Appendix A – Acton Storm Tanks

A.1 Introduction

A.1.1 This appendix sets out the site selection process that we used and our rationale for identifying our preferred phase one and phase two consultation sites to intercept the Acton Storm Tanks CSO and to construct the western sections of the main tunnel.

Type of site

A.1.2 We need a worksite to connect the local combined sewer overflow (CSO), known as the Acton Storm Tanks CSO, to the main tunnel. To enable the connection to be made the site needs to be as close as possible to the line of the existing sewers.

A.1.3 We also need to identify a series of suitable worksites to allow us to build the main tunnel. The main tunnel will transfer the collected overflows to the Abbey Mills Pumping Station and they will then transfer via the Lee Tunnel (under construction) to Beckton Sewage Treatment Works.

A.1.4 Larger sites are required where a TBM will be inserted into the ground (known as a main tunnel drive site). This type of worksite will need to handle all the materials excavated by the TBM as it constructs a section of the tunnel. Smaller sites are required to remove the TBM from the ground at the end of a tunnel drive (known as a main tunnel reception site). A more detailed description of the different types of worksite required to construct and operate the Thames Tunnel and the size requirements of these sites can be found in the Site selection background technical paper.

Site selection process

A.1.5 All potential worksites have been identified in accordance with our Site selection methodology paper (SSM), which involved a ‘sieving’ approach, commencing with identification of all potentially suitable areas of land (excluding concentrated residential sites and World Heritage Sites) and passing these sites through increasingly detailed levels of assessment to move from a long list to a draft short list, a final short list and finally a list of preferred sites for phase one consultation.

A.1.6 The SSM recognises the vital complementary relationship between the site selection process and engineering design developments. Accordingly, as the site selection process has progressed it has been increasingly important to compare sites against engineering requirements. A fundamental consideration is the need to identify sufficient sites, in the right locations, to enable the scheme to be built.

Preferred site for phase one and phase two consultation

A.1.7 The table below identifies our preferred phase one and phase two consultation sites. Section A.2 in this appendix provides the details of how we identified our preferred phase one site for a CSO only interception.
Sections A.3 to A.5 provide details of why we changed the use of our preferred site for phase two consultation.

<table>
<thead>
<tr>
<th>Phase one consultation site:</th>
<th>Acton Storm Tanks – CSO and long connection tunnel reception site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase two consultation site:</td>
<td>Acton Storm Tanks – combined main tunnel reception site and CSO site</td>
</tr>
</tbody>
</table>

A.2 Site selection up to phase one consultation

Assessment of the long list sites

A.2.1 The long list of potential sites to intercept the Acton Storm Relief CSO was created by conducting a desktop survey of the land in the vicinity of the existing sewer.

A.2.2 In total 28 sites were included on the long list. These sites were assessed having regard to the high-level considerations set out in Table 2.2 of the SSM (hereafter referred to as Table 2.2) including engineering (site size, site features, availability of jetty/wharf and access), planning and environment (heritage, landscape/townscape, open space and ecological) and community and property (neighbouring land uses, site use, Special Land/Crown Land and acquisition costs) considerations.

A.2.3 The table below provides a summary of the outcome of the Table 2.2 assessment in respect of the long list of sites considered for the interception of this CSO. Sites which were assessed as being the least constrained when considered against Table 2.2 considerations passed to the draft short list. This did not necessarily mean that a site would ultimately be judged as suitable, but that no significant constraints were identified in relation to the high-level considerations addressed at Table 2.2. Sites that were judged to be more constrained were not recommended to be retained on the draft short list for more detailed assessment. The main rationale for the exclusion of these sites at this stage is summarised in the table below.

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>C01XA</td>
<td>Foreshore of Chiswick Eyot</td>
<td><strong>Recommendation:</strong> To draft shortlist</td>
</tr>
<tr>
<td>C01XB</td>
<td>Chiswick Eyot</td>
<td><strong>Recommendation:</strong> To draft shortlist</td>
</tr>
<tr>
<td>Site ID</td>
<td>Site name/ description</td>
<td>Recommendation and rationale</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>C01XC</td>
<td>Shoreline and river between land and Chiswick Eyot</td>
<td><strong>Recommendation:</strong> To draft shortlist</td>
</tr>
</tbody>
</table>
| C01XD  | Riverside gardens of river front properties | **Recommendation:** Not to draft shortlist  
**Rationale:** Gardens are part of the residential curtilage |
| C01XE  | Private gardens backing large river front properties | **Recommendation:** Not to draft shortlist  
**Rationale:** Gardens are part of the residential curtilage |
| C01XF  | Chiswick Maternity Hospital (derelict) | **Recommendation:** To draft shortlist |
| C01XG  | Gardens backing river front properties | **Recommendation:** Not to draft shortlist  
**Rationale:** Gardens are part of the residential curtilage |
| C01XH  | British Grove South | **Recommendation:** Not to draft shortlist  
**Rationale:** Site small and difficult with difficult access. Furthermore, the site also comprises residential curtilage. |
| C01XJ  | Netheravon Road South from Great Western Road (A4) to area fronting Chiswick Maternity Hospital | **Recommendation:** To draft shortlist |
| C01XK  | Junction of British Grove and Netheravon Road | **Recommendation:** To draft shortlist |
| C01XL  | Green area between Great Western Road and Netheravon Road South | **Recommendation:** Not to draft shortlist  
**Rationale:** The engineering connection to the sewer is long and difficult |
| C01XM  | Gardens to houses between Netheravon Road and Airedale Avenue | **Recommendation:** Not to draft shortlist  
**Rationale:** Access to the site is poor and the site includes residential curtilage. |
| C01XN  | Homefield Recreation Ground | **Recommendation:** Not to draft shortlist  
**Rationale:** The engineering connection to the sewer is long and difficult |
<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
</table>
| C01XP  | Tree and grass area including footpath/verge fronting Great Western Road, with part of Berestede Road | **Recommendation:** Not to draft shortlist  
**Rationale:** The engineering connection to the sewer is long and difficult |
| C01XQ  | Park within St Peters Square | **Recommendation:** Not to draft shortlist  
**Rationale:** The engineering connection to the sewer is long and difficult |
| C01XR  | Part Beverley Road, part area behind residences | **Recommendation:** To draft shortlist |
| C01XS  | Tree/grass gardens fronting Prebend Gardens | **Recommendation:** Not to draft shortlist  
**Rationale:** Access to the site is poor |
| C01XT  | Car park at south end of Welstead Way | **Recommendation:** To draft shortlist |
| C01XU  | Grassed area fronting Stamford Brook Road | **Recommendation:** Not to draft shortlist  
**Rationale:** The engineering connection to the sewer is long and difficult |
| C01XV  | Park fronting Stamford Brook Road | **Recommendation:** Not to draft shortlist  
**Rationale:** The engineering connection to the sewer is long and difficult |
| C01XW  | Grassed area fronting Stamford Brook Road | **Recommendation:** To draft shortlist |
| C01XX  | Car parking area to block of flats adjacent Goldhawk Road | **Recommendation:** Not to draft shortlist  
**Rationale:** The site is highly restrictive with a long and difficult engineering connection to the sewer. Furthermore, the site includes residential curtilage |
| C01XY  | Wendall Park | **Recommendation:** Not to draft shortlist  
**Rationale:** The engineering connection to the sewer is long and difficult |
| C01XZ  | Grassed area between the rear gardens of houses on Woodstock Road and the high rise blocks of flats behind | **Recommendation:** Not to draft shortlist  
**Rationale:** The work conditions on the site are highly restrictive and the site has poor access |
## Appendix A – Acton Storm Tanks

### Part two: Appendices

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
</table>
| C01YA    | Area to the south west of the boundary wall of Acton Storm Tanks | **Recommendation:** Not to draft shortlist  
**Rationale:** The site is too narrow and has poor access |
| C01YB    | Areas in front of block of flats on Warple Way | **Recommendation:** Not to draft shortlist  
**Rationale:** The site is too narrow and has poor access |
| C01YC    | Area of Acton Storm Tanks | **Recommendation:** To draft shortlist |
| C01YD    | Airedale Avenue South cul de sac | **Recommendation:** Not to draft shortlist  
**Rationale:** Site small with constrained access and a long and difficult engineering connection to the sewer. Furthermore, the site also comprises residential curtilage. |

NB. The Site ID and Site name/description were used as an internal mechanism to record and describe the site and are reproduced here to ensure consistency across documentation.

A.2.4 Full details are provided in the Table 2.2 assessment tables and accompanying plans.

A.2.5 Of the 28 sites identified, ten were assessed as potentially suitable and passed to the draft short list while 18 sites were eliminated as being unsuitable.

### Assessment of draft short list sites

A.2.6 The ten draft short list sites identified for further assessment at the next stage were:

- C01XA: Foreshore of Chiswick Eyot
- C01XB: Chiswick Eyot
- C01XC: Shoreline and river between land and Chiswick Eyot
- C01XF: Chiswick Maternity Hospital (derelict)
- C01XJ: Netheravon Road South from Great Western Road (A4) to area fronting Chiswick Maternity Hospital
- C01XK: Junction of British Grove and Netheravon Road
- C01XR: Part Beverley Road, part area behind residences
- C01XT: Car park at south end of Welstead Way
- C01XW: Grassed area fronting Stamford Brook Road
- C01YC: Area of Acton Storm Tanks.
A.2.7 These sites were further assessed by the engineering, planning, environment, community and property disciplines having regard to the considerations set out in Table 2.3 of the SSM (hereafter referred to as Table 2.3). This stage of the process built on the information gathered and assessment undertaken at long list stage but focussed on more detailed local considerations.

A.2.8 At this stage we also consulted with each of the London boroughs and pan-London stakeholders such as the Environment Agency and English Heritage to seek their views on the suitability of sites for the short list.

A.2.9 The table below summarises the outcome of the Table 2.3 assessment of the draft short list of sites. Sites which were assessed as being the least constrained when considered against Table 2.3 considerations were retained on the short list to pass to the next stage of assessment. This did not necessarily mean that a site would ultimately be judged as suitable, but that no significant constraints were identified in relation to the considerations addressed at Table 2.3. Sites that were judged to be more constrained were not recommended to be retained on the short list for more detailed assessment. The main rationale for the exclusion of these sites at this stage is summarised below.

### Table A.2 Draft short list to final short list for the interception of the Acton Storm Relief CSO (Table 2.3 assessment)

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
</table>
| C01XA   | Foreshore of Chiswick Eyot | **Recommendation:** Not to shortlist  
**Rationale:** Preliminary consultations with statutory consultees raised significant concerns over the use of this site. |
| C01XB   | Chiswick Eyot | **Recommendation:** Not to shortlist  
**Rationale:** Preliminary consultations with statutory consultees raised significant concerns over the use of this site. |
| C01XC   | Shoreline and river between land and Chiswick Eyot | **Recommendation:** Not to shortlist  
**Rationale:** Preliminary consultations with statutory consultees raised significant concerns over the use of this site. |
<p>| C01XF   | Chiswick Maternity Hospital (derelict) | <strong>Recommendation:</strong> Retain on short list |</p>
<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
</table>
| C01XJ  | Netheravon Road South from Great Western Road (A4) to area fronting Chiswick Maternity Hospital | Recommendation: Not to shortlist  
Rationale:  
• Engineering – The site is small and shape would make working difficult. Also, the shaft level will be above ground so there is no possibility to locate it in a public road.  
• Transport – There are likely to be access issues.  
• Property – This is a difficult site and will require replacement of access to properties possibly including taking gardens. |
| C01XK  | Junction of British Grove and Netheravon Road                                           | Recommendation: Not to shortlist  
Rationale:  
• Engineering – The site is significantly constrained in terms of access, the site size, features and working area layout.  
• Transport – Access to the residential properties adjacent to the site will need to be maintained. |
| C01XR  | Part Beverley Road, part area behind residences                                         | Recommendation: Not to shortlist  
Rationale:  
• Engineering – Small and narrow site providing a restricted working area. Access route potentially unsuitable for HGVs due to need to use narrow residential roads with parking on either side.  
• Community – Significant impact upon residential amenity including the use of residential gardens and residential road network, which may result in adverse impact upon community cohesion. |
<p>| C01XT  | Car park at south end of Welstead Way                                                   | Recommendation: Retain on short list                                                        |</p>
<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
</table>
| C01XW  | Grassed area fronting Stamford Brook Road | Recommendation: Not to shortlist  
Rationale:  
- Engineering – The site is constrained particularly in terms of site features (substation and electricity cables)  
- Community – Concerns over significant impact upon community considerations due to a large number of sensitive receptors, resulting in potential health and equality impacts. A church and open space adjacent to the proposed site may also be affected. |
| C01YC  | Area of Acton Storm Tanks | Recommendation: Retain on short list |

NB. The Site ID and Site name/description were used as an internal mechanism to record and describe the site and are reproduced here to ensure consistency across documentation.

A.2.10 Full details are provided in the Table 2.3 assessment tables and the plans which accompanying this.

A.2.11 Of the ten sites on the draft short list, three were assessed as potentially suitable and passed to the final short list, while seven sites did not proceed to the final short list.

**Assessment of the final short list sites**

A.2.12 The three sites identified for inclusion on the final short list and assessment at the next stage were:
- C01XF: Chiswick Maternity Hospital (derelict)
- C01XT: Car park at south end of Welstead Way
- C01YC: Area of Acton Storm Tanks.

A.2.13 A site suitability report (SSR) was prepared for each of the final shortlisted sites. These reports contained an assessment of each site’s suitability having regard to engineering, planning, environment, community and property considerations. At this stage in the process sites were assessed in isolation without comparison to other sites or regard to tunnelling strategy. Sites were evaluated by each discipline using technical knowledge and professional judgement as appropriate and assessed as *suitable*, *less suitable* or *not suitable* from that discipline’s perspective.

A.2.14 A summary of the conclusions of each discipline’s assessment from the site suitability reports is provided below.
Appendix A – Acton Storm Tanks

Site C01XF: Former Chiswick Maternity Hospital (derelict)

A.2.15 Site C01XF comprises the former Chiswick Maternity Hospital, known as Chiswick Lodge, situated on Netheravon Road South, Chiswick, within the London Borough of Hounslow.

A.2.16 The site extends between Netheravon Road to the north and Chiswick Mall to the south. The surrounding area is characterised by residential properties which front onto Chiswick Mall and face towards the River Thames.

A.2.17 **Engineering:** The site was considered **suitable** as a CSO interception site as there are no restrictions in terms of access and working area and no major utilities running through the site.

A.2.18 **Planning:** On balance, the site was assessed as **less suitable** for use as a CSO site. The site is subject to a number of planning and environmental designations including a conservation area and listed buildings. The current status and implementation timescales for the redevelopment of the site would require further investigation and ongoing monitoring.

A.2.19 **Environment:** Overall, the site was assessed as **suitable** for use as a CSO site. The site was considered **suitable** from the perspectives of transport, archaeology, townscape, water resources, ecology and flood risk. This site was considered **less suitable** from the perspectives of built heritage, air quality, noise and land quality. Various mitigation measures would be required.

A.2.20 **Socio-economic and community:** From a community impacts perspective, the site was assessed as **suitable** for use as a CSO site. It was recognised that there may be impacts upon adjacent residential properties and mitigation against these impacts would be required.

A.2.21 **Property:** The site was assessed as **suitable** from a property perspective as it is a brownfield site and likely to have a resale value which would offset the cost of acquisition. There is also a low prospect of offsite compensation required.

Site C01XT: Car park at south end of Welstead Way

A.2.22 Site C01XT would be located within a public car park at the southern end of Welstead Way, Chiswick, within the London Borough of Hounslow.

A.2.23 The site is roughly rectangular in shape and located approximately 200m south of Bath Road/Stamford Brook Road. The site is bounded by the rear gardens of residential dwellings to the east, north and west, and by the elevated London Underground District Line to the south.

A.2.24 **Engineering:** The site was considered **suitable** as a CSO interception site as it is of a sufficient size with the sewer running beneath the site, allowing all works to be contained within one area.

A.2.25 **Planning:** On balance, the site was assessed as **less suitable** for use as a CSO site. The proposal site is enclosed by residential properties along three site boundaries, with short separation distances between the properties and the construction works.
A.2.26 **Environment:** Overall, the site was assessed as **suitable** for use as a CSO site. The site was considered **suitable** from the perspectives of transport, archaeology, built heritage and townscape, water resources (hydrogeology and surface water), ecology, flood risk and land quality. This site was considered less suitable from the perspectives of air quality and noise. Various mitigation measures would be required.

A.2.27 **Socio-economic and community:** From a community impacts perspective, the site was assessed as **less suitable** for use as a CSO site. It was recognised that there may be impacts upon residential properties adjacent to the site and appropriate mitigation would be required for noise and visual disruption.

A.2.28 **Property:** The site was assessed as **suitable** from a property perspective. Site acquisition costs are likely to be acceptable, although owner of the land was not known at this stage. There are also unlikely to be disturbance compensation claims.

**Site C01YC: Acton Storm Tanks**

A.2.29 Site C01YC is located on land within the curtilage of a Thames Water pumping station and storm water storage tanks fronting Warple Way, Acton, within the London Borough of Ealing. The site is currently open land, forming part of the landscaped area of the pumping station, and situated at the southernmost tip of the pumping station site.

A.2.30 The site is bounded to the north by Canham Road and industrial units. The east and southeast of the site are bounded by Warple Way and residential properties. The site is bounded to the southwest and west by further dwellings along Greenend Road.

A.2.31 **Engineering:** The site was considered **suitable** as a CSO interception site as it is large enough to fit all the site facilities, access is reasonable and the land is owned by Thames Water. It should be noted, however, that this site is a considerable distance from the river.

A.2.32 **Planning:** On balance, the site was assessed as **suitable** for use as a CSO site. Although the site is near to residential properties, appropriate mitigation could reduce any impacts upon amenity.

A.2.33 **Environment:** Overall, the site was assessed as **suitable** for use as a CSO site. The site was considered **suitable** from the perspectives of transport, archaeology, built heritage, townscape, water resources, flood risk, and ecology. This site was considered **less suitable** from the perspectives of air quality, noise and land quality. Various mitigation measures would be required.

A.2.34 **Socio-economic and community:** From a community impacts perspective, the site was assessed as **suitable** for use as a CSO site. It was recognised that there may be impacts upon residents of the housing development to the east and southeast of the site and appropriate mitigation would be required for noise and other types of disruption.

A.2.35 **Property:** The site was assessed as **suitable** from a property perspective as the land is owned by Thames Water.
Identification of the preferred site for phase one consultation

A.2.36 Following the completion of the SSRs, a multidisciplinary workshop was held to compare the suitability of each of the shortlisted sites based on the SSR assessments and to make a recommendation on which site should be identified as the preferred site.

A.2.37 From the three shortlisted sites, Acton Storm Tanks (C01YC) was identified as the preferred CSO site to intercept the Acton Storm Tanks CSO for a number of reasons which are summarised below:

- The building on site C01XF had been derelict for a considerable time but site activities, including partial demolition, earthworks and foundation construction commenced in spring 2010. It was therefore considered that as redevelopment of the site has started, further consideration of the Former Maternity Hospital, Netheravon Road South site as a possible worksite for the interception of the local CSO should cease and the site should be considered unavailable.

- The remaining two shortlisted sites would provide a suitably sized construction area to enable efficient working.

- C01YC would provide a suitable clear area of land and was considered to have a lower risk of becoming unavailable due to change of use or redevelopment. Furthermore, this is within an existing operational site owned by Thames Water Utilities Ltd. The environmental impact of using C01YC was assessed as low, with the key consideration being mitigation of noise and dust impacts on the adjacent residential properties.

- C01XT is bounded by residential dwellings along three sides and it is considered that work at this site would subject adjacent properties to some degree of air quality, noise and vibration impacts during construction. Access to the site would be via a relatively narrow residential carriageway and create potential disturbance to the community and disruption to traffic.

A.3 Review of site selection following phase one consultation

Phase one consultation responses

A.3.1 As part of the site selection methodology, all feedback received during the phase one consultation was reviewed and taken into account in the development of our scheme from phase two.

A.3.2 The main issues and concerns raised during phase one consultation in relation to the Acton Storm Tanks site can be summarised as follows:

- Impact on residential amenity during construction
- Existing odour problems on the site
- Increased congestion and alternative access arrangements should be explored
Appendix A – Acton Storm Tanks

- Impact on conservation area
- Impact of subsidence on buildings and structures
- The whole site requires improvement
- Impact of odour on completion of the works.

A.3.3 The main comments received in support of the preferred site included:

- the land is already in Thames Water’s ownership
- the site has existing utility purpose and facilities, so will have least impact on surrounding area
- the proposed design for after-use of the site is acceptable
- the site as it currently exists is unappealing and therefore the proposals provide an opportunity to significantly improve the area
- the site is large enough and feasible in all other respects.

A.3.4 More detail on the consultation responses relating to this site and our response to the comments received are provided within the Report on phase one consultation.

A.3.5 Having taken all comments received during phase one consultation into account, we still believe Acton Storm Tanks is the most appropriate CSO site because the site is of an adequate size, is on the line of the existing sewer and is located within an existing Thames Water operational site. We recognise the concerns that have been raised including impact on residential amenity and traffic congestion and will take these into account when developing the project further, including measures that can be put in place to minimise potential impacts.

Back-check process

A.3.6 The tunnelling strategy proposed during phase one consultation utilised the Acton Storm Tanks site to intercept the local CSO and connect this to the main tunnel via a connection tunnel to the Hammersmith Pumping Station site. It was proposed that this connection tunnel would be driven from the Hammersmith Pumping Station site, so the site at Acton Storm Tanks would be used to receive the TBM creating this connection tunnel.

A.3.7 Design development identified that a larger diameter connection tunnel was required to connect the Acton Storm Tanks CSO to the main tunnel than that originally anticipated at phase one consultation. The Acton Storm Tanks site is also large enough to potentially be suitable for use as a main tunnel site.

A.3.8 In addition to the design development of our tunnelling strategy, a significant planning constraint was identified in relation to the use of the Hammersmith Pumping Station site (S33HF) as a main tunnel reception site and to drive the connection tunnel to Acton Storm Tanks due to the progression of a new planning application for the site. The Hammersmith Pumping Station site already had planning permission for a mixed-use development. However, the site was then purchased and the new landowner submitted a revised planning application for a major residential
Appendix A – Acton Storm Tanks

development for the whole of the site including the area identified at phase one consultation as our preferred site. In addition, the London Borough of Hammersmith and Fulham’s emerging Local Development Framework also reallocated the site from offices to residential use. This new planning application and the revised allocation also increase the acquisition complexities and potential cost of the site to the project. All these factors significantly increased the risk that the Hammersmith Pumping Station site would not be available to be used as proposed at phase one consultation.

A.3.9 Extensive negotiations with the landowner of the Hammersmith Pumping Station site resulted in a change in our proposed use of the Hammersmith site as it became clear that the only viable option was to use the site to intercept the local CSO (known as Hammersmith Pumping Station). Further details can be found in Appendix B – Hammersmith Pumping Station.

A.3.10 As a result of these changes to the tunnelling strategy and engineering considerations, as well as the planning and property issues at Hammersmith Pumping Station, we began a review of the tunnelling strategy for the western end of the tunnel to address the possibility of extending the main tunnel to Acton Storm Tanks.

A.3.11 A back-check (as outlined in the Site selection methodology paper) was therefore undertaken to identify sites in the Acton area which could potentially be used as a main tunnel site for the western end of the main tunnel.

A.3.12 We need to identify a series of suitable worksites to allow us to build the main tunnel into which the flows from the combined sewer overflows (CSOs) being intercepted by the project will be collected. The main tunnel will transfer the collected overflows to the Abbey Mills Pumping Station and they will then transfer via the Lee Tunnel (under construction) to Beckton Sewage Treatment Works.

A.3.13 Worksites are required to construct shafts from which TBMs can be lowered into, and removed from the ground in order to construct sections of the tunnel (known as tunnel drives). Larger sites are required where the TBMs will be lowered into the ground (known as main tunnel drive sites) as these will have to handle all the materials excavated by the TBM as it constructs the tunnel. Smaller sites (known as main tunnel reception sites) are required to extract the TBMs from the ground at the end of a tunnel drive. A more detailed description of the different types of worksite required to construct and operate the Thames Tunnel and the size requirements of these sites can be found in the Site selection background technical paper.

A.3.14 In developing the tunnelling strategy for phase one consultation, the final shortlisted main tunnel sites were grouped geographically into ‘zones’, and tunnel drive options were then identified showing how the sites in these zone could be connected to construct the main tunnel. These tunnel drive options defined the tunnelling direction between zones and the site type (either main tunnel drive or reception site) required in a zone.
A.3.15 The need for a new main tunnel site in the Acton area for the western end of the main tunnel required the creation of a new zone, S0, as shown on the diagram below, so that once a short list of suitable sites had been identified in Zone S0, the tunnel drive options utilising this new zone could then be considered.

Figure A.1 Revised main tunnel zones including new zone S0

Engineering assumptions

A.3.16 As part of the back-check process, the engineering assumptions which had been used during the initial phase of site selection for main tunnel sites were reviewed to see if any of the design developments or new technical information altered any of the original assumptions.

A.3.17 The outcome of this review was that for zones S0 – S4 (covering the majority of the section of the tunnel to be constructed predominantly in London Clay), the size of construction site required for a main tunnel drive shaft was reduced from 18,000m$^2$ to 15,000m$^2$. This important change allowed the back-check process to review sites previously considered too small for a main tunnel drive shaft site. At the same time, it was agreed that the size of site required for a double drive shaft site (ie, tunnelling in two directions concurrently from one shaft) should be 20,000m$^2$.

A.3.18 The following section outlines the results from each stage of the back-check process.
Assessment of the back-check long list

A.3.19 As Zone S0 was newly identified there was no original long list of sites suitable for main tunnel sites in this zone. The Acton Storm Tanks site identified at phase one consultation was however found to be large enough to support a main tunnel site so this was reviewed alongside any newly identified sites. The result of this scoping exercise found we needed to assess the following six sites:

- S01EG: Acton Storm Tanks
- S02EG: Commercial Units, Stanley Gardens
- S03EG: Acton Park Industrial Estate
- S04EG: Industrial Units, Allied Way
- S05EG: Southfields Park
- S88HF: Wendall Park - new site (also C01XY).

A.3.20 The back-check long list sites were then assessed against the engineering, planning, environment, community and property considerations set out in Table 2.2.

A.3.21 The table below summarises the outcome of the ‘back-check’ assessment of the back-check long list of sites. Sites which were assessed as being the least constrained when considered against Table 2.2 considerations passed to the next stage of assessment. This did not necessarily mean that these sites would ultimately be judged as suitable, but that no significant constraints were identified in relation to the high-level considerations addressed at Table 2.2. Sites that were judged to be more constrained were not recommended to be passed to the back-check draft short list for more detailed assessment. The main rationale for the exclusion of these sites at this stage is summarised below.

A.3.22 For sites not excluded at this stage, we then determined how these sites would be assessed at the Table 2.3 assessment based on size. For some sites this also included examining neighbouring sites to see if they could be used together. We concluded for all the Zone S0 sites that, due to distance from river and navigational constraints of being upstream of Hammersmith Bridge, these sites could not be considered as a main tunnel drive site.

Table A.3  Long list to draft short list for main tunnel sites in Zone S0
(Table 2.2 assessment)

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01EG</td>
<td>Acton Storm Tanks</td>
<td>Recommendation: To draft shortlist as a main tunnel reception site</td>
</tr>
<tr>
<td>S02EG</td>
<td>Commercial Units, Stanley Gardens</td>
<td>Recommendation: To draft shortlist as a main tunnel reception site</td>
</tr>
</tbody>
</table>
**Appendix A – Acton Storm Tanks**

**Phase two scheme development report**

**Part two: Appendices**

### Site ID and Site name/description

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>S03EG</td>
<td>Acton Park Industrial Estate</td>
<td><strong>Recommendation</strong>: To draft shortlist as a main tunnel reception site</td>
</tr>
<tr>
<td>S04EG</td>
<td>Industrial Units, Allied Way</td>
<td><strong>Recommendation</strong>: To draft shortlist as a main tunnel reception site</td>
</tr>
<tr>
<td>S05EG</td>
<td>Southfields Park</td>
<td><strong>Recommendation</strong>: To draft shortlist as a main tunnel reception site</td>
</tr>
<tr>
<td>S88HF</td>
<td>Wendall Park</td>
<td><strong>Recommendation</strong>: To draft shortlist as a main tunnel reception site</td>
</tr>
</tbody>
</table>

NB. The Site ID and Site name/description were used as an internal mechanism to record and describe the site but may be updated if necessary.

**A.3.23** Full details are provided in back-check Table 2.2 assessment tables and accompanying plans.

**A.3.24** Of the six sites identified, all six were assessed as potentially suitable for a main tunnel reception site and passed to the draft short list.

**Assessment of the back-check draft short list sites**

**A.3.25** The back-check draft shortlisted sites were then further assessed by the engineering, planning, environment, community and property disciplines having regard to the considerations set out in Table 2.3 of the SSM.

**A.3.26** The table below summarises the outcome of the 'back-check' assessment of the draft short list. Sites which were assessed as being the least constrained when considered against Table 2.3 considerations were retained on the back-check short list to pass to the next stage of assessment. This did not necessarily mean that a site would ultimately be judged as suitable, but that no significant constraints were identified in relation to the considerations addressed at Table 2.3. Sites that were judged to be more constrained were not recommended to be retained on the back-check short list for more detailed assessment.

**Table A.4 Draft short list to final short list for main tunnel sites in Zone S0 (Table 2.3 assessment)**

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site name/ description</th>
<th>Recommendation and rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01EG</td>
<td>Acton Storm Tanks</td>
<td><strong>Recommendation</strong>: Retain on short list as a main tunnel reception site</td>
</tr>
<tr>
<td>Site ID</td>
<td>Site name/ description</td>
<td>Recommendation and rationale</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------</td>
<td>-----------------------------------------------------------------</td>
</tr>
<tr>
<td>S02EG</td>
<td>Commercial Units, Stanley Gardens</td>
<td><strong>Recommendation:</strong> Retain on short list as a main tunnel reception site</td>
</tr>
<tr>
<td>S03EG</td>
<td>Acton Park Industrial Estate</td>
<td><strong>Recommendation:</strong> Retain on short list as a main tunnel reception site</td>
</tr>
<tr>
<td>S04EG</td>
<td>Industrial Units, Allied Way</td>
<td><strong>Recommendation:</strong> Retain on short list as a main tunnel reception site</td>
</tr>
</tbody>
</table>
| S05EG   | Southfields Park                      | **Recommendation:** Not to final shortlist **Rationale:**  
  - Planning/Environment – There are a number of constraints that relate to the use of this site, particularly concerns about impact on open space (priority site for playground provision in relation to child density and improving access to nature areas), impact on conservation area and access issues. Also note there are potentially available brownfield sites.  
  - Community – Temporary loss of over half of the recreation facilities (tennis courts, playground and nature area). The tennis courts are run by a group that encourages local level tennis in parks. All these factors may have adverse impact on health and equality considerations. |
| S88HF   | Wendall Park                          | **Recommendation:** Not to final shortlist **Rationale:**  
  - Planning/Environment – There are a number of constraints that relate to the use of this site, particularly concerns about impact on open space that is of borough wide importance and local nature conservation area, impact on the character of the conservation area and loss of protected trees and poor access. Also note there are potentially available brownfield sites.  
  - Community – There are a number of sensitive receptors in close proximity such as church, vicarage and school. Temporary loss of this park. All of |
A.3.27 Full details are provided in back-check Table 2.3 assessment tables and accompanying plans.

A.3.28 Of the six sites on the draft short list, four were assessed as potentially suitable and passed to the final short list. The remaining two sites were eliminated as being unsuitable.

**Assessment of the back-check final short list sites**

A.3.29 Following the back-check, the final shortlisted sites identified for assessment at the next stage were:

- S01EG/C01YC: Acton Storm Tanks
- S02EG/C01YC: Commercial Units, Stanley Gardens
- S03EG/C01YC: Acton Park Industrial Estate
- S04EG/C01YC: Industrial Units, Allied Way.

A.3.30 All of the above sites were assessed in combination with our preferred CSO interception site at Acton Storm Tanks (C01YC).

**S01EG/C01YC: Acton Storm Tanks**

A.3.31 The site boundary for S01EG is slightly bigger than the site C01YC in order to allow the main tunnel drive option to be assessed as well as the reception site option. The other factual details remain largely unchanged. A summary of the disciplines’ assessments for both main tunnel site options are provided below.

A.3.32 **Engineering:** The site was considered *suitable* as a main tunnel reception site as it is large enough to accommodate all the site facilities, access is reasonable and the land is owned by Thames Water.

A.3.33 **Planning:** On balance, the site was assessed as *less suitable* for use as a main tunnel reception site as the site is located in very close proximity to adjacent residential properties. However, the site could become *suitable* with appropriate mitigation to reduce any impacts on residential amenity.

A.3.34 **Environment:** Overall, the site was assessed as *suitable* for use as a main tunnel reception site. The site was considered *suitable* from the perspectives of transport, archaeology, built heritage, townscape, water resources, flood risk, and ecology. This site was considered *less suitable* from the perspectives of air quality, noise and land quality. Various mitigation measures would be required.
A.3.35 **Socio-economic and community:** From a community impacts perspective, the site was assessed as **less suitable** for use as main tunnel reception site as there is likely to be significant impacts upon residential property adjacent to the site. Appropriate mitigation would be required for noise and visual disruption.

A.3.36 **Property:** The site was considered **suitable** as a main tunnel reception site as it would only use Thames Water land.

**S02EG/C01YC: Commercial Units, Stanley Gardens**

A.3.37 This site is located within an industrial area. This site was assessed as a main tunnel reception site with the interception of the Acton Storm Relief CSO at Acton Storm Tanks (C01YC). A summary of the disciplines’ assessments are provided below.

A.3.38 **Engineering:** This site is considered **suitable**. The site is of sufficient size to fit all the site facilities for efficient working and has suitable access. The site requires the demolition of a number of existing structures which currently occupy the site, prior commencement of the main works.

A.3.39 **Planning:** On balance, the site was assessed as **less suitable** for use as a main tunnel reception site as the site is located in very close proximity to adjacent residential properties. However, the site could become **suitable** with appropriate mitigation to reduce any impacts on residential amenity.

A.3.40 **Environment:** Overall, the site was assessed as **suitable** for use as a main tunnel reception site. The site was considered **suitable** from the perspectives of transport, archaeology, built heritage, townscape, water resources (hydrogeology and surface water), ecology, flood risk and noise. This site was considered **less suitable** from the perspectives of air quality and land quality.

A.3.41 **Socio-economic and community:** From a community impacts perspective, the site was assessed as **less suitable** for use as a main tunnel reception site. There is unlikely to be a substantial or long-term impact on the local community. However, a number of businesses may need to be relocated on a temporary or permanent basis. Furthermore, noise and visual disruption will be experienced during construction by residential properties in close proximity to the east.

A.3.42 **Property:** The site was considered **less suitable** as a main tunnel reception site as a number of business operations would be displaced.

**S03EG/C01YC: Acton Park Industrial Estate**

A.3.43 This site is located within an industrial area. This site was assessed as a main tunnel reception site with the interception of the Acton Storm Relief CSO at Acton Storm Tanks (C01YC). A summary of the disciplines’ assessments are provided below.

A.3.44 **Engineering:** This site is considered **suitable** for a main tunnel reception site. The site is of sufficient size to fit all the site facilities for efficient working and has suitable access. The site requires the demolition of a number of existing structures which currently occupy the site, prior commencement of the main works.
A.3.45 **Planning:** On balance, the site was assessed as **less suitable** for use as a main tunnel reception site. The site is within or in proximity to a number of planning and environmental policy designated areas and sensitive uses such as residential properties, community facilities and public open spaces. Further investigation would be required to determine if the temporary loss of designated employment land and the relocation of a number of existing businesses would be acceptable. Appropriate mitigation to protect the amenity of residential dwellings and other sensitive community uses from construction impacts would be required.

A.3.46 **Environment:** Overall, the site was assessed as **suitable** for use as a main tunnel reception site. The site was considered **suitable** from the perspectives of transport, archaeology, built heritage, townscape, water resources (hydrogeology and surface water), ecology, flood risk, air quality and noise. This site was considered **less suitable** from the perspectives of land quality.

A.3.47 **Socio-economic and community:** From a community impacts perspective, the site was assessed as **less suitable** for use as a main tunnel reception site. The use of the site appears likely to require the demolition of around five commercial units which could affect owners, employees and the local community. Also, a number of further business premises and residential properties in proximity to the site may also be affected by works in this area. There are also a number of residential properties in close proximity to the proposed CSO interception works.

A.3.48 Appropriate mitigation will be required for noise and visual disruption during construction to reduce the potential impacts on the neighbouring commercial and residential properties.

A.3.49 **Property:** The site was considered **less suitable** as a main tunnel reception site. A large number of business occupiers would need to be displaced. Furthermore, the site adjoins residential properties.

**S04EG/C01YC: Industrial Units, Allied Way**

A.3.50 This site is located within an industrial area. This site was assessed as a main tunnel reception site with the interception of the Acton Storm Relief CSO at Acton Storm Tanks (C01YC). A summary of the disciplines’ assessments are provided below.

A.3.51 **Engineering:** The site was considered **less suitable** as a main tunnel reception site. The site is of sufficient size to fit all the site facilities for efficient working and has suitable access. However, due to the distance from C01YC and the nature of existing development between both sites, construction of the tunneled connection culvert would be complex and would likely need to be deep thus leading to a deeper CSO and main tunnel shaft. This would increase the amount of excavated fill to be removed off site and increase the duration of the construction programme.

A.3.52 **Planning:** On balance, the site was assessed as **less suitable** for use as a main tunnel reception site as the site. The site is within or in proximity to a number of planning and environmental policy designated areas and sensitive uses such as residential properties and community facilities.
Further investigation would be required to determine if the temporary loss of designated employment land and the relocation of a number of existing businesses would be acceptable. Appropriate mitigation to protect the amenity of residential dwellings and other sensitive community uses from construction impacts would be required and it is recognised that this may be particularly challenging on this site, given the proximity and number of sensitive receptors.

A.3.53 **Environment:** Overall, the site was assessed as *suitable* for use as a main tunnel reception site. The site was considered *suitable* from the perspectives of transport, archaeology, built heritage, townscape, water resources (hydrogeology and surface water), flood risk and ecology. This site was considered *less suitable* from the perspectives of air quality, noise and land quality.

A.3.54 **Socio-economic and community:** From a community impacts perspective, the site was assessed as *less suitable* for use as a main tunnel reception site. Residential properties are located in close proximity to the proposed works are likely to be directly affected. Furthermore, several businesses are likely to be required to be relocated during construction and operation.

A.3.55 **Property:** The site was considered *less suitable* as a main tunnel reception site. A large number of business occupiers would need to be displaced. Furthermore, the site adjoins residential properties on three sides.

A.4 **Preferred site recommendation**

A.4.1 Following the completion of the back-check SSRs, a multidisciplinary workshop was held to compare the suitability of each of the shortlisted sites.

A.4.2 This workshop took into account the findings of the back-check SSRs and the feedback received during the phase one consultation. On the basis of the assessments described above and professional judgement, it was agreed by all disciplines that site **S01EG: Acton Storm Tanks should become the recommended phase two consultation preferred site as a combined main tunnel reception site and interception of the Acton Storm Relief CSO.** This meant that we believed this to be the most appropriate site, subject to further engagement with stakeholders and further design development to verify this conclusion prior to phase two consultation.

A.4.3 Figure A.2 shows the preferred and shortlisted sites at phase two consultation to intercept this CSO.
A.4.4 In summary, Acton Storm Tanks (S01EG) was identified as the preferred site because:

- use of this site would not result in the loss of existing businesses which is the case for the three other shortlisted sites
- it is already necessary to use this site for the interception of the CSO
- use of the site as a main tunnel reception site was assessed as suitable by engineering, planning, environment and property disciplines
- use of the site as a main tunnel reception site was also considered potentially suitable by community with appropriate mitigation measures to reduce impacts on the local area
- detailed transport management arrangements will be made to manage construction vehicle movements
- it would maximise the use of Thames Water owned land for construction works
- it is located within an existing Thames Water site
- there may be an opportunity to decommission the existing tanks.

A.4.5 It should be noted that the previous proposal to use this site to only intercept the Acton Storm Relief CSO with a smaller connection tunnel to the main tunnel is no longer a viable solution that would meet the aims of the project.

A.4.6 In addition to identifying a suitable site in Zone S0, the back-check process also reviewed main tunnel sites in zones S1 to S4 and the overall
tunnelling strategy. The options for these zones were reviewed at the same multidisciplinary workshop as the Acton Street site.

A.4.7 This process identified S87HF: Carnwath Road Riverside as the preferred main tunnel site in zones S1 to S4 (see Appendix G – Carnwath Road Riverside for full details).

A.4.8 In reviewing the tunnelling strategy and drive options, it was agreed by all disciplines that S01EG should be used as a reception site for the main tunnel, meaning a TBM would be removed from the shaft at this site after constructing the western sections of the main tunnel.

A.5 Site development

A.5.1 Following the selection of Acton Storm Tanks as the recommended preferred site, further feedback from stakeholders and ongoing scheme development work have contributed to a number of refinements to the site.

Engagement with stakeholders

A.5.2 Engagement with stakeholders has been ongoing and has continued beyond the phase one consultation period. This has resulted in continual development of our proposals to take on board the comments made by stakeholders.

A.5.3 We have also engaged with community and interest groups through ongoing meetings and correspondence. Furthermore, we have had regular meetings and workshops with officers from the London boroughs of Ealing and Hammersmith and Fulham, TfL, the Environment Agency and English Heritage with respect to developing the design and construction of our works and the scope of our environmental assessments. To ensure our design process is transparent, we undertook a series of design reviews hosted and chaired by the Design Council CABE (formerly the Commission for Architecture and the Built Environment). The review for Acton Storm Tanks was attended by the London Borough of Ealing and our pan-London stakeholders.

A.5.4 We have undertaken a series of drop-in sessions to present and discuss the potential suitability of using the Acton Storm Tanks site as a CSO interception and main tunnel reception site. These comments have been considered and details are provided in the Interim engagement report.

Construction layout

A.5.5 In response to stakeholder engagement, phase one consultation responses and scheme development, the construction layout of the site has been altered to minimise impact on the local community and environment, and is guided by operational and functional requirements. Particular factors at this site that have influenced the layout are as follows:

- The construction access arrangements for the site have been amended since phase one consultation. Access would now be located on Canham Road to further reduce the effects of construction on the residents of Warple Way.
Since phase one consultation, the construction site has been moved to the northern end of the Acton Storm Tanks site, which is farthest from nearby residential properties on Warple Way.

A.5.6 Further information on the construction logistics and the site layouts for the construction and operational phases can be found in the Acton Storm Tanks site information paper.

Design

A.5.7 Since phase one consultation, we have also progressed the design for the permanent use and look of Acton Storm Tanks taking into account comments made at our phase one consultation and the ongoing engagement with London boroughs of Ealing and of Hammersmith and Fulham and other technical consultees.

A.5.8 Full details of design development for the Acton Storm Tanks site are provided in the Design development report.

A.6 Confirmation of the preferred site for phase two consultation

A.6.1 A final preferred site workshop was held in summer 2011 to verify the choice of preferred sites and to consider any outcomes of further engagement and scheme development. The conclusion reached was that Acton Storm Tanks should remain the preferred site for phase two consultation for the interception of the Acton Storm Relief CSO and to receive the western section of the main tunnel.

A.6.2 Phase two consultation will provide an opportunity for the public to comment on the changes to our preferred site revised preferred scheme for the Thames Tunnel project, before we publicise our proposed application.