assessment of the likely impact on the immediate location is included in Section 7.

6.4.13 Further designated nature conservation sites may be impacted on by the site access options, and mitigation measures to reduce potential impact and safeguard the biodiversity value of these sites may be required. A detailed assessment of the likely impacts on nature conservation is included in Section 7.

6.4.14 A section of the site falls within an area liable to flood and issues relating to flood risk are considered within Section 7.
**Heritage**

6.4.15 The site falls within a designated development of archaeological sites evaluation of archaeological sites, and is also located close to an archaeology priority area within the borough of Wandsworth. The appropriate level of site investigation should be agreed with the appropriate local planning authority in accordance with policies BLT8, BLT9 and TBE14 and TBE15.

6.4.16 The Putney Embankment Conservation Area is located adjacent to the southeast of the site. Bishops Park and Fulham Palace are on the opposite side of the river. With appropriate mitigation, such as appropriately designed hoarding, use of the site should not adversely impact on the character or appearance of the adjoining conservation area or wider features of heritage interest. A further appraisal of heritage considerations is provided in Section 7.

**Residential amenity**

6.4.17 There are residential properties to the south and southwest of the proposal site. The nearest residents are located a distance of approximately 55m within Horne Way. While trees lining the southern perimeter of Barn Elms Schools Sports Centre may provide some screening, it is likely there would be some temporary visual impact and disturbance due to noise, dust and traffic movements. Appropriate mitigation measures would be required to avoid unacceptable harm to residential amenity during the construction impact, as well as a control of working hours.

**7 Environmental appraisal**

7.1 **Introduction**

7.1.1 The following sections summarise specialist assessments which are provided in Appendix 9 – *Environmental appraisal tables.*

7.2 **Transport**

7.2.1 This site is considered to be suitable as a CSO shaft site in highway terms. Road access is possible with the access route to the TLRN. The site requires the construction of a new access and the construction/ improvement of an access road through the playing fields.

7.2.2 Access Option 1 requires the construction of a new access road through the playing fields and the widening of the access onto Rocks Lane. Traffic signal control may also be required, along with the removal of some parking on Rocks Lane and relocation of the bus stop.

7.2.3 Access Option 2 requires the construction of a new site access and the construction/improvement of the access road through the playing fields. A possible conflict may exist between construction vehicles and users of the sports centre. Traffic management will be required to manage vehicles through the sports centre car park and some parking may be displaced.
7.2.4 Access Option 3 requires the construction of a new access road through the playing fields, a new access onto Lower Richmond Road and a temporary bridge over Beverley Brook.

7.2.5 Road access is possible. However, the access route to the TLRN (A205) for Access Option 2 is traffic calmed (with speed humps) along Queen Elizabeth Walk and these speed humps would therefore need to be removed.

7.2.6 The site is less suitable for public transport access and therefore either workforce transport or parking for vehicles within site boundary, depending on acceptability, would need to be provided.

7.3 Archaeology

7.3.1 On the basis of the current information available, the site is considered less suitable as a CSO site as it is located in an area containing known archaeological receptors of potential high value; in this case, an Iron Age settlement. Further archaeological deposits of high value are likely to be present within the proposed development footprint. The proposed development has the potential to adversely impact archaeological receptors.

7.3.2 Peat deposits containing archaeological material have been commonly recorded throughout London in a similar proximity to the Thames. While no direct evidence has been revealed, given the location of the site and wider evidence for historical occupation along the river, it is a reasonable assumption to suggest that waterlogged remains and peat deposits of high or medium value may be present.

7.4 Built heritage and townscape

7.4.1 This site is considered to be suitable as a CSO site in relation to built heritage and townscape, as it is unlikely to result in direct or indirect impacts on any built heritage receptors, and adverse changes to the landscape character of the area could be mitigated through a high-quality scheme design, screening and planting.

7.5 Water resources – hydrogeology and surface water

7.5.1 In terms of hydrogeology, and on the basis of the current information available, this site is considered to be suitable because the drop shaft is to be constructed in London Clay (non-aquifer), and no impact on the Chalk aquifer is expected. The Chalk piezometric head is likely to be approximately 1.9m above the base of construction and should be taken into account in the engineering design. The superficial deposits at the site comprise alluvium, classified as a minor aquifer, which is likely to be the subject of limited impacts on flow due to sheet piling.

7.5.2 In terms of surface water resources, this site is less suitable because work is to be undertaken in close proximity to Beverley Brook, which acts as a direct pathway to the Thames. As such, specific mitigation may be required to prevent pollution.
7.6 **Ecology**

7.6.1 Overall, and on the basis of the current information available, the site is considered to be less suitable as a CSO site due to potential adverse impacts on London BAP habitat ‘Parks, Squares and Amenity Grassland’, and the potential for the site to support reptiles, notable breeding birds, roosting bats and scarce/notable invertebrates. Subsequently, this site is likely to require extensive ecological surveys and provision of compensatory habitat (potentially involving offsite solutions) if it is selected.

7.6.2 Invasive Japanese knotweed is known to occur near mouth of Beverley Brook and may require treatment prior to construction.

7.7 **Flood risk**

7.7.1 This site is considered to be less suitable because although it is defended from flooding from the River Thames, the site is not currently defended from Beverley Brook and would require specific mitigation to alleviate flood risk.

7.8 **Air quality**

7.8.1 This site is considered to be suitable for use as a CSO site from an air quality perspective, as the potential for fugitive emissions of dust during construction to have a perceptible impact at residential receptors closest to the site is low, and any impacts could be minimised with standard dust control measures.

7.8.2 For all access options, there is potential for HGV movements on the local road network to cause localised air quality impacts; however, Site Access Option 1 is likely to have the least impact on sensitive receptors. It is likely that any impacts can be mitigated by minimising the movement of HGVs during peak hours. Data gaps exist, and collection of diffusion tube data at the point of access to the major road network is likely to be required.

7.9 **Noise**

7.9.1 Based on the information currently available, the site is considered to be suitable as a CSO site, given the relatively large separation distances between the site and the closest sensitive receptors. The number of vehicles associated with the construction phase and their access route has the potential to cause localised disturbance to properties. However, Site Access Option 1 is likely to have the least impact on local receptors. Vibration levels from shaft sinking are unlikely to give rise to human annoyance at nearby residential properties.

7.10 **Land quality**

7.10.1 The site is considered to be less suitable as a CSO site, based on the potential historical presence of tanks (use unknown) in the south-eastern corner of the site.
7.10.2 This has the potential to impact on site workers and adjacent human receptors through direct contact exposure pathways and, to a lesser extent, volatilisation.

8 Socio-economic and community assessment

8.1 Introduction
8.1.1 The socio-economic and community assessment builds on the advantages and disadvantages reported in Table 2.3 and covers the following areas:
- Socio-economic profile
- Socio-economic and community issues and impacts.

8.2 Socio-economic profile
8.2.1 The site is within the Barnes ward of the London Borough of Richmond. Statistics from the Office of National Statistics (ONS) 2001 Census show the following indicators for the ward, in comparison to the rest of the borough, London and England as a whole:
- Higher rate of full-time employees and self-employed people, which coincides with a lower proportion of unemployed people than in London or nationally
- Higher rate of employment in management, professional occupations and associated technical occupations
- Substantially higher proportion of people educated to Level 4/5 (degree level)
- In terms of social mix, 75 per cent of people in the ward were born in the UK and 86 per cent describe their ethnicity as white (including white British and other)
- The proportion of people aged 20-24 and 25-29 living in the ward is a few per cent lower than that of London and national averages. Conversely, the proportion of people aged 45-49 is a few per cent higher.

8.2.2 This data indicates that the site is located within a relatively affluent community with a high concentration of professionals.

8.3 Issues and impacts
8.3.1 There is likely to be an impact on users of Barn Elms Sports Ground, which may result in the temporary loss of a small area of open space.

8.3.2 The site is also in relatively close proximity to a number of community facilities, such as the Scout hut to the north and Sea Cadet centre to the east. There are a number of residential properties opposite the site to the south, with the closest located along Horne Way, although the proposed works may be partially screened by the vegetation lining Beverly Brook. Construction impacts from the use of the site may cause disturbance to local residents as well as users of the Scout hut, Sea Cadet centre and
gardens. The site visit identified the area as tranquil with few sources of noise, but it is in the flight path for Heathrow.

8.3.3 Proposed Access Route Option 1 (Rocks Lane) runs along Beverley Brook west of the site and then crosses the playing fields to enter the works area in the south-western corner. The brook and its associated vegetation should provide some level of screening for the residential properties southwest of the site from the access route. The greatest impact of the use of the proposed road access on the community is likely to be any temporary or permanent partial loss of the Beverley Brook footpath and the effect of the access route as it crosses the playing fields to reach the site. This would need to be hoarded with crossing points to allow safe passage to the southernmost sections of the playing fields and Putney Common. In addition, residents of properties on Rocks Lane are also likely to be impacted by increased traffic in this area. Use of this access route also would also require the temporary or permanent relocation of a changing facility and the temporary relocation of a bus stop, both of which could cause some inconvenience.

8.3.4 Proposed Access Route Option 2 (Queen Elizabeth Walk) divides a section of the playing fields into two, and also passes through a traffic calmed street prior to entering the site. Given the traffic volumes expected in the construction phase, this access route is likely to be significantly disruptive to local residents and could inhibit use of the playing fields as it would create a significant barrier which would need to be crossed to reach certain parts of the playing fields.

8.3.5 Proposed Access Route Option 3 (Mill Hill Road) runs along the edge of Putney Lower Common, passing in close proximity to two blocks of flats, a bowling green and an associated pavilion. A new bridge access would be created across the Beverley Brook to the proposed site on Barn Elms. Although this access is shorter than access Option 1 and does not involve the shared access of Option 2, it would bring construction vehicles in close proximity with the large number of residential properties at the western end of Home Way. The route would have to cross the Beverley Brook footpath, and a number of existing footpaths and rights of way also cross the common which appear likely to be affected and which could impact on the local community. Noise and dust from the access route may also affect bowling green users, as well as a cricket club, based in a building in its southwest corner. As with Option 1, this access route also needs to cross a section of the playing fields to enter the site, so would again require hoarding and crossing gates.

8.3.6 Impacts in the operational phase are likely to be minimal, as after-use structures would be restricted to a small area in the south-eastern edge of the playing fields.

9 Property assessment

9.1 Introduction

9.1.1 This report builds on the advantages and disadvantages in Table 2.3 and the assessment provides more up-to-date information.
9.1.2 The site under consideration forms part of the Barn Elms Schools Sports Centre. The centre is owned and managed by the London Borough of Wandsworth, although the site actually falls with the London Borough of Richmond upon Thames.

9.2 Crown land and special land comments

9.2.1 The land is open space and may be classified as special land under S.131 of the Planning Act 2008. If this is the case and if an acquisition cannot be agreed with the owner, special parliamentary procedure may be needed after the Secretary of State has decided that the order should be confirmed. As the whole order would be subject to the special parliamentary procedure, not just the acquisition of this site, the project could be delayed by a minimum period of several months in the best case. In the worst case, the order might be rejected by Parliament, which could delay the project for a much longer period and even result in the order failing, although this is considered unlikely.

9.2.2 If the site is considered to be special land, a special parliamentary procedure may not be required if exchange land is provided or the site is smaller than 200 square metres. Alternatively, where temporary works powers only are required, this would not amount to land acquisition and the issue would not arise.

9.2.3 Otherwise, the provision of exchange land should be included in the order, although it is likely to be difficult to identify an appropriate replacement.

9.2.4 It may also be possible to agree temporary acquisition of the site, in which case a special parliamentary procedure or replacement land would not be required. It is therefore advisable to continue discussions with freeholders to establish if acquisition can be agreed and, if so, on what terms.

9.2.5 Access Option 1 passes through open space, including a small changing room facility. Land registry information identifies part of this route as being in the ownership of the Wimbledon and Putney Commons Conservators of Manor Cottage, the London Borough of Richmond and the London Borough of Wandsworth. As the land is open space, it will be classified as special land under S.131 of the Planning Act 2008 and therefore subject to a special parliamentary procedure, as mentioned above.

9.2.6 Access Option 2 is contained within the open space land owned by the London Borough of Wandsworth and therefore potentially subject to S.131 special parliamentary procedure, as mentioned above.

9.2.7 Access Option 3 passes through open space. Land Registry information identifies this route as being in the ownership of the Wimbledon and Putney Commons Conservators of Manor Cottage and London Borough of Wandsworth. As the land is open space, it will be classified as special land under S.131 of the Planning Act 2008 and therefore potentially subject to a special parliamentary procedure, as mentioned above.

9.3 Land to be acquired

9.3.1 The compensation assessment assumes that the worksite and access to it would be acquired temporarily via the acquisition of new rights for the
period of the works stated in the engineering section above. At the end of the works, a smaller area would need to be acquired permanently to house the permanent infrastructure.

9.3.2 A temporary right of way would be acquired to allow access to the worksite and the three options have been assessed separately.

9.3.3 A permanent right of way to enable access to the operational land will also need to be acquired.

9.3.4 A smaller area located in the southeast area of the worksite would need to be acquired permanently for operational purposes.

9.4 Property valuation comments

9.4.1 Compensation for the acquisition of new rights is normally based on the diminution in value to the land caused by the acquisition. Compensation for the permanent acquisition of land is normally based on market value. However, compensation for the permanent acquisition of unusual types of property, where there is no general market, can be assessed on the basis of the cost of equivalent reinstatement at a new site, but there must be a genuine intention to reinstate.

9.4.2 If compensation is assessed on a diminution in value basis for the new rights (temporary occupation during works, access rights during works, access rights for operational purposes) and on a market value basis for the permanent acquisition, the costs are likely to be relatively low and therefore acceptable.

9.4.3 Although finding replacement land may be difficult, compensation for worksite and access options has been assessed on an equivalent reinstatement basis in order to be prudent and to take account of the possible need to provide replacement land. Compensation assessed on an equivalent reinstatement basis is significantly higher, but acceptable.

9.4.4 An allowance has also been included for the cost of the potential need to realign affected pitches.

9.4.5 Access Option 1 includes a small changing room facility. The cost of replacing the building within Barn Elms has been included in the cost estimate for the route one option.

9.4.6 If it is necessary to fence off the access road, it will be important to provide crossing points to avoid severing part of the remaining playing fields from the rest of the playing fields. If the acquisition results in the sterilisation of additional playing fields, the acquisition costs could increase significantly.

9.4.7 The temporary working area will be restored to its original condition on completion of the construction works as part of the engineering work. Therefore, the reinstatement cost is not included in the acquisition cost estimate.

9.4.8 No allowance has been made for costs in relation to the impacts of access Option 2 on the tennis club operations. There is a risk that costs for access Option 2 could increase if this route prejudices the club.
9.5 **Disturbance compensation comments**

9.5.1 Use of this site is unlikely to give cause to any significant disturbance compensation claims, as the majority of the sports centre is unlikely to be affected.

9.5.2 The site is used as a sports ground and the council may therefore claim the cost of temporary relocation to the replacement sports ground, in relation to the part of the playing fields acquired. This cost is likely to be acceptable.

9.5.3 There has been no allowance made for disturbance cost in relation to the impacts of Access Route 2 on the tennis club operations. There is a risk that disturbance costs for access Option 2 could increase if this route prejudices the club.

9.6 **Discretionary purchase costs comments**

9.6.1 The worksite will be located to the north of existing residential property. Given there is little noise attenuation between the worksite and the residential property, there will be potential for discretionary purchase costs.

9.6.2 However, works on the site will be limited to 12-hour working, Monday to Saturday, and therefore it is unlikely that these costs will be significant.

9.7 **Offsite statutory compensation comments**

9.7.1 There should be limited potential for offsite statutory compensation under S.10 of the *Compulsory Purchase Act 1965*, as there is unlikely to be any physical interference with public or private property rights.

9.7.2 There should also be limited potential for claims under the *Land Compensation Act 1973* Part 1, as the completed works are unlikely to result in diminution in value to property.

9.8 **Site acquisition cost assessment**

9.8.1 Site acquisition cost, calculated on an equivalent reinstatement basis, is assessed as acceptable for all three access options.

9.8.2 Access Option 1 results in higher acquisition cost than options 2 or 3 as a result of relocating the changing room facility and impact on pitches.

10 **Site conclusions by discipline**

10.1 **Introduction**

10.1.1 The conclusions presented in this section are drawn from each discipline’s assessment, and are designed to inform the workshop where a final conclusion on whether the site moves forward as one of the preferred sites or not.
10.2 Engineering

10.2.1 This site is suitable as a CSO site with road access via access Option 1 – off Rocks Lane because it would be large and level, with the drop shaft close to the storm relief sewer to be intercepted.

10.3 Planning

10.3.1 On balance, the site is considered suitable for use as a CSO site with road access via access Option 1 (Rocks Lane).

10.3.2 A series of planning and environmental designations are applicable to the site. However, with appropriate mitigation measures, it should be possible to avoid unacceptable conflict with these designations and associated planning policy. Use of the site would result in temporary loss of an area of sports fields and MOL. Due to the extensive nature of the recreational sports grounds and the proportional temporary loss of open space proposed by the CSO site, it is not considered that the potential impact would be so detrimental that it would prohibit the use of the site with appropriate mitigation measures.

10.3.3 Mitigation would be required as described in Section 10.4 below to avoid conflict with planning policy.

10.4 Environment

10.4.1 Overall, the site is considered suitable as a CSO site with road access via Option 1 – Rocks Lane, although mitigation would be required.

10.4.2 Based on current information, the site is considered suitable from the perspective of transport, hydrogeology, air quality, noise, built heritage and townscape.

10.4.3 This site is considered less suitable from the perspective of archaeology, surface water, ecology, flood risk and land quality.

10.4.4 Overall, the site is considered less suitable and further investigation would be required as to whether archaeology, surface water, ecology, flood risk and land quality impacts could all be adequately mitigated. Likely mitigation considerations would include:

- Flood risk – further investigation into the potential flood risk from Beverley Brook and necessary mitigation to alleviate flood risk
- Surface water – specific mitigation may be required to prevent pollution to Beverley Brook
- Ecology – ecological surveys and potentially some provision of compensatory habitat, given the potential for adverse impacts on London BAP habitat ‘Parks, Squares and Amenity Grassland’
- Archaeology – further investigations to accurately assess the potential for high-value archaeological remains, given the recordings of remains in the vicinity
• Land quality – any required remediation of contamination (at this medium risk site) and/or measures to ensure no mobilisation of contaminants are retained in situ.

10.5 **Socio-economic and community**

10.5.1 The site is *suitable* for use as a CSO site from a community impacts perspective. Proposed Access Route Option 1 – off Rocks Lane is preferred because it appears likely to have the least potential impact on the local community.

10.5.2 There is likely to be a temporary loss of open space on the site and some impact on users/local residents. As the site is a very small part of a much larger area of open space, the effects of this loss may be reduced.

10.6 **Property**

10.6.1 The advantages of the site are as follows.

• The acquisition costs assessed on an equivalent reinstatement basis are likely to be high but acceptable for all three access options.

10.6.2 The disadvantages of the site are as follows.

• Acquisition using compulsory purchase powers may require provision of replacement land or a special parliamentary procedure.

10.6.3 The advantages and disadvantages of all three access options are the same except for the following comments:

• Access Option 1 results in higher, although acceptable, acquisition cost as a result of relocating the changing room facility and impact on pitches

• Access Option 2 contains the access within one freehold ownership, therefore reducing acquisition procedural difficulties

• Access Option 3 passes an increased number of residential properties and therefore there is an increased risk of discretionary purchases, although many of the properties may not qualify for discretionary purchase, so this is likely to be limited.

10.6.4 This site is classified *suitable* for use as a CSO site for all access options.

10.6.5 Access routes 2 and 3 are equally preferred due to slightly reduced acquisition cost, although the difference between all three options is not that significant.
Appendices
Appendix 1 – Sources of information

Engineering

- Traffic Management and Access Roads/Rail – URS Scott Wilson
- Access River – BMT Isis
- Services (Utilities) and Third Party Assets – Thames Tunnel and utility companies
- Geology – British Geological Society and Thames Tunnel
- Construction and Operational Layout Template – Thames Tunnel
- Site selection background technical paper – Thames Tunnel

Planning

- London Borough of Richmond upon Thames online planning applications database

Environment

Transport

- Map of Transport for London Road Network (TLRN) – www.tfl.gov.uk
- Bus Route Maps: North-east, north-west, south-west, south-east – www.tfl.gov.uk
- Crossrail Plans – www.crossrail.co.uk/crossrail-bill-documents
- PTAL scores – Obtained from Table 2.3 information
- Thames Path map – www.walklondon.org.uk
- Capital Ring – www.walklondon.org.uk
- Cycle Routes – www.sustrans.org.uk and Local Cycling Guides 1-14
- Design Manual for Roads and Bridge TD 42/95, Highways Agency
Archaeology

- Historic Environment data from Greater London Archaeology Advisory Service (GLAAS)
- National Monuments Record – for some additional information regarding registered historic parks and gardens
- London Archaeological Archive and Research Centre (LAARC)
- Local authority websites
- Bing maps

Built heritage and townscape

- Local authority lists of Locally Listed Buildings
- National Monuments Record – for some additional information regarding registered historic parks and gardens
- Unitary development plan and DPDs
- Local authority websites
- Bing maps

Water resources – hydrogeology and surface water

- Local authority details of unlicensed abstractors
- Environment Agency abstraction licence details
- Environment Agency groundwater levels and contour maps (2009-11)
- Environment Agency water quality (surface water and groundwater)
- Environment Agency Groundwater Source Protection Zones
- Envirocheck
- British Geological Survey (BGS) logs
- BGS 1:50,000 Geological Sheets – Solid and Drift Editions (England and Wales)
- BGS Geology of London – Special Memoir for 1:50,000 Geological sheets 256 (North London), 257 (Romford), 270 (South London) and 271 (Dartford) (England and Wales)
- Crossrail (2005) – Assessment of Water Impacts Technical Report: Appendix C – Baseline Data. Figure C.4: Extent of Saline Intrusion based on 177 mg/l *(5mmol/l) Isochlor

Ecology

• Multi-Agency Geographic Information for the Countryside (MAGIC) – www.magic.gov.uk - statutory designated sites
• London Wildweb – wildweb.london.gov.uk - non-statutory site of importance for nature conservation
• National Biodiversity Network – http://searchnbn.net - distribution of protected species
• Google Maps – aerial views of habitat features
• BAP habitats – www.natureonthemap.org.uk
• Priority habitats and species on national and local scales – www.ukbap.org.uk

**Flood risk**
• Environment Agency Flood Map – www.environment-agency.gov.uk
• Environment Agency National Flood and Coastal Defence Database
• Envirocheck

**Air quality**
• Local authority websites
• London Air Quality Network – www.londonair.org.uk
• Defra UK-AIR, air quality information resource – www.airquality.co.uk
• Defra Air Quality Management Areas – http://aqma.defra.gov.uk
• Defra Local Air Quality Management – http://laqm.defra.gov.uk

**Noise**
• Envirocheck – Identification of receptors
• Promap – Calculation of distances between site and receptors
• Multimap – Aerial photography – www.multimap.co.uk
• Defra noise maps – Identification of existing noise levels

**Land quality**
• Google Maps/Earth
• Site walkover information
• Envirocheck Data Sheets provided as a GIS Database
• British Geological Survey (BGS) logs

**Socio-economic and community**
• Statistics from the Office of National Statistics 2001 Census data
• Wandsworth, Chelsea & Fulham Sea Cadets: http://units.ms-sc.org/%20Chelsea%20Fulham/Default
• Save Barn Elms: www.savebarnelms.mfbiz.com

Property
• Promap, Ordnance Survey and A-Z mapping
• Multimap/Google Earth aerial/satellite photographs
• Mouchel referencing
Appendix 2 – Site location plan
This is an indicative working draft plan which has been produced for the purpose of confidential discussions only. Accordingly, the draft plan must not be copied, distributed or shown to any third party without the express written permission of Thames Water Utilities Limited. It provides an indication of sites that, following discussions with local authorities and other stakeholders, may be confirmed as being on the shortlist of construction sites for the proposed Thames Tunnel. Inclusion of a site on this draft plan should not be taken to mean that such site will be selected as a construction site to form part of the Thames Tunnel scheme.
Appendix 3 – Planning and environment plans
This is an indicative working draft plan which has been produced for the purpose of confidential discussions only. Accordingly, the draft plan must not be copied, distributed or shown to any third party without the express written permission of Thames Water Utilities Limited. It provides an indication of sites that, following discussions with local authorities, stakeholders and other stakeholders, may be confirmed as being on the shortlist for the construction of the Thames Tunnel. Inclusion of a site on this draft plan should not be taken to mean that such site will be selected as a construction site to form part of the Thames Tunnel scheme.

Legend
- Protected/Strategic Views
- Thames Policy Area
- Thames Water Utilities
- Putney Embankment Policy Area
- Site Allocations Document Area
- River Walks

Map Ref: 1PL04-SS-02086
Date: 2011/06/29
Projection: British National Grid

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This is an indicative working draft plan which has been produced for the purpose of confidential discussions only. Accordingly, the draft plan must not be copied, distributed or shown to any third party without the express written permission of Thames Water Utilities Limited. It provides an indication of sites that, following discussions with local authorities and other stakeholders, may be confirmed as being on the shortlist of construction sites for the proposed Thames Tunnel. Inclusion of a site on this draft plan should not be taken to mean that such site will be selected as a construction site to form part of the Thames Tunnel scheme.
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Appendix 4 – Photographs of the site and surroundings
This is an indicative working draft plan which has been produced for the purpose of confidential discussions only. Accordingly, the draft plan must not be copied, distributed or shown to any third party without the express written permission of Thames Water Utilities Limited. It provides an indication of sites that, following discussions with local authorities and other stakeholders, may be confirmed as being on the shortlist of construction sites for the proposed Thames Tunnel. Inclusion of a site on this draft plan should not be taken to mean that such site will be selected as a construction site to form part of the Thames Tunnel scheme.
View from the western boundary of Barn Elms Playing Fields looking back towards the site.

Existing site access to Barn Elms Sports Centre and Boathouse (Access Option 2).
Existing emergency access to Barn Elms playing field from Rocks Lane (Access Option 1).

Photograph of existing Barn Elms changing facility looking east, close to the emergency site access off Rocks Lane.
View from eastern end of the site looking west along the boundary of Barn Elms playing fields.
Appendix 5 – Transport plan
This is an indicative working draft plan which has been produced for the purpose of confidential discussions only. Accordingly, the draft plan must not be copied, distributed or shown to any third party without the express written permission of Thames Water Utilities Limited. It provides an indication of sites that, following discussions with local authorities and other stakeholders, may be confirmed as being on the shortlist of construction sites for the proposed Thames Tunnel. Inclusion of a site on this draft plan should not be taken to mean that such site will be selected as a construction site to form part of the Thames Tunnel scheme.
Appendix 6 – Services and geology plan
Appendix 7 – Construction phase layout
Appendix 8 – Operational phase layout
Barn Elms Schools Sports Centre

This drawing shows fully encompassing shaft/Top structure. Reduction in area can be considered.

1. HARDSTANDING SHOWN FULLY ENCOMPASSING SHAFT / TOP STRUCTURE. REDUCTION IN AREA CAN BE CONSIDERED.

2. NOTES

- THERE ARE NO INVERTEBRATE WORKING LEAF TIP WHICH HAVE BEEN IDENTIFIED FOR THE PURPOSE OF CONSTRUCTION OR RESIDENCES.
- ACCORDINGLY, THE MAP LS NOT PART OF A CONSTRUCTION SITE. EXCEPT POSSIBLY FOR THE LOCAL AUTHORITIES FOR THE PURPOSE OF CONFIRMATION OF CONSTRUCTION OR RESIDENCES.
- IT PROVIDES A DRAFT PLAN OF THE SITE THAT SHOULD NOT BE TAKEN TO MEAN THAT SUCH SITE WILL BE INCLUDED FOR THE PURPOSE OF CONFIRMATION OF CONSTRUCTION OR RESIDENCES. THE PROPOSED BOUNDARIES ON THE MAP LS NOT DETAILED TO BE SELECTED AS A CONSTRUCTION SITE TO FORM PART OF THE THAMES TUNNEL.

NOTES:

- THIS IS AN INDICATIVE WORKING DRAFT PLAN WHICH HAS BEEN DISTRIBUTED OR SHOWN TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN PERMISSION OF THAMES WATER UTILITIES LTD, ALL RIGHTS RESERVED ORDNANCE SURVEY LICENCE NUMBER 100019345.

DO NOT SCALE. IF IN DOUBT ASK.
The Point, 7th Floor, 37 North Wharf Road, Paddington, London W2 1AF

VENTILATION COLUMN (CSO)

ELECTRICAL CONTROL KIOSK (CSO)

Dimensions and technical specifications are depicted in the diagrams.

NOTE:
1. Structure to be protected by removable handrails in the temporary case.
2. Position of covers are variable within 10m from the edge of the structure, and the location is based on site-specific requirements.
3. Cladding of ventilation building to suit location and aesthetics.
4. All top structures to have:
   - Access stairs/ladder
   - Temporary or permanent hand railing

All dimensions in millimetres unless otherwise stated.
### Appendix 9 – Environmental appraisal tables

<table>
<thead>
<tr>
<th>Transport</th>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to road network</td>
<td>Site would access onto Rocks Lane from existing access for sports fields. Access road will run along the southern perimeter of the sports fields for Barn Elms Schools Sports Centre. The proposed access point is within close proximity to a bus stop which is likely to need relocating. On-street parking is also provided opposite the access which will need to be removed to facilitate access. Rocks Lane is subject to a 30mph speed limit and is street lit. It has an approximate carriageway width of 8.1-8.7m which is reduced to an effective carriageway width of 6.2-6.4m due to on-street parking. Achievable visibility out of the site access along Rocks Lane is 90m to the north and south. Access to the A205 (TLRN strategic highway network) can be achieved along Rocks Lane towards the south. Access to the A205 (TLRN strategic highway network) has no visible restrictions over railway bridge on Rocks Lane. Distance to TLRN 1km from site. See transport access plan in Appendix 5.</td>
<td>Access road will require construction along southern perimeter of sports fields for approximately 500m. Conclusion: Road access possible but will require construction of a new access road of approximately 500m in length along the southern perimeter of the sports fields to the emerging access point on Rocks Lane. Access route to the TLRN (A205) is along Rocks Lane, with no significant visible constraints. On-street parking opposite the proposed site access will need to be removed so construction vehicles are not obstructed when accessing the site and the bus stop relocated.</td>
<td></td>
</tr>
<tr>
<td>Access to river</td>
<td>River access is not required for CSO site.</td>
<td>River access not required as excavated material will be transported away by road.</td>
<td></td>
</tr>
<tr>
<td>Site considerations</td>
<td>Comments</td>
<td>Mitigation required and conclusions</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------</td>
<td>-------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Access to rail</td>
<td>Access to rail unlikely to be feasible due to small volumes of excavated material produced by the site. Access to railway sidings at Clapham Junction uses the same route to the TLRN (A205); proceeding eastwards along the A205 then onto Putney High Street and Putney Bridge Road. Putney Bridge Road avoids the two 15'0&quot; height restricted rail bridges on the A205. The route continues along the A3, A217, onto York Road and along Plough Road. On return, the A3 is used towards the roundabout with the A219 to avoid the 15'0&quot; bridge on Upper Richmond Road. The route runs through a high street area, and over and under several bridges (with no visible restrictions). Access to rail taken off York Way (A3205) onto Plough Road for Clapham Junction, Traincare Depot railway sidings. Distance 7.1km to rail access point from CSO site.</td>
<td>Route to possible rail link at Clapham Junction runs through a high street area along York Road and under/over several bridges (with no visible restrictions). Clapham Junction railway sidings at the Traincare Depot accessible using Plough Road.</td>
<td></td>
</tr>
<tr>
<td>Parking</td>
<td>Parking for workforce could potentially be provided on site within sports fields. On-street parking is available within vicinity of site on Embankment but is restricted to permit holders only Mon-Fri 08:00-18:30.</td>
<td>Workforce parking could potentially be made available on site. Alternative parking on street inadequate as for permit holders only Mon-Fri 08:00-18:30. Some on-street parking bays for permit holders along Rocks Lane will be displaced opposite site access. Additional parking available along Rocks Lane for permit holders.</td>
<td></td>
</tr>
</tbody>
</table>
### Transport

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public transport accessibility</td>
<td>PTAL 1-2, as identified within Table 2.3.</td>
<td>PTAL least suitable. Public transport access issues for workforce. Workforce transport could be provided.</td>
</tr>
<tr>
<td>Traffic management</td>
<td>Removal of on-street parking bays opposite site access.</td>
<td>Removal of parking bays opposite site access and relocation of the bus stop within vicinity of site access will be required. Construction of site access road through Barn Elms Sports Centre.</td>
</tr>
<tr>
<td></td>
<td>Removal of bus stop within vicinity of site access.</td>
<td>Construction of site access road through Barn Elms Sports Centre.</td>
</tr>
<tr>
<td></td>
<td>Construction of site access road through Barn Elms Sports Centre.</td>
<td></td>
</tr>
</tbody>
</table>

**Summary:** This site is considered to be suitable as a CSO main tunnel site in highway terms.

The current proposal would make use of existing emergency access on Rocks Lane, and would require the construction of an access road along the southern perimeter of the sports fields. Temporary traffic management is likely to be required in the form of removal of on-street parking opposite site access, as well as the bus stop nearby. Potential road and rail access routes are likely to be suitable for HGVs with no major constraints identified at this stage. However, rail transport is unlikely to be feasible due to the small volumes of excavated material produced by a CSO site.

The site is less suitable for public transport access and either workforce transport or parking for vehicles within site boundary, depending on acceptability, would therefore need to be provided.
<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designations, including archaeological priority areas</td>
<td>The site is situated within the Richmond Archaeological Priority Area.</td>
<td>A detailed desk-based assessment is required to sufficiently understand the archaeological resource and define risk to potential development.</td>
</tr>
<tr>
<td>Summary of historical uses</td>
<td>Map evidence indicates no built development within the site, which is currently a park. References to a golf course in some historic maps may indicate that some landscaping has taken place.</td>
<td>A detailed desk-based assessment is required to sufficiently understand the archaeological resource and define risk to potential development.</td>
</tr>
<tr>
<td>Potential receptors of very high or high value with the potential to be directly affected</td>
<td>Archaeological investigations during pipe trenching have uncovered evidence of Iron Age settlement activity within or adjacent to the eastern end of the site. These receptors may be considered to be of high value. Further unrecorded archaeological receptors of high value may also be present within the site.</td>
<td>A detailed desk-based assessment is required to sufficiently understand the archaeological resource and define risk to potential development.</td>
</tr>
<tr>
<td>Potential receptors of medium value with the potential to be directly affected</td>
<td>Bronze Age and Iron Age material is recorded immediately to the east of the site. Similar material may be present within the site itself. Further unrecorded receptors of medium value may be present within the site.</td>
<td>A detailed desk-based assessment is required to sufficiently understand the archaeological resource and define risk to potential development.</td>
</tr>
<tr>
<td>Other receptors with the potential to be directly affected</td>
<td>Dewatering of potential waterlogged deposits may be an issue considering the close proximity of the site to the Thames.</td>
<td>A detailed desk-based assessment is required to sufficiently understand the archaeological resource and define risk to potential development.</td>
</tr>
<tr>
<td>Extent of existing disturbance</td>
<td>There is no evidence for any disturbance.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
### Archaeology

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
</table>
| Potential issues    | Detailed design proposals and an outline method statement will be required to enable initial assessment of development impacts, and to inform mitigation proposals. The proposed development site is located in an area containing known archaeological receptors of possible high value. Both the proposed development and the access road have the potential to adversely impact archaeological receptors. A programme of archaeological mitigation (in the form of excavation) is likely to be necessary prior to development in this location. | Mitigation methods could include:  
• Desk-based assessment  
• Production of deposit model  
• Archaeological monitoring of geotechnical investigations  
• Archaeological evaluation  
• Archaeological watching brief  
• Archaeological excavation. |

**Summary:** On the basis of the current information available, the site is considered less suitable as a CSO site as the site is located in an area containing known archaeological receptors of potential high value, in this case an Iron Age settlement. Further archaeological deposits of high value are likely to be present within the proposed development footprint. Both the proposed development and the access road have the potential to adversely impact archaeological receptors. Peat deposits containing archaeological material have been commonly recorded throughout London in a similar proximity to the Thames. While no direct evidence has been revealed, given the location of the site and wider evidence for historical occupation along the river, it is a reasonable assumption to suggest that waterlogged remains and peat deposits of high or medium value may be present.
## Built heritage and townscape

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Listed buildings</strong></td>
<td>There are no statutorily listed buildings within 250m of C05XQ.</td>
<td>In the case of conservation areas and protected views, a high-quality scheme design and adequate screening for the development may be required, as discussed below. A detailed desk-based assessment in conjunction with archaeology work will be required to further determine the likely impact of the development and to inform more detailed mitigation proposals. On the basis of currently available information (June 2009) and on the basis of certain receptors not being present within 250m of C05XQ, mitigation will not be applicable in the case of listed buildings, locally listed buildings, registered historic parks and gardens and locally listed parks and gardens.</td>
</tr>
<tr>
<td><strong>Locally listed buildings</strong></td>
<td>Although a local list is maintained by the borough of Hammersmith and Fulham, this information is not currently available. However, there are no locally listed buildings within 250m of C05XQ located within the boroughs of Richmond-upon-Thames or Wandsworth.</td>
<td></td>
</tr>
<tr>
<td><strong>Conservation areas</strong></td>
<td>Bishops Park Conservation Area: 200m Fulham Reach Conservation Area: 245m Putney Embankment Conservation Area: 70m Putney Common Conservation Area: 150m</td>
<td></td>
</tr>
<tr>
<td><strong>Registered historic parks and gardens</strong></td>
<td>There are no registered historic parks and gardens within 250m of C05XQ.</td>
<td></td>
</tr>
<tr>
<td><strong>Locally listed parks and gardens</strong></td>
<td>There are no locally listed parks and gardens within 250m of D05XQ.</td>
<td></td>
</tr>
<tr>
<td><strong>Viewing corridor</strong></td>
<td>King Henry VIII’s Mound, Richmond Park, to St Pauls: 130m</td>
<td></td>
</tr>
</tbody>
</table>
## Built heritage and townscape

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local information on protected views is not currently available for the boroughs of Hammersmith and Fulham and Wandsworth.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential receptors of medium to very high importance with the potential to be directly affected</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Other receptors of lesser importance with the potential to be directly affected</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Potential receptors of medium to very high importance with the potential to be indirectly affected</td>
<td>There is the potential for four conservation areas and one protected view to be indirectly affected.</td>
<td>Of the four conservation areas, all are located over 70m from D05XQ and none are likely to share a visual relationship with the site as a result of the presence of existing mature vegetation or existing buildings. Consequently, it is unlikely that the development will affect the character or appearance of the designated areas and therefore it is unlikely that any mitigation will be required. The protected view from King Henry VIII’s Mound, Richmond Park, to St Paul’s lies 130m from the site and the vista and its setting is unlikely to be altered by the development. Mitigation will therefore not be applicable in relation to this built heritage receptor.</td>
</tr>
</tbody>
</table>
## Built heritage and townscape

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other receptors of lesser importance with the potential to be <strong>indirectly</strong> affected</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Sensitive landscape character areas likely to be affected, including trees and TPOs</td>
<td>Site is located within Thames Policy Area. Sensitive site on part of Barn Elms Schools Sports Centre. Barnes Common to the west, Leaders Garden, playground and tennis courts to the southeast, a Scouts hall to the northeast and the River Thames further east, Barnes Elm Waterworks (now the London Wildfowl and Wetland Centre) to the north and residential properties along Horne Way, Putney leisure open space, and Beverly Brook to the south. The site is contained to the east and south by dense, mature trees. The removal of mature vegetation along the southern and eastern boundary of the site would increase openness and reduce isolation. The presence and operation of machinery, materials stores and buildings would potentially result in temporary, adverse direct impacts on the character of the Schools Sports Centre and temporary, adverse indirect impacts on neighbouring areas.</td>
<td>Retention of trees where possible and protection in accordance with BS 5837. Introduction of landscape scheme to include appropriate surface treatments and planting to tie in with adjacent open space and mature vegetation along southern boundary of site. Removal of mature vegetation and the presence and operation of machinery, materials stores and buildings on site would potentially severely impact character of site.</td>
</tr>
</tbody>
</table>
## Built heritage and townscape

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential views likely to be affected</td>
<td>Open views from the Sports Centre to the northeast. Partially interrupted, seasonal views of the site from surrounding properties along Horne Way, Putney leisure open space, and Beverly Brook. Visual amenity of surrounding properties is likely to be adversely impacted upon by cranes on site.</td>
<td>During construction, use of hoardings and appropriate lighting. Design of finished appearance of electrical kiosk and ventilation column to be given careful consideration. Existing trees play large part in screening, therefore, trees should be retained. Planting to screen permanent plant. Removal of mature vegetation on site would be visually significant, therefore, appropriate design would be important to protect visual amenity.</td>
</tr>
<tr>
<td>Particular considerations on sites where new permanent structures are required</td>
<td>There are no particular considerations concerning permanent structures in relation to built heritage as the potential indirect impact to any built heritage receptors is so low. The direct impact of the permanent structures upon the landscape character of the open space in which it would be located will need to be carefully considered.</td>
<td>Design of finished appearance of electrical kiosk and ventilation column to be given careful consideration. Planting to screen permanent plant.</td>
</tr>
<tr>
<td>Potential issues</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

**Summary:** This site is considered to be suitable as a CSO site in relation to built heritage and landscape, as it is unlikely to result in direct or indirect impacts on any built heritage receptors, and adverse changes to the landscape character of the area could be mitigated against through a high-quality scheme design, screening and planting.
## Water resources – hydrogeology and surface water

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
</table>
| Hydrological conditions (groundwater and surface water) | **Geology (thickness)**  
- Superficial geology and made ground (5m)  
- London Clay (47m)  
- Lambeth Group (17m)  
- Thanet Sand (9m) | The drop shaft will be constructed to an invert level of approximately 30.93mbgl, therefore the shaft will be founded in the London Clay. Piezometric head(1) in the Chalk is approximately 1.93m above the base of the construction. Therefore, pressure effects would be expected during construction and is to be considered as part of geotechnical design. |
|                      | **Hydrogeology**  
- Piezometric level in Chalk aquifer: ~-25mAOD (~29mbgl) from EA Jan 08 water level contouring | |
|                      | **Groundwater monitoring location**  
- EA hydrometry sites:  
  TQ27-336 – approximately 2.35km south of the site (water levels to Dec 1994)  
  TQ27-159 – approximately 2.66km southeast of the site (water levels to March 2009) | |
|                      | **Watercourses**  
- Adjacent to Beverley Brook (5-10m) | |
| Source protection zones (SPZ) and groundwater users | **SPZ**  
- Not located in a source protection zone defined by EA | A simple volumetric approach has been used to calculate the 400 days travel times of the abstraction borehole. A conservative mean annual recharge of 100mm/year was used to calculate a radius for licensed abstraction boreholes as follows:  
1. 72m  
2. 109m |
|                      | **EA licensed groundwater abstractions and details**  
- No public water supply  
- Three licensed abstraction boreholes within 2km radius. | As a result, the drop shaft |
## Water resources – hydrogeology and surface water

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations:</td>
<td></td>
<td>will not be located within either of these catchment areas.</td>
</tr>
<tr>
<td>1. 375m northeast of the site (other side of the River Thames) 1. 1.45km southwest of the site (other side of the River Thames)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Fulham Football Club Ltd 2. Trustees of the Hurlingham Club</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstracted aquifer unit:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Chalk 2. Gravel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstraction purposes:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Industrial, commercial and public service (sports grounds/facilities – spray irrigation) 2. Industrial, commercial and public service (sports grounds/facilities – spray irrigation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstraction quantity (annual):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. 6,500m$^3$ 2. 15,000m$^3$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Local authorities (LA) unlicensed groundwater abstractions and details

- No abstraction borehole within 1 km radius inside Hammersmith and Fulham council
- No abstraction borehole within 1 km radius inside Richmond Upon Thames council boundary
- No abstraction borehole within 1 km radius inside Wandsworth council boundary
## Water resources – hydrogeology and surface water

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borehole locations and depths</td>
<td>There are eight historical records of water wells: Five deep wells and three shallow wells within 1km radius. Depth range: 96.3m – 152.4m. Depth range: 14.6m – 14.8m.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Potential impacts on surface water features</td>
<td>The site is located in close proximity to the Beverley Brook and there is potentially a direct pathway for pollution to the Beverley Brook. The Beverley Brook acts as a pathway to the Thames.</td>
<td>Work needs to be undertaken in consideration of Pollution Prevention Guidelines – PPG1, PPG5 and PPS23.</td>
</tr>
<tr>
<td>Potential impacts on groundwater (resources and quality)</td>
<td>No impact on groundwater at depth is likely since the drop shaft is to be constructed in London Clay (non-aquifer). At shallow depth, the drop shaft is located in alluvium, which is classified as a minor aquifer. Impact on shallow aquifer is likely to be limited where water is excluded from the excavation by sheet piling.</td>
<td>See below (likely types of mitigation measures that will be required)</td>
</tr>
<tr>
<td>Likely types of mitigation measures that will be required</td>
<td>No mitigation is likely to be required as groundwater is unlikely to be impacted.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Potential issues</td>
<td>Potential upward pressure is expected during construction. Limited impact on flow in shallow aquifer due to sheet piling.</td>
<td>Pressure to be considered as part of geotechnical design.</td>
</tr>
</tbody>
</table>

**Summary:** In terms of hydrogeology, and on the basis of the current information available, this site is considered to be suitable because the drop shaft is to be constructed in London Clay (non-aquifer), and no impact on the Chalk aquifer is expected. The Chalk piezometric head is likely to be approximately 1.9m above the base of construction and should be taken into account in the engineering design. The superficial deposits at site comprise alluvium, classified as a minor aquifer, which is likely to be the subject of limited impacts on flow due to sheet piling.

In terms of surface water resources, this site is less suitable because work is to be undertaken in close proximity to the Beverley Brook, which acts as a direct pathway to the Thames. As such, specific mitigation may be required to prevent pollution.
## Ecology (terrestrial and aquatic)

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statutory designations</strong></td>
<td>Leg of Mutton Reservoir and Barnes Common LNRs are within 2km. Barn Elms Wetland Centre SSSI is within 2km.</td>
<td>None required</td>
</tr>
<tr>
<td><strong>Non-statutory designated wildlife sites</strong></td>
<td>Site is adjacent to Beverley Brook from Richmond Park to the River Thames borough Grade II site and Beverley Brook in Wandsworth Borough Grade I site.</td>
<td>Any constructions impinging on Beverley Brook will require compensatory habitat provision. Avoidance of water pollution in the brook will be important.</td>
</tr>
<tr>
<td><strong>BAP priority habitats</strong></td>
<td>London BAP habitat ‘Parks, Squares and Amenity Grassland’ lies within this area. The brook forms part of the London BAP habitat ‘Rivers and Streams’. Reedbeds, a London BAP priority habitat, are noted to have been planted along Beverley Brook nearby. The site access runs alongside an SNCI to the west of the site (Barn Elms Sports Ground Extend).</td>
<td>Loss of amenity grassland and parkland habitat may require compensatory provision. No land-take from the river or foreshore, or Beverley Brook, is anticipated. Care will need to be taken to avoid discharge or runoff into the river or Beverley Brook.</td>
</tr>
<tr>
<td><strong>Protected or otherwise notable species within the study area</strong></td>
<td>Site has potential to support reptiles, notable breeding birds, roosting bats and scarce/notable invertebrates. Site is known to be used by wintering waterfowl and survey will therefore be required. The brook could have potential for water vole. No direct impacts on aquatic receptors, although Beverley Brook is likely to provide spawning habitat for fish.</td>
<td>Mitigation will be possible but may require offsite provision. If bat roosts were found to be present, mitigation would be required for any buildings to be affected by works, possibly including offsite provision. Careful placement of lighting to minimise illumination of surrounding habitat is likely to be required. Controls may need to be placed on piling operations close to the riverbank. Negotiation with EA required.</td>
</tr>
<tr>
<td>Site considerations</td>
<td>Comments</td>
<td>Mitigation required and conclusions</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Potential issues</td>
<td>Course of Beverley Brook known to support stands of Japanese knotweed</td>
<td>Presence of invasive species within 10m of construction site will be noted during any initial site survey. However, eradication could lead to delays in construction programme.</td>
</tr>
</tbody>
</table>

**Summary:** Overall, and on the basis of the current information available, the site is considered to be less suitable as a CSO site, due to potential adverse impacts on London BAP habitat ‘Parks, Squares and Amenity Grassland’, and the potential for the site to support reptiles, notable breeding birds, roosting bats and scarce/notable invertebrates. Subsequently, this site is likely to require extensive ecological surveys and provision of compensatory habitat (potentially involving offsite solutions) if it is selected.

Invasive Japanese knotweed known to occur near mouth of Beverley Brook and may require treatment prior to construction.
## Flood risk assessment

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood risk zone</td>
<td>Flood Zone 3 – 1 in 200-year flood extent but defended to the 1 in 1,000-year flood level – there is a residual risk of a breach for which mitigation would need to be considered as part of the FRA. The site is undefended from flooding from the Beverley Brook and is located within Flood Zone 3 with a risk of flooding of up to 1 in 100-year flood event.</td>
<td>An FRA would be required to assess the risk of flooding to the site.</td>
</tr>
<tr>
<td>Assessment of conditions for SUDS</td>
<td>There is likely to be space for SUDS within the site boundary. However, the site may not be suitable for infiltration SUDS due to the underlying geology and, as such, an investigation would be required into the feasibility of the infiltration and the requirement for surface water attenuation.</td>
<td></td>
</tr>
<tr>
<td>Potential issues</td>
<td>The site is defended from flooding from the Thames; however, the site is not defended from the Beverley Brook and this would need to be investigated.</td>
<td>FRA</td>
</tr>
</tbody>
</table>

**Summary:** This site is considered to be less suitable because although it is defended from flooding from the River Thames, the site is not currently defended from the Beverley Brook and would require specific mitigation to alleviate flood risk.
### Air quality

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing air quality</td>
<td>The air quality objective for NO$_2$ is exceeded on major roads in vicinity of site. There is a diffusion tube located at the approximate point the site traffic accesses the A205.</td>
<td>There is a nearby diffusion tube for this site, however it cannot be guaranteed the LA will maintain the monitoring point.</td>
</tr>
<tr>
<td>Sensitive receptors</td>
<td>There are residential properties along the South Circular (A205) and along the access route from the A205 to the site. There are residential properties within 60m of the proposed site on Horne Way.</td>
<td>There are relevant air quality sensitive receptors present along the route the construction traffic is likely to take.</td>
</tr>
<tr>
<td>Existing traffic issues</td>
<td>The main traffic issue in this area is exhaust emissions along the A205 corridor.</td>
<td>Additional vehicle emissions have a high potential to interfere with local air quality action plan policies.</td>
</tr>
<tr>
<td>Existing sources of significant air pollutants</td>
<td>See above.</td>
<td>See above.</td>
</tr>
<tr>
<td>Notable gaps in existing air quality monitoring</td>
<td>There is no data available at the likely access to A205 and the nearest existing data indicates existing exceedance of AQLV.</td>
<td>Collect minimum six months’ diffusion tube data at site access to A205 or other point of access to major road network in case the LA removes its tube.</td>
</tr>
<tr>
<td>Potential issues</td>
<td>The risk from additional exhaust emissions from construction HGVs is undefined at present. The risk from dust impacts is low.</td>
<td>Minimise HGV movements on the local road network during the peak hour Standard dust control measures will minimise the effect of fugitive dust on nearby sensitive receptors.</td>
</tr>
</tbody>
</table>

**Summary:** This site is considered to be suitable for use as a CSO site from an air quality perspective, as the potential for fugitive emissions of dust during construction to have a perceptible impact at residential receptors closest to the site is low, and any impacts could be minimised with standard dust control measures. There is potential for HGV movements on the local road network to cause localised air quality impacts, however this can be reduced by minimising the movement of HGVs during peak hours.
## Noise

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Noise band level (from Defra noise maps)</strong></td>
<td>Information from Defra noise maps indicates daytime noise levels of less than 58dB $L_{Aeq}$ and night-time noise levels of less than 50dB $L_{Aeq}$ at residential properties on Horne Way and Stockhurst Close, located to the south and southeast of the site respectively. The residential properties facing the site are likely to experience low daytime and night-time noise levels due to their remoteness from major roads. Noise levels from the Defra noise maps provide an indication of prevailing noise levels only, and will not be employed in any detailed assessments for chosen sites.</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Sensitive receptors</strong></td>
<td>There are sensitive receptors at a distance of approximately 50m to the south of the site at Horne Way, and at 60m on Stockhurst Close to the southeast of the site. To the southwest is the Putney Lower Common and to the north is the Barn Elms Schools Sports Centre playing fields. To the east of the site, on the other side of the River Thames, is Bishops Park, with residential properties beyond on Stevenage Road. Sensitive receptors to the south consist of six-storey residential flats on Horne Way. To the southwest there are three-storey residential dwellings at Stockhurst Close. There are a number of sensitive receptors adjacent to the site access route, specifically where the access joins Rocks Lane, which will considerably be affected by HGV traffic. The Thames Path, Beverley Brook Path and other recreational facilities lie adjacent to the site.</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
## Noise

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing traffic issues</strong></td>
<td>Local road traffic on Horne Way, Ashlone Road and Embankment, coupled with more distant road traffic on the A306 and A219, are likely to contribute to the local noise climate in the area of the sensitive receptors. Current road traffic flows on Queen Elizabeth Walk are relatively low, although it is used by coaches accessing the sports centre and Wetlands Centre.</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Existing sources of significant noise emissions</strong></td>
<td>Local road traffic, coupled with more distant road traffic on the A306 to the west and the A219 to the southeast, will contribute to the local noise climate in the area of the sensitive receptors. There are no railway lines or significant industrial noise sources evident in the area.</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Potential issues</strong></td>
<td><strong>Construction:</strong> The construction period is estimated at up to two years, and working hours will be 12 hours per day (7am to 7pm), Monday to Saturday. This has the potential to result in adverse noise impacts on sensitive receptors on Queen Elizabeth Walk to the north of the site, on Rocks Lane at the point of access for construction traffic, and Horne Way to the south of the site. A relatively high number of HGV movements are anticipated, and this has the potential to result in adverse noise impacts on properties on Queen Elizabeth Walk and also properties on Horne Way. Proposed 3m site boundary fencing will provide useful noise mitigation to some plant and construction activities. Situating plant in the northern area of the site would maximise the distance between them and the nearest receptors, and minimise the potential disturbance.</td>
<td>Adherence to the good site practices provided in BS5228. Siting of noisy equipment and construction activities as far as is practicable from sensitive receptors. Provision of site boundary noise fences if practicable.</td>
</tr>
</tbody>
</table>
### Noise

<table>
<thead>
<tr>
<th>Site considerations</th>
<th>Comments</th>
<th>Mitigation required and conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vibration resulting from general construction works is not anticipated to result in an adverse impact. The nearest receptors to the proposed shaft location are at a distance of approximately 50m and it is unlikely that vibration levels will result in minor cosmetic damage or annoyance during shaft sinking. Vibration from tunnelling should be considered on a case-by-case basis at particular sensitive locations. <strong>Operation:</strong> With appropriate attenuation (if necessary), there is no reason why noise from the ventilation column and associated permanent structures should result in adverse noise impacts to nearby sensitive receptors.</td>
<td></td>
</tr>
<tr>
<td>Summary:</td>
<td>Based on the information currently available, the site is considered to be suitable as a CSO site, given the relatively large separation distances between the site and the closest sensitive receptors. The number of vehicles associated with the construction phase and their access route (through residential streets) has the potential to cause disturbance to properties lining those streets. Vibration levels from shaft sinking are unlikely to give rise to human annoyance at nearby residential properties.</td>
<td></td>
</tr>
</tbody>
</table>
## Land quality

<table>
<thead>
<tr>
<th><strong>Site location</strong></th>
<th><strong>Grid reference:</strong> 523298, 176238</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current site use</strong></td>
<td>The site occupies part of an open space comprising playing pitches at Barn Elms Sports Centre.</td>
</tr>
<tr>
<td><strong>Topography</strong></td>
<td>Flat</td>
</tr>
<tr>
<td><strong>Field evidence of contamination (ie, visual/olfactory)</strong></td>
<td>None identified at this stage.</td>
</tr>
</tbody>
</table>
| **Current surrounding land use (immediately adjacent to site)** | **North:** A continuation of Barn Elms playing fields, and the Wildfowl and Wetland Centre beyond.  
**East:** Beverley Brook Path, Beverley Brook and the Sea Cadet centre  
**South:** Beverley Brook Path, Beverley Brook  
**West:** Beverley Brook Path, Beverley Brook, Putney Common |

## Geological and hydrogeological information

| **Geological strata**<sup>3</sup> | • Superficial geology and made ground (5m)  
• London Clay (47m)  
• Lambeth Group (17m)  
• Thanet Sand (9m) |
| **Underlying aquifer classes (Major/Minor/Non-aquifer)** | **Non-aquifer:** London Clay  
**Minor aquifer:** River terrace deposits, Lambeth Group, Thanet Sand  
**Major aquifer:** Chalk |
| **Groundwater vulnerability/Soil classification (High/Intermediate/Low/Not applicable)**<sup>1</sup> | • River terrace deposits – minor aquifer  
• High leaching potential of soils (U)<sup>1</sup> |
| **Source protection zone details** | Not located in a source protection zone defined by EA |
| **Surface water receptors** | • Beverly Brook (10m south and 30m east)  
• River Thames (115m southeast) |

## Relevant information within a 250m radius of the site

| **Site history information and historical potentially contaminating activities (based on mapping data)** | **On site**  
• Open land – part of Barn Elms Park, 1874-1896  
• Golf course, 1896-1920  
• Polo ground/golf course, 1920-1950 |
### Land quality

- Playing fields, 1955-1966
- Barn Elms Sports Centre (open land), 1967-present
- Site is close to a flood gate (15m southeast) and the Beverly Brook
- Tank – contents not defined (southeast corner of site), 1913-1952

### Off site

- Works yard, use not defined, (80m east and south), 1896-1974
- Wharf (transport support and cargo handling), (90m east), 1920-1948
- Laundry (110m south), 1896-1991
- Electrical substations (9 no.) south of the site (closest located 120m south), 1951-1991
- Works, use not defined (120m south), 1983-1991
- Hospital (200m south), 1948
- Garage with potential tanks, (210m south), 1950

<table>
<thead>
<tr>
<th>Pollution incidents to controlled waters</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landfill sites</td>
<td>None</td>
</tr>
<tr>
<td>Other waste sites</td>
<td>None</td>
</tr>
<tr>
<td>Registered radioactive substances</td>
<td>None</td>
</tr>
<tr>
<td>Fuel stations/depots</td>
<td>None</td>
</tr>
<tr>
<td>Contemporary trade entries</td>
<td>Five</td>
</tr>
<tr>
<td></td>
<td>• Domestic cleaning service, inactive (85m southwest)</td>
</tr>
<tr>
<td></td>
<td>• Stained glass designers and producers, active (140m south)</td>
</tr>
<tr>
<td></td>
<td>• Laundry equipment manufacturers and suppliers, inactive (170m southwest)</td>
</tr>
<tr>
<td></td>
<td>• French polishing, active (240m south)</td>
</tr>
<tr>
<td></td>
<td>• Lighting manufacturers, active (240m south)</td>
</tr>
</tbody>
</table>
### Land quality

#### Site classification based on above information

<table>
<thead>
<tr>
<th>Activity</th>
<th>Distance and direction to site</th>
<th>Contaminants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Potential site contaminants derived from surface sources (eg, contaminants in made ground)</strong></td>
<td>1) Some potential for made ground from potential filling operations during development of golf course 2) Tanks</td>
<td>1) Metals, PAHs, TPH 2) TPH, PAHs, lead, solvents</td>
</tr>
<tr>
<td><strong>Potential site contaminants derived from offsite sources and transported to site</strong></td>
<td>1) None identified</td>
<td>1) None identified</td>
</tr>
<tr>
<td><strong>Identified source-pathway-receptor risk assessment at CSO construction stage (Conceptual Site Model)</strong></td>
<td>Source 1: A1, A3, B4, C5, Source 2: D6, E1, F7</td>
<td>Category 2 – assessed as medium risk</td>
</tr>
</tbody>
</table>

**Conclusion**

The site is considered to be less suitable as a CSO site based on the potential historical presence of tanks (use unknown) in the south-eastern corner of the site. This has the potential to impact on site workers and adjacent human receptors through direct contact exposure pathways and, to a lesser extent, volatilisation.

**Notes:**

1. Soil information for urban areas is based on fewer observations than elsewhere in the country. Therefore, a worst case vulnerability (H) is assumed until proven otherwise.

2. Refer to schematic Conceptual Site Model for explanation of site-specific source-pathway-receptors.

3. From BGS Geological Model, giving average ground condition profile. Local near surface conditions may vary, particularly within the river.
Contacts

For information about the Thames Tideway Tunnel

Call: 0800 0721 086 Lines are open 24 hours a day
Visit: www.thamestidewaytunnel.co.uk
Email: info@tidewaytunnels.co.uk

For our language interpretation service call 0800 0721 086

For information in Braille or large print call 0800 0721 086

For information about acceptance of our application and the examination process please contact the Planning Inspectorate.

Call: 0303 444 5000
Visit: http://infrastructure.planningportal.gov.uk