Preliminary environmental information report

Addendum to Volume 20:
Victoria Embankment Foreshore

Regulations 2 and 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009
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1 Introduction

1.1.1 The Preliminary Environmental Information Report (PEIR)\(^1\) relating to the Thames Tunnel project was subject to phase two consultation from 4 November 2011 to 10 February 2012. The PEIR included a preliminary assessment of the likely significant effects of the proposed development at Victoria Embankment Foreshore, presented in Volume 20 of the PEIR.

1.1.2 Potential changes to the design at Victoria Embankment Foreshore are under consideration in response to feedback from phase two consultation feedback. These are the subject of targeted consultation and comprise:

a. The permanent foreshore structures to consist of two separate structures constructed on the river bed:
   i. One rectangular permanent structure to be located adjacent to the existing Victoria Embankment river wall and comprise the interception and overflow structures.
   ii. One circular permanent structure to be located within the river containing the drop shaft.

b. A curved pedestrian bridge on the northern side and a curved pedestrian and maintenance vehicle access bridge on the southern side to connect the landward and in-river permanent structures.

c. Revisions to the indicative construction site layout and extent, as a result of the proposed revisions to the permanent works shape and extent, and to address navigation risk.

d. Amendments to the proposals for the Tattershall Castle. It is now proposed to move the vessel back closer to its existing position once construction works are complete. An alternative option, to remove the Hispaniola and relocate the Tattershall Castle in the Hispaniola’s place, is also being considered and consulted upon.

1.1.3 Plans showing the potential changes are provided in Appendix A.

1.1.4 This document forms an Addendum to Volume 20 of the PEIR. The purpose of this Addendum is to describe the potential changes at this site which are being considered in response to comments received during phase two consultation and to identify whether these have the potential to give rise to likely significant environmental effects not identified in the assessment presented at phase two consultation or which are materially different. This document does not repeat information from the earlier assessment where this is unchanged. This document should be read in conjunction with PEIR Volume 20 – Victoria Embankment Foreshore.

1.1.5 Section 2 of this document describes the potential changes to the proposed development at Victoria Embankment Foreshore. Section 3 deals with those topics where these changes are not anticipated to result

in likely significant environmental effects not already identified or materially
different from those identified in the *PEIR* at phase two consultation.
Section 4 contains an update to the preliminary assessment for
environmental topics where the potential changes to the proposed
development have the potential to generate likely significant environmental
effects which were not previously identified in the *PEIR* or which are
materially different to those identified in the *PEIR* published at phase two consultation.

1.1.6 Once targeted consultation at this site has been completed and feedback
considered, the proposed application for a Development Consent Order
for the project will be publicised in accordance with Section 48 of the
Planning Act 2008. The information published at that stage will include an
*Environmental Information Report* setting out findings from the
Environmental Impact Assessment (EIA). That document will not
comprise an *Environmental Statement* for the purposes of the EIA
Regulations, and there is no requirement to provide an *Environmental
Statement* as part of the Section 48 publicity material. The environmental
information that is to be published voluntarily at that stage is intended to
assist in a fuller understanding of the nature and location of the proposed
development which Thames Water intends to seek development consent
for in due course, subject to considering responses received to the Section
48 publicity. A full *Environmental Statement* will be submitted with the
Development Consent Order application.
2 Potential changes to the proposed development

2.1 Introduction

2.1.1 This section describes the potential changes to the proposed development at Victoria Embankment Foreshore during operation and construction which have been triggered by feedback from phase two consultation. Plans showing the potential changes are presented in Appendix A. Equivalent plans showing the phase two scheme are provided in Appendix B. The operational phase and the construction phase are addressed in turn.

2.2 Operation

2.2.1 The proposed development at Victoria Embankment Foreshore would remain as presented in the PEIR, with the exceptions as described in the following paragraphs.

2.2.2 At phase two consultation the interception and overflow structures and CSO drop shaft were presented as being contained within a single L-shaped structure adjacent to Victoria Embankment, approximately 40m in length and 30m width. The drop shaft internal diameter was approximately 16m. One vent column approximately 4m high and two electrical and control kiosks, approximately 3.3m long, 2.2m wide and 2.5m high were proposed. The operational area was 0.1ha.

2.2.3 The potential change is for the permanent structures to comprise two separate structures standing on the river bed, constituting a change to the shape, size and number of permanent structures.

2.2.4 The interception and overflow structures would be contained in a landward rectangular structure adjacent and parallel to the existing Victoria Embankment. The structure would be approximately 53m in length and 11m in width. There would be one combined electrical and control kiosk located in the centre of the structure along the boundary with the existing Victoria Embankment. The structure containing the kiosk would be approximately 19m long x 2m wide x 4m high.

2.2.5 There would be two ventilation columns of between approximately 4m and 8m in height located on the landward structure. There would be two stone plinths each approximately 2m high to mark where the listed river wall meets the new structure.

2.2.6 The second structure would be a broadly circular in-river structure, located adjacent to the southern end of the landward structure and contain the drop shaft (approximately 22m in diameter). The drop shaft would be approximately 13m internal diameter. The shaft would be located approximately 25m southeast of its location presented in the phase two scheme.
2.2.7 A connection culvert beneath the river bed would link the interception and overflow structures with the combined sewer overflow (CSO) drop shaft. The two structures would be connected at ground level by a curved, cable stayed pedestrian footbridge on the northern side, and a curved access bridge for pedestrian and periodic maintenance vehicle access on the southern side.

2.2.8 The operational site would cover an area of approximately 0.08ha.

2.2.9 The ventilation column on the Embankment pavement for the interception chamber would remain at approximately 6m high, as in the phase two scheme.

2.3 Construction

2.3.1 The construction of the proposed development at Victoria Embankment Foreshore would remain as presented in the PEIR, including measures within the Code of Construction Practice (CoCP), with the exception of the potential changes as described in the following paragraphs.

2.3.2 At phase two consultation, the Tattershall Castle was proposed be moved once. It would have been permanently relocated upstream to a position, at the end of Horse Guards Avenue, presently occupied by two moorings which would, in turn, have required relocation. In addition, the phase two consultation scheme required the removal of four trees.

2.3.3 Two options are being considered for the relocation of the Tattershall Castle bar/restaurant. The preferred option for the Tattershall Castle is that it would be moved twice. Under this option, during construction the Tattershall Castle would be temporarily moved upstream (to the same location as that reported in the PEIR) towards Horse Guards Avenue to a position presently occupied by two moorings, which, in turn, would require their relocation. Upon completion of the works, the Tattershall Castle would be moved back to a location close to its original location. A second option is also being considered that would require only one move, whereby the Hispaniola vessel would be removed and the Tattershall Castle relocated to the Hispaniola’s mooring. This second option is discussed in this Addendum where appropriate.

2.3.4 The relocation of the Tattershall Castle would be subject to further consultation with the owners, Westminster City Council and the Port of London Authority in order to obtain the necessary licences and consents, which are outside the remit of the Development Consent Order.

2.3.5 The new temporary and permanent moorings including the access brows, bank seats, gangways and means of access will be designed to respect the existing listed river wall, regardless of the option that is selected.

2.3.6 The construction working area as defined by the ‘limits of land to be acquired or used’ would increase in size by approximately 0.4ha to approximately 1.9ha. This increase is to accommodate the changed size, layout and alignment of the following: the shaft, interception structure and associated utility works, and the inclusion of the two options for the replacement mooring for the Tattershall Castle, including the Hispaniola.
2.3.7 Seven trees to the west of the site would require removal in advance of the works to accommodate the longer length of the interception and overflow foreshore structure and the resulting longer utility diversion works.

2.3.8 The length of listed wall that would be partly demolished and covered by the interception and overflow structure would be greater than the phase two scheme. An additional 16m (approximate) of parapet would require dismantling compared to the phase two scheme.

2.3.9 The site is located on the Transport for London Road Network (TLRN) and site access would remain unchanged from the phase two scheme.

2.3.10 For the purposes of this report, as stated in the PEIR, one vehicle movement is defined as a vehicle either accessing or egressing the site. Due to an increase in the overall use of barges, total lorry movements would decrease to approximately 7,700 from around 8,000, although the peak daily lorry movements, averaged over a one month period, would be approximately 56 movements a day during shaft construction (compared to approximately 50 during shaft construction, reported in the PEIR). The total number of barges would increase, the peak daily barge movements, averaged over a one month period, would decrease to four barge movements per day (compared to six barge movements a day in the PEIR) as a result of minor changes to the construction programme.
3 Topics with effects unchanged from phase two

3.1 Introduction

3.1.1 This section presents an update to the PEIR as it relates to Victoria Embankment Foreshore, taking account of the potential changes to the proposed development, which are being considered in response to comments made during phase two consultation. It addresses those topics where the changes under consideration are not likely to give rise to significant effects that are materially different compared to those presented in the PEIR published at phase two consultation.

3.1.2 In relation to the option for the relocation of the Tattershall Castle to the Hispaniola’s mooring, whilst the receptor has changed (Tattershall Castle replacing Hispaniola) the effects, as reported in the PEIR, remain the same. For completeness, the effects of this option are reported in this section.

3.2 Air quality and odour

3.2.1 The preliminary findings of the air quality and odour assessment of the phase two scheme can be found in Section 4 of Volume 20 of the PEIR.

3.2.2 Potential changes to the phase two scheme of relevance to the air quality assessment include an increase in peak lorry movements, a reduction in peak barge movements, an increase in the volume of excavated materials (from the increased area to be demolished), and slight changes to the location of some construction activities which could give rise to dust and emissions, due to changes in the construction site shape and layout.

3.2.3 Similarly the potential change from one large ventilation column to two smaller ventilation columns on the foreshore structure and the changed location of the ventilation columns are relevant to the operational assessment of odour.

3.2.4 Effects resulting from potential changes to the phase two scheme have been assessed qualitatively based on professional judgement.

3.2.5 There is no need to include further receptors in the assessment because the location of the site has not changed and traffic routing would remain the same as described for the phase two scheme. Therefore the receptor set identified in the PEIR remains comprehensive and appropriate. However, under the preferred option for the Tattershall Castle it would be closer to the permanent structures in the operational phase than that presented at phase two: the Tattershall Castle would be moved back near its original position rather than remaining in its construction phase position near Horse Guards Avenue. If the second option were to be taken forward, in which the Tattershall Castle would replace the Hispaniola at the latter’s mooring, in terms of the air quality and odour assessment.
those effects reported for the Hispaniola in the PEIR would apply to the Tattershall Castle (and the Hispaniola would no longer be a receptor).

3.2.6 Due to the distance of the receptors from the site and the fact that changes in the location of construction activities and operational equipment are small, the potential changes to the construction and operation of the Victoria Embankment Foreshore site would not materially change the minor adverse air quality and negligible odour effects identified in the PEIR. Thus, as the negligible odour impacts identified at both ground level and height would remain with the potential changes to the scheme, the closer proximity of the Tattershall Castle to the permanent works in the preferred option would not alter the negligible odour effect identified at that receptor in the PEIR. Under the second option for the relocation of the Tattershall Castle, the negligible air quality and odour effects identified during construction and operation on the Hispaniola would apply to the Tattershall Castle.

3.2.7 Taking into account the replacement of the Hispaniola with the Tattershall Castle as described for the second option, and the consequent substitution of receptors it is considered that the potential changes to the proposed development would not result in material changes to the phase two air quality and odour assessment during construction or operation.

3.3 Ecology – aquatic

3.3.1 The phase two assessment for aquatic ecology can be found in Section 5 of Volume 20 of the PEIR.

3.3.2 Potential changes to the phase two scheme of relevance to aquatic ecology include the increase in temporary footprint of the construction working area, the separation of the permanent works into two separate structures with a narrow channel between them and the decrease in permanent footprint.

3.3.3 Effects resulting from potential changes to the proposed development have been assessed qualitatively based on professional judgement. The loss of additional foreshore from the increased size of the temporary cofferdam would not elevate the moderate adverse effect on habitats / designated sites, nor the minor adverse effect on fish or invertebrates (as identified in the PEIR) because the increase is small relative to the overall landtake.

3.3.4 The encroachment of temporary and permanent structures in the river may affect the hydraulic regime of the river and affect the migratory movements of fish. As reported in the PEIR, the effects associated with this potential impact will be assessed using a predictive modelling technique and reported in the Environmental Statement. The shape of the new permanent works and its separation into two structures with a channel between them could either result in improved opportunities for fish movement along the foreshore, or result in adverse changes in the hydrodynamic regime including the creation of localised tidal eddies. The requirement for modelling the potential changes to the proposed development will be determined if the changes are progressed.
3.3.5 Mitigation would be required if it is identified that the changes to the permanent structures may make fish passage through the intertidal zone more difficult. This will be reported in the *Environmental Statement* if the potential changes are progressed.

3.3.6 The small decrease in river bed encroachment by the permanent footprint would not change the overall effect of permanent land take from moderate adverse as identified in para. 5.6.9 in Volume 20 of the *PEIR*.

3.3.7 It is therefore considered that the potential changes to the proposed development would not result in any material changes to the preliminary findings of assessment of aquatic ecology during construction or operation.

### 3.4 Ecology – terrestrial

3.4.1 The phase two assessment for terrestrial ecology can be found in Section 6 of Volume 20 of the *PEIR*.

3.4.2 Terrestrial ecology was scoped out of the assessment for the Victoria Embankment Foreshore site at the scoping stage and consequently no significant effects were anticipated for either construction or operation in the *PEIR*.

3.4.3 Potential changes to the phase two scheme of relevance to terrestrial ecology include an increase in the number of trees that would need to be removed prior to construction. However, the trees have low intrinsic biodiversity value and are unlikely to support any notable species. Also, replacement tree planting would be provided. It is therefore considered that, as reported for the assessment in the *PEIR*, there would not be any significant adverse effects on terrestrial ecology.

3.4.4 It is therefore considered that the potential changes to the proposed development would not result in any material changes to the approach to terrestrial ecology and the topic remains scoped out of the assessment of the Victoria Embankment Foreshore site.

### 3.5 Historic environment

3.5.1 The phase two assessment for historic environment can be found in Section 7 of Volume 20 of the *PEIR*.

3.5.2 Potential changes to the phase two scheme of relevance to the historic environment include:

a. removal of a further 16m (approximate) length of the parapet of the Grade II Listed riverside wall (HEA 1D), bringing the total length to be removed to approximately 58m

b. changes to the dimensions of the interception and overflow chambers

c. an increase in the area of the temporary cofferdam, and associated working area around it, which could lead to changes in effects on buried heritage and any above ground assets falling within the revised site boundary.
3.5.3 Effects resulting from potential changes to the proposed development have been assessed qualitatively based on professional judgement. As there are limited changes proposed to the site boundary the historic environment receptors for above and below ground assets would remain as presented in the PEIR.

3.5.4 The removal of a greater length of the listed riverside wall is considered to continue to have a major adverse effect on its significance. The listing of this structure includes the sturgeon lamps on the parapet (two of which would be temporarily removed and one permanently as reported in paras. 7.5.1 – 7.5.2 of Volume 20 of the PEIR).

3.5.5 The variations to the dimensions of the below ground structures connecting the existing Bazalgette sewer to the new CSO drop shaft, in particular the overflow chamber, would not change the magnitude of impact on the structure of the Embankment behind the riverside wall and would not add materially to the resulting effect on the wall itself. In as much as the subterranean structure is grouped and directly associated with the above ground structures, the impact on the Embankment structures would remain high and continue to result in a major adverse effect, as presented in the PEIR.

3.5.6 With the potential changes to the proposed development the impact on any below ground remains within the cofferdam is still considered to constitute a minor to moderate adverse effect as presented in the PEIR. The increase in construction working area would not materially increase the nature or significance of the impact given that there is considered to be only a very low potential for the survival of any assets on the foreshore as a result of previous dredging activity in the River Thames.

3.5.7 All other effects would be as set out in the PEIR.

3.5.8 No new mitigation measures are considered necessary as the nature of the effects remains as described in the PEIR, therefore the mitigation remains as presented in the PEIR.

3.5.9 It is therefore considered that the potential changes to the proposed development would not result in any material changes to the phase two historic environment assessment of the Victoria Embankment Foreshore site during construction or operation.

3.6 Land quality

3.6.1 The phase two assessment for land quality can be found in Section 8 of Volume 20 of the PEIR.

3.6.2 Potential changes to the phase two scheme of relevance to the land quality assessment include the change in the area of the temporary and permanent structures.

3.6.3 Effects resulting from potential changes to the proposed development have been assessed qualitatively based on professional judgement. The potential changes would not lead to the inclusion of any known contaminative land uses (as identified in the baseline described within a 250m study area in the PEIR) and would not introduce any additional
potential receptors that could be affected by the development. Therefore, the non-significant effects that were identified for receptors in the *PEIR* would remain with the potential changes to the proposed development.

3.6.4 It is therefore considered that the potential changes to the proposed development would not result in any material changes to the phase two assessment of land quality during construction or operation.

### 3.7 Noise and vibration

3.7.1 The phase two assessment for noise and vibration assessment can be found in Section 9 of Volume 20 of the *PEIR*.

3.7.2 Potential changes to the phase two scheme of relevance to noise and vibration include the change in location of some construction activities which could give rise to noise and vibration due to the potential change in the size and shape of the construction working area. Similarly the location of operational equipment and the drop shaft within the permanent foreshore structure would change, which is relevant to the operational assessment of noise.

3.7.3 There is no need to include further receptors in the assessment because the overall location of the site has not changed and traffic routing would remain the same as presented in the *PEIR*. The minor change in the shaft location would not bring it closer to receptors. Therefore the receptor set identified in the *PEIR* remains comprehensive and appropriate. However, under the preferred option for the Tattershall Castle it would be closer to the permanent structures in the operational phase than that presented at phase two: the Tattershall Castle would be moved back near its original position rather than remaining in its construction phase position near Horse Guards Avenue. If the second option were to be taken forward, in which the Tattershall Castle would replace the Hispaniola at the latter’s mooring, in terms of the noise and vibration assessment those effects reported for the Hispaniola in Table 9.6.1 of Volume 20 of the *PEIR* would apply to the Tattershall Castle (and the Hispaniola would no longer be a receptor).

3.7.4 Effects resulting from potential changes to the phase two scheme have been assessed qualitatively based on professional judgement. Due to the distance of the receptors from the site and the fact that changes in the location of construction activities and operational equipment are small, it is considered that changes to the construction and operation of the Victoria Embankment Foreshore site would not result in any material changes to the assessment of noise and vibration during construction and operation presented in the *PEIR*. Although under the preferred option for the relocation of the Tattershall Castle, it would be in closer proximity to the permanent works during the operational phase, it is not considered that this would lead to a change in the negligible effect identified in the *PEIR*. This is because, as stated in paras. 9.2.2 and 9.6.4 of Volume 20 of the *PEIR*, noise emissions from plant will be managed by control measures to meet acceptable limits and no noise impacts have been identified during operation. Under the second option for the relocation of the Tattershall
Castle, the not significant noise and vibration effects identified during construction and operation on the Hispaniola would apply to the Tattershall Castle. Thus, the significant effects that were identified in the PEIR for residential receptors and non-significant effects identified for all other receptors would remain for all options under consideration.

3.7.5 Taking into account the replacement of the Hispaniola with the Tattershall Castle as described for the second option, and the consequent substitution of receptors, it is considered that the potential changes to the proposed development would not result in material changes to the phase two noise and vibration assessment during construction or operation.

3.8 Socio-economics

3.8.1 The phase two assessment for socio-economics can be found in Section 10 of Volume 20 of the PEIR.

3.8.2 Potential changes to the phase two scheme of relevance to the socio-economic assessment include any changes which could affect local businesses and users of the site and surrounding area, and any changes which could affect amenity of users of the site and surrounding area, due to air quality, construction dust, noise, vibration or visual effects. In this respect the location of construction activities which would give rise to amenity effects could change slightly due to the potential change in the size and shape of the construction working area. Similarly, the location of operational equipment, including the ventilation columns and drop shaft within the permanent foreshore structure would change.

3.8.3 There is no need to include further receptors as the overall location of the site has not changed. Therefore the receptor set identified in the PEIR (which includes users of Thames Path and Whitehall Gardens and nearby businesses) remains comprehensive and appropriate. However, under the preferred option for the Tattershall Castle it would be closer to the permanent structures in the operational phase than that was presented at phase two consultation: the Tattershall Castle would be moved back near its original position rather than remaining in its construction phase position near Horse Guards Avenue. If the second option were to be taken forward, in which the Tattershall Castle would replace the Hispaniola at the latter’s mooring, the amenity effects reported for the Hispaniola in the PEIR would apply to the Tattershall Castle (and the Hispaniola would no longer be a receptor).

3.8.4 Effects resulting from potential changes to the phase two scheme have been assessed through qualitative assessment based on professional judgement.

3.8.5 The Tattershall Castle would be moved twice under the preferred option for its relocation, elevating the impact to low adverse rather than negligible. Thus given the medium sensitivity of the receptor the displacement effect would be minor adverse, and therefore remain not significant. Under the second option for the relocation of the Tattershall Castle, it would be relocated only once thus the effect would remain negligible as reported in Table 10.8.1 of Volume 20 of the PEIR.
would however be a significant adverse effect on the Hispaniola due to its removal (see Section 4.1 of this Addendum below).

3.8.6 All other effects on businesses and users of the site and surrounding area during construction would remain as predicted in the PEIR, given that there would be no change in the overall location of the site, no change to the route or length of the Thames Path diversion and that the construction methods would remain as detailed in the PEIR.

3.8.7 Amenity effects on businesses, users of Whitehall Gardens and the Thames Path, resulting from air quality, construction dust, noise, vibration and visual effects would remain as predicted in the PEIR, with overall effects of minor adverse to negligible significance. This is on the basis that the conclusions of the air quality, noise and vibration, and townscape and visual assessments would not change (see Sections 3.2, 3.7 and 3.9 of this Addendum). Similarly under the second option for the removal of the Hispaniola and relocation of the Tattershall Castle to the former’s moorings, the minor adverse (not significant) amenity effects identified for the Hispaniola during construction in para. 10.5.27 of Volume 20 of the PEIR would now apply to the Tattershall Castle.

3.8.8 Operational effects would remain as presented in the PEIR, with minor beneficial effects accruing to users of the future public amenity space created by the permanent foreshore structure.

3.8.9 With the exception of the replacement of the Hispaniola with the Tattershall Castle and the related socio-economic effects as described for the second option (see Section 4), it is considered that the potential changes to the proposed development would not result in any material changes to the assessment of socio-economic effects during construction or operation presented in the PEIR.

3.9 **Townscape and visual**

3.9.1 The phase two assessment for townscape and visual assessment can be found in Section 11 of Volume 20 of the PEIR.

3.9.2 Potential changes to the phase two scheme of relevance to the townscape and visual assessment include the increased extent of the construction working area and associated extent of hoardings, removal of additional trees along Victoria Embankment, removal of an additional length of the listed river wall, and the change in shape of the permanent foreshore structure and location of above ground structures and inclusion of a cable stayed pedestrian bridge for access to the foreshore structure. The options being considered for the relocation of Tattershall Castle are also relevant to the townscape and visual assessment. Under the preferred option the Tattershall Castle would be moved twice. During construction it would be moored next to Horse Guards Avenue, and then moved to a location close to its original location during operation. Its final position would maintain views along Horse Guards Avenue towards the river. Under the second option, in which the Tattershall Castle would be moved once and replace the Hispaniola, there would be a reduction in the visual clutter within the views from Hungerford Bridge towards the Westminster
World Heritage Site and similarly maintain views along Horse Guards Avenue towards the river.

3.9.3 Effects resulting from potential changes to the proposed development have been assessed qualitatively based on professional judgement, in line with the approach adopted in the  
PEIR. During construction, additional impacts would arise from the enlarged temporary cofferdam, removal of additional trees along Victoria Embankment and removal of an additional length of the listed river wall. During construction under the preferred option the relocated Tattershall Castle would partially obscure views towards the river from Horse Guards Avenue. Under the second option for the relocation of the Tattershall Castle, as it would be located in a similar position to an existing vessel there would no overall change to the townscape. Overall, for both options, these changes would not alter the construction phase assessment, as the level of construction activity and its visibility on the river frontage would remain broadly the same as which would remain as reported in the  
PEIR.

3.9.4 During operation, the new river wall and railings, ventilation columns, kiosk, public realm and bridge connections (including a cable stayed bridge) would affect the setting of townscape character areas along both sides of the river and would be visible from many of the visual assessment viewpoints identified. While the shape and form of the proposed site is different to the phase two scheme assessed in the  
PEIR and the cable stayed bridge would introduce new above ground structures, the effect the development would have on the site, surrounding character areas and viewpoints would be unchanged from the assessment recorded in the  
PEIR, assuming a high quality design. This is on the basis that with the potential changes, the proposed development would still represent a new structure projecting into the river with materials compatible with the character of the surrounding townscape. The relocation of the Tattershall Castle to the south west of the site under the preferred option would not affect the townscape character as this would only involve a slight repositioning from its original position. Similarly the second option of relocating the Tattershall Castle to the Hispaniola moorings is within the same part of the townscape character area and would therefore not alter the findings reported in the  
PEIR.

3.9.5 The potential changes would result in a reduction in bulk of the foreshore structure through dividing it into two separate parts, linked by light bridge structures. The difference between the potential changes and the phase two scheme assessed in the  
PEIR would be most distinct from Viewpoint 2.2: View south from the western end of the southern Golden Jubilee footbridge, and Viewpoint 2.3: View southwest from the centre of the southern Golden Jubilee footbridge. Under the second option the relocated Tattershall Castle would be visible in the foreground of these views. However the visibility of the permanent works area would not be altered and therefore the effects reported in the  
PEIR would remain the same. Assuming the high quality design of the river wall, public realm and above ground structures, the effect of the proposed development would be likely to remain as minor adverse as the structure would form a new
component of the view in this location that is in keeping with the surrounding townscape character.

3.9.6 No new mitigation would be possible for the potential changes to the proposed development during construction or operation due to the highly visible location on the river frontage.

3.9.7 Taking into account the replacement of the Hsppiola with the Tattershall Castle as described for the second option, it is considered that the potential changes to the proposed development would not result in any material changes to the phase two assessment of townscape and visual effects during construction or operation.

3.10 Transport

3.10.1 The phase two assessment for transport can be found in Section 12 of Volume 20 of the PEIR.

3.10.2 Potential changes to the phase two scheme of relevance to the transport assessment include the increase in peak lorry movements, a decrease in peak barge movements (see para 2.3.10 above) and the southward movement of traffic management works along Victoria Embankment closer to the Horse Guards Avenue junction (required to facilitate the utility diversions).

3.10.3 Effects resulting from potential changes to the proposed development have been assessed qualitatively based on professional judgement. The receptors outlined in the PEIR, which include pedestrians and cyclists in the local area and bus, rail, river, road and parking users, remain appropriate for assessment of effects arising from the potential changes. It is not considered that the potential changes in lorry numbers and movement of traffic management works on Victoria Embankment would lead to material changes in effects due to the additional HGV movements being relatively small in relation to the total volume of vehicles that travel along Victoria Embankment. Similarly, it is not considered that the small increase in the peak number of barge movements would lead to a material change in effects on river traffic. The movement of the traffic management works would still require highway modifications that would create a similar level of effect.

3.10.4 It is therefore considered that the potential changes to the proposed development would not result in any material changes to the assessment of transport during construction or operation.

3.11 Water resources – flood risk

3.11.1 The phase two assessment for flood risk can be found in Section 15 of Volume 20 of the PEIR.

3.11.2 Effects arising from potential changes to the phase two scheme have been assessed qualitatively based on professional judgement.

3.11.3 Potential changes to the proposed development of relevance to the flood risk assessment include the increased area of the temporary cofferdam
and the change in the projection of the permanent foreshore structures into the River Thames.

3.11.4 Both the temporary and permanent structures would be designed to maintain the existing flood defence level, as reported in the *PEIR*. Therefore flood risk to the site and adjacent areas from all sources (tidal, fluvial and surface water) would be as reported in the *PEIR*. The potential changes would not affect any additional sewers apart from the planned interception, so would not give rise to a change in flood risk from sewers.

3.11.5 The flow within the River Thames would be modified by the presence of the temporary and permanent works. This may lead to an increase in scour or deposition rates on adjacent areas within the river and to river structures, including flood defences. Flood storage, flood levels and scour effects resulting from changes in the scheme will be modelled and reported in the *Environmental Statement* if the potential changes to the proposed development proceed. The cumulative and scour assessments will assess impacts on water levels and flood storage implications, and identify impacts with respect to scour on the riverbed and the implications this may have on the flood defence integrity. As described in the *PEIR* these assessments will be presented in the Level 2 Flood Risk Assessment as part of the *Environmental Statement* for this site.

3.11.6 Initial hydraulic cumulative modelling indicates that the influence of the project as a whole on the River Thames (tidal and fluvial) flood levels would be minimal and is unlikely to exacerbate flood risk. It is likely that this would still be the case if modelling were undertaken for the potential changes to the proposed development (due to the small scale of the changes in relation to the River Thames flood cell assessed in the modelling). The requirement for modelling the potential changes to the proposed development will be considered if the changes are progressed.

3.11.7 The area of hard standing created by the permanent works arising from the potential changes is reduced so there would be less runoff from the site and therefore flooding from surface water. In para. 15.4.59 of Volume 20 of the *PEIR* this effect was predicted to be negligible and it is considered that the change in the area of the permanent foreshore structure would not change this conclusion.

3.11.8 All other effects would be as set out in the *PEIR*.

3.11.9 Subject to undertaking detailed modelling of the potential changes, if required, it is considered that the potential changes to the proposed development are unlikely to result in any material changes to the assessment of flood risk during construction or operation.

3.12 **Water resources – groundwater**

3.12.1 The phase two assessment for groundwater can be found in Section 13 of Volume 20 of the *PEIR*.

3.12.2 Potential changes to the proposed development of relevance to the groundwater assessment include small changes in the configuration of the
below ground structures due to the change in site design, which could affect groundwater flows.

3.12.3 Effects resulting from potential changes to the phase two scheme have been assessed qualitatively based on professional judgement. The potential changes to the proposed development could lead to some small changes in the nature of impacts on groundwater. However, because there would only be a small increase in the size of the cofferdam required, the physical obstruction in the upper aquifer (river terrace deposits) is likely to be similar to the phase two scheme. The obstruction effects that were identified for the upper aquifer in para. 13.5.23 of Volume 20 of the PEIR were negligible effects and this would remain the case with the potential changes to the phase two scheme.

3.12.4 The potential changes to the proposed development would not alter any of the other impacts on groundwater receptors described in the PEIR and therefore all other effects would remain as reported in the PEIR.

3.12.5 It is therefore considered that the potential changes to the proposed development would not result in any material changes to the assessment of groundwater resources during construction or operation.

3.13 Water resources – surface water

3.13.1 The phase two assessment for surface water can be found in Section 14 of Volume 20 of the PEIR.

3.13.2 Effects arising from the potential changes to the proposed development have been assessed qualitatively based on professional judgement.

3.13.3 Any construction activity within or close to the river channel is of relevance to the assessment of effects on surface water as the flow within the River Thames would be modified by the presence of the temporary works. In this respect the development remains unchanged, ie, it would still require construction of temporary and permanent cofferdams with jack-up barges located within the river channel, and use of barges to import and remove cofferdam fill material. In terms of effects during construction, these would therefore remain as presented in the PEIR.

3.13.4 Regarding the operational assessment, the beneficial effects on water quality would not change. Moderate adverse geomorphological changes as a result of permanent land take during operation were predicted in Table 14.6.2 of Volume 20 of the PEIR. As stated in the PEIR modelling will be undertaken to understand these effects and presented in the Environmental Statement. Modelling for the potential changes to the proposed development will be considered if they are progressed. It is not considered that these effects would materially change, and appropriate mitigation for this effect will be reported in the Environmental Statement.

3.13.5 All other effects would be as set out in the PEIR.

3.13.6 It is therefore considered that the potential changes to the proposed development would not result in any material changes to the assessment of surface water during construction or operation.
4 Topics with materially different effects from phase two

4.1 Overview

4.1.1 This section presents an update to the PEIR as it relates to Victoria Embankment Foreshore, taking account of the potential changes to the proposed development which are being considered in response to comments made during phase two consultation. It addresses those topics where the changes under consideration have the potential to give rise to materially different effects compared to those presented in the PEIR published at phase two consultation.

4.1.2 Overall, with one exception, based on a review of the potential changes to the proposed development there are not likely to be any materially different effects from those reported in the PEIR. The exception is in relation to the assessment of the socio-economic effects of the option to remove the Hispaniola and replace it with the Tattershall Castle.

4.1.3 A materially different effect with respect to this option would arise in relation to the significant adverse socio-economic effect on the Hispaniola due to its removal. Should this option proceed, further consultation would be undertaken with the owners of the Hispaniola to determine what mitigation, if any, might be appropriate to address this effect. All other socio-economic effects on businesses and users of the site and surrounding area during construction would remain as predicted in the PEIR.

4.1.4 Other effects relating to this option are presented where appropriate in Section 3 of this Addendum.
Appendices
Appendix A Plans of potential changes to the proposed development at Victoria Embankment Foreshore

Please see individual A3 drawings as follows:

A.1 – Victoria Embankment Foreshore - Targeted Consultation - Demolition and Site Clearance - Sheet 1 - 110-DA-CVL-PWR2X-000754

A.2 – Victoria Embankment Foreshore - Targeted Consultation - Demolition and Site Clearance - Sheet 2 - 110-DA-CVL-PWR2X-000755

A.3 – Victoria Embankment Foreshore - Targeted Consultation - Construction Phases - Phase 1 Site Setup - 110-DA-CNS-PWR2X-000756

A.4 – Victoria Embankment Foreshore - Targeted Consultation - Construction Phases - Phase Shaft Construction and Tunnelling - 110-DA-CNS-PWR2X-000757

A.5 – Victoria Embankment Foreshore - Targeted Consultation - Construction Phases - Phase 3 - Other Structures - 110-DA-CNS-PWR2X-000758

A.6 – Victoria Embankment Foreshore - Targeted Consultation - Permanent Works Layout - 110-DA-CVL-PWR2X-000759
Appendix B Plans of the phase two proposed development at Victoria Embankment Foreshore

Please see individual A3 drawings as follows:

B.1 – Victoria Embankment Foreshore - Demolition and Site Clearance - 110-DA-CVL-PWR1X-000270

B.2 – Victoria Embankment Foreshore - Construction Phases - Phase 1 Site Setup - 110-DA-CNS-PWR1X-000271


B.4 – Victoria Embankment Foreshore - Construction Phases - Phase 3 - Other Structures - 110-DA-CNS-PWR1X-000273

B.5 – Victoria Embankment Foreshore - Permanent Works Layout - 110-DA-CVL-PWR1X-000274
For further information see our website:
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