

SILVERTOWN TUNNEL

Volume 7

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7.12 Mitigation Route Map

TR010021

APFP Regulation 5(2)(h)

Revision [32](#)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009

~~April~~[March](#) 2017

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Silvertown Tunnel

Mitigation Route Map 7.12

Planning Act 2008

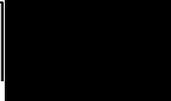
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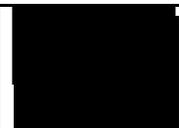
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List of Abbreviations

AQMP	Air Quality Management Plan
CEMP	Construction Environment Management Plan
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
HGV	Heavy Goods Vehicle
MMO	Marine Management Organisation
MTS	Mayor's Transport Strategy
NN NPS	National Road and Rail Networks: National Policy Statement
PINS	The Planning Inspectorate

Glossary of Terms

Account holder	User of the tunnels who has registered their vehicle and payment details with TfL.
Blackwall Tunnel	An existing road tunnel underneath the River Thames in east London, linking the London Borough of Tower Hamlets with the Royal Borough of Greenwich, comprising two bores each with two lanes of traffic.
Charging period	For the purposes of the Assessed Case this has been defined as 6am to 10pm every day.
Development Consent Order	This is a statutory order which provides consent for the project and means that a range of other consents, such as planning permission and listed building consent, will not be required. A DCO can also include provisions authorising the compulsory acquisition of land or of interests in or rights over land which is the subject of an application.
Environmental Impact Assessment	There are categories of development that are required by European and UK domestic legislation to be made the subject of an assessment known as an Environmental Impact Assessment (EIA). The EIA regime in Europe is governed by Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of public and private projects on the environment. This directive is transposed into UK law by the Infrastructure Planning

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	(Environmental Impact Assessment) Regulations 2009 as amended by the Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2012 (the EIA Regulations).
Habitats Regulations	Conservation of Habitats and Species Regulations 2010 (as amended).

1. INTRODUCTION

- 1.1.1 This mitigation routemap has been prepared in order to demonstrate that all necessary environmental controls and mitigation measures for the Scheme have been identified and secured. The purpose of this document is therefore to:
- a) provide an audit trail of the controls and mitigation measures on which the Environmental statement (ES), including related assessment documents, relies to avoid, reduce and/or offset significant (i.e. moderate or major) impacts of the Scheme (columns (3) and (4) of the table); and;
 - b) set out the way in which they have been, or will be, translated into clear and enforceable controls (Column (6)); either via Development Consent Order (DCO) Requirements, development consent obligations or other consent regimes.
- 1.1.2 This mitigation routemap is not proposed to have any formal status, but is submitted to help both the Examining Authority and interested parties understand how and where mitigation relied on by the ES is to be secured. It is proposed that this document is kept 'live' by updating it throughout the examination process to ensure it captures all relevant issues, providing certainty that the DCO and ES are consistent.
- 1.1.3 The routemap is structured as follows:
- Column (1) provides the item number for individual issues identified;
 - Column (2) gives the source and relevant reference of the issue and associated mitigation measures;
 - Column (3) describes the potential significant effect (moderate or major);
 - Column (4) gives the detail of the measure or mitigation set out in the ES or associated document:
 - Scheme Design, e.g., a physical feature of the development that has been, or will be, complied with, such as landscape planting or a Design Principle,

- Construction Methods or Controls, e.g., a measure set out within the Code of Construction Practice, or Mitigation, e.g., a measure that is proposed to avoid or reduce significant impact.
- Column (5): gives the relevant timing or 'trigger' for when an identified mitigation or measure should be in place;
- Column (6): refers to the relevant securing mechanism(s). Wherever possible, we have also sought to identify compliance with the relevant section of the CoCP, or other relevant control document. The references to the DCO provisions and Requirements contained in this document relate to those as contained in the submission draft.

1.1.4 For ease, the structure of the mitigation routemap follows that of the topic chapters of the ES.

2. MITIGATION ROUTEMAP

2.1.1 The Mitigation Routemap is set out in Table 2-1below:

Table 2-1 Mitigation Route Map

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
Air Quality					
1	<p>ES Chapter 6 – Air Quality, section 6.5</p> <p>ES Appendix 6.A [APP-049]</p>	<p>Impacts on local air quality during construction.</p>	<p>An Air Quality Management Plan (AQMP) will be prepared by the Contractor for each worksite and submitted for approval to the relevant planning authority. The AQMP will contain details of the measures to limit vehicle, plant and dust emissions during construction and control odour. It also includes PM₁₀ monitoring requirements and timescales</p> <p>CoCP Chapter 5 (Document Reference 6.10) sets out what the AQMP will cover. This will include appropriate dust monitoring procedures and timescales.</p> <p>All construction vehicles to be Euro VI unless otherwise agreed. (CoCP 5.2).</p>	<p>Prior to commencement of relevant works</p>	<p>CoCP Chapter 5 (Document Reference 6.10).</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
2	<p>ES Chapter 6 – Air Quality, section 6.5</p>	<p>Air quality during operation.</p>	<p>The user charges will be used to manage demand for the Silvertown and Blackwall Tunnels. By regulating traffic flows, the user charge can be used to manage air quality impacts associated with traffic</p>	<p>Before opening of the tunnel to traffic and during its operation.</p>	<p>Article 52 of the draft DCO provides that the user charging power</p>

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			<p>using the crossings.</p> <p>The user charging power provides scope for discounts and exemptions which can be used to encourage the use of cleaner vehicles.</p> <p>The charging power must be exercised in accordance with the Charging Policies and Procedures (CPAP) (document ref 7.11). That document sets out the factors which TfL must have regard to when setting and varying the charges, and these include air quality impacts. In particular, the CPAP provides that the initial user charges must be set at a level and subject to conditions so that the Scheme in operation is not likely to give rise to significant environmental effects which are materially <u>new or different</u> worse than reported in the ES.</p> <p>The Monitoring and Mitigation Strategy (document ref 7.6) contains details of how TfL will monitor the air quality impacts of the Scheme after opening. The results of this monitoring will be considered when</p>		<p>must be exercised in accordance with the Charging Policy.</p> <p>The implementation of the Monitoring and Mitigation Strategy and the Traffic Impacts Mitigation Strategy is secured by Requirement 7 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>setting and varying the user charges and will be used to identify any mitigation measures that are required as a result of localised impacts (including air quality impacts) as a result of the Scheme.</p> <p>Requirement 7 of the DCO requires the air quality data to be subject to an annual review by a firm or experts to determine whether the Scheme has resulted in a material worsening of air quality. If the experts conclude that the Scheme has worsened air quality, TfL must prepare a scheme of mitigation in consultation with the relevant local authorities and submit this to the Mayor of London for approval.</p>	<p>Firm of experts conclude that the Scheme has materially worsened air quality.</p>	<p>Requirement 7</p>
3	ES Chapter 6.5	Use of low emission Euro VI or equivalent buses.	Buses using the Silvertown Tunnel have to be of Euro VI standard.	Prior to commencement of operation.	dDCO Requirement 13
Community and private assets					
4	ES Chapter 7, section 7.5	Construction impacts of the scheme on	The Contractor will register with and comply with the principles of the Considerate Constructors Scheme or	Prior to commencement of relevant	CoCP chapter 2 and 4.

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
		community and private assets (e.g. local residents and businesses) – noise, dust, traffic etc.	<p>similar (CoCP chapter 2).</p> <p>The Contractor will be responsible for notifying the local residents of particularly noisy work prior to commencement. The mechanisms for notification will be detailed in the Community Engagement Plan required under the CoCP (chapter 4).</p> <p>A community construction liaison manager will be appointed for the duration of the works. The Community Engagement Plan will include a 24 hour telephone helpline, a website with construction updates, a contact email address, a Community Liaison Group and traffic meetings, both of which affected landowners will be invited to join. (CoCP chapter 4).</p>	works	Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
5	ES Chapter 7, section 7.5	Construction impacts of the scheme on access for local residents and businesses.	<p>The Contractor will take measures to maintain reasonable access to premises during the construction works. These will include:</p> <p>Measures to ensure the continuation of</p>	Prior to commencement of relevant works	<p>CoCP section 2.6.</p> <p>Compliance with the CoCP is secured by</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>access for premises including requirements for complementary measures to ensure that delivery and servicing access can take place.</p> <p>Localised temporary diversions will be sought during the cut and cover tunnel works.</p>		<p>requirement 5 in Schedule 2 to the dDCO.</p>
6	ES Chapter 7, section 7.6	Severance impacts for pedestrians and cyclists caused by construction.	<p>Temporary diversions will be put in place on some routes. All diversion routes for pedestrians and cyclists will be kept to a minimum feasible length.</p> <p>Envisaged diversion routes are shown in the Transport Assessment and will be finalised in the Construction Traffic Management Plan produced by the Contractor for each work site (CoCP 3.1.3).</p> <p>Paragraph 14.1.1 of the CoCP Chapter 14 sets out the mitigation measures for pedestrians and cyclists as does Table 14-1.</p>	Prior to commencement of relevant works	<p>CoCP sections 3.1 and 14.3.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
7	ES Chapter	Effects on O2 of	Mitigation includes the requirement to	Prior to	CoCP section

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
	7, section 7.5,	the removal of a significant amount of parking currently used by The O2.	provide alternative parking capacity for The O2 during the construction works.	commencement of relevant works	2.6.2
8	ES Chapter 7, section 7.5,	Employment and skills impacts	Employment of a proportion of local workers in construction jobs and delivery of apprenticeships. This will be based on TfL's Strategic Labour Needs and Training commitments.	Prior to commencement of relevant works	Legal agreement with local authorities.
9	ES Chapter 7, section 7.6	Effects of Scheme on river navigation and wharfage.	A Passage Plan (PP) (CoCP 3.2.14) for use of the river will be prepared by the Contractor in consultation with and for approval by the PLA. The PP will establish cycle times for loading, unloading and journeys for vessels in relation to tides and will permit an informed decision regarding the number of vessels required to meet the production rates achieved for the TBM and civil works. It will include an updated navigational risk assessment.	Prior to commencement of relevant works.	Compliance with the Passage Plan is secured by dDCO Requirement 5 (2)(n). CoCP table 1-1
10	ES Chapter 7, section 7.6	Effects on existing utilities infrastructure	Provisions will be necessary to divert or safeguard existing utilities infrastructure assets during construction works.	Prior to commencement of relevant	dDCO Schedule 4 and Land Plans.

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
		assets during construction works	<p>Appropriate safeguarding measures will be identified as the detailed design progresses.</p> <p>Provision for utilities diversions has been made within the Order Limits for the Scheme, which includes plots which may be occupied temporarily and plots over which rights may be acquired to facilitate temporary and permanent utility diversions and their on-going protection.</p>	works.	Protective Provisions for utilities in Schedule 13 to the dDCO.
Cultural Heritage and Archaeology					
11	ES Chapter 8, section 8.5.2	Impact on sub-surface archaeological remains considered to be of medium value due to their potential regional importance.	<p>A Archaeological Written Scheme of Investigation (AWSI) will be produced for each work site in consultation with Historic England and GLAAS (and the PLA and the MMO where there is interaction with river Thames) at the detailed design stage for approval by the relevant planning authority.</p> <p>The CoCP sets out the detail on this at chapter 6.</p>	Prior to construction of relevant works	<p>CoCP Chapter 6.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p> <p>dDCO Deemed Marine Licence condition 11</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
12	ES Chapter 8, section 8.5.5	Potential impacts to the Grade II listed Blackwall Tunnel entrance building as a result of settlement.	Prior to construction, an assessment of the likely effects of settlement on the Grade II listed Blackwall Tunnel building will be undertaken in accordance with Chapter 10: (Settlement) of the Code of Construction Practice and Appendix A of the CoCP – Settlement Assessment and Mitigation Process.	Prior to construction of relevant works	CoCP 6.1.9 and chapter 10 Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
13	ES Chapter 8, section 8.5.6	Removal of sub-surface archaeological remains during construction and operation of the jetty due to dredging	Where mitigations measures within the river Thames are identified in the AWSI, the Contractor shall consult the MMO and PLA before submitting to the relevant planning authority for approval. <u>The approved AWSI then needs to be provided to the MMO under the dDML.</u> Impacts of dredging within the area of the proposed jetty on currently unknown archaeological remains will be mitigated through the monitoring of dredged	Prior to construction of relevant works	CoCP (section 6.1.2 and 6.1.7). Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO. <u>dDCO Deemed Marine Licence conditions 5</u>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>material in order to identify and record any archaeological materials that are recovered. If any remains are recorded, the Contractor will liaise with Historic England/GLASS and the MMO as to any scour protection measures required.</p> <p>If required, details of any scour protection would be subject to approval under the PLA Protective Provisions (Schedule 13 to the dDCO) and would be subject to the dDML (Schedule 12).</p>		<p>and 11</p> <p>Protective Provisions for the benefit of the PLA In Schedule 13 to the dDCO</p>
14	ES Chapter 8, section 8.5.6	Scour to the river bed due to propeller wash from barges moored at the jetty.	Should significant archaeological remains be identified during monitoring of the dredging, within the areas subject to scour, the Contractor will liaise with Historic England and GLASS as to any scour protection measures required.	Prior to construction of relevant works	<p>CoCP (section 6.1.8).</p> <p>Compliance with the CoCP is secured by Requirement 5 in Schedule 2 to the dDCO.</p>
Terrestrial Ecology					
15	ES Chapter 9, section 9.5	Terrestrial Ecology effects during construction.	Ecology Management Plans will be prepared by the Contractor prior to construction in consultation with Natural	Prior to construction of relevant works	CoCP Chapter 7. Paragraph 7.1.1 and

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(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>England and be submitted for approval to the relevant planning authority. It will be substantially in accordance with the Outline Ecology Management Plan (Appendix HG).</p> <p>The detailed EMPs will include the programme for ecological monitoring during the construction of the Scheme. The monitoring programme should be in substantial accordance with the OEMP.</p> <p>The Ecology Management Plans will include an arboricultural impact assessment (CoCP chapter 7).</p>		<p>Appendix HG</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
16	ES Chapter 9, section 9.5	Prevent a potential impact from dust on East India Dock Basin SINC, which is within 50m of a construction traffic route.	<p>Dust attenuation measures forming part of the Air Quality Management Plan for each worksite (and approved by the relevant planning authority) will be used.</p> <p>The CoCP at section 5.3 sets out the mitigation measures to reduce dust impacts.</p>	Prior to construction of relevant works	<p>CoCP section 5.3.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to</p>

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					the dDCO.
17	ES Chapter 9, section 9.5	Prevent impacts on mobile species.	<p>A pre-construction survey will be undertaken a maximum of two years prior to commencement of construction works. This should include an extended Phase 1 habitat survey followed by targeted surveys for protected species that may be using the worksites.</p> <p>The results of these surveys would inform the Ecology Management Plans developed by the contractor.</p>	Prior to construction of relevant works	<p>Part of OEMP, compliance with which is secured by CoCP paragraph 7.1.2</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
18	ES Chapter 9, section 9.5	Prevent spread of non-native invasive species during construction.	<p>Invasive species (such as Japanese Knotweed and Virginia Creeper) will be cleared from the site during construction following Natural England guidelines.</p> <p>The Ecology Management Plans developed and implemented by the Contractor in consultation with Natural England and approved by the relevant</p>	Prior to construction of relevant works	<p>Part of OEMP, compliance with which is secured by CoCP paragraph 7.1.2</p> <p>Compliance</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>planning authorities will include method statements in the event that invasive species are encountered and details about how additional survey requirements would be accommodated in the programme.</p> <p>The Ecology Management Plans will include a requirement for an ecologist to be present onsite during site clearance and when required throughout the duration of the construction works.</p>		<p>with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
19	ES Chapter 9, section 9.5	Avoiding direct mortality of species during construction.	<p>Any site clearance will take account of seasonal constraints and will be carried out in accordance with a Site Clearance Plan (which will form part of the Ecology Management Plans prepared by the Contractor in consultation with Natural England and approved by the relevant planning authorities).</p> <p>Any clearance of vegetation suitable for breeding birds (namely scrub and trees) will be undertaken outside of the breeding bird season (February to August inclusive) or following a check for active</p>	Prior to construction of relevant works.	<p>Part of OEMP, compliance with which is secured by CoCP paragraph 7.1.2</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

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			<p>bird nests by a suitably qualified ecologist in order to mitigate any potential impact on breeding birds.</p> <p>Worksites will be screened where necessary to reduce adjacent disturbance.</p>		
20	ES Chapter 9, section 9.5	Protecting the black redstart bird.	<p>Black redstart monitoring will be undertaken weekly in areas that are suitable for black redstart when construction coincides with the black redstart breeding season (April to July).</p> <p>If black redstart is recorded, the Contractor will liaise with the ecologist (who will be required to be on site as part of the Ecology Management Plans to be prepared by the Contractor in consultation with Natural England and approved by the relevant planning authorities) to determine whether there is a need for additional mitigation, demarcation of exclusion zones or whether works are required to stop temporarily until the birds have left the area (i.e. following the breeding period).</p>	Prior to construction of relevant works.	<p>Part of OEMP, compliance with which is secured by CoCP paragraph 7.1.2</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p> <p>..</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
21	ES Chapter 9, section 9.5	Degradation of adjacent habitats during construction due to ground breaking works, vehicle movements and dust during construction.	<p>Worksites will be screened where necessary to reduce adjacent disturbance.</p> <p>Habitats of value with potential to be affected beyond the Order Limits will be demarcated and avoided.</p> <p>Where there are sensitive habitats such as trees adjacent to the site, an appropriate barrier e.g. temporary fencing, will be put in place to ensure that the trees and their roots will be protected throughout the construction phase.</p> <p>The dust control measures set out in section 5.3 of the CoCP will be implemented to mitigate disturbance to adjacent habitats.</p>	Prior to construction of relevant works.	<p>Part of OEMP, compliance with which is secured by CoCP paragraph 7.1.2</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
22	ES Chapter 9, section	Construction lighting affecting	Construction lighting will be designed in accordance with appropriate standards,	Prior to construction of	CoCP (section 12.2).

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
	9.5	biodiversity, especially bats	<p>as set out in ES Chapter 4 - <i>Scheme Description</i>. A Lighting Management Plan is proposed within the CoCP (12.2).</p> <p>The Lighting Management Plan will reflect appropriate industry standard procedures which will be implemented at both worksites. Lighting will be designed, positioned and directed so as not to unnecessarily intrude on adjacent buildings and so as to prevent unnecessary interference with local residents, the DLR, passing motorists, the navigation lights for air or water traffic, and wildlife breeding seasons (CoCP 12.2.2).</p>	relevant works.	Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
23	ES Chapter 9, section 9.5	Mitigate impacts on sensitive ecological features such as breeding birds and notable invertebrates.	The CoCP includes dust attenuation measures to prevent pollution, timing recommendations to avoid core activity periods and pollution prevention measures following Environment Agency guidelines.	Prior to construction of relevant works.	CoCP (section 7.1.9). Compliance with the CoCP is secured by requirement 5 in

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>These will be protected by measures set out in the Ecology Management Plans prepared by the contractor in consultation with Natural England and approved by the relevant planning authority (CoCP chapter 7).</p>		<p>Schedule 2 to the dDCO.</p>
24	ES Chapter 9, section 9.5	Habitat loss caused by the permanent scheme.	<p>The Scheme must be implemented in accordance with the Scheme-specific BAP (Appendix 9.H: Biodiversity Action Plan and Mitigation Strategy (Document Reference Number: 6.3.9.H)). This presents the important ecological features, the habitat design principles/ parameters and enhancement measures along with the quantum and natural capital value of on site replacement habitat and offsetting habitat required as part of the final design, based on the results of the assessment.</p>	<p>Prior to commencement of the operation of the Scheme.</p>	<p>The implementation of the BAP is secured by Requirement 14 in Schedule 2 to the dDCO.</p>
25	ES Appendix 9H Biodiversity Action Plan	Biodiversity offsetting.	<p>ES paragraph 9.5.19 requires residual significant effects to be mitigated within the Order limits or offset within the wider area. The Scheme will result in a net deficit of semi-natural habitat in Greenwich. The BAPMS provides a</p>	<p>Prior to commencement of the operation of the Scheme.</p>	<p>The implementation of the BAP is secured by Requirement 14 in Schedule 2 to</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			mechanism for this loss to be allocated a monetary value and then offset by funding replacement habitat.		the dDCO
26	ES Appendix 9D Arboricultural Survey. The arboricultural survey (ES Appendix 9.D) [APP-061] recommends in paragraph 5.1.1 that an arboricultural impact assessment is prepared when the proposed layout is finalised, with the assessment including a	Trees to be retained and removed by the Scheme.	The Ecology Management Plans will include an arboricultural impact assessment including a schedule of trees to be retained and removed.	Prior to construction of relevant works.	Part of OEMP, compliance with which is secured by CoCP paragraph 7.1.2 The Code of Construction Practice is secured by Requirement 5 in the dDCO.

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
	schedule of trees to be retained and removed.				
Marine Ecology					
27	ES Chapter 10. Section 10.5	Construction impacts on marine ecology.	<p>The contractor will employ the following measures to minimise any adverse effects from the construction and demolition of a temporary jetty and any in-river construction activities:</p> <ul style="list-style-type: none"> • the application of EA pollution prevention guidance throughout the construction phase; • the development of a non-native species risk assessment and management plan (in liaison with the MMO, PLA and EA as necessary); 	Prior to commencement of construction.	<p>CoCP Chapter 8.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p> <p>Controls of the jetty <u>and related works</u> are covered in PLA protective provisions (Schedule 13) and Deemed Marine license (Schedule 12).</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<ul style="list-style-type: none"> • the use of soft start procedures during piling for a minimum of 20 minutes. Should piling cease for a period greater than 10 minutes the soft start procedure must be repeated; • percussive piling will be limited to November-March inclusive (unless otherwise agreed with the MMO, PLA and EA); • the lighting on the jetty will be designed to minimise light levels in the marine environment and prevent interference with navigation lights. The lighting on the jetty head would have the lamps facing out to the watercourse, to facilitate 		<p>Lighting Management Plan is set out within CoCP – section 12.2.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>unimpeded loading and unloading operations. Reflectors, that avoid excessive light pollution to surrounding areas, will be used.</p> <ul style="list-style-type: none"> • A Lighting Management Plan will be prepared by the contractor for each worksite in consultation with the relevant planning authority, the Environment Agency and the PLA.. • Any planned (i.e. non-emergency) dredging work must avoid the period of June-August inclusive. Any dredging within the months of June-August inclusive shall only be undertaken with the approval of the 		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>Environment Agency.</p> <ul style="list-style-type: none"> The decommissioning programme of the jetty will adhere to the same seasonal restrictions for piling if hydraulic vibratory methods are used. 		
28	ES Table 10-15	Approval of dredging methods, depths and volumes in line with ES assessments.	<p>Construction method statements would be submitted to the PLA and MMO for approval as part of their respective protective provisions and deemed marine license. These would include details of dredging depths, volumes, <u>benthic ecology monitoring and mitigation</u> and dredging methods.</p> <p>Any dredging within the months of June-August inclusive shall only be undertaken with the approval of the Environment Agency</p>	Prior to commencement of works.	<p>PLA protective provisions set out in Schedule 13 of the dDCO and MMO deemed marine license (schedule 12 of dDCO).</p> <p>CoCP Chapter 8. The CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
29	ES Chapter 10 section 10.5.1 and Table 10-15	Waste disposal strategy needs to mitigate impacts on marine ecology.	The CoCP sets out how the management of material dredged from the River Thames to facilitate the construction and operation of the temporary jetty at the Silvertown site will be in accordance with the SWMP (CocP 13.3.1)		CoCP Chapter 13. The CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
Effects on all travellers					
30	ES Chapter 11, section 11.5	Need to minimise road disruption during construction.	The Contractor will produce a Construction Traffic Management Plan (CTMP) for each worksite. The CTMP will contain measures to minimise road disruption during construction and must be approved by the relevant highway authority. The measures to be included in the CTMP are set out in the CoCP at section 3.1.4.	Prior to commencement of works.	CoCP Chapter 3. The CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
31	ES Chapter 11, section 11.5	Ensure that all walking and cycling routes in the vicinity of the tunnel portals are re-instated or are	The following mitigation measures will be implemented as part of the Construction Traffic Management Plan (CTMP) for each worksite to be prepared by the Contractor, and approved by the relevant planning authority:	Prior to commencement of works.	CoCP Chapters 3 and 14 (14.1) Compliance with the CoCP is secured by

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
		<p>replaced with direct, safe and comfortable alternative routes.</p>	<p>All existing public rights of way and provision for cyclists and pedestrians that are affected by the construction works will be clearly signed, fenced and diversion routes provided from the outset to ensure that their usage would not be unduly impaired by construction activities. Envisaged diversion routes are provided in the Transport Assessment (Document Reference 6.5). The Scheme phasing would accommodate all revisions to the alignment of these public rights of way and any changes would occur progressively during the construction period.</p> <p>The alternative routes for pedestrian and cyclists will be kept to a minimum feasible length. Alternative safe routes will be provided for people with reduced mobility to ensure that they can access facilities in a safe manner. On completion of the works the pedestrian and cycle routes will be reinstated to their original or revised alignments.</p> <p>The existing footbridge over the A102</p>		<p>requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>Blackwall Tunnel Approach at Boord Street will be demolished and replaced with a new foot and cycle bridge. Ramped access to the current footbridge or to the replacement foot and cycle bridge will be maintained during all stages of construction.</p>		
32	ES Chapter 11, section 11.5	Minimising lorry movements during construction by maximising river transport.	<p>The Scheme will seek to maximise river transport for construction materials and excavated material as detailed in the CoCP at section 3.2.</p> <p>The river transport objectives are to:</p> <ul style="list-style-type: none"> • minimise the effects of construction of the Scheme associated with the transport of construction materials and excavated materials; • minimise the number and length of construction-related transport movements; and • minimise the potential social and environmental impacts arising from construction-related transport 	During construction works.	<p>CoCP section 3.2</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>associated with the Scheme.</p> <p>Subject to <u>paragraph 3.2.9</u>the additional derogations in section 3.2 of the CoCP TfL/<u>the Contractor</u> will transport:</p> <ul style="list-style-type: none"> • at least 55% by weight of all materials associated with the Scheme by River; and • <u>100%</u> of suitable excavated material out by River. <p><u>Before commencing construction the contractor must prepare a Construction Site River Strategy (CSRS) to be submitted to and approved by TfL in consultation with the relevant planning authority(s) and the PLA.</u></p> <p><u>The contractor will submit monthly monitoring reports to TfL, the relevant planning authority(S) and the PLA on the performance of the Scheme in meeting the commitments in 3.2.3</u></p> <p><u>2.1.2</u> <u>Where circumstances outside</u></p>		

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(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p><u>the Contractor's control arise which mean that the commitments in paragraph 3.2.3 cannot be met, the Contractor shall submit an application for a Derogation for approval to TfL and the relevant planning authority(s), who shall consult with the PLA prior to approval.</u></p> <p><u>The Contractor may agree with the relevant planning authority(s), who must consult the PLA, additional circumstances in which the Contractor may apply for a Derogation from the commitments in paragraph 3.2.3 of the CoCP. Any such agreement must be given in writing by the relevant planning authority(s) and may only be given if the Contractor has demonstrated to the satisfaction of the relevant planning authority(s) that the Derogation will not give rise to any materially new or materially different environmental effects to those assessed in the ES.</u></p> <p><u>The CoCP sets out the criteria and process for any application for a</u></p>		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			Derogation.		
33	ES Chapter 11, table 11-18	Amenity and severance impacts on all travellers – pedestrians and cyclists.	Enhancements to non-motorised user routes embedded in the Scheme design. Monitor impacts on the highway network and mitigate as appropriate through the Monitoring and Mitigation Strategy and through consultation with STIG as required under Article 65 of the dDCO.	Commencement of operation.	DCO Requirement 6, and legal agreement with LBN Monitoring and Mitigation Strategy secured by requirement 7 in Schedule 2 to the dDCO.
Geology and Soils					
34	ES Chapter 12, para 12.5.66	Mitigation proposed in the event of needing to dewater peat deposits.	The asset protection process spans; scoping, initial and detailed assessment (including the effects of any dewatering), protective measures, construction and completion closeout and is secured in the dDCO via Chapter 10 of the Code of Construction Practice..	Prior to commencement of works.	CoCP Chapter 10 Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
35	ES Chapter 12, para	Need for groundwater	A Groundwater Monitoring and Verification Plan (GMVP) will be prepared	Prior to commencement	CoCP section

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
	12.6.22	<p>monitoring. Detailed assessment of potential dewatering impacts is required to enable understanding of ground conditions ahead of works; and ensure that most appropriate groundwater exclusion or management method is adopted to minimise risks.</p>	<p>by the Contractor (in accordance with the Groundwater Monitoring Strategy) which will set out a groundwater monitoring programme for levels and quality which will be initiated ahead of construction (CoCP section 9.3.9). It will contain the following measures:</p> <p>Pre-construction baseline monitoring will commence as soon as practicable and continue until the commencement of construction or the implementation of the construction phase of the Groundwater Monitoring and Verification Plan. The pre-construction monitoring will be used to establish a baseline which will inform the setting of alert and trigger levels, for both water quality and groundwater elevations, against which the construction phase monitoring will be compared.</p> <p>Monitoring will be undertaken throughout the construction and post construction of the relevant part of the Scheme, and reported to the Environment Agency. These reporting requirements will be outlined in the Groundwater Monitoring</p>	of works.	<p>9.4.9</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p> <p>When agreed, the Environment Agency Protective Provisions in Schedule 13 to the dDCO. The form of these provisions is still the subject of discussions between the Applicant and the EA – the</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>and Verification Plan.</p> <p>Detailed controls on the potential effects of groundwater will be included as part of the detailed construction methodology submitted to the Environment Agency pursuant to their Protective Provisions.</p>		<p>most up-to-date working draft is attached to the Applicant's response to SWQ DC2.13.</p>
36	ES Chapter 12, para 12.5.27, 12.6.9 & 12.6.14	Human health impact on construction workers and surrounding land users from contamination from excavation works.	<p>The Contractor will prepare a Construction Materials Management Plan (CMMP) setting out measures to ensure excavated materials are handled and used in a way that prevents harm to human health and pollution of the environment.</p> <p>The Construction Materials Management Plan must be approved by the relevant planning authority. See CoCP section 13.2.</p> <p>The risk from release of asbestos during alteration and demolition works and excavation work will be managed in accordance with The Control of Asbestos</p>	Prior to commencement of works.	<p>CoCP sections 9.5 and chapter 13</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>Regulations 2012 and associated codes of practice and guidance. See CoCP section 13.4.3.</p> <p>Health and safety risks to construction workers from contamination will initially be controlled by the Contractor's responsibility to design out risk, as per the requirements of the Construction Design and Management (CDM) Regulations¹.</p> <p>The Contractor will be required to produce health and safety risk assessments that specify appropriate precautionary measures during works. These shall be completed by a suitably qualified person appointed by the Contractor. See CoCP section 9.5.</p> <p>The Contractor will employ appropriate health and safety measures which will be</p>		

¹ Construction, Design and Management Regulation, 2015, HSE

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>incorporated within the general construction site safety standards at a level sufficient to protect both members of the public and site workers.</p> <p>The Contractor will also employ specific measures to manage the risks of asphyxiation caused by the potential release of deoxygenated air where excavation is required within the Thanet Sand Formation.</p>		
37	ES Chapter 12, section 12.5.28 – 12.5.38	The impact of settlement on the built environment, including potential indirect impacts from dewatering.	<p>The Contractor will design and undertake construction of the Scheme in a manner that will avoid or minimise the damage to land and assets as a result of settlement.</p> <p>TfL has carried out an initial assessment of potential settlement attributable to the Scheme that assessed the risk of damage to all buildings potentially affected by settlement.</p> <p>The Contractor will investigate the</p>	Prior to commencement of works	<p>CoCP Chapter 10.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>potential for ground movement (including settlement) associated with the detailed design and construction methods. This investigation will be carried out in accordance with the <i>Settlement Assessment and Mitigation Process</i> appended to the CoCP (Appendix A).</p> <p>Depending on the level of risk identified by the investigation, either no action will be required, or buildings will be monitored during construction, or measures will be implemented to protect the buildings.</p> <p>Defect surveys will be undertaken on all properties assessed to experience 1mm or more settlement in the assessment carried out in accordance with <i>Settlement Assessment and Mitigation Process</i>. These will capture the condition of the properties immediately prior to tunnel construction commencing in an area.</p> <p>Following the construction of the Scheme in the vicinity of the building, a second survey will then be undertaken by the appointed professional to record changes</p>		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>from the first survey.</p> <p>Subject to specified conditions, TfL will reimburse property owners for the reasonable costs they incur in remedying material physical damage arising from ground movement (including settlement) caused by the Scheme.</p> <p>The Contractor may, on receiving the advanced notice of the proposal to carry out the repair work, elect to undertake the repair work itself.</p>		
38	ES Chapter 12, section 12.5.6-12.5.8	Construction contamination to geology, soils and groundwater from disturbance of contaminated ground & creation of new pathways.	<p><u>The dDCO contains a land contamination requirement in Schedule 2. This requires the Applicant to undertake site investigation and risk assessments where intrusive works are to be carried out on a site to assess the nature and extent of contamination. These must be provided to the relevant planning authority.</u></p> <p><u>Where, following this, it is determined that remediation is required, a remediation strategy must be submitted to the relevant planning authority for approval and then</u></p>	Prior to commencement of works	<p><u>CoCP Chapter 9.2</u></p> <p><u>Compliance with the CoCP is secured by Requirement 15 in Schedule 2 to the dDCO.</u></p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p><u>implemented. This must contain details of the data to be collected to demonstrate the works required for the remediation have been completed.</u></p> <p><u>Following this, the Applicant must submit a verification report to the relevant planning authority, demonstrating compliance with the remediation strategy. Where any works are outstanding, the Applicant must set out a plan as to how these will be completed and those works must be completed to the satisfaction of the relevant planning authority.</u></p> <p>The following approach and mitigation measures to avoid and limit contamination impacts will be followed:</p> <p>The Contractor will prepare a site investigation and risk assessment to assess the nature and extent of contamination within the relevant area. The site investigation scheme shall be developed based upon the preliminary risk assessment of contaminant sources, pathways and receptors undertaken in the Environmental Statement as well as the detailed design and construction</p>		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>methodology. The investigation and risk assessment should be conducted in accordance with DEFRA and the Environment Agency's "Model Procedures for the Management of Land Contamination" CLR 11, and shall include:</p> <ul style="list-style-type: none"> i. a survey of the nature, extent and scale of contamination within the relevant area; ii. an assessment of the potential risks to human health, property and other relevant receptors; iii. (only where the investigation and assessment indicates that remediation is required as a result of the proposed intrusive groundworks in order for the relevant area of land not to meet the 		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>definition of "contaminated land" under Part 2A of the Environmental Protection Act 1990) an appraisal of remediation options and proposal of the preferred option.</p> <p>Full details are in the CoCP at chapter 9.2.</p>		
39	ES Chapter 12, section 12.5.39 – 12.5.40	Risk of unexploded Ordnance (UXO) within the Order limits.	<p>Linear UXO surveys of the Scheme have previously been undertaken to identify the risk within the Order Limits. The Contractor will carry out further assessment prior to undertaking any intrusive investigation works on the Scheme within areas identified as medium and high risk.</p> <p>Once the assessment is complete the Contractor will develop a detailed UXO mitigation strategy for the project prior to construction commencing.</p>	Prior to commencement of works.	CoCP section 9.5. The CoCP is secured by Requirement 5 in Schedule 2 to the dDCO.
40	ES Chapter	Drivability of piles	The Contractor will develop a method for	Prior to	CoCP (Chapter

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
	12, section 12.5.41 – 12.5.43	and the TBM in hard layers and through ground obstructions (such as existing redundant piles) is a potential hazard during construction.	<p>pile removal that will prevent potential groundwater flow between aquifers.</p> <p>The envisaged construction method is contained within ES Appendix 4.A - CMS (Document Reference 6.3.4.1) that proposes removal of obstructing piles by either an adapted tracked excavator to pull the piles, or by the over-coring of the pile using a standard piling rig and single or double steel casing.</p> <p>All piles extracted will be stockpiled and removed from site following material categorisation.</p>	commencement of works.	<p>9.3.3).</p> <p>The CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
Materials and Waste					
41	ES Chapter 13, para 13.5.2 – 13.5.3	Need to reduce the impacts of material resources use and waste arisings from the Scheme.	<p>Measures to be taken in the management of materials produced by the Scheme will be set out in a Construction Materials Management Plan and Site Waste Management Plan prepared by the Contractor for each site. These plans are required by the CoCP at 13.2 and 13.3.</p> <p>The Contractor must deal with CD&E Materials in accordance with the <i>CD&E Materials Commitments</i> set out at</p>	Prior to commencement of works and during works.	<p>CoCP section 13.2 and 13.3.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>Appendix C of the CoCP. This includes commitment for 80% (by weight) of CDE waste to be taken to schemes for 'beneficial use'. This commitment is secured through the CoCP.</p> <p>The SWMP will be updated and will be used to record how waste will be reduced, reused, recycled and disposed of by the Scheme.</p> <p>The Construction Materials Management Plan (CoCP 3.1) will help to ensure that materials are handled and used in a way that prevents harm to human health and pollution of the environment.</p> <p>The Construction Traffic Management Plan and the Scheme's river transport commitments (55% by weight of waste arisings to be transported by river), set out in the CoCP, will enable better management of all types of freight vehicle movement to and from the Scheme.</p>		
Noise and Vibration					

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
42	<p>ES Chapter 14, section 14.5</p> <p>ES Chapter 11, section 11.5</p>	Construction noise and vibration	<p><u>Pre-construction noise monitoring surveys will be undertaken and agreed with the relevant planning authority to establish a pre-construction baseline for monitoring compliance with construction noise limits. Baseline monitoring will commence three months before construction works begin.</u></p> <p><u>The Contractor will then carry out an updated construction noise assessment against this baseline based on the detailed design and construction methodology. This will be carried out in accordance with BS 5228 using specific manufacturer's data and position of equipment.</u></p> <p>Noise impacts from the construction phase of the Scheme will be mitigated through implementation of measures to be set out in a Noise and Vibration Management Plan (NVMP).</p> <p>The Contractor will carry out an updated construction noise assessment based on the detailed design and construction methodology, including the height of any boundary treatment. This assessment will</p>	Prior to commencement of works.	<p>CoCP Chapter 11 and Appendix H.</p> <p>Compliance with CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

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(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>inform a Noise and Vibration Management Plan (NVMP), which will be prepared by the Contractor for each work site setting out the proposed specific mitigation measures to be approved by the relevant planning authority prior to commencing construction.</p> <p>This assessment will also inform the eligibility of any persons eligible for the Construction Noise and Vibration Mitigation Scheme which the Contractor will deliver, set out at Appendix H of the Code of Construction Practice. The Noise and Vibration Management Plan referred to above must either reflect the mitigation measures included in the environmental statement or, where the mitigation proposed materially differs from the mitigation identified in the environmental statement, the Contractor must provide evidence with the Noise and Vibration Management Plan submitted that the mitigation proposed would not give rise to</p>		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>any materially new or materially different worse adverse environmental effects than those reported to those reported in the environmental statement taking into account the mitigation identified in it.</p> <p>The Contractor will be responsible for notifying the local residents of particularly noisy work prior to commencement and for providing contact details for a site representative in the event that disturbance due to noise or vibration from the construction works occurs; ensuring that any complaints are dealt with pro-actively and that subsequent resolutions are communicated to the complainant.</p> <p>During the construction phase, day time and night time noise and vibration monitoring will be undertaken at key sensitive receptors to ensure that the mitigation measures suggested are working effectively. The location and duration of the monitoring will be set out</p>		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			in the NVMP.		
43	ES Chapter 14, section 14.5	Operational road traffic noise.	Visual/acoustic barrier around both northern and southern tunnel portals; and low noise surfacing system surface to be laid within the Order Limits.	Prior to opening of the Scheme.	Requirement 12 in Schedule 2 to the draft DCO will require the details of noise mitigation measures to be submitted to and approved by the relevant planning authority. <u>Such measures must not give rise to any materially new or different environmental effects to those reported in the ES.</u>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
44	ES Document 7.6]	Operational road traffic noise	<p>Noise modelling and monitoring to be carried out before the Scheme opens in order to inform the setting of the user charge and to ensure the charge is set at a level so that the Scheme in operation is not likely to give rise to significant environment effects which are materially new or different <u>worse than</u> those reported in the ES.</p> <p>Noise monitoring to be carried out and results presented to STIG in annual monitoring reports. Suitable mitigation to be investigated if traffic triggers are activated.</p> <p><u>TfL will appoint an independent noise expert to carry out an annual review the noise monitoring data presented within the annual monitoring reports produced under the M&MS. TfL will consult STIG regarding the expert to be appointed.</u></p> <p><u>The traffic monitoring data will be used by the noise expert to calculate a “Basic Noise Level” in accordance with the guidance of the Calculation of Road</u></p>	<p>Prior to opening of the Scheme.</p> <p>Review of monitoring data by reference to traffic triggers or in response to a request from a STIG member to investigate mitigation</p> <p><u>If the annual review carried out by the independent noise expert concludes that the difference in calculated Basic</u></p>	<p>Article 52 and Charging Policies and Procedures.</p> <p>DCO requirement 7 and the Monitoring and Mitigation Strategy.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p><u>Traffic Noise (DfT, 1988).</u></p>	<p><u>Noise Level values between the predicted flows and measured flows through the Blackwall and Silvertown Tunnel is greater than 1dB (and that the difference is attributable to the Scheme). TfL will consider the need for localised noise mitigation measures in consultation with the relevant Borough.</u></p>	

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
45	ES Chapter 14, section 14.5	Tunnel ventilation noise during operation.	Tunnel ventilation noise impacts will be mitigated to be below existing background noise levels.	Commencement of operation of the authorised development.	Requirement 12 in Schedule 2 to the draft DCO requires details of noise mitigation measures to be submitted to and approved by the relevant planning authority. Such measures must not give rise to any materially <u>new or different</u> <u>worse</u> <u>adverse</u> environmental effects <u>than those reported to those reported</u> in the ES.
Townscape and Visual					
46	ES Chapter	Minimising visual	The Contractor will employ best practices	Prior to	CoCP Chapter

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
	15, section 15.5	disruption during construction.	<p>to minimise townscape and visual disruption, for example protection of existing vegetation to be retained, where possible, and targeted use of hoarding to screen construction sites.</p> <p>The visual intrusion of construction sites on nearby residents and users of local facilities will be contained and limited. Signage, decoration or enhancement, for information or aesthetic purposes, on the hoarding will be in accordance with TfL's corporate requirements.</p>	commencement of works.	<p>12</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
47	ES Chapter 15, section 15.5	Minimising significant night-time visual effects during construction.	<p>For each worksite a Lighting Management Plan will be prepared by the Contractor in consultation with the relevant planning authority. The Contractor will implement the measures set out in the Lighting Management Plan.</p> <p>The Lighting Management Plan will reflect appropriate industry standard procedures which will be implemented at both worksites. Lighting will be designed, positioned and directed so as not to</p>	Prior to commencement of works.	<p>CoCP Chapter 12.2</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			unnecessarily intrude on adjacent buildings and so as to prevent unnecessary interference with local residents, the DLR, passing motorists, the navigation lights for air or water traffic, and wildlife breeding seasons.		
48	ES Chapter 4, section 4.5.52	Minimising light pollution effects on local amenity.	<p>The Design Principles [APP-096] state that all highway lighting, including within the tunnel, would be in accordance with the appropriate design standards and guidance and use energy efficient illumination throughout. ILP parameters for obtrusive light will be adhered to in the detailed design. Similarly detailed design for building lighting will also be undertaken in accordance with ILP guidelines.</p> <p>Site specific lighting measures to minimise the adverse impacts during construction on adjacent buildings, wildlife sites and land uses will be taken from the 'Guidance Notes for the Reduction of Obtrusive Light GN01:2011' (published by the Institution of Lighting Professionals).</p>	Prior to scheme opening.	<p>CoCP Chapter 12</p> <p>Requirement 3 of Schedule 2 to the dDCO requires the Applicant to comply with the Design Principles (APP-096) in designing and implementing the Scheme.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>During construction the Contractor will use cowling and reflectors on the temporary jetty to avoid excessive light pollution to surrounding areas. These measures will be detailed within the Lighting Management Plan required by the CoCP (chapter 12).</p>		
Water Environment					
49	ES Chapter 16, section 16.5.2 – 16.5.15	Measures to prevent or reduce water quality impacts by ensuring adequate drainage and preventing pollution.	<p>The Contractor will employ the appropriate water conservation and pollution prevention measures and site drainage controls required.</p> <p style="text-align: center;"><u>The Contractor will employ measures to minimise spillage of materials associated with the Scheme being loaded onto, or unloaded from, barges or other vessels;</u></p> <p>The CoCP sets these out at section 15.2</p>	Prior to commencement of works.	<p>CoCP Chapter 15</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p> <p>When agreed, the Environment</p>

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(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			site drainage, 15.3 control of pollution, 15.4 in-river works, 15.5 water conservation, and 5.6 flood risk.		Agency Protective Provisions in Schedule 13 to the dDCO. The form of these provisions is still the subject of discussions between the Applicant and the EA – the most up-to-date working draft is attached to the Applicant's response to SWQ DC2.13.
50	ES Chapter 16, section 16.5.12	Potential for increases in turbidity and scour	Works would be undertaken in accordance with good practice methods for pollution control as detailed in the	Prior to commencement of works.	CoCP (section 15.4.2 and 15.4).

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
		during construction of the jetty.	CoCP at section 15.3 and 15.4.		Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
51	ES Chapter 16, section 16.5.15	Need to minimise effects on water quality from dredging associated with the temporary jetty.	<p>Measures will include but are not limited to:</p> <ul style="list-style-type: none"> the management of spill water decanting from the excavated material transport barge to minimise locally high concentrations of suspended sediment and changes in water quality; the minimisation of the loss of material from the back-hoe by optimising angle of dredge to the prevailing tidal current flow; avoiding summer/low river flow periods if possible; and limiting the areas of dredging to a minimal footprint to allow safe access to the jetty. 	Prior to commencement of works.	<p>CoCP section 15.4.3.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
52	ES Chapter 16, section 16.5.19	Potential for an impact on the integrity of the flood defences protecting the Scheme and wider areas due to settlement	<p>Any works which could affect flood defences will be subject to EA approval which may be given subject to reasonable conditions in respect of the protection of flood defences.</p> <p>The construction methodology submitted for EA approval would have to demonstrate that good tunnelling practice would be implemented including continuous working, erecting linings immediately after excavation, grouting, management of the tunnel face pressures and the measurement of excavated material quantities.</p> <p>This methodology will also include provision for settlement monitoring to be undertaken at the river walls during the tunnelling works and would be carried out for a period of up to two years post construction.</p>	Prior to commencement of works.	<p>When agreed, the Environment Agency Protective Provisions in Schedule 13 to the dDCO. The form of these provisions is still the subject of discussions between the Applicant and the EA – the most up-to-date working draft is attached to the Applicant's response to SWQ DC2.13<u>the</u></p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
					Applicant's preferred version of the protective provisions is contained in revision 5 of the dDCO submitted at Deadline 6.
53	ES Chapter 16, section 16.5.20 & 15.5.21	Ability of river walls to withstand foreseeable construction activities association with the Scheme and to identify whether the Scheme would affect the feasibility of the future raising of the walls to TE2100 defence	<p>Any works which could affect flood defences will be subject to EA approval which may be given subject to reasonable conditions to ensure the works do not affect the feasibility of raising the wall in the future.</p> <p>Prior to commencing the works, an intrusive survey of the river wall will be undertaken to establish its structural condition.</p>	Prior to commencement of works.	When agreed, the Environment Agency Protective Provisions in Schedule 13 to the dDCO. The form of these provisions is still the subject of

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
		levels.			discussions between the Applicant and the EA – the Applicant's preferred version of the protective provisions is contained in revision 5 of the dDCO submitted at Deadline 6 .the most up-to-date working draft is attached to the Applicant's response to SWQ-DC2.13.
54	ES Chapter 16, section	Residual risk of	During the construction phase a Flood Warning and Evacuation Plan (FWEP)	Prior to commencement	CoCP section

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
	16.5.22	flooding in the very unlikely scenario of a breach on the River Thames defences during the construction period.	would be in place, a draft of which has been prepared (see document reference 6.3.16.3). This draft plan would be updated prior to construction and approved by the relevant local authority emergency planning officer in consultation with the Environment Agency, as secured by the CoCP	of works.	<p><u>2.7</u></p> <p>When agreed, the Environment Agency Protective Provisions in Schedule 13 to the dDCO. The form of these provisions is still the subject of discussions between the Applicant and the EA—the most up-to-date working draft is attached to the Applicant's response to SWQ DC2.13.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
55	ES Chapter 16, section 16.5.24 & 16.5.25	Measures to prevent or reduce impacts on water resources.	<p>The Contractor will implement measures that control water consumption and ensure water is used efficiently on the construction worksites to support water conservation wherever possible. The measures will include but will not be limited to:</p> <p>water audits that identify all water-using processes, activities and equipment on site (aligned with significant changes in site(s) activities throughout the construction phases);</p> <p>staff engagement and training, to reduce water consumption by all water-using processes, activities and equipment on site;</p> <p>a monitoring regime that assesses the effectiveness of water conservation measures;</p> <p>stored water collected by the drainage systems would be used for dust suppression and for other construction</p>	Prior to commencement of works.	<p>CoCP section 15.5.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			<p>phase tasks, such as operation of the TBM; and</p> <p>if required, pumps will be provided at each storage lagoon for use in filling water bowsers.</p> <p>Measures to encourage water use efficiency in the worksite offices and canteens will be adopted.</p>		
56	ES Chapter 16, section 16.5.26 – 16.5.30	During operation – prevent or reduce water quality impacts.	<p>The Scheme would provide a permanent drainage system for the new structures and highways created by the Scheme that is fit for purpose overall, improving the quality of drainage discharges to receiving waters, namely the Cut and the River Thames.</p> <p>Details of the surface water drainage system, must be prepared prior to commencement of the Scheme development, and submitted to the relevant planning authority for approval.</p>	Prior to commencement of works.	Requirement 8 in Schedule 2 to the dDCO.
57	ES Chapter 16.5	Flood risk during operation.	Compliance with measures set out in the Flood Risk Assessment including but not		

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			limited to; an operation FWEP, a SUDs compliant drainage system designed with a climate change allowance.		
Health					
58	ES Chapter 18, table 18-1 HEqIA Table 15-1	Road safety - Increased risk of road traffic accidents as a result of changes in traffic flows and patterns during construction and operation.	The CoCP at Chapter 3 sets out measures to minimise any road safety risks related to construction. The CTMP will ensure that safety measures are implemented to minimise road-related risks. The Contractor will specify the highest current standards in construction vehicle safety, including visibility. This includes but is not limited to FORS Gold (Fleet Operator Recognition Scheme), CLOCS (Construction Logistics and Cycle Safety), SLS (Safety Lorry Scheme) and WRRR (Work Related Road Risk) scheme. Signs identifying the Silvertown Tunnel project and Contractor contact numbers will be displayed in a prominent position on all construction vehicles. All vehicles working in the construction of the Silvertown Tunnel will be compliant with the Mayor's Direct Vision Standard.	Prior to commencement of works.	CoCP Chapter 3. Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
59	ES Chapter 18, section 18.4.1 HEqIA Table 15-1	Active travel – need to maintain pedestrian and cycle links.	Ensuring diversions are in place and walking and cycling routes re-instated post-construction. See section 14.1 of the CoCP.	Prior to commencement of works.	CoCP Chapter 14 Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
60	ES Chapter 18, section 18.4.1 HEqIA Table 15-1	Accessibility - access to local services and facilities during construction.	The CoCP sets out at 2.6 and 14.1 how access will be provided during construction, providing diversions where necessary and well sign-posted routes.	Prior to commencement of works.	CoCP sections 2.6 and 14.1 Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.
61	ES Chapter 18, section 18.4.1 HEqIA Table 15-1	Access to work and training	Employment of a proportion of local workers in construction jobs and delivery of apprenticeships. This will be based on TfL's Strategic Labour Needs and Training commitments.	Prior to commencement of works.	Legal agreement with local authorities

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
62	<p>ES Chapter 18, section 18.4.1</p> <p>HEqIA Table 15-1</p>	<p>Noise impacts during construction.</p>	<p>The CoCP details at Chapter 11 the types of noise control measures which the contractor will set out in a Noise and Vibration Management Plan for each work site. This must be approved by the relevant planning authority.</p> <p>The Contractor will carry out an updated construction noise assessment based on the detailed design and construction methodology. This assessment will also inform the eligibility of any persons eligible for the Construction Noise and Vibration Mitigation Scheme which the Contractor will deliver, set out at Appendix H of the Code of Construction Practice.</p>	<p>Prior to commencement of works.</p>	<p>CoCP Chapter 11.2</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>
63	<p>ES Chapter 18, section 18.4.1</p> <p>HEqIA Table 15-1</p>	<p>Air quality effects during construction.</p>	<p>Air quality control measures, which include control of dust will be set out in the Air Quality Management Plan (AQMP) which will be prepared by the Contractor for each worksite and submitted for approval to the relevant planning authority. The CoCP at Chapter 5 sets out what this will include.</p>	<p>Prior to commencement of works.</p>	<p>CoCP Chapter 5.</p> <p>Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.</p>

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
64	<p>ES Chapter 18, section 18.4.1</p> <p>HEqIA Table 15-1</p>	Social Capital	<p>Contractor to develop a programme of community engagement and involvement through volunteering and educational activity.</p> <p>The Contractor will appoint a Community Construction Liaison Manager (CCLM) for the duration of the works. This manager will prepare and implement a Community Engagement Plan (CEP) which must be submitted to the relevant planning authority for approval. The CCLM will be the main point of contact for stakeholders on site, providing information and resolving issues of concern within a specified time with complaints logged.</p> <p>The Contractor will establish and maintain a Community Liaison Group. It will comprise representatives from key local groups, user representatives, and the local authorities. Invitations to join the group will also be sent to all affected landowners for the Scheme, who will also be invited to co-ordination and communication meetings particularly in relation to traffic matters.</p>	Prior to commencement of works.	CoCP Chapter 4. (4.1.4) Compliance with the CoCP is secured by requirement 5 in Schedule 2 to the dDCO.

(1)	(2) Source	(3) Issue	(4) Mitigation or measure to prevent, reduce, offset and minimise impacts	(5) Trigger	(6) Securing mechanism
			The CoCP at Chapter 4 (4.1.4) sets out what the CEP will include.		