Design development report

Addendum
# Thames Tunnel

## Design development report – Addendum

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<tr>
<td>CABE</td>
<td>Commission for Architecture and the Built Environment (now the Design Council CABE)</td>
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<tr>
<td>CSO</td>
<td>combined sewer overflow</td>
</tr>
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<td>DM</td>
<td>development management</td>
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<td>DPD</td>
<td>development plan document</td>
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<td>EU</td>
<td>European Union</td>
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<td>HGV</td>
<td>heavy goods vehicle</td>
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<td>IPC</td>
<td>Infrastructure Planning Commission</td>
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<tr>
<td>LDF</td>
<td>local development framework</td>
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<td>LPA</td>
<td>local planning authority</td>
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<td>MOL</td>
<td>Metropolitan Open Land</td>
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<td>NPPF</td>
<td>National Planning Policy Framework</td>
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<td>NPS</td>
<td>National Policy Statement on Waste Water</td>
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<td>NSIP</td>
<td>nationally significant infrastructure project</td>
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<tr>
<td>PPS</td>
<td>planning policy statement</td>
</tr>
<tr>
<td>SIS</td>
<td>Secret Intelligence Service</td>
</tr>
<tr>
<td>SINC</td>
<td>site of importance for nature conservation</td>
</tr>
<tr>
<td>SSSI</td>
<td>site of special scientific interest</td>
</tr>
<tr>
<td>sqm</td>
<td>square metres</td>
</tr>
<tr>
<td>STW</td>
<td>sewage treatment works</td>
</tr>
<tr>
<td>SUDS</td>
<td>sustainable urban drainage system</td>
</tr>
<tr>
<td>UDP</td>
<td>unitary development plan</td>
</tr>
<tr>
<td>UWWTD</td>
<td>European Union Urban Waste Water Treatment Directive</td>
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<td>UWWTR</td>
<td>Urban Waste Water Treatment Regulations</td>
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1 Introduction

1.1 Purpose of this report

1.1.1 The Design development report (DDR) was published as part of the second phase of consultation on our proposals for the Thames Tunnel project (the ‘project’) from 4 November 2011 to 10 February 2012. A copy of the DDR that was published for phase two consultation can be found on the project website: www.thamestunnelconsultation.co.uk.

1.1.2 The DDR described the process behind the development of the proposed designs of the permanent above-ground elements of the project, as well as how these new elements would be integrated into the surrounding environment. Above-ground elements include ventilation structures or columns, ventilation buildings, electrical and control kiosks, and potential new public realm, footpaths and landscaping. Since the close of phase two consultation in February, we have reviewed consultation feedback, undertaken further detailed engineering work and had regard to on-going discussions with key statutory stakeholders for specific sites. As a result, we are considering revised designs at Barn Elms, Putney Embankment Foreshore (formerly Putney Bridge Foreshore) and Victoria Embankment. In accordance with our Statement of Community Consultation (SOCC), we are carrying out a targeted consultation exercise to seek comments on the revised proposals we are considering at each of these sites.

1.1.3 The purpose of this DDR Addendum is to update the site specific appendices that describe how the proposed designs at Barn Elms, Putney Embankment Foreshore and Victoria Embankment have evolved since phase two consultation. The addendum should be read in conjunction with the DDR (November 2011), which sets out the project-wide design process and approach as well as the key design principles that have been applied across the whole scheme.

1.1.4 Addenda updates have also been made to the Preliminary environmental information report (PEIR) and the relevant site information papers in support of the targeted consultations.

1.1.5 This DDR Addendum also describes the changes in planning policy since the original DDR was published in November 2011.

1.1.6 The design changes we are currently considering can be summarised as follows:

a. **Barn Elms**: A new alignment for the construction and permanent access roads using Queen Elizabeth Walk, along the northern and eastern perimeters of the Barn Elms Schools Sports Centre and Barn Elms Schools playing fields.

b. **Putney Embankment Foreshore**: Extending the main construction working area westwards in order to construct the permanent foreshore structure in a revised location; construction of the temporary slipway from prefabricated steel and assembled on site.
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1.1.7 We are also conducting targeted consultation in respect of Albert Embankment Foreshore, where we are considering a revised construction access route. However, as these potential changes will not affect the permanent design, they are not considered in this addendum report. The design development for this site remains as described in Appendix N of the DDR (November 2011).

1.1.8 Full details of the consultation responses relating to these sites, including key issues raised in respect of the proposed permanent designs, are provided in the Report on phase two consultation published in May 2012.

1.2 Report structure

1.2.1 This report is presented in two main parts. The first deals with the changes in relevant planning policy since the DDR was published as part of our phase two consultation material, whilst the second part contains addenda to the three respective site specific appendices in the DDR.

1.2.2 In the period since the publication of the DDR in November 2011, new national planning policy documents have been issued, notably the National Planning Statement for Waste Water (NPS) and the National Planning Policy Framework (NPPF). The application of regional and local planning policies has been amended to reflect the new policy guidance for projects such as the Thames Tunnel. This report therefore also updates Section 3.6 of the DDR to take into account the new guidance.

1.2.3 The three site specific appendices which are amended are:

a. Appendix C – Barn Elms
b. Appendix D – Putney Embankment Foreshore (formerly Putney Bridge Foreshore)
c. Appendix P – Victoria Embankment

1.2.4 Within each of the site specific appendices, updated information is provided on the new designs, and arranged under the following headings (where relevant), which correspond with the Design Council CABE’s good practice guidance (see www.cabe.org.uk/publications/design-and-access-statements) and the Department for Communities and Local Government Circular 01/06:

a. Location (local siting considerations; for the broader location considerations please refer to the Phase two scheme development report)
b. Use (the functional requirements specific to the site, and any public or other use proposed for the permanent site)
c. Amount, layout and scale (the size and arrangement of the development)
1 Introduction

d. **Landscaping and appearance** (the look and visual impression of above-ground works)

e. **Access and movement** (how the public or other users such as our occasional maintenance vehicles would be able to use the site and how we have designed the site to be accessible to all).

1.2.5 However, in the case of Barn Elms, as the targeted consultation relates to changes on the access arrangements to the site this is the only updated information provided.
2 Planning policy context

2.1.1 The following section provides an update to Section 3.6 of the DDR (November 2011) in respect of the planning policy context at strategic, national, regional and local levels. The relevant local planning policies are dealt with in each of the site specific appendices.

Strategic planning context

2.1.2 The application for DCO consent will be submitted to the Planning Inspectorate and will be judged by the decision maker primarily on the policies in the National Policy Statement for Waste Water (designated March 2012) (‘the NPS’). The project will also make reference to regional (Mayor of London) and local planning policies (local authorities). A full assessment of these policies will be provided in the Planning Statement that will accompany the application.

2.1.3 The following provides details on changes to the national planning policy context, which has emerged since the DDR was produced for the start of phase two consultation in November 2011. It also relates the regional and local planning policies relevant to the Thames Tunnels project within this new national planning policy context.

National planning context

2.1.4 The NPS sets out Government policy for the provision of major waste water infrastructure and is to be used by the Planning Inspectorate and the decision maker (the relevant Secretaries of State) as the primary basis for considering and determining Development Consent Order applications for waste water developments that fall within the definition of Nationally Significant Infrastructure Projects (NSIP), as defined in the Planning Act 2008 (‘the Act’). Through an Order to be made under Section 14(3) of the 2008 Act, the Government is anticipated to determine that development consent for the project should be dealt with through the processes of the 2008 Act because of its national significance.

2.1.5 The NPS is intended to be a self-contained and complete set of policies for all nationally significant waste water projects, including the Thames Tunnel project. The NPS makes clear that it has taken account of all other relevant national planning policy. Section 104(3) of the Planning Act 2008 requires that the decision maker must decide an application for waste water infrastructure in accordance with the relevant NPS, except to the extent it is satisfied that to do so would:

- lead to the UK being in breach of its international obligations;
- be in breach of any statutory duty that applies to the decision maker;
- be unlawful;
- result in adverse impacts from the development outweighing the benefits; or
- be contrary to regulations about how its decisions are to be taken.
2 Planning policy context

2.1.6 The NPS makes clear that the decision maker should start with a presumption in favour of granting consent for applications for Waste Water NSIPs. That presumption applies unless more specific policies set out in the NPS itself clearly indicate that consent should be refused.

2.1.7 The NPS confirms the need for the Thames Tunnel project which is considered crucial in order to meet our obligations under the Urban Waste Water Treatment Objective. In paragraphs 2.6.34, it is confirmed as the preferred solution and the Planning Inspectorate (for Nationally Significant Infrastructure Projects) is instructed as follows:

2.1.8 ‘The examining authority and the decision maker should undertake any assessment of an application for the development of the Thames Tunnel on the basis that the national need for this infrastructure has been demonstrated. The appropriate strategic alternatives to a tunnel have been considered and it has been concluded that it is the only option to address the problem of discharging unacceptable levels of untreated sewage into the River Thames within a reasonable time at a reasonable cost. It would be for Thames Water to justify in its application the specific design and route of the project that it is proposing, including any other options it has considered and ruled out.’

2.1.9 Section 3.5 of the NPS sets out the criteria for ‘good design’ in new waste water infrastructure proposals. It states at paragraph 3.5.2 that the decision maker needs to be satisfied that waste water infrastructure developments are “sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable as they can be”. Emphasis is given to the requirements for good architecture and appropriate landscaping, to ensure that the development is as visually attractive as possible and contributes to the quality of the area.

2.1.10 The NPS also advises that the application should set out how the proposal will take account of the projected impacts of climate change. The relevant requirements are described in Section 3.6 of the NPS. The project is required to satisfy the decision-maker that the proposals have taken into account potential impacts using the latest UK Climate Projections available at the time the ES was prepared. Appropriate mitigation or adaptation measures need to be identified, which should also cover the estimated lifetime of the new.

2.1.11 Section 4 of the NPS deals with generic impacts including landscape and visual impacts. In section 4.7 the guidance states that landscape and visual impacts should be assessed on a site by site basis, having regard to the local context.

2.1.12 The Planning Act does require the decision maker to have regard to any other matters which it considers are both important and relevant to its decision and, whilst this may include local planning policies, it is a matter for the Inspectorate and decision maker to decide what weight it wishes to give to such polices. The NPS makes clear that, in the event of a conflict between any documents and the NPS, it is the NPS which prevails for the purposes of decision making given the national significance of the infrastructure.
2.1.13 Section 104 (2) of the 2008 Act provides that the decision maker must have regard to any NPS that has effect and to any other matters which it thinks are both important and relevant to its decision. This requires some consideration of the National Planning Policy Framework (NPPF) which was published on 27th March 2012. The NPPF now replaces the majority of the Planning Policy Guidance Notes and Statements, with the exception of a small number of documents including PPS 10.

2.1.14 The NPPF does not contain specific policies for nationally significant infrastructure projects for which particular considerations apply. Paragraph 3 states: “These are determined in accordance with the decision-making framework set out in the Planning Act 2008 and relevant national policy statements for major infrastructure, as well as any other matters that are considered both important and relevant (which may include the National Planning Policy Framework). National policy statements form part of the overall framework of national planning policy, and are a material consideration in decisions on planning applications”.

2.1.15 Although the NPPF does not apply directly to the Thames Tunnel it does provide a recent and useful summary of government policy towards infrastructure, including waste water infrastructure.

2.1.16 Local planning authorities are urged to work with other authorities and providers to “take account of the need for strategic infrastructure including nationally significant infrastructure within their areas.’

2.1.17 The NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development (paragraph 6). This requires the planning system to perform economic, social and environmental roles. The economic role explicitly recognises the need for “identifying and coordinating development requirements, including the provision of infrastructure” and the environmental role recognises the need to “minimise waste and pollution and mitigate and adapt to climate change”.

2.1.18 In preparing local plans paragraph 162 states that “authorities should work with other authorities and providers to assess the quality and capacity of infrastructure for transport, water supply, wastewater and its treatment...”, and to “take account of the need for strategic infrastructure including nationally significant infrastructure within their areas”.

2.1.19 Other national planning documents of relevance include publications by the Department for Culture Media and Sport (DCMS), Department for Communities and Local Government (DCLG), Defra, English Heritage, Commission for Architecture and the Built Environment (CABE) (now at the Design Council), and the EA. The document on Climate Resilient Infrastructure, which set out UK Government’s overarching policy objectives for these areas, also provides important context for the project and is available at: http://www.defra.gov.uk/publications/2011/05/09/climate-resilient-infrastructure/
Regional planning context

2.1.20 At a regional level the London Plan sets out the Mayor’s spatial planning framework for London, which aims to promote an attractive, well designed and greener city. The London Plan 2011 was published in July 2011.

2.1.21 The London Plan provides support for the Thames Tunnel project through Policy 5.14 which states that the “The development of the Thames Tideway Sewer Tunnels to address London’s combined sewer overflows should be supported in principle”, and that relevant Boroughs should include policies within their LDFs to support the project in principle.

2.1.22 With regard to energy and sustainability issues, the draft Plan aims to tackle climate change by reducing London’s carbon dioxide emissions, managing resources more effectively and helping the city to cope with the effects of a changing climate. This is addressed through policies on overheating and cooling, encouraging urban greening including the use of green roofs, the management of flood risk, sustainable drainage, water efficiency and the management of water quality.

2.1.23 Local policies contained in LDFs are required to be in ‘general conformity’ with the London Plan.

Local planning context

2.1.24 The application for DCO consent will be judged by the decision maker primarily on the policies in the NPS. The Planning Inspectorate must also have regard to any Local Impact Report prepared by affected local planning authorities but there is no obligation on the Inspectorate to have regard to policies of the development plan.

2.1.25 A number of topics are highlighted in the NPS for which local policies may be a consideration in assessment of the proposal. These include land use and open space, ecology, landscape and heritage. Against this background, the Thames Tunnel project team has had regard to local planning policy and, particularly, to local planning designations of land where these help to inform an assessment of the potential impacts of the project.
## Appendices

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<td>Design development at Victoria Embankment Foreshore</td>
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Appendix C – Barn Elms

C.1 Summary of proposals

C.1.1 We need a worksite to intercept and divert flow from the existing local CSO, known as the West Putney Storm Relief CSO, to the main tunnel.

C.1.2 Our preferred site is situated in the south-eastern corner of the Barn Elms Schools sports centre in the London Borough of Richmond upon Thames and is located close to the boundary with the London Borough of Wandsworth. Details of the site selection process can be found in the Phase two scheme development report. Refer to Figure C.1 for a site location plan.

C.1.3 Our proposal comprises the following permanent works:
   a. A CSO drop shaft (approximately 6m internal diameter) with access covers
   b. Below-ground works, including structures to intercept and divert flows from the CSO to a connection tunnel; an interception chamber and valve chamber; a connection tunnel to the main tunnel; a connection culvert between the interception chamber, valve chamber and the drop shaft; and associated pits and ducts for cables, and hydraulic pipelines
   c. Above-ground works, including an electrical and control kiosk with an integrated ventilation column (approximately 4m high) within the structure and two permanent and elevated hardstanding areas with sloped or vertical retaining walls and grassed/level shrub landscaping. Both may be clad by perforated ‘habitat walls’ that would encase all the above proposed infrastructure on-site
   d. Permanent hardstanding for maintenance vehicle access.

C.1.4 Following feedback received during phase two consultation on the permanent design and appearance of the site, we are considering amendments to the scale and design of the permanent structures.

C.1.5 For further details of the engineering proposals, please refer to the relevant site-specific sections of the Preliminary environmental information report and the Barn Elms site information paper; addenda to both of these documents have been issued for targeted consultation.
C.2 Site-specific design objectives and constraints

C.2.1 In addition to the scheme-wide design principles described in Section 3 of the DDR, the design rationale for our proposals at Barn Elms has had regard to the following considerations:

a. The semi-rural open location on Metropolitan Open Land (MOL)
b. The use of the surrounding playing fields for sports and recreation
c. Significant ecological resources.

C.2.2 A review of relevant planning policies and designations has also influenced the design principles for the scheme, together with iterative scheme refinements in response to phase one consultation, on-going
engagement with stakeholders and our environmental impact assessment process.

**Planning policy**

C.2.3 In developing our proposals at Barn Elms we have had regard to the local development plan which comprises the London Borough of Richmond upon Thames Core Strategy (April 2009), the Development Management Plan November 2011 (DMP) and saved policies from the Unitary Development Plan 2005 (UDP).

C.2.4 Planning policies relating to designated Metropolitan Open Land (Core Strategy Policy CP10 and DMP Policy DM OS2), land use (UDP Policy B5) and biodiversity (Core Strategy Policy CP4 and DMP Policy OS5) are considered to be of most relevance and have been taken into account in the design and assessment of the project at this site.

**Outcomes of phase two consultation and other stakeholder engagement**

C.2.5 Having regard to the feedback received from phase two consultation and further stakeholder engagement, and taking account of on-going technical work, we are considering the following changes to our proposals for this site: a new alignment for the permanent access road and amendments to the scale and design of the permanent structures.

C.2.6 Full details of the consultation responses on this site including key issues raised with regard to the permanent design and access route are provided in the *Report on phase two consultation*.

**C.3 Design development**

C.3.1 Table C.1 describes how the design has developed with the information available at the time.

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<td><strong>Design development</strong></td>
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<tr>
<td>Phase one to phase two</td>
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<tr>
<td>Reduction in shaft diameter from 25m to approximately 6m internal diameter.</td>
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<td>No ventilation building.</td>
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### Design development

<table>
<thead>
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<th>Design development</th>
<th>Reason</th>
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<td>Location and design of the permanent structures and provision of habitat walls.</td>
<td>To conceal the project structures behind a habitat wall in order to promote biodiversity and to take into account changes in site level from the Beverley Brook footpath and views across the site.</td>
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### Phase two to targeted consultation

| The permanent access road would be routed to the north and east of the site via Queen Elizabeth Walk. | To comply with the preferred route suggested by the London Borough of Wandsworth and supported by the London Borough of Richmond upon Thames at phase two consultation. |

C.3.2 The changes we are considering in targeted consultation are described further under the relevant heading recommended in the Design Council CABE’s guidance.

### Access and movement

C.3.3 At phase two consultation, it was proposed that the permanent access would be via Queen Elizabeth Walk and an existing access road across the sports fields, which serves the boat house and rowing club facilities. We propose to extend the new access route southwards from the existing boat house access to the permanent works. This access would be used infrequently by vehicles to maintain the infrastructure and would be constructed using reinforced grass to blend into the playing fields. At phase two consultation, we also proposed that the temporary construction access would be from Rocks Lane (A306) and then along the northern side of the Beverley Brook watercourse to the proposed construction site using a dedicated haul road.

C.3.4 Having regard to the feedback received at phase two consultation, we are considering an alternative and combined construction and permanent site access route. The alternative permanent access route would be constructed on the same alignment of the construction access route along the northern and eastern perimeters of the Barn Elms Schools Playing Fields. As before, this access would be used infrequently by vehicles to maintain the infrastructure. These vehicles would access Queen Elizabeth Walk from Upper Richmond Road (A205) and Rocks Lane (A306) before passing through a narrow section of private road that currently serves the playing fields. The width of the new route would be reduced from the width required for the construction phase.

C.3.5 The location of the permanent works in the southern-most corner of the site enables the access route to hug the eastern boundary of the site.
along the existing tree line, thus minimising the impact on the sports fields. From late 2011 to spring 2012, the Environment Agency used a similar access arrangement for its improvement works to Beverley Brook.

C.3.6 While the site is publicly accessible to users of the sports fields, users would not be directly encouraged to interact with the permanent structures. The structures have been designed to blend with their surrounds as much as possible and potential planting could act as a natural barrier between the sports fields and the permanent structures.
D.1 **Summary of proposals**

D.1.1 We need a worksite to intercept and divert flow from the existing local CSO, known as the Putney Bridge CSO, to the main tunnel.

D.1.2 Our preferred site, previously known as Putney Bridge Foreshore, and now referred to as Putney Embankment Foreshore due to its change in location, is situated in the River Thames to the west of Putney Bridge in the London Borough of Wandsworth. Details of the site selection process can be found in the *Phase two scheme development report*. Refer to Figure D.1 for a site location plan.

D.1.3 Our proposals comprise the following permanent works:

a. A CSO drop shaft (approximately 6m internal diameter) with access covers

b. Below-ground works, including structures to intercept and divert flow from the CSO to a connection tunnel; an interception chamber located beneath the shore arch of Putney Bridge; a connection tunnel to the main tunnel; and a connection culvert between the interception chamber, valve chambers and drop shaft

c. Above-ground works, including a new area of hardstanding located on the foreshore for the drop shaft, valve chamber, and an above-ground ventilation structure (approximately 5m high) and repositioned CSO outfall, including a new and realigned river wall. The new area of hardstanding would be at the same level as the existing adjacent pavement. The hardstanding would include a repositioned CSO outfall, a new and realigned river wall. Works would also include an above-ground electrical and control kiosk on Waterman’s Green, adjacent to the disused toilet facility and an interception chamber ventilation column on Putney Bridge (approximately 6m high).

D.1.4 In response to feedback received during phase two consultation on the permanent design and appearance of the site, we are considering amendments to the scale and design of the permanent structures.

D.1.5 For further details of the engineering proposals, please refer to the relevant site specific sections of the *Preliminary environmental information report* and the *Putney Bridge Foreshore site information paper*. We have issued addenda to both of these documents for targeted consultation.
D.2 Site-specific design objectives and constraints

D.2.1 In addition to the scheme-wide design principles described in Section 3 of the DDR, the design rationale for our proposals at Putney Embankment Foreshore has had regard to the following considerations:

- the Environment Agency stated that, in principle, designs should minimise encroachment into the foreshore
- proximity to the Grade II listed Putney Bridge and location within the Putney Embankment Conservation Area
- ensuring that the permanent operation and historic identity of the slipway is not compromised
• preventing the accumulation of debris and rubbish at the end of the slipway
• avoiding tree loss as far as possible
• proximity of commercial and residential properties along Lower Richmond Road, including Kenilworth Court
• avoiding creating a navigational hazard or increased deposition in the river.

D.2.2 A review of relevant planning policies and designations has also influenced the design principles for the scheme, together with iterative scheme refinements as a result of phase one consultation, on-going engagement with stakeholders and our environmental impact assessment process.

Planning policy

2.1.26 In developing our proposals at Putney Bridge Foreshore we have had regard to the local development plan which comprises the London Borough of Wandsworth Core Strategy (October 2010), the Development Management Policies Document February 2012 (DMPD), and the Site Specific Allocations Document (February 2012).

2.1.27 Planning policies relating to heritage (Core Strategy Policy IS3 and DMPD Policy DMS2), land use (Core Strategy Policy PL9), biodiversity (Core Strategy Policy PL4 and DMPD Policies DMO4, DMO6 and DMO7) are considered to be of most relevance and have been taken into account in the design and assessment of the project at this site.

Outcomes of phase two consultation and stakeholder engagement

D.2.3 Having taken all comments received following phase two consultation into account, we still believe that Putney Embankment Foreshore is the most appropriate site for the interception of the Putney Bridge CSO. However, we are considering changes to the location and design of our permanent structures, which will be the subject of targeted consultation.

D.2.4 Potential design changes of the permanent proposals will follow our scheme-wide design principles and take into account comments made during phase two consultation as well as on-going engagement with the London Borough of Wandsworth and other stakeholders.

D.2.5 Comments received in relation to the permanent design included concerns that the foreshore structure would project above and in front of the historic slipway. We are seeking to address this through design development.

D.2.6 Full details of the consultation responses relating to this site, including key issues raised in respect of the permanent design, are provided in the Report on phase two consultation.
D.3 Design development

D.3.1 The design presented at phase two was completed before all surveys and technical studies had been carried out. The final design may change as a result of these studies as well as feedback from targeted consultation.

D.3.2 Table D.1 describes how the design has developed since phase one consultation. Changes are also illustrated in Figure D.2 and Figure D.3.

Table D.1 Design development at Putney Embankment Foreshore following phase one consultation

<table>
<thead>
<tr>
<th>Design development</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site moved westwards.</td>
<td>Proximity of the Grade II listed Putney Bridge. Moving the shaft also allows the slipway to be maintained/reinstated in its existing position.</td>
</tr>
<tr>
<td>Shape of the reduced area of permanent hardstanding optimised.</td>
<td>Reduce the encroachment of the permanent structures into the River Thames and the resulting impact on aquatic ecology and flood storage levels. Reduce the visual impact on the wider Putney Embankment Conservation Area and the impact on views from heritage assets.</td>
</tr>
<tr>
<td>Ventilation column relocated onto the permanent platform area.</td>
<td>Reduce proximity to the Grade II listed Putney Bridge.</td>
</tr>
<tr>
<td>Ventilation column lowered from 10m to approximately 5m.</td>
<td>Modified scheme-wide air management proposals and column height consistent across all CSO sites.</td>
</tr>
<tr>
<td>Interception chamber located beneath the shore arch of Putney Bridge designed to be as low as possible.</td>
<td>Reduce the visual impact on the Grade II listed Putney Bridge following comments received from the Design Council CABE.</td>
</tr>
<tr>
<td>Protecting the existing historic slipway location and alignment.</td>
<td>Ensure the permanent operation of the slipway is not compromised for river users and that its existing alignment is retained.</td>
</tr>
<tr>
<td>Electrical and control kiosk located within Waterman’s Green.</td>
<td>Minimise visual impact and avoid damage to important trees protected under the conservation</td>
</tr>
</tbody>
</table>
## Appendix D – Putney Embankment Foreshore

<table>
<thead>
<tr>
<th>Design development</th>
<th>Reason</th>
</tr>
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<tbody>
<tr>
<td>area designation.</td>
<td></td>
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</table>

### Phase two to targeted consultation

<table>
<thead>
<tr>
<th>Design development</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent foreshore structure moved further westwards.</td>
<td>To increase the distance from the Grade II listed Putney Bridge and to remove the level difference and awkward juxtaposition between the existing public drawdock and the proposed foreshore structure. To address concerns that the foreshore structure would project above and in front the historic slipway.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design development</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change to the shape and layout of permanent foreshore structure.</td>
<td>To create a bold marker at the beginning of Putney Embankment, and link it with the University Boat Race stone to make a high quality public space that will incorporate materials, street furniture and surfacing appropriate to the historic setting.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design development</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width of the electrical and control kiosk reduced and re-located adjacent to the west of the disused toilet block on Waterman’s Green.</td>
<td>To reduce the kiosk's visual prominence, widen access along Waterman's Green and avoid damage to significant trees, except one adjacent holly tree.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design development</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary kiosk re-located on the permanent foreshore structure.</td>
<td>Reducing the size of the kiosk on Waterman’s Green would require a secondary kiosk, creation of a marker at the end of the embankment to mediate the level difference between the pavement and the foreshore structure at this point and provide a surface for interpretive information relating to the history of the site, including major events, the Grade II listed Putney Bridge, historic slipway and other heritage features.</td>
</tr>
</tbody>
</table>

**D.3.3** The design development is explained in further detail below, together with illustrations to show how the scheme has evolved at this site since the first phase of consultation. The changes we are considering in targeted consultation are described further under the headings recommended in the Design Council CABE’s guidance.
Figure D.2 Permanent design presented at phase one consultation

Figure D.3 Permanent design presented at phase two consultation
Appendix D – Putney Embankment Foreshore

Figure D.4 Permanent design presented for targeted consultation

Location

D.3.4 This section describes the detailed arrangement and positioning of the site and the key site-specific considerations, both above ground and below ground.

D.3.5 Please refer to the *Phase two scheme development report* for an overview of the scheme and how the location of the site has been developed both up until and since phase one consultation.

D.3.6 Putney Embankment Foreshore is situated on the River Thames to the west of Putney Bridge and at the junction of Lower Richmond Road and the Embankment in the London Borough of Wandsworth. There are residential properties on the south side of Lower Richmond Road and a restaurant to the west of the site on the junction of the Embankment and Lower Richmond Road. Refer to Figure D.5 for an aerial photograph of the site.

D.3.7 The permanent structure is situated approximately 30m further west than the location shown in the phase two consultation material. As a result the permanent structure would be closer to Putney Pier (approximately 25m away), and parallel to the Embankment and two storey restaurant building.

D.3.8 A key concern raised at phase two consultation by the London Borough of Wandsworth was that the permanent structure had an uncomfortable and visually intrusive relationship with the historic slipway. The PLA also
commented that the permanent structure appeared to prevent access and the ability of vessels to load and discharge alongside the existing slipway.

D.3.9 The new location proposed for targeted consultation would further separate the permanent foreshore structure from the Grade II listed Putney Bridge and also remove the awkward junction with the historic slipway.

Figure D.5 Aerial photograph of Putney Bridge Foreshore –

Use

D.3.10 The proposed use of the Putney Embankment Foreshore site has not changed following phase two consultation and remains an interception site to divert flows from the Putney Bridge CSO to the main tunnel. The site would also continue to accommodate the permanent structures required to operate the project infrastructure.

D.3.11 The permanent platform would continue to provide a new area of public realm adjacent to the Embankment; however, the proposed new location would align the structure with the University Boat Race stone, which is used as the starting point for the annual event and other river boat events.

2.1.28 The outer face of the slipway is currently used for mooring and vessel loading/unloading activities. The proposed permanent platform area would enable these activities to continue at the same point in a safe manner.

Amount, layout and scale of development

D.3.12 Re-positioning the site west of Putney Bridge made it possible to retain the existing slipway in its present location. Maintaining the slipway’s current location and alignment would ensure that its current usage is not compromised, which was a shared concern raised in the Design Council CABE phase one review and by the Port of London Authority, the Greater
London Authority, the London Borough of Wandsworth and community groups, at both phase one and phase two consultation.

D.3.13 Repositioning the permanent foreshore structure approximately 30m further west of Putney Bridge would create a greater separation between our works, the bridge and the historic slipway. The proposed new location would maintain the slipway’s current location, alignment and usage and avoid juxtaposing the proposed structure with the slipway. This conservation of the character of heritage assets is in line with Core Strategy Policy IS3 and DMPD Policy DMS 2.

D.3.14 The permanent foreshore structure would cover an area of 0.05ha, compared to 0.04ha in the phase two layout, which is an increased encroachment into the foreshore compared to the phase two proposals. The increase in size of the permanent foreshore structure is a result of the relocation and the space and layout requirements for maintenance, crane and vehicle access during the operational phase. However, we are in discussions with the relevant stakeholders, including the PLA and the Environment Agency, in order to minimise the impact of the permanent works on the foreshore and navigation in the river.

D.3.15 In order to accommodate the permanent works and repositioned CSO outfall, we still propose to realign the existing river wall with a new river wall structure and permanent platform area, in agreement with the Environment Agency and English Heritage. The new CSO outfall location would avoid further scour/erosion of the foreshore from outfalls on the arches of Putney Bridge and improve operational access to the structure.

D.3.16 Following comments received from the Design Council CABE at phase one, the interception chamber located beneath the southernmost arch of Putney Bridge to intercept the CSO has been re-designed to be as low as possible. The proposed curved geometry responds to this aim and will be retained in our proposals post phase two. This would avoid impeding the clear view of the abutment of the shore bridge arch from the river and the foreshore.

D.3.17 Following feedback from phase two and a review of scheme-wide air management proposals, we are considering minor amendments to the scale and design of our ventilation structures. We still propose to locate of the column on the permanent platform area in response to comments regarding the proximity to the listed bridge and in accordance DMPD Policy DMS 2, which requires new developments to sustain the character and setting of heritage assets.

D.3.18 We also still propose a separate ventilation column of smaller diameter adjacent to Putney Bridge, which is necessary to ventilate the interception chamber located beneath the shore arch.

D.3.19 We propose to locate an electrical and control kiosk adjacent to the west of the disused toilet block on Waterman’s Green. The kiosk would be narrower than proposed at phase two, in order to reduce its visual prominence, widen access along Waterman’s Green and avoid damage to
significant trees (in line with DMPD Policy DMO5). However, an adjacent holly tree would still be affected and need to be removed.

D.3.20 The reduction in size of the kiosk on Waterman’s Green requires a secondary kiosk to be located on the permanent foreshore area. We have positioned the secondary kiosk to contribute positively to the overall composition of the site. It would provide a vertical marker to the end of the Embankment and the threshold onto the foreshore structure. Positioning it at the western end of the structure where the pavement level falls helps mediate the level change and provides a clean junction for the intersection of the various guard rails required here. Finally, in the specification for surface finishes, we anticipate that interpretive material about the site and its history could be embossed and engraved on the structure.

Figure D.6 Site layout plan Putney Embankment Foreshore at phase two consultation
Figure D.7 Site layout plan Putney Embankment Foreshore at targeted consultation

Landscaping and appearance

D.3.21 The shape and treatment of the permanent hardstanding area has been optimised for both functional and aesthetic purposes, while minimising encroachment into the river. Comments received from the Greater London Authority and the Design Council CABE at phase one consultation stated that an improved public realm should be reinstated following completion of the construction activities. We continue to design the permanent platform area as a useable potential public space with public seats that could be constructed from recycled timber fenders.

D.3.22 The Design Council CABE phase one review stressed the importance of reflecting the simplicity and quality of the setting through a design with ‘simple, orthogonal geometry’. In response to these comments received from the Design Council CABE, we have designed the bridge-facing edge of the platform to be perpendicular to the existing slipway, thus creating a
parallel edge and a complementary visual relationship with the Putney Bridge. Our current design develops this further by making the western end also parallel to the bridge.

Figure D.8 View of proposed design from Putney Bridge

D.3.23 We continue to propose high quality materials, street furniture and surfacing appropriate to the historic setting post phase two consultation. We would make a feature of the University Boat Race stone by linking it to the new structure with a brass line inlay in the pavement that would also run down the river wall. Other elements on the structure are composed around this line. This sensitivity to the local environment is in line with Core Strategy Policy PL9, which seeks to support and protect Putney Embankment's special recreational character and function, particularly in connection with river sports.

D.3.24 The new river wall would have timber fenders that would complement the existing handrail and fenders to the edge of the slipway. We would make provision for the installation of anti-litter accumulation measures following construction, if required.

D.3.25 We anticipate that functional materials would be appropriate to the new space. Linear granite paving could be incorporated into the floor surface, in keeping with the cobbled treatment of the slipway, but with a more accessible finish. The river wall material shown here is a stone with horizontal grooves marking pertinent river levels (refer to Section 3 of the
We have emphasised the marine nature of the structure through the vertical fendering.

**Figure D.9 Design examples**

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D.3.26 The Environment Agency's *Thames Estuary 2100* guidance encourages the formation of visual links with the river. Across the project, we need to raise our structures for hydraulic reasons and are seeking to enhance the river environment; therefore, we propose to raise the finished level of the structure to the current flood defence level in order to use less visually intrusive barriers to the river edge.

D.3.27 In order to keep the new structure as simple and functional as possible, we propose to include minimal street furniture to reduce visual clutter.

D.3.28 The existing listed bollards would be refurbished and relocated nearby as part of the existing footway.

**Access and movement**

D.3.29 The new platform would extend access to views over the River Thames. We propose to install removable bollards along the edge of the platform to the Putney Embankment to prohibit vehicular access. We have, however, provided an area to ensure sufficient loading space for crane access for infrequent maintenance purposes.

D.3.30 Comments received from the Design Council CABE request that we design an inclusive and safe environment, with careful consideration of streetscape materials and access. The new public realm would be designed to match the existing pavement levels to ensure a continuous alignment.

D.3.31 Following phase two consultation, access to the proposed foreshore structure would remain from the Embankment. The new location of the permanent structure creates a difference in levels on the western edge between the existing Embankment and the permanent structure. Steps and a graduated slope for disabled, pushchair and vehicular access would be incorporated to deal with this level change and ensure that the new area of public realm is fully accessible.
Appendix P – Victoria Embankment Foreshore

P.1 Summary of proposals

P.1.1 We need a worksite to control the local CSO, known as the Regent Street CSO, by connecting the northern Low Level Sewer No.1 to the main tunnel.

P.1.2 Our preferred site is situated on the foreshore of the River Thames in the City of Westminster, off the Victoria Embankment (A3211). It includes the established location of the moored vessel the Tattershall Castle, which would be relocated nearby to the south as part of the works. The site is adjacent to the Hispaniola vessel moored close to Hungerford Bridge (rail) and the Golden Jubilee footbridges. Refer to Figure P.11 for a site location plan.

P.1.3 Our proposals will comprise the following permanent works:

a. A rectangular structure projecting into the foreshore along the existing listed embankment wall that would enclose an overflow weir chamber online at the northern Low Level Sewer No.1 and various chambers required to direct the flow from the northern Low Level Sewer No.1 into the CSO drop shaft. The rectangular projection would accommodate two ventilation columns (approximately 5m high) with an associated below-ground passive filter chamber, and the electrical and control equipment kiosk. A smaller diameter ventilation column (approximately 6m high) would be located in the footpath along Victoria Embankment.

b. A separate structure enclosing a drop shaft (approximately 13m in internal diameter), which would be linked to the main tunnel via a connection tunnel. The structure would extend up to existing ground level and form an area of landscaped public realm enclosed by river walls faced with stone and stone parapets.

P.1.4 For further details of the engineering proposals, please refer to the relevant site-specific sections of the Preliminary environmental information report, the Victoria Embankment Foreshore site information paper and the addenda to both of these documents that have been issued for targeted consultation.
P.2 Site-specific design objectives and constraints

P.2.1 In addition to the scheme-wide design principles described in Section 3 of the DDR, the design rationale for our proposals at Victoria Embankment has had regard to the following considerations:

a. The orthogonal form, robust materials, period detailing/furniture and mature tree line along the listed embankment wall, and period extensions, such as Cleopatra’s Needle and the Whitehall Steps/Royal Air Force memorial

b. Designated and protected views along the riverside, including views of the Palace of Westminster World Heritage Site
Appendix P – Victoria Embankment Foreshore

c. The relatively fast flow and depth of the river at this location

d. The location in the Westminster Central Activities Zone, with a high number of tourists in the vicinity, the pub use within the site (in the Tattershall Castle) and coach parking

e. The proximity of the Bakerloo Line London Underground tunnels, the Golden Jubilee footbridges and Charing Cross rail bridge

f. The proximity to the Embankment Pier and the river traffic that uses it

g. The Environment Agency's principle that designs should minimise encroachment in the foreshore.

P.2.2 A review of relevant planning policies and designations has also influenced the design principles for the scheme, together with iterative scheme refinements as a result of phase one consultation, on-going engagement with stakeholders and our environmental impact assessment process.

Planning policy

P.2.3 In developing our proposals at Victoria Embankment Foreshore we have had regard to the local development plan which comprises the City of Westminster’s Core Strategy 2011 and saved policies from the Council’s Unitary Development Plan 2007 (UDP).

P.2.4 Planning policies relating to landscape / views (Core Strategy Policy CS25 and UDP Policies ENV 15, ENV 16, DES 1, DES 5, DES 7, DES 8, DES 14, DES 15, DES 16, RIV 1, RIV 2, RIV 5 and RIV 9) heritage (Core Strategy Policies CS24, CS27 and UDP Policies DES 9, DES 10 and DES 11), biodiversity (Core Strategy Policies CS35, CS36, CS37 and UDP Policies ENV 17 and RIV 3) and open space (Core Strategy Policy CS34 and UDP Policy DES 12) are considered to be of most relevance and have been taken into account in the design and assessment of the project at this site.

Outcomes of phase two consultation and other stakeholder engagement

P.2.5 Comments were received from Westminster City Council, the Greater London Authority, the Port of London Authority, the Environment Agency, English Heritage, the community and others. The key issues raised with regard to permanent design were:

- that the proposals should be in keeping with and blend into the character of the local area/minimise visual impact having regard to the civic environment and the world heritage site
- concerns regarding the effects on heritage assets
- that further consideration of the foreshore structure is required, including reducing the size of the structures within the foreshore of the River Thames.
P.2.6 Having taken all comments received into consideration, we still believe that Victoria Embankment Foreshore is the most appropriate site. Full details of the consultation responses relating to this site are provided in the Report on phase two consultation.

P.2.7 In order to address the concerns raised, we are considering the following changes to our proposals for this site including: amendments to the layout and shape of our permanent structures to reduce the footprint in the river, improve the relationship with the listed embankment wall and reduce the effect on river prospect views towards the world heritage site. Details of these changes are set out below.

P.3 Design development

P.3.1 The design presented here was completed before all surveys, technical studies, and open space and socio-economic surveys had been carried out. We may alter the final design in response to these surveys and feedback from phase two consultation. Table C.1 describes how the design has developed since phase one consultation with the information available at the time, as illustrated in Figure P.22 and Figure P.33.

Table P.1 Design development at Victoria Embankment Foreshore

<table>
<thead>
<tr>
<th>Design development</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move structure westwards.</td>
<td>To move away from the Bakerloo Line and improve the alignment with existing heritage assets and gardens; also to reduce the impact on river flow.</td>
</tr>
<tr>
<td>Increase area of projecting structure and drop shaft diameter.</td>
<td>A hydraulic requirement established as a result of physical modelling of the drop shaft.</td>
</tr>
<tr>
<td>Give the projecting structure an orthogonal shape rather than curved.</td>
<td>Feedback from stakeholders and the result of fluvial modelling.</td>
</tr>
<tr>
<td>Landscaping.</td>
<td>Amendments to the layout as a result of stakeholder feedback.</td>
</tr>
<tr>
<td>More, but smaller, ventilation columns.</td>
<td>Modified scheme-wide air management proposals.</td>
</tr>
<tr>
<td>Identify a permanent relocation site for the Tattershall Castle.</td>
<td>The site is in the present location of the Tattershall Castle and disruption to business should be minimised.</td>
</tr>
<tr>
<td>Design development</td>
<td>Reason</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Phase two to targeted consultation</td>
<td></td>
</tr>
<tr>
<td>Amend the layout and shape of the structure to separate the interception chambers and drop shaft.</td>
<td>To reduce and break down the footprint of the structure in the foreshore and the perceived bulk in the river prospect views towards the Palace of Westminster World Heritage Site.</td>
</tr>
<tr>
<td>Permanent relocation site for the Tattershall Castle.</td>
<td>Final location of the Tattershall Castle amended to minimise the impact on views along Horse Guards Avenue.</td>
</tr>
<tr>
<td>Reduce the internal diameter of drop shaft</td>
<td>Amendment to construction technique.</td>
</tr>
</tbody>
</table>

P.3.2 The design development is explained in further detail below, together with illustrations to show how the scheme has evolved at this site since the first phase of consultation. The changes we are considering in targeted consultation are described further under the headings recommended in the Design Council CABE’s guidance.
Figure P.2 Permanent design presented at phase one consultation

Figure P.3 Permanent design presented at phase two consultation
Location

P.3.3 This section describes the detailed siting and positioning of the site and the key site-specific considerations.

P.3.4 The site lies off the Victoria Embankment, where the Tattershall Castle is currently moored. We propose to re-provide the mooring further to the west, subject to the necessary agreements. Embankment Millennium Pier lies to the north of the site beyond Hungerford Bridge, and Embankment Station is situated to the northwest. The west side of the site is bordered by Victoria Embankment (the A3211), the pavement of which forms the Thames Path, and beyond are the Victoria Embankment Gardens. Figure P.55 illustrates the aerial view of the site.

P.3.5 Please refer to the Phase two scheme development report for an overview of the scheme and how we selected the location of the site.

P.3.6 Three key considerations influenced the proposed location and form of the scheme presented at phase two:

P.3.7 Firstly, the location needs to be close to the existing Regent Street CSO.

P.3.8 Secondly, the requirement for suitable separation between the drop shaft and the Bakerloo Line tunnels, the piers of the railway and footbridges, and the navigation channel from Embankment Pier.

P.3.9 Thirdly, the effect of the proposed foreshore on the appearance of the historic embankment. The proposals presented at phase two sought to design an orthogonal structure which reflected existing embankment projections, whilst having regard to the historic rhythm of projections in the existing listed embankment wall.
Figure P.5 Aerial photograph of Victoria Embankment Foreshore
P.3.10 The slight move southwards from the phase one location has responded to many of the heritage and townscape issues raised, as follows:

a. It would be an appropriate distance from the listed steamer pier bay rather than a direct attachment to it

b. It would be more in keeping with the established ‘rhythm’ of projections into the river, as established by the Royal Air Force Memorial, steamer piers and Cleopatra’s Needle

c. A location on the axis established by the roundel in the Embankment Gardens would subtly relate this contemporary space to the bigger and grander gardens

P.3.11 Subsequent discussions in regular meetings with Westminster City Council and English Heritage, and the Design Council CABE review prior to phase two established that the new proposed location would help address their issues, in line with policy requirements.

P.3.12 At phase two we proposed to relocate the Tattershall Castle opposite Horse Guards Avenue in order to construct our works. The Tattershall Castle has had a permanent mooring in its current location since 1984. At phase two we received objections to the proposed relocation from both
English Heritage and Westminster City Council based on the impact on the setting of the historic environment, including the world heritage site. As a result, we have moved the final location back towards our proposed structure and away from world heritage site and the views along Horse Guards Avenue. We consider it appropriate to move the vessel a short distance and that it would not materially alter the character of the area.

P.3.13 We would need to create a new mooring for the Tattershall Castle and a means of access to the vessel over the existing river wall, which is listed and provides flood defence.

Use

P.3.14 The site would control the Regent Street CSO flows via an overflow weir on the northern Low Level Sewer No.1. Modelling undertaken since phase one consultation has determined that it is feasible to make the necessary reduction in overflows by intercepting a substantial volume of flow from the northern Low Level Sewer No.1 with a longer (20m) weir, and undertaking minor below-ground works. Ventilation equipment would also be installed below and above ground at the proposed site, including two columns (between 4m and 8m high) to ventilate the drop shaft, and one column (approximately 6m high) to ventilate the overflow weir chamber. Electrical and control kiosks would also be installed.

P.3.15 We consider that the creation of a new area of high-quality public realm at this busy central London riverside location would further the aims of planning policy, particularly Saved UDP Policies RIV 9 (The Thames Path), RIV 10 (Encouraging access to the river and its foreshore), and CENT 4 (Central London Activities Zone), as well as Core Strategy Policies CS27 (Urban Design) and CS36 (Blue Ribbon Network). There has been pressure on pavement space in the vicinity for some years from coach disembarkation and other tourist activities, kiosks, and the pier and tube stations. This is evidenced by the refusal of planning permission for new kiosks, a cycle hire station and ticket shelters. Additionally, we have undertaken pedestrian counts, which will be reported in the Environmental Statement.

P.3.16 The footbridge and the Thames Path riverside walk here are increasingly busy thoroughfares, during the day and in the evening. They are characterised by movement and noise and do not encourage people to stop and enjoy the views. This site offers an opportunity to relieve some of the pressure on pavement space and would provide a calm area, away from traffic, affording clear visual links to the river and allowing viewers to gain a greater appreciation of the river and interpretation of the historic surroundings.

P.3.17 Our proposals include space for a commercial kiosk as part of the structure housing the electrical and control kiosk which could be used as a café or information kiosk and provide an activity for the site. Previous proposals to provide commercial accommodation noted above have been unsuccessful due to the limited pavement space. The new structure would provide sufficient space and allow for the separated ‘island’ structure to be
closed off and used in the future as a performance space; however, this would be provided by other developers.

P.3.18 One outcome of the phase one consultation process and the Design Council CABE reviews was that we should seek to provide a space that is calm, welcoming and self-contained. We do not consider that the proposed commercial kiosk would hinder this requirement and we believe that the separate island structure would help to meet it.

P.3.19 The island structure itself would provide a unique piece of public realm for London, surrounded on all sides by water. We expect that the space will primarily be used as a seating area and viewing platform to enjoy vistas towards the London Eye and the world heritage site. However, the layout of the space also lends itself to public performance – either informal street performance, or more formal staged events.

**Amount, layout and scale of development**

P.3.20 The drop shaft would be approximately 13m in internal diameter rather than 16m as put forward at phase two, following a change in the proposed construction technique. As detailed fluvial modelling had not been undertaken at phase one consultation, we had adopted a project-wide approach whereby the structures projecting into the foreshore/river would be curved in order to minimise obstruction and alteration of flow. Both Westminster City Council and English Heritage raised issues regarding the curved shape of the structure and expressed a preference for a more traditionally inspired shape.

P.3.21 The proposed shape of the structure at phase two was originally supported in the Design Council CABE review by both Westminster City Council and English Heritage. In their response to phase two consultation, both were concerned about the size of the structure and the effect on the historic environment.

P.3.22 In response to comments made during phase two consultation regarding reducing the footprint of the structure in the river, improving its relationship with the listed embankment wall, and reducing the effect on river prospect views towards the world heritage site and the setting of surrounding listed buildings, we have considered two approaches in addition to the design presented at phase two consultation: a symmetrical design and an island design.

P.3.23 The symmetrical design is similar to the phase two design; however, additional structures would be required within the river to make the design symmetrical. This would significantly increase the footprint within the river compared to the phase two proposal (by approximately 20 per cent) and, taken in the context of river views, it would not reduce the bulk of the structure.

P.3.24 The island design allows us to split the structure as it appears above the river bed. This would reduce the size of the overall footprint of our permanent works from that presented at phase two by about ten per cent. Separating the structures would reduce the scale of the development in
views towards the world heritage site and give the structure a nautical character with the interception structure and drop shaft mirroring moored vessels along the river. Furthermore, the structure provides a clear but sculptural indication of the form of the engineering structures below the surface that are essential to intercept and divert the flows from the low level sewer.

P.3.25 Given the reduced impact on views and the 30 per cent difference in footprint between the symmetrical and island designs we believe that the island design should be taken forward.

Figure P.7 Proposed Symmetrical option

Figure P.8 View of proposed Symmetrical option from Golden Jubilee footbridge
P.3.26 The proposed ‘island’ design splits the engineering structures into two parts, which allows them to read as separate features and enables both structures to serve as new areas of public realm that would complement the historic setting in different ways. Refer to Figure P.100 for a site layout plan. The two parts of the structures would be as follows:

a. A rectangular structure approximately 53m long and 11m wide attached to the existing listed embankment wall that would house the various chambers required to direct the flow from the northern Low Level Sewer No.1 into the CSO drop shaft. The two electrical and control kiosks would be combined and located in the centre of the structure along the boundary with the existing Victoria Embankment (approximately 19m long, 2m wide and 5.6m high). This would permanently affect a longer length of the listed embankment wall compared to our design at phase two consultation but a smaller area would extend into the river.

b. The CSO drop shaft would form a separate ‘island’ structure within the river of approximately 22m in diameter. This structure would be connected to the interception and overflow structure by a curved pedestrian bridge and a curved vehicular bridge for maintenance purposes at ground level and a connection culvert running beneath the river bed.

P.3.27 We have undertaken physical fluvial modelling to establish an appropriate shape, both in terms of townscape/heritage and to respond to the issues raised by the Port of London Authority and the Greater London Authority regarding river flow, navigation, erosion and siltation. We have found that a rectangular interception structure and a circular island structure would be acceptable in terms of potential hydrology and navigation effects at this location. This would also help minimise the impact on local and metropolitan views, in line with Core Strategy Policy CS25. We also consider that it would respect long views of the river and incorporate references to local architectural features, in line with Core Strategy Policy CS36.
The proposed new location of the Tattershall Castle has been considered in relation to local and metropolitan views as well as its effect on the setting of the world heritage site and nearby listed buildings. We consider it appropriate in terms of scale in the new location identified nearby. The slight repositioning will not affect the townscape character of the area.

The Environment Agency’s *Thames Estuary 2100* guidance encourages the formation of visual links with the river. As a project, we are seeking to enhance the river environment; therefore, we propose to raise the finished level of the structure to the current flood defence level in order to use less visually intrusive barriers to the river edge. In the case of Victoria Embankment, this would have the benefit of attracting people from the busy pavement of the dual carriageway and creating interesting seating and viewing spaces, looking both inward and along/the river to the London Eye and Palace of Westminster.
Landscaping and appearance

P.3.30 In order to address concerns raised during phase two consultation we have made some major changes to the appearance of our proposals. We have split the structure above the bed of the river into two structures, see Figure P.100.

P.3.31 The surface of the shaft would create a modern and unique island viewing platform from where views of the iconic structures of the world heritage site and south bank can be enjoyed. The iconic design would clearly distinguish the structure as a new feature, with a modern river-related purpose and function. In views along the river, the separation between the structures would mirror the appearance of moored vessels along the river.

P.3.32 To respond to the issues raised regarding the potential effects on the appearance of the historic embankment and established planning policy, such as Core Strategy Policy CS24 and Saved UDP Policy DES9, the landscaping and materials seek to respect the surroundings while being clearly distinguishable.
Following discussions with Westminster City Council and English Heritage, a modern interpretation of the form and materials is considered appropriate. The recent Golden Jubilee footbridges, the Whitehall/Northumberland Avenue/Trafalgar Square public realm improvements and nearby river piers provide local examples of how contemporary forms and high-quality modern materials can coexist with other more substantial and historic forms.

The interception structure would extend along the existing embankment and out into the river. The long rectangular shape would better respect the strong linear character of the river wall and reduce the apparent bulk of the structure in views along the river. It has been designed to reflect existing 19th century elements of the wall that extend into the river at intervals along its length, including the RAF memorial/Whitehall Steps and Cleopatra’s Needle. As a result we propose to place two stone plinths with a bronze cap, each approximately 1.6m high, to mark where the listed river wall meets the new structure and a feature wall to mark the boundary between the new structure and existing pavement.

The surface of the structure would rise from south to north to enable maintenance and step free access to the island at the south and an area above flood defence level to the north. The transition between these areas would be formed by a series of wide steps on the structure and stairs between the northern end and the existing footpath.

The electrical and control kiosks would be housed in the proposed feature wall. Such features are common along the embankment where there are numerous memorials, such as the Bazalgette and RAF memorials. The feature wall would also contain space for commercial kiosk. The wall would provide space on the road side to provide information about the project, such as a map of the Thames Tunnel containing key facts and information. On the river side there would be openings for the commercial kiosk and to provide access to the electrical and control kiosks. The series of steps running north to south across the structure could be used to provide space for tables and chairs in the event of the kiosk being used as a café.

We anticipate that both spaces would be used as a mustering and meeting point, for example by tourists, away from the traffic of the Embankment. A commercial café would provide a reason to linger and enjoy the views. The overall structure will provide an interesting space that would open up views of the river and the surrounding area and would not only be accessible but a positive and playful part of the landscape. The higher levels would have a simple, largely open brass balustrade on all levels, from which the optimum views would be enjoyed.

The existing embankment wall is constructed of grey dressed granite and paved with concrete slabs. We anticipate that granite would be used extensively in the main body of the new space, but that it would be of a different colour or finish to the existing wall to mark the fact that this is a modern intervention. Like other sites along the river, we propose to apply a number of metal inlays into the paving, probably brass in this case.
Appendix P – Victoria Embankment Foreshore

P.3.39 There would also be bronze details at the threshold between the existing pavement and the new public realm. An example of a similar type of detail and material is shown in Figure P.111.

Figure P.11 Example of granite hard landscaping with bronze detail

P.3.40 Lighting may be provided at surface level and in handrails.

P.3.41 As at other sites, pertinent river levels could be engraved on the granite surface of the new river wall around the interception structure, providing continuity with the other Thames Tunnel proposals along the river. The form of the wall around the island structure would break up its appearance to ensure that the structure provides interest at different tidal levels.

P.3.42 Three existing ‘sturgeon lamps’ (as shown in Figure P.122) and one ‘sphinx’ seat (as shown in Figure P.133), which are listed structures, would be carefully dismantled and stored to clear the construction site during our works. The seat would be returned to (or close to) its current location and, following feedback from English Heritage, we have incorporated two of the lamps into the new structure along the line of the existing wall. We could therefore maintain the festoon lighting up to this point. However, there would be a break in the feature wall, similar to other locations such as the RAF memorial along the embankment. One sturgeon lamp would be permanently removed or relocated elsewhere on the embankment.
Figure P.12 One of the listed sturgeon lamps at Victoria Embankment, with the Tattershall Castle and its gangway behind

Figure P.13 Sphinx seat at the site
The ventilation columns, in line with the scheme-wide Air management plan, would be thinner and shorter than proposed at phase one consultation. We consider that they should be located on the interception structure in order to reduce the effect on views along the river. The form of the ventilation columns and interpretation material for the public could convey the use of the site and its relationship with our other sites. The Regent Street CSO is not linked to a ‘lost river’ like some other Thames Tunnel project sites (eg the Fleet, Westbourne and Effra) but was laid out as part of the creation of Regent Street and Regent’s Park in the early 19th century.

The island structure containing the drop shaft would be circular in shape to reflect its function and minimise its footprint in the river. To allow for maintenance access and step free access, a short bridge would link it to the embankment. The flood defence would be extended onto the island structure in order to provide this access. The structure would contain a series of raised areas on the north-west side where people could sit and enjoy unobstructed views along the river towards the London Eye and the Palace of Westminster. This would give the space the feel of an amphitheatre and lend it to future use as a performance space or for lectures.

The relocation of the Tattershall Castle to the south west of the site would require construction of a new permanent mooring, including access brows, bank seats, gangways and means of access. The design of the mooring would maintain the fabric of the existing listed river wall by going over the existing wall and keeping any fixtures and fittings to the wall to a minimum so that, should the mooring not be required in the future, it could be removed with minimal intervention to the listed structure.

**Access and movement**

The site is near the Embankment underground station and the Embankment and Westminster riverboat piers. A large Transport for London cycle hire station is located on the corner of Northumberland Avenue and Whitehall Place. We do not propose to include support for these facilities as, in consultation with Westminster City Council, it is considered that the space should be used for quiet enjoyment of the riverside.

The proposals are considered not to generate additional pedestrian movements but, will provide a space for passers-by to pause and enjoy the views away from the busy road and Thames path.

The site would be accessed occasionally by maintenance vehicles (approximately twice a year). We are in discussions with Transport for London as to whether a drop kerb or lay-by would be required in this busy location.

Step free access between the two structures would be provided via a short bridge at the southern end of the interception structure.
P.3.50 The proposed new access to the Tattershall Castle nearby would be designed to be as accessible as its present location, while minimising alterations to the listed wall.

P.3.51 All visitors would be able to use the space, in line with Core Strategy Policy CS27 (Urban Design) and CS36 (Blue Ribbon Network).
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For further information see our website: www.thamestunnelconsultation.co.uk or call us on 0800 0721 086.