



Thames Tideway Tunnel Project Local Impact Report

October 2013



THE ROYAL BOROUGH OF
KENSINGTON
AND CHELSEA

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1. Introduction

- 1.1. The Council reiterates its concerns about this scheme and the different impacts it will have in economic, social and environmental terms. However, it is understood that the aim of the Local Impact Report is not to discuss the principle of the project but to state all the positive, negative and neutral local impacts that the project will have.
- 1.2. The Royal Borough's Local Impact Report is divided in two sections, one for each of the sites affected by this project: Cremorne Wharf and Chelsea Embankment Foreshore. These sections describe the sites, their local context and the different impacts on the following topics:
 - Heritage
 - Transport
 - Noise, Vibration and Odour
 - Land Quality
 - Air Quality
 - Ecology
 - Socio-economics
 - Water Resources and Flood Risk
- 1.3. The application documents that address the impacts of the project and the associated mitigation measures are the Environmental Statement, The Code of Construction Practice, the Statement of Common Ground, the design principles and the requirements included in the Development Consent Order. The Environmental Statement presents the findings of the assessments of the likely significant effects on the different topics addressed.
- 1.4. The Code of Construction Practice contains requirements and mitigation measures to minimise the potential negative effects. They are based on a precautionary approach. The Code of Construction Practice is divided in two sections: Part A which includes the generic measures and Part B which includes site specific measures. There are few site specific measures included in Part B for sites in this borough.
- 1.5. The Statement of Common Ground states the areas of agreement and disagreement between the Council and Thames Water. There are currently a few matters still to be agreed:
 - the dimensions of the vent columns on both sites as the Council wish to see their height considerably reduced from the current 8m shown on the plans;
 - the impact of development on the Cremorne Riverside Activity Centre;
 - settlement effects on the listed Pumping Station in Lots Road;
 - project-wide requirements regarding the monitoring of listed buildings;
 - approval in principle for asset protection agreements, and
 - site specific issues included in the design principles and requirements.
- 1.6. The Council is working with Thames Water to address the matters not agreed and therefore the Statement of Common Ground is a working document and could change during the Examination in Public.

- 1.7. The design principles are the basis for the design of the ground and above ground permanent structures and open spaces left after the development takes place. There are three types of design principles:
- high-level design principles (overarching objectives for the design of permanent structures on all sites);
 - generic principles (general project-wide commitments), and
 - site-specific principles (contextual principles unique to our sites.
- They cover the following issues: design; odour sources; impacts on habitats; landscape and visual effects; effects on existing land use, and heritage assets.
- 1.8. The Development Consent Order is a legal 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 Development Consent Order 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.
- 1.9. The Development Consent Order includes in Schedule 3 a series of requirements which are tools to assess the detailed designs submitted to the Council for subsequent approval. The requirements relate to project-wide and site-specific issues. The project-wide requirements include:
- interpretation and definition of issues such as Air Management Plan, Overarching Archaeological Written Scheme of Investigation and Heritage Statement amongst other terms;
 - time limits for the commencement of the development and phasing;
 - drive strategy;
 - Code of Construction Part A;
 - design principles;
 - Air Management Plan;
 - monitoring of listed buildings and structures, and
 - built heritage.

The site-specific requirements for our sites include:

- Code of Construction Part B;
- detailed design approval for permanent above ground structures including ventilation columns;
- temporary works
- details of works to listed building and structures, including protecting works;
- works on the river;
- activities (contaminated land, archaeology, fencing/enclosure);
- transport (construction traffic, travel plan and accesses);
- environment (surface water drainage and flood protection);
- landscaping;
- scour and accretion protection, and
- lighting.

1.10. The Council has raised concerns about the implementation of the mitigation measures in its relevant representation. The concerns come from the fact that most of the mitigation measures are included in the Code of Construction Practice and design principles. The requirements within the Development Consent Order refer to these two documents; however their implementation is not ensured. All mitigation measures must be included as part of the Development Consent Order.

1.11. The Council has been working with Thames Water to reduce the impacts and ensure that mitigation measures are in place. The proposals have evolved considerably over the years to achieve an overall better integration of the structures needed and a reduction of their sizes. In cases where the Council and Thames Water have been unable to reach an agreement regarding the impacts or the mitigation measures, these have been reported in the Statement of Common Ground. The Council's concerns are detailed in the next two sections but the main concerns are summarised below:

- **The implementation of the Development Consent Order:** this will be undertaken by an Infrastructure Provider, different to Thames Water, who may not adhere to the same principles and visions/aspirations which are included in non-statutory documents separate from the Development Consent Order.
- **Mitigation Measures:** in most cases, mitigation measures are left to the future design options included in the contactors' methodologies. This increases uncertainty about their implementation. It could also lead to increasing costs for the Council once construction starts discharging the requirements and enforcing the Code of Construction Practice (this has been supported by English Heritage in their representation for the consultation of the Local Impact Report).
- **Cumulative impacts:** these include cumulative impacts to the transport network; air quality; land contamination; ecology (loss and disruption of habitat); and the settlement of the river wall during construction.
- **Heritage issues:**
 - the vent columns on both sites are still too high. Their impact could be even greater depending on their location (paragraphs 2.2.4, 2.2.11, 3.2.26 and 3.2.13);
 - the details of the electrical and control equipment within the listed Lots Road pumping station have not yet been decided. (paragraph 2.2.5); the pumping station is also under the threat of settlement as a result of the tunnelling (paragraph 2.2.11);
 - although plans include a four metre clear strip for the future provision of the Thames Path at Cremorne Wharf, this is not ensured (paragraph 2.2.11);
 - the proposed plans allow the kiosks to be located in positions that could disrupt the axial view on the Chelsea Embankment Foreshore (paragraph 3.2.13);

- the distinctive boundary wall of Ranelagh Gardens could be permanently disrupted (paragraph 3.2.13);
 - the design could facilitate the use of the open space created at Chelsea Embankment Foreshore as an off-street parking area or coach drop-off (paragraph 3.2.13), and
 - the quality of the scheme is not assured (paragraph 3.2.13).
- **Transport Issues:**
 - the removal of five parking bays in Lots Road for the duration of the works is more than necessary to achieve safe access to Cremorne Wharf (paragraphs 2.2.23 – 2.2.24); this should be reviewed to minimise impact on residents;
 - the excessive traffic regulation powers included within the Development Consent Order (Article 18). The Council as a traffic authority is best placed to exercise these powers (paragraph 2.2.25);
 - a requirement should be included in the Development Consent Order to allow the Thames Path on the Chelsea Embankment Foreshore to be opened as often as possible, including on Saturday mornings (paragraph 3.2.23).
- **Noise, Vibration and Odour:** working hours during Saturdays should only be until 1pm (paragraphs 2.2.28 and 3.2.32). Thames Water has agreed this in the changes submitted to the Code of Construction Practice Part B.
- **Land Quality issues:**
 - some assessments are limited and further assessments are needed and/or their findings have not been included in the Environmental Assessment. This has implications for the assessment of land contamination including issues such as the effects on the construction on nearby receptors (paragraphs 2.2.46 and 3.2.48); the effects of the operational phase, the potential risks of migration of contamination and the associated Remediation Strategy (paragraphs 2.2.47-2.2.50, 3.2.43, and 3.2.50-3.2.52);
 - the requirement for site assessments and investigations is included in the Code of Construction Practice. However, mitigation measures proposed as a result of the assessments will be signed off only by the employer and the Environment Agency. The Council also needs to sign off both the assessment and the mitigation measures (paragraphs 2.2.51 and 3.2.55). The same is relevant to the submission of a Remediation Strategy (paragraphs 2.2.52 and 3.2.54-3.2.56);
 - Site Investigation Schemes and Risk Assessments should be included as requirements within the Development Consent Order (paragraph 2.2.52).

- **Air Quality:**
 - some assessments and their accuracy are not clear and, as a result, the predicted impacts on residents may not reflect reality (paragraphs 2.2.57 and 3.2.59). This relates to baseline concentrations of air pollutants (paragraphs 2.2.61 and 3.2.64-3.2.65); the predicted increase in traffic does not reflect the significant reduction in the concentration of air pollutants predicted by the model used in the Assessment (paragraphs 2.2.64 and 3.2.67); and receptor locations have not been agreed with the Council (paragraph 3.2.63);
 - only four mitigation measures are included although best practice guidance requires many more (paragraphs 2.2.73 and 2.2.75);
 - it is not clear if an air quality management plan will be produced and if it will be submitted to the Council for approval (paragraphs 2.2.74 and 3.2.70), and
 - the assessment assumes that control measures within the Code of Construction Practice will be implemented which has an impact on the results of the assessment (paragraph 3.2.76); and the mitigation measures included in the Code are vague (paragraph 3.2.73).

- **Ecology issues:** the presence of bats at Cremorne Wharf site will result in the loss of a roosting site. There is concern that onsite mitigation measures will not be achieved. Further consideration is required to ensure that onsite post construction habitat is provided.

- **Socio-economic issues:**
 - there should be opportunities for local jobs; a training programme should be in place, and
 - the maintenance of the new public open space created on the Chelsea Embankment foreshore and who will cover its costs. . The Council does not wish to take on the maintenance.

- **Water resources and flood risk:** the Environmental Statement explains that there are not significant effects on the flood defences. However, the Environment Agency considered that further assessment of the flooding defences needed to be undertaken. Thames Water has submitted a Flood Defence Assets Interpretive Report but the Council have not seen the comments made by the Environment Agency on this report.

1.12 It is worth noting that new information has been submitted by Thames Water on the 23rd September 2013. If this information leads to any changes, these will be included in the Council's future written representations.

2. Cremorne Wharf

2.1 Site related matters

Details of the proposal.

- 2.1.1 Proposals at Cremorne Wharf Depot consist of a combined sewer overflow drop shaft (approximately 6m internal diameter and 42m deep) and a connection tunnel (3m internal diameter and 100m long) between the combined sewer overflow drop shaft and the main tunnel. Above-ground works will include two 'signature' ventilation structures, one ventilation structure within an existing Lots Road Pumping Station ventilation column; a local control pillar and areas of hard standing. Associated development comprises works to intercept and divert flow from the Lots Road Pumping Station combined sewer overflow to the drop shaft including construction of an interception chamber, combined sewer overflow structures, hydraulic structures, chambers with access covers, structures for air management plant and equipment and other structures including culverts, pipes and ducts to modify, connect, control, ventilate and intercept flow.

Relevant planning history and any issues arising.

- 2.1.2 The National Policy Statement for Waste Water will be used by the Planning Inspectorate as the primary basis for deciding development consent applications. The relevant local and regional policies and designations regarding the proposals are:
- Local Policy CL1(a, d) – architecture and urban design, riverside development;
 - Local Policy CL2(a) – high design quality;
 - Local Policy CL4(g) – setting of a listed building/structure;
 - Local Policy CR4(d, h) – street furniture and public art;
 - Local Policy CR5(b, h) – protected open space, public access to the Thames;
 - Local Saved UDP Policy CD1 – riverside views and vistas;
 - Local Saved UDP Policy CD63 - conservation area setting;
 - Local Policy CT1(a) – riverside development;
 - Local Policies CT1 and CP18 – Thames Path;
 - Local Policy CR7 - parks, gardens, open spaces and waterways;
 - Local Policy CE5 – air quality;
 - Local Policy C1 – infrastructure delivery and planning obligations;
 - Conservation Area Proposal Statement for Thames (21);
 - Regional Policy - London Plan Thames Policy Area (Policy 7.29);
 - Regional Policy - London Plan Flood Risk Management (Policy 5.1.2);
 - the River Thames (including Chelsea Creek) is designated Site of Nature Conservation Importance (Grade III of Metropolitan importance) (related to Policy CE4);
 - Lots Road is designated as an Employment Zone (related to Policy CF5);

- Cremorne Wharf is designated as a Safeguarded Wharf and waste site (related to Policy CE3). This is also related to the London Plan Policy on Safeguarded Wharves (Policy 7.26);
- The site is in Flood Risk Zone 3 (high probability);
- The site has been identified as being of medium significance in terms of archaeological potential, and the Council is currently reviewing the responses of the consultation on the designation of the Lots Road Conservation Area.

2.13 There is not a live planning application on the site. However, the previous planning permissions related to Imperial Road and the redevelopment of a Lots Road Power Station could have a cumulative impact effect if they are not fully implemented before the project construction starts.

2.2 Cremorne Wharf Impact related matters

Heritage

- 2.2.1 The proposal is extensively underground, but will require some new infrastructure above ground, comprising access hatches for tunnel maintenance, electrical and hydraulic equipment and ventilation columns. The new equipment is housed within a replacement waste depot building adjacent to the listed Lots Road Pumping Station. Two ventilation columns which could be up to 6 m high are the most conspicuous features of the Thames Tideway Tunnel at this location. The exact position and material details of the columns have yet to be confirmed, although it is understood that Thames Water wishes to make a signature structure of them, providing a common distinctive feature across all sites along the Thames.
- 2.2.2 The tunnelling works require the demolition of the existing depot and temporary use of the site. Following completion of the tunnelling works, Thames Water proposes to provide a replacement depot building, but has only submitted information on its maximum footprint and height of the apex roof.
- 2.2.3 The scheme plays down the visual presence of the Thames Tideway Tunnel, locating the majority of the control equipment within the pumping station where it is not open to view and secure. The main visible presence is a pair of ventilation columns, for approval for anywhere on the site, but in the illustrative information shown positioned close to the riverside, aligned with the replacement depot and close to the site's western boundary wall. In this position the columns will be visible to the public as-and-when the Thames Path is provided.
- 2.2.4 The minimal, low-key design approach of the new infrastructure is supported. It reduces the visual impact upon the townscape and setting of the adjacent pumping station. As proposed there is little visual impact on the Thames Conservation Area other than the new vent columns. At 0.9m diameter and up to 6m in height the vents are large and visually prominent structures. A

location away from the riverside and close to the pumping station is discouraged, as the vents have no functional relationship with the listed building and could clutter its appearance. The illustrative location closer to the riverside is preferred, as is the notion of the columns as signature structures for the Thames Tideway Tunnel project that could feature with the other sites along the river and contribute to the Thames-side experience.

- 2.2.5 The location of the electrical and control equipment within the listed pumping station is supported, being functionally appropriate for the building and reducing the problems of external public realm clutter. However, the final location and equipment details are not provided at this stage, although informal discussions suggest that these matters could be addressed without harm to the building's special architectural and historic interest. Whilst the proposals include the use of an existing ventilation chamber and column, the latter remains encased within a concrete box that runs the height of the pumping station and detracts from its appearance. In addition, a new control pillar is located adjacent to the column. The scheme architects are encouraged to remove the concrete box and reinstate a cast iron pipe that would be more compatible with the historic building.
- 2.2.6 No information is provided regarding the resurfacing of the access roads and footpaths, which should be of a quality commensurate with the final use of the site, including the public realm and the proposed Thames Path. Surface level ventilation ducts should be avoided or minimised/located away from the public realm, and hatches to any new chambers should be dressed to coordinate with the surface finish.
- 2.2.7 Regarding the replacement depot building, little information is provided other than the footprint and overall building height. The proposed footprint is welcome, as it retains the depot as a detached structure, sets back the new flank elevations so as not to challenge the adjacent pumping station, and allows for the future provision of a new public footpath along the riverside. The building's overall height is marginally taller than the current depot, although this is not problematic given the footprint and height of the pumping station. The position and general envelope of the proposal is supported; further details are required to assess its detailed bulk, architectural appearance, material quality and urban design to confirm that the new building does not disrupt the setting of the listed building and to ensure that it makes a positive improvement to the character and appearance of the riverside and Thames Conservation Area.
- 2.2.8 The existing jetty remains untouched by the proposals, although the connection tunnel runs underneath and barges for removing the spoil will anchor close to the structure. The opportunity should be taken to upgrade the structure, particularly were it to be damaged during construction work.
- 2.2.9 There are operational requirements that largely determine the scale and position of the new infrastructure and especially that required above ground. It is welcomed that the scheme architects have sought to minimise the visual

impact of the infrastructure in terms of the location and visual quality of the above ground infrastructure. The height of the ventilation columns has been reduced to up to 6 m. However, further effort to ensure a high quality, bespoke design is strongly encouraged, being in line with Policies CL1, CL2 and CR4. On this basis, the new structures do not impact upon the visual quality of the open space, setting of the listed building and conservation area in general, in line with Policies CD1, CL4 and CD63.

2.2.10 Regarding the new depot, the revised footprint and similar height maintain the setting of the adjacent listed building, although detailed design matters remain outstanding to ensure the building fully accords with Policies CL1, CL2, CL4, CR5, CD1 and CD63. The set-back allowing the new riverside walk is especially welcome, according with Policies CR5 and CT1.

2.2.11 The Council has worked with Thames Water officers to ensure the proposals comply with Local Plan Policies. Whereas the proposed development has evolved and reduced its impact on the area, there are still few outstanding issues to be agreed in the Statement of Common Ground. The Council's main concerns are:

- The potential changes affecting the nearby Lots Road pumping station, where the threat of settlement on the Grade II listed structure is an issue; (English Heritage has also highlighted this building for particular care in this respect).
- The site parameter plans for approval allow for positioning of new 6.0m ventilation columns within and immediately adjacent to the pumping station. The height of column could be reduced further. Also, the possible location could be harmful to the setting of the listed building.. Any works undertaken should be to a high quality and preserve, if not enhance, the special architectural character and historic interest of the listed building.
- The proposals do not take the opportunity to advance the widely recognised ambition for filling in one of the few gaps in the Thames Path at this location apart from leaving a gap. Given the disruption involved it is very disappointing that a more comprehensive and positive proposal for reinstatement could not have been advanced.

Transport

2.2.12 Cremorne Wharf is situated on Lots Road, a borough road for which the Royal Borough of Kensington and Chelsea is the highway authority. There are continuous footways on both sides of the street. The carriageway accommodates two way traffic and kerbside parking on both sides. The carriageway is of variable width and generally wide enough to allow two large vehicles to pass one another. There is, however, a number of pinch points between kerbside parking where it is not possible for large opposing vehicles to pass one another. This is not normally problematic given the street's moderate traffic flows. If a vehicle must temporarily stop to allow an opposing vehicle to pass it does not cause undue disruption or delay.

2.2.13 Lots Road connects to the strategic road network (Transport for London Road Network) at the Lots Road/ Cremorne Road priority junction which is situated

150m to the north east of Cremorne Wharf. Cremorne Road is heavily trafficked for much of the day. Traffic waiting to join Cremorne Road from Lots Road must queue at peak times.

2.2.14 The mixed use character of Lots Road generates more varied traffic than is typical on a borough road and is used by significant numbers of commercial vehicles and cyclists. In addition to Cremorne Wharf, there are several other large development sites on, or close to, Lots Road including the Lots Road Power Station site, which is expected to generate significant construction traffic flows on Lots Road in the coming years.

2.2.15 The Council's most recent parking survey data (MHTC consultants, 2011) indicates that there are saturated parking conditions in the vicinity of Cremorne Wharf with 96% of available residents permit parking bays occupied overnight (see Appendix A). This level of parking occupancy means that residents may have to:

- drive around seeking space, sometimes some distance from their homes causing inconvenience, and more serious problems for vulnerable residents, especially at night; and/or
- park on single yellow lines and move the car before parking control begins at 0830, or on Pay & Display Spaces where, because of the shortage of spaces, residents are granted an hour's grace until 0930.

2.2.16 Circulating traffic causes noise and air pollution and general environmental degradation. Accordingly the Council seeks to maintain the existing supply of residents parking bays. The pressure on the area's visitor bays is not as pronounced. The heaviest demand for visitor bays occurs when Chelsea FC play a home game at nearby Stamford Bridge.

2.2.17 Cremorne Wharf has moderate public transport accessibility (PTAL 3). Eight bus routes can be reached within eight minutes walk. Imperial Wharf overground station is situated 640 metres away (approximately an eight minute walk). A peak time river bus service runs from Chelsea Harbour pier to the south west. The nearest underground station is at Fulham Broadway, 20 minutes walk away. This is too far away to count towards the public transport accessibility level.

2.2.18 The south eastern footway on Lots Road is designated as part of the Thames Path as there is currently limited access to the riverside in this area. The Council seeks to secure a continuous riverside path by implementing Core Strategy Policy CT1 (n). The owners of Chelsea Wharf are obligated to provide a riverside link from Cremorne Wharf to Cremorne Gardens, should a path be provided at Cremorne Wharf. The consented scheme at the Lots Road Power Station site includes a riverside path which would connect Cremorne Wharf to the existing riverside path at Chelsea Harbour. Therefore the Cremorne wharf site is pivotal to the delivery of a continuous riverside path.

- 2.2.19 During construction, vehicular traffic would use the two existing entrances to the Cremorne Wharf site from Lots Road. These are situated on either side of the listed Lots Road pumping station. A one way system would be put in place with incoming traffic using the entrance to the east of the pumping station and outgoing traffic using an exit to the west of the pumping station. This arrangement is supported and is incorporated into the Code of Construction Practice Part B which has been submitted with the application.
- 2.2.20 The Code of Construction Practice (Part B) states that heavy goods vehicles accessing and egressing the site will be between 09:30 and 15:00 to avoid school traffic outside these hours. This restriction is appropriate. There is a large school on Lots Road. The number of conflicts between construction traffic and students must be minimised by limiting HGV movement to the above times.
- 2.2.21 A daily maximum of 12 lorry visits (24 movements) to the site is expected. Up to 30 vehicles (of all types) would visit daily. This level of traffic should have no significant impact on traffic conditions on Lots Road. Queue lengths at the Lots Road Cremorne Road junction which are projected to worsen over time due to background traffic growth would not be significantly influenced by development traffic.
- 2.2.22 Given that there would be only 12 lorry visits to the site on a given day, it should be possible to schedule movements so conflicts on Lots Road are minimised. It should be possible to hold outgoing vehicles within the site until a scheduled incoming vehicle arrives. This would prevent opposing Thames Tunnel traffic from conflicting on Lots Road. Such a requirement should be secured by agreeing an appropriate site traffic management plan.
- 2.2.23 The draft Development Consent Order proposes the removal of five on street parking bays from Lots Road for the duration of the works to facilitate construction traffic movement. The bays comprise three residential parking bays on the northwestern side of the road and two visitor bays on the southeastern side of the road.
- 2.2.24 The tracking diagrams appended to the transport assessment demonstrate that the two bays on the southeast side of the street would not be overrun by construction vehicles accessing the site. Such vehicle would manoeuvre towards the opposite side of the road before swinging into the site. Accordingly there is scope for these two bays to be retained. The tracking diagrams appended to the Transport Assessment demonstrate that the removal of three bays on the northwest side for the duration of the works would be reasonable given the project's access requirements. To limit the impact of the development on the supply of residential parking bays the two bays on the southeastern side of the street proposed for removal should instead be redesignated as visitor bays.
- 2.2.25 Within the Development Consent Order, the powers under Article 18 (Traffic Regulation) of the work provisions and the extent of the no waiting restrictions proposed under Schedule 10 are considered to be excessive. There is scope

to retain two parking bays as explained in the preceding paragraph. Traffic regulation powers are most effectively exercised by the Council as traffic authority who will be aware of all the competing demands on the highway at a given time.

2.2.26 Thames Water's plant on the site would generate a low servicing requirement of approximately two visits per year with more significant maintenance required every ten years. This servicing would take place off street using the one way vehicular route through the site which would be retained. Therefore, there is no conflict with Local Plan Policy CR7.

Noise, Vibration and Odour

2.2.27 The Environmental Statement volumes 12 and 13 cover the assessed noise and vibration impacts of these two sites. Section 9 of both the volumes covers the assessed noise and vibration impacts. The Code of Construction Practice parts, A and B, and the Environmental Statement include mitigation measures to the generation of noise and or vibration during construction at these two sites.

2.2.28 Working hours are site specific and no set hours of work are project wide. Working hours at the two sites in the Borough are set out in the Code of Construction Practice Part B. This Code has been revised to align with the Council's normal working hours of 8am to 6.30pm on Mondays to Fridays and 8am to 1pm on Saturdays.

2.2.29 Part 6 of the Code of Construction Practice Part A sets out the s61 'Prior Consent' application process which all contractors must adhere to. The requirements in regard to the s61 process including noise and vibration monitoring are considered to be acceptable. Also included in part 6 are a sound insulation and temporary re-housing schemes. Should noise after the applying of mitigation and best practicable means exceed certain trigger levels, then the scheme will be available to exposed residents. The s61 detailed construction noise prediction process will establish if construction noise impacts reach the trigger levels that will implement the noise insulation and re-housing policy.

2.2.30 The Council is satisfied that the procedure for application for Prior Consent under section 61 of the Control of Pollution Act 1974 given in Code of Construction Practice Part A will allow the Council detailed examination and approval for works at this site.

2.2.31 The Borough's two sites, as they are isolated by distance one from the other will have no cumulative construction noise and vibration impacts. The one project wide issue is the possibility of ground borne noise from the tunnel boring machine excavating the main tunnel.

2.2.32 The contour plot of ground borne noise from the tunnel boring machine propagates to no more than 29dBLAmax(s) within the existing north bank river wall. Levels propagated to within residential dwellings which lie further beyond

this point would be even lower. Even allowing for predictive uncertainty and possible room modes within buildings ground borne noise from tunnelling this should not be a significant issue. Tunnel boring is also a temporary transient event with the potential to affect dwellings only during the time the tunnel boring machine passes a specific location. The level above is the peak level as it passes.

2.2.33 Section 9 of Volume 12 covers the assessment of noise and vibration in both the construction and operational phases at Cremorne Wharf and section 3 the Proposed Development and Appendix G to Volume 12 the ambient noise surveys data and the likely construction noise predictions.

2.2.34 The method used in the Environmental Statement for the establishment of significance of construction noise impact is the ABC method of BS5228:2009. For daytime noise this has resulted in a significance criterion level of 70dB LAeq (day) at this site. The predictions of construction noise have resulted in the following conclusions on impacts on the residential receptors:

- 40-78 Lots Road: noise is predicted to not exceed the significance criterion level;
- Station House: there will be one month when noise exceeds the significance criterion for daytime work. For evening and night time work the criterion is not exceeded;
- Chelsea Wharf Apartments: noise is predicted to not exceed the significance criterion level;
- Lots Road Power Station – Mid-rise building: this development will be partially occupied in year three of the Cremorne Wharf construction. In year three it is predicted that noise will exceed the significance criterion for daytime noise only. However, with windows closed it is estimated that internal noise levels will be at or below 40dB LAeq which is an acceptable level for internal daytime noise as per BS 8233;
- Lots Road Power Station - High-rise tower: this is a 25 storey residential building that will be under construction in year one and construction noise impact has been assessed for years 2 and 3. It is predicted that for the highest levels in the range of noise levels affecting this building noise will exceed the significance criterion for daytime, evening and night time noise. However with windows closed it is estimated that internal noise levels will be 34dB LAeq and 30dB LAeq and 22dB LAeq during the day, evening and night time respectively which is an acceptable level for internal noise as per BS 8233.
- Whistlers Avenue: noise is predicted to not exceed the significance criterion level.

2.2.35 The s61 process will also look examine construction methods to be adopted by the contractor undertaking the works and will include noise predictions affecting these receptors. On the basis of the construction noise predictions the construction noise impact should be acceptable with good site management and adherence to s61 conditions and requirements of the Code of Construction Practice. Monitoring of construction noise levels is required. It is also proposed, to ensure consistency between s61 applications, that prior to being submitted they go through a screening and approval process to be undertaken by specialist consultants.

Construction Road Traffic: Noise

2.2.36 The works are predicted to generate 24 additional HGVs movements on local roads; taken together with other assorted workers vehicles there would be less than a 1% increase in current flows. This would result in much less than a 1dB increase in current traffic noise levels. The Council considers that this is not significant .

River Barge Traffic: Noise

2.2.37 At this location it is predicted that one barge a day is sufficient to remove excavated spoil from the workings. The noise impact of this one movement has been predicted as a one-off noise event. Noise during this one event would add less than 3dB to the existing ambient noise level and as such can be assessed as not significant.

Operational: Noise and Vibration

2.2.38 During the operation of the Thames Tideway Tunnel, triggered by combined sewage being diverted to the combined sewer overflow, noise and or vibration generated is not likely to cause any noticeable impact. The only issue is the noise generated by the effluent diverted to the combined sewer overflow falling down the drop shaft. However, this falling water will generate a vortex and this will reduce impact noise. The interceptor chamber and filter chamber will also help contain noise to within the drop shaft acting partially as noise reducing plenums. The ventilation stacks here are also passive with a very low efflux and influx velocity. Audible air movement noise is unlikely to be generated. The limited use throughout a year for about fifteen hours will ensure operational noise is negligible. There will be surface located plant which will need to meet the appropriate noise emission limits of Table 9.6.1 of the Environmental Statement. The plant to be installed will operate very intermittently and compliance with the noise emission limits when the plant is operational will need to be shown by way of submission of a noise report.

Operational: Odour

2.2.39 During the operational phase odour was perceived as a potential impact. However Cremorne Wharf is a passive vent site that will only emit air displaced by combined effluent rising up the combined sewer overflow drop shaft. The vent will also allow air entry when the system is emptying. The top of the drop shaft will be interrupted by an activated carbon filter chamber, intended to remove odour from the air flow passed to the vents. The air flow rate is 100 litres per second and the filters have a capacity to treat 500 litres per second. All expelled air will therefore be treated. Maintenance of the filters

is an important consideration. Maintenance visits are programmed to occur every two to three months. Emitted concentrations of hydrogen sulphide after dispersal from the vents to atmosphere and at receiver positions are predicted to be very low and are likely to be at undetectable concentrations. Air is predicted to be expelled infrequently from the drop shaft and for not more than fifteen hours in any year. This vent will also open to allow air to enter the system when the main tunnel is emptied.

2.2.40 When the system is empty constant ventilation and air changes of the main tunnel will be provided by fans sited at Acton, Carnworth Road and Abbey Mills. These fans will draw air through the tunnel to the atmosphere. Air circulation will be achieved by air entering and then moving through the tunnel from Hammersmith pumping station, Blackfriars Bridge and the two sites at Beckton. No air is therefore expelled at Cremorne Wharf when the tunnel is empty and no potential odour can result at this site. Odour should not have an impact on residential occupiers adjacent to the site.

Land Quality

2.2.41 Section 8 of both Volumes 12 and 13 of the Environmental Assessment covers the assessed land quality impacts. The Code of Construction Practice Part A is also part of the application and sets out the mitigation measures that will reduce the impacts of land contamination on the development at both sites.

2.2.42 Cremorne Wharf has been occupied by industrial land uses for over 150 years and it is likely that contamination will be found in the ground and groundwater beneath the site. The geology beneath the site, consisting of a significant thickness of made ground underlain by river terrace gravels, could have facilitated the accumulation of contamination caused by the activities that have taken place historically. Similarly, this geology makes it easier for contaminants to have migrated both off the site and on to the site from offsite sources.

2.2.43 The Environmental Statement includes results from a preliminary ground investigation at the site. One sample showed elevated levels of Benzo(a)pyrene above the generic assessment criteria for a commercial land use. Analysis of groundwater samples showed that the groundwater within the made ground and River Terrace Deposits was contaminated with low levels of Polycyclic Aromatic Hydrocarbons.

2.2.44 Development works at Cremorne Wharf will consist of demolition of the wharf building and significant excavation works including the construction of pits, chambers, drainage, the combined sewer overflow drop shaft and connection tunnel. Construction workers have been identified as the main receptor in terms of being at risk from contamination on the site and these risks will be mitigated through implementation of the Code of Construction Practice. With these measures in place the assessed impact on above ground construction workers has been estimated as negligible and minor adverse for intensive

below ground works. This may need to be updated pending the findings of further investigation.

- 2.2.45 There are residential receptors immediately adjacent to the site and several residential and other sensitive receptors in the near vicinity. The Environmental Statement has assessed the impact on these receptors as minor adverse once the mitigation measures in the Code of Construction Practice are implemented. The Environmental Statement states that a negligible effect is likely to be experienced by the adjacent commercial / light industrial land users, Thames Path users and recreational users (Cremorne Gardens and Cremorne Riverside Activity Centre).
- 2.2.46 The assessment of the effects of the construction on nearby receptors is based on limited site investigation information; however the assessment assumes that the mitigation measures contained within the Code of Construction Practice are being implemented. The scope of the measures is broadly acceptable, however, their applicability will need to be further reviewed once the site is fully investigated and risk assessed.
- 2.2.47 The operational phase of the development is not considered as part of the Environmental Impact Assessment as it was determined that no significant effects would be likely. It is expected that the operational phase will be considered as part of the remediation strategy once further assessment has taken place. Any removal or remediation of contamination on site is likely to have a beneficial impact on the general land quality of the area.
- 2.2.48 Thames Water has confirmed that off site receptors will be considered as part of the investigation, risk assessment and remediation strategy. If the site assessment shows that on site contamination has migrated off site and potentially poses a risk to sensitive receptors, remedial action may have to be taken outside of the site boundary. This needs to be made clear within the draft Development Consent Order The Environmental Impact Assessment relates to the impact of the development whereas under the National Planning Policy Framework we must consider the suitability of the site for its proposed use. This means that the Council must also ensure that any existing contamination is not having an impact on off-site sensitive receptors (such as the adjacent residential dwellings in Chelsea Wharf).
- 2.2.49 If the investigation shows that contamination is likely to have migrated offsite and offsite receptors are not considered as part of a remediation strategy, as required by the National Planning Policy Framework, the Council would need to consider further assessment of the impacted site through Part 2A of the Environmental Protection Act 1990, if the risk was deemed to be significant.
- 2.2.50 The draft Development Consent Order includes a requirement for the submission of a site specific remediation strategy which must include a preliminary risk assessment, site investigation and remediation strategy, which will be agreed by the local planning authority. A requirement is also included for the development works to cease if unexpected contamination is encountered, a remediation strategy must then be produced and approved by

the Council. The new revised contamination requirement 'CREWD7' begins with 'Work No. 11a shall not commence until a land quality assessment has been submitted'. Work No. 11a is detailed within the Draft Development Consent Order as being the construction of the Cremorne Wharf combined sewer overflow drop shaft only. The CREWD7 requirement needs to apply to all works at Cremorne Wharf, Works No. 11a to 11c.

2.2.51 The Code of Construction Practice includes a requirement for site assessments and investigations and/or risk assessments and Thames Water has confirmed that any necessary measures will be agreed with the relevant local authority. The Code of Construction Practice needs to be updated to reflect the revised wording of CREWD7 (taking into account all works 11a, 11b and 11c) within the draft Development Consent Order. All stages of investigation will need to be agreed with the local planning authority, rather than the remedial measures only.

2.2.52 Although the draft Development Consent Order contains a requirement for the submission of a remediation strategy, assessing contaminated land is a phased approach and it is essential that the required steps leading up to the formation of a remediation strategy are also agreed with the Council. Without this agreement, the remediation strategy may not be considered acceptable and the earlier phases, such as site investigation, may need to be revisited. This could have a significant impact on the project delivery in terms of costs and delays. The following wording should be included at the start of CREWD7 (1), 1c and 1d: 'No development works shall commence, unless otherwise agreed by the local planning authority that a set extent of the development is required in order to fulfil this requirement, until a (...)'. This will ensure that the relevant works can commence in order to allow the different stages of the contamination assessment to take place, for example site investigation works may not be able to take place until buildings on site have been demolished.

Air Quality

2.2.53 Section 4 of both volumes 12 and 13 covers the assessed air quality impacts. The Code of Construction Practice Part A and Part B is also part of the application and outlines the mitigation measures that will reduce the impacts on air quality from the development at both sites. Thames Water has provided additional information to the Council in response to specific queries that have been raised and this information has been taken into account within the Local Impact Report.

2.2.54 Any development within the Borough will need to comply with the Council's Local Plan Policy on air quality CE5 which aims to control the impact of development on air quality and resist proposals which would materially increase exceedences of local air pollutants and have an unacceptable impact on amenity. Regional Policy 7.14c of the 2011 London Plan requires any development to be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs)).

- 2.2.55 There will be impacts on the local air quality from construction vehicles, construction plant and dust from construction activities. The Environmental Statement contains an air quality assessment that has assessed this impact in terms of the effect on annual and hourly concentrations of nitrogen dioxide (NO₂) and annual and daily mean concentrations of particulate matter (PM₁₀) during the years of construction.
- 2.2.56 The air quality assessment has been carried out on the assumption that only 10% of excavated material will be removed from site by road and that 90% will be removed by river barge. If these percentages change in any way, the results of the assessment will be incorrect. It is expected that this will remain the case throughout the development, as if more material is to be moved by road transport, the increased number of HGV's will have a detrimental impact on local air quality.
- 2.2.57 There are several concerns about the assessment and its accuracy and therefore it is not clear that the assessed impacts on local residents will be as predicted in the Environmental Statement. Further comments on the issues with the air quality assessment are detailed below.
- 2.2.58 The assessment has calculated that the annual mean concentration of NO₂ will increase due to the activities on site and that this increase will have a minor adverse impact on the nearest residential receptors at Chelsea Wharf and Lots Road. A negligible impact has been predicted for the Chelsea Academy, Chelsea Wharf offices, Cremorne Gardens, the Riverside Activity Centre, Thames Path and River Thames recreational users.
- 2.2.59 For PM₁₀, the assessment has calculated that there will be a negligible increase in the annual mean concentration and therefore a negligible impact on all identified receptors. The assessment predicts that there would be no increase in the number of days when the daily mean is exceeded during the construction works. The Environmental Statement concludes that the impact on PM₁₀ concentrations and on the identified receptors will be negligible.
- 2.2.60 The receptor locations chosen for the assessment were not agreed with the Council. Thames Water has clarified that all receptors were modelled at a height of 1.5 metres above the ground and are at the facades of the buildings. Some of the receptors highlighted are not buildings and therefore more detailed information should be supplied (i.e. distance from road, coordinates etc). It is uncertain whether all the receptor locations chosen for the assessment are applicable as no information has been supplied that sets out the exact location that was modelled.
- 2.2.61 The predicted baseline concentrations of NO₂ and PM₁₀ for the future construction year (2018) are extremely low. At most receptor locations the model predicts more than a 10µg/m³ reduction in the annual mean NO₂ concentration between 2010 and 2018. At the Thames Path receptor (CWDR9), it has been predicted that the concentrations will decrease by approximately 27µg/m³ in the next 5 years. This is because a background

concentration of $28.7\mu\text{g}/\text{m}^3$ has been used in the assessment, whereas background emission factors from the DEFRA 2010 based Background Maps predict a background concentration of $35\mu\text{g}/\text{m}^3$ for this area of the Borough (measured levels at the Borough's background monitoring site shows concentrations between 2010-12 have been 37, 36 and $36\mu\text{g}/\text{m}^3$ respectively). Also our monitoring has shown only a very slight reduction in background concentrations over the longer term with roadside locations showing increases. Therefore there is no evidence that these reductions will be achieved. Thames Water has carried out sensitivity analysis, following the production of the Environmental Statement. The results of this sensitivity analysis have not been provided to the Council. Although Thames Water states that the use of the up to date emission factors and background data are unlikely to affect the magnitude of impact of the project and the associated significance, the Council will need to see the results before commenting further.

2.2.62 The predicted 2010 baseline for the Thames Path receptor (CWDR 7) is very high. Data from the Borough's own diffusion tube at Lots Road/Upcerne Road (KC39) shows that concentrations are over half this concentration. Although this may represent a worse case receptor location, it is unclear why the levels are higher than the diffusion tube results at similar locations along Cremorne Road. The full dataset from the diffusion tube survey should be provided as part of the assessment, rather than the annual mean data only. The locations chosen for the diffusion tube survey are described as being in the vicinity of the site. However, most of the locations are on the junctions of busy A roads and therefore are unlikely to provide an accurate picture of the baseline concentrations around the site. It is unclear why these monitoring locations were chosen and what impact the data may have had on the results of the assessment.

2.2.63 Paragraph 4.8.1 of the Environmental Statement, states that no mitigation is required as there are no significant effects from the development. This statement is misleading as a commitment to implement mitigation measures is included in the Code of Construction Practice. Similarly Table 4.10.1 should not state that mitigation measures are not required, the table should refer to the Code of Construction Practice. Agreement to this must be given.

Transport

2.2.64 The Transport Assessment predicts that traffic flows on the road links around the Cremorne Wharf site will increase by 9.5% between 2009 and 2018. This figure is likely to be based on a worst case scenario as traffic levels over the London wide area have not seen a significant increase over the last few years. This predicted increase in traffic does not tie in with the significant reductions in concentrations of NO_2 and PM_{10} that have been predicted by the model at the receptor locations around the site for 2018.

2.2.65 Paragraph 4.2.3 of the Environmental Statement states that the average daily number of vehicle movements during the peak month in year one of construction, would be approximately 24 movements per day. It is not made clear how this average number of movements relates to the traffic input data

table in the Appendices (Table B.1) which shows an increase of very few vehicles along Lots Road itself where the site is located (an increase of 10 vehicles over the baseline). Additionally, the modelled speed assumed for this road link is 30mph when this is unlikely to be the case (emissions are speed dependant and a higher speed will give lower emissions).

- 2.2.66 The method for how the emissions from the tug boats for the river barges were calculated is not provided within the Environmental Statement. The information supplied within Appendix B3 includes the assumed emissions per river tug, however the source of this data is not specified and therefore we cannot be certain of its accuracy. Figures 4.5.4 and 4.5.8 show the impact of the peak construction year on NO₂ and PM₁₀ concentrations and no increase in concentrations is shown along the Thames. The Council will require more detailed emissions data for the river tugs before we can accept that the conclusion within the Environmental Statement is accurate.
- 2.2.67 The development is within an Air Quality Management Area and the results of diffusion tube monitoring undertaken by Thames Water in 2011-2012 show that annual mean concentrations of NO₂ already exceed the objective/limit value at all monitored locations around the site. For areas of the development site and parts of the Lots Road Power Station site that currently fall below the objective level of 40µg/m³, the construction of the proposed development will increase concentrations of NO₂, meaning that these areas will then exceed the objective level.
- 2.2.68 The Environmental Statement states that should the development become delayed by a year and the adjacent Lots Road development is completed, there will be a significant impact on the new residential properties within the development, with a 2.2 µg/m³ increase in annual mean NO₂, which equates to a moderate adverse impact on receptors.
- 2.2.69 The main impact on air quality from the proposed development will be from additional traffic and emissions from construction plant and river barges during the construction period of three years. Numerous problems with the way the air quality assessment has been carried out have been identified. Therefore the conclusions of the Environmental Statement are not accepted at this stage. It is unclear if the proposed development will comply with Local Plan Policy CE5 until an appropriate assessment of the impacts is carried out.

Construction dust

- 2.2.70 The Environment Statement includes an assessment of the risk from construction dust from the activities that will take place on site. The assessment has been undertaken in line with the Institute of Air Quality Management guidance and has been classified as posing a high risk. With the application of the control measures outlined in the Code of Construction Practice the site would have a minor adverse impact on receptors within 50 metres of the site. For receptors over 50 metres away from the site there would be a negligible impact.

- 2.2.71 The draft Development Consent Order includes a requirement for Parts A and B of the Code of Construction Practice to be adhered to. This will require dust and emissions control measures to be implemented during the construction period as well as real time particulate monitoring. These requirements will provide the Council with an opportunity to monitor the impact of the construction works and take action if complaints are received from nearby receptors. In order to keep residents informed about the performance of contractors on site, a mechanism should be set up whereby residents can access the results or a summary of the results of the monitoring data, either on a weekly or more frequent basis.
- 2.2.72 The Council is concerned about the level of detail included in the Code of Construction Practice. The mitigation measures set out in the Code of Construction Practice are vague and the Council has previously raised this issue in comments on a draft version of the Code of Construction Practice.
- 2.2.73 Thames Water has confirmed that a more detailed Construction Environmental Management Plan will be developed by the contractor if the scheme proceeds. However, the Environmental Statement Part A, does not explicitly set out what the contents of the Construction Environmental Management Plan's should be. A full list of all the possible mitigation measures should be provided in the Code of Construction Practice, from which the contractor producing the Construction Environmental Management can select the most appropriate measures.
- 2.2.74 Currently the Code of Construction Practice Part A is vague and only states that an Air Quality Management Plan including details of dust and air pollution control measures, vehicle and plant emissions and odour should be included in the Construction Environmental Management. It is essential that contractors are compulsorily required to implement all the appropriate best practice mitigation measures to ensure that the impact of the construction on nearby receptors is reduced as much as possible.
- 2.2.75 The Council is unable to agree with the conclusion that a minor adverse impact will be experienced by receptors within 50 metres of the site at the current time. The assessment assumes that the control measures within the Code of Construction Practice are being implemented. However, the exact control measures that are to be implemented are unclear. Therefore, it is impossible to establish whether the predicted minor adverse impact is an appropriate assessment. Further detail about the proposed mitigation measures for construction dust is required in order to comply with the Local Plan Policy CE5.

Operational phase

- 2.2.76 Only odour impacts were considered as part of the operational phase in the Environmental Impact Assessment, as it was considered that no significant effects would be likely. The main impacts on air quality would be during the three year construction period.

Ecology

- 2.2.77 Thames foreshore forms part of a Metropolitan Site of Importance for Nature Conservation. A surprising variety of plants and invertebrates are supported on the vertical flood defence walls of the river and these provide a food source for birds and fish, not to mention their importance in their own right, as identified in the Boroughs Biodiversity Action plan under Tidal Thames Habitat.
- 2.2.78 . The presence of bats at Cremorne Wharf site will result in the loss of a roosting site. There is concern that onsite mitigation measures will not be achieved and therefore further consideration is required to ensure that onsite post construction habitat is provided.
- 2.2.79 The Borough's bat survey of its main parks in 2010 indicated that a bat roost is present in the building on the Lots Road site. There is concern that disturbance may be caused during the construction phase of the project having a negative impact on bats. Subsequent surveys and mitigation measures would be expected prior to the commencement of works to ensure no disturbance and alleviate this impact. The recommendations for surveys in Code of Construction Practice Part A 11.2.4 and 11.2.5 and the requirements set out in the Cremorne Code of Construction Practice Part B are supported.
- 2.2.80 The proposals would involve the removal a small group of shrubs and maybe one tree by the river. These have no public visibility and could easily be replaced on completion of the project. Thames Water has confirmed that it may not be necessary to remove street trees on Lots Road to allow vehicular movements to the site. None of the trees here are very old and so provided that the developer bears the cost of any new or large replacement trees this is likely to be acceptable to the Council.

Socio-economics

- 2.2.81 The construction of the tunnel on Cremorne Wharf should not prejudice the future redevelopment of the site. The Council would welcome that a large proportion of the predicted work force for the site (around 65 persons) comes from the local area and includes local trainees.
- 2.2.82 The use of the river may disrupt activities at the Cremorne Riverside Activity Centre. However, as the barge movements predicted are two a day, a significant impact is unlikely.

Water Resources and Flood Risk

Groundwater

2.2.83 The Environmental Statement Volume 12, Section 13 explains that the effects of the project on groundwater are negligible both during construction and operation. The Council was previously concerned about the lack of mitigation and monitoring measures. It is understood that a revised Groundwater Environmental Monitoring Strategy is currently being reviewed by the Environment Agency. The Council will support the agency's comments.

Surface water

2.2.84 During operation, the effects on water quality will be mainly positive as there will be a considerable reduction of the combined sewer overflow spills into the river (1,140,000m³ and associated litter per year). This will have a positive impact in river ecology, river users health and aesthetics. Construction impact on surface water quality is likely to be negligible if the appropriate site measures used to control pollutants in the general site run-off are in place. These measures are proposed in the Environmental Assessment and the Code of Construction Practice Part A (Section 8).

Flood Risk

2.2.85 The site is located by the river in a Flood Risk Zone 3 (high probability). The main issue in relation to flood risk is the effect of the project on the settlement of the flooding defences (river wall). The Code of Construction Practice includes measures to monitor and maintain a continuous flood defence level and safe access, egress and refuge in the event of a flood event. If these measures are in place and the construction is closely monitored, there should not be an increase in tidal and fluvial flood risk. However, the Environment Agency considered that further assessment of the flooding defences needed to be undertaken. As a result, a Flood Defence Asset Interpretative Report was produced and more detailed mitigation measures were suggested. Those measures need to be incorporated in the Code of Construction Practice. The Council will also support the comments that the Environment Agency has regarding the report.

2.2.86 It is unlikely that there will be an increase in fluvial, groundwater, sewer and artificial sources flood risk as a result of the development. The site run-off will discharge directly into the Thames but this seems not to have a significant impact on flood risk.

3. Chelsea Embankment Foreshore

3.1 Site related matters

Details of the proposal.

- 3.1.1 The proposals at Chelsea Embankment Foreshore consist of a combined sewer overflow drop shaft (approximately 12m internal diameter and 45m deep) and a connection tunnel (approximately 4.8m internal diameter and 57m in length) between the combined sewer overflow drop shaft and the main tunnel. Above-ground works would include new river walls; 'signature' ventilation structures, two ventilation structures of an approximate internal diameter of 0.225m and up to 6m in height; two electrical and control kiosks; and areas of hard standing. There are two options for the foreshore: an intertidal habitat and a floodable public realm. Both options will create public open space which should be maintained. The maintenance of the new public open space is a concern as details are not yet available to ascertain costs.

Relevant planning history and any issues arising.

- 3.1.2 The National Policy Statement for Waste Water will be used by the Planning Inspectorate as the primary basis for deciding development consent applications. The relevant local and regional policies and designations regarding the proposals are:

- Local Policy CL1(a, d) – architecture and urban design, riverside development;
- Local Policy CL2(a) – high design quality;
- Local Policy CL4(g) – setting of a listed building/structure;
- Local Policy CR4(d, h) – street furniture and public art;
- Local Policy CR5(b, h) – protected open space, public access to the Thames;
- Local Policy CT1(a) – riverside development;
- Local Policies CT1 and CP18 – Thames Path;
- Local Policy CE2 (h) – flooding and Thames and works associated with the construction of the Thames Tideway Tunnel;
- Local Policy CR7 - parks, gardens, open spaces and waterways;
- Local Policy CE5 – air quality;
- Local Policy C1 – infrastructure delivery and planning obligations;
- Local Saved UDP Policy CD1 – riverside views and vistas;
- Local Saved UDP Policy CD8 - Royal Hospital views and vistas;
- Local Saved UDP Policy CD9 – Royal Hospital open space;
- Local Saved UDP Policy CD63 - conservation area setting;
- Conservation Area Proposal Statement for Royal Hospital (20) and Thames (21);
- Regional Policy - London Plan Thames Policy Area (Policy 7.29);
- Regional Policy - London Plan Flood Risk Management (Policy 5.1.2);

- the River Thames (including Chelsea Creek) is designated Site of Nature Conservation Importance (Grade III of Metropolitan Importance) (related to Policy CE4);
- Ranelagh Gardens has been designated as a Site of Nature Conservation Importance (Borough II) (related to local Policy CE4) and Grade II registered park and garden (related to local Policy CR5);
- The site is in Flood Risk Zone 3a (functional floodplain);
- The site has been identified as being of moderate significance in terms of archaeological potential, and
- Part of the embankment is a Crossrail 2 Safeguarded Zone (related to Local Plan Policy CT2).

3.1.3 The Chelsea Embankment foreshore is not the object of any current planning applications. However, the Royal Hospital South Grounds and Ranelagh Gardens holds the annual Chelsea Flower Show, Masterpiece London and a winter sale of Christmas trees on a temporary basis. The development at Chelsea Barracks is planned to be in construction during year one of the construction of the Thames Tideway Tunnel. Therefore cumulative impacts are anticipated.

3.2 Chelsea Embankment Foreshore Impact related matters

Heritage

- 3.2.1 An interception site is proposed along the Chelsea Embankment foreshore intercepting the Ranelagh combined sewer overflow at its discharge point close to the Bull Ring Gates of the Royal Hospital, Chelsea. The proposal is extensively subterranean, but positioned within a proposed extension of the embankment into the river foreshore, constructed using a cofferdam. It does, however, require some new infrastructure above ground, comprising access hatches for tunnel maintenance, electrical and hydraulic equipment and ventilation columns. The foreshore extension, as shown for approval, involves the removal of a street tree and three ornamental street lamps; the relocation of the embankment wall; new landscaped open space at street level and at inter-tidal level; and two up to 6m ventilation columns located to the western edge of the extension and another column to the east. Material details of the columns have yet to be confirmed, although it is understood that Thames Water wishes to make a signature structure of them, providing a common distinctive feature across all the sites along the Thames.
- 3.2.2 The proposals include the resurfacing of the Bull Ring. The new design is conceived as a large oval arranged on a northwest-southeast axis, following the line of Monument Walk and the historic axis that runs through the Royal Chelsea Hospital and Royal Avenue beyond. The oval is bisected by the Chelsea Embankment highway. The oval is surfaced in coloured granite setts in an organic pattern. Large, curved stone benches provide seating adjacent to the new river wall. A stone inlay marks the historic axis. The inter-tidal terrace is extensively planted.

- 3.2.3 An additional area of works is proposed on the north side of the Embankment, which partly falls within Ranelagh Gardens. Thames Water proposes to excavate the site, install an overflow weir chamber and re-cover, reinstating the walls and railings to match the existing and provide replacement tree cover. A new access gate for the utility services is also provided.
- 3.2.4 The site is highly prominent being midway along a stretch of riverside that is characterised by a continuous embankment wall and unbroken foreshore and general backdrop of trees and historic buildings, and sitting in the foreground of the Grade I listed Royal Hospital, Grade II listed Bull Ring Gates and registered gardens. Views are obtained from the Embankment, Chelsea Bridge and Battersea Park opposite. These views are highlighted as important in the Thames Conservation Area Proposal Statement. Although a listed structure for much of its length, the embankment wall is not listed immediately opposite the Bull Ring, having been rebuilt at the time of the construction of Chelsea Bridge.
- 3.2.5 The proposal has scaled back considerably the infrastructure requirements for this visually sensitive site. Nevertheless, it presents a disruption to the long linearity of the embankment and a visual intrusion. The current design does not yet avoid satisfactorily negative impacts on the setting of the Grade I listed Royal Chelsea Hospital, the Grade II listed Chelsea Bridge, the Grade II Registered Royal Hospital and Ranelagh Gardens and the Grade II* listed Battersea Park. This must be weighed against three factors. First, the need for the use of this location, in this way, as part of achieving the public good of reducing sewage in the River Thames. Second, there was a need to avoid the threat to life to the tunnelling workers, who would otherwise have to operate within the riskier Thanet Sands in the previous potential alternative site in Ranelagh Gardens. Finally, this had to be weighed against the provision of new publicly accessible open space. Thames Water has opted to make a bold intervention in terms of aligning the disruption with the axis running through the layout of the Royal Hospital, which could prove effective and provide an attractive new public open space from which to enjoy local views, subject to the design quality and maintenance of the new public open space.
- 3.2.6 The current proposals for approval offer little detail beyond setting out the extent of river wall demolition, storage and reinstatement; removal of existing street trees and lighting columns; the extent of the foreshore extension; areas for unspecified landscaping; the inter-tidal terrace; zones for new equipment and ventilation columns, and their maximum heights. Given the sensitive foreshore location and setting of the Royal Hospital and registered gardens, and the disruption of the riverside wall with its distinctive linearity, the scheme's impact depends upon the high quality of design and materials of the public realm.
- 3.2.7 Information on the replacement and extended open space are illustrative. However, they currently indicate a simple, hard landscaped area with bench seating, detailed in high quality granite setts in something of a floral pattern. The designs draw in the attractive listed Bull Ring Gates opposite and celebrate the axial alignment of the open space in a low-key way. There is a

concern, however, that the new space remains uneventful rather than understated, lacking a sense of focus within the space itself. The calmness is undermined by the clutter of the very large equipment cabinets located to either side of the axis, the two large vent columns to the west and the single tall vent pipe to the east that detract from the visual quality of the new streetscape. The cabinets should be further minimised in their visual impact.

- 3.2.8 Reviewing the equipment needs or relocating the cabinets below ground should be considered. Whilst it is acknowledged that the proposed cabinets will be clad in stone which may help matters, the success of this will still be subject to the detailed and overall design. The notion of the columns as the project's signature structure is supported and Thames Water are encouraged to recast the structures as public art or incorporating public art, reducing their negative visual impact, perhaps providing the required focus to the space. Information is also required regarding replacement/new lighting and other street furniture.
- 3.2.9 Currently the material quality of the new paving is high and the resurfacing of the Bull Ring to match is welcome. The use of granite setts is a key feature of the design and must be retained in subsequent design stages to ensure the scheme's high quality. The unit size, colour and patterned layout need finessing. However, it is very disappointing that the adjacent footpaths are proposed to be resurfaced in concrete paving as existing and not upgraded to York Stone to complement the material quality of the new space, particularly around the entrance to the Royal Hospital Gardens. Information is needed on the design of the new side gates for the utility services entrance to ensure it complements the garden wall.
- 3.2.10 Regarding the reed beds, they provide added visual interest and a softening of the incursion into the river at low-tide, although the contribution is limited. The positive visual effect, however, should not be undermined by any accumulation of flotsam and rubbish dumping. Regular maintenance must be secured, if the visual quality of the terraces is to be maintained. The design and location of the access ladders needs to be clarified to minimise any visual clutter.
- 3.2.11 It is acknowledged that there are operational requirements that largely determine the scale and position of the new infrastructure and especially that required above ground. It is welcomed that the scheme architects have sought to design a new public open space that is low-key and celebrates the axial alignment of the Royal Hospital and its gardens, although this must be weighed against the disruption to the characteristic linearity of the embankment wall and foreshore. The quality and future maintenance of the new public open space is very important in assessing this balance, and as currently shown further details are required if a positive outcome is to be ensured in line with Local Plan Policies CL1, CL2, CR4, CD1, CD8, CD9 and CD63.

3.2.12 The importance of the engineering part of the project is undisputed. However, the Council would like assurance that the quality of the public realm created will not be affected if the costs of the engineering project escalate.

3.2.13 The Council has the following concerns:

- The parameter plans for approval allow for columns of up to 8.0m in height, which is excessively tall and visually prominent. Although this has been revised down to 6 metres in the requirements, the height is still considered excessive in this location.
- The plans allow the location of the new columns and other kiosks in positions that would disrupt or infringe upon the very axial view the scheme sets out to celebrate.
- The designs include the permanent disruption of the distinctive boundary wall of Ranelagh Gardens, which is harmful to its appearance and unnecessary given an existing entrance near-by.
- The designs could facilitate off-street parking and coach drop-off on the new open space, requiring the potential provision of signage, bollards and other deterrents that would clutter and detract from its appearance (please note suggestion in paragraph 3.2.30).
- The quality of scheme is not assured; it fails to deliver high quality paving adjacent to the Grade II listed Bull Ring Gates, and does not cover any future maintenance regime.

Transport

3.2.14 Chelsea Embankment is a wide single carriageway road (11.8m wide) which forms part of the Transport for London Road Network. Transport for London is the Highway Authority for this road. The Bullring, which is situated off the Chelsea Embankment and provides access to the Royal Hospital's South Grounds, is maintained by the Royal Borough of Kensington and Chelsea. The proposal is for two construction sites on Chelsea Embankment, one on either side of road.

3.2.15 The main construction site would be situated on the south side of Chelsea Embankment where a temporary work area would be established on the foreshore by filling a cofferdam with spoil. The works area would extend across the southern footway on Chelsea Embankment. This would be closed for the duration of the works except at weekends (when weekend working is not scheduled). A 3.3m wide, 140m long site access lane would be demarcated using temporary barriers on the southern part of the carriageway. The site access lane would operate one way east to west. Construction vehicles would turn off the site access lane onto the temporary work site across the (closed) footway.

3.2.16 The secondary construction site would be situated on the north side of Chelsea Embankment c. 100 metres east of the main site. The site would extend across the footway on the northern side of Chelsea Embankment and would occupy the northern part of the roadway where a west to east site access land would be provided.

3.2.17 Two traffic lanes, 4.3m wide, one in each direction would be provided on the remaining carriageway past both sites (facilitated by removing an existing traffic island northeast of Bull Ring). Pedestrian diversions would be put in place to maintain a pedestrian route along Chelsea Embankment.

Highway/ vehicular traffic

3.2.18 It is proposed to limit the number of vehicular movements generated by the project by transporting by barge the cofferdam fill (both import and export) and as much shaft and 'other' excavated material (export) from the main construction site as possible. All other materials would be transported by road. There is no barge access so all materials from the site on the northern side of Chelsea Embankment would be transported by road. The proposed arrangements are considered to satisfy Local Plan Policy CT1 (n) which requires new development to take full advantage of the River Thames for transport including freight.

3.2.19 A maximum of 42 lorry visits (84 movements) are anticipated daily. Typically there would be far fewer HGV's visits on average, less than ten daily, for the majority of the project period. The traffic modelling data submitted with the application indicates that the construction traffic generated by the works would not have a significant impact on traffic conditions on Chelsea Embankment (Thames Water's traffic modelling work is currently being reviewed by Transport for London to confirm the validity of its findings. The Council supports Transport for London comments).

3.2.20 All construction traffic routes to and from the works site are on the Transport for London Road Network. These strategic conduits are already heavily trafficked. The proportionate increase in traffic on these routes resulting from the construction traffic generated by the works on Chelsea Embankment would not be significant. Accordingly the construction site on Chelsea Embankment should have no significant impact on traffic conditions in the Borough.

Pedestrian movement

3.2.21 One of the primary transport impacts of developing the foreshore is the fact that the riverside footway would have to close for an extended period. Pedestrians coming from the east would be diverted to the northern footway at the existing pedestrian signals at the Chelsea Bridge/ Chelsea Bridge Road/ Grosvenor Road/ Chelsea Embankment junction or via a temporary signalised pedestrian situated between the main and secondary sites depending on the construction phase. Pedestrians coming from the west would be diverted to the northern footway at the existing signalised pedestrian crossing to the west of the Bull Ring.

3.2.22 At present 95% of pedestrians on Chelsea Embankment choose to use the riverside footway which forms part of the Thames Path. While a diversion to the footway on the north side of the road would be provided, this would be less attractive and would take pedestrians away from their desire line. Pedestrians would have to cross the busy Chelsea Embankment twice at each end of the diversion. This, according to the Transport Assessment, would increase journey times by up to 2 minutes, 40 seconds. This will discourage pedestrians from using Chelsea Embankment contrary to Local Plan Policy CT1 (g).

3.2.23 The impact of the project on pedestrian movement will be lessened by the opening the Thames Path (southern footway on Chelsea Embankment) at the weekends, when pedestrian traffic on the Embankment is heaviest. It is essential that the site Traffic Management Plan to include measures to allow the footway to be opened as often as possible, including all weekend. An explicit 'requirement' to this effect should be imposed.

Cyclists

3.2.24 Chelsea Embankment is heavily used by cyclists with over 600 cyclists using the Embankment in the morning peak (08:00 – 09:00). Although cyclists are permitted to cycle "off road" on the southern footway of Chelsea Embankment (Thames Path), the vast majority (95%) of cyclists use the carriageway. The closure of the southern footway will require the proportion of cyclists that use the footway to use the carriageway.

3.2.25 The carriageway would be narrowed as a result of providing site access lanes to the two works site. However, there is sufficient width to retain two 4.3m wide traffic lanes. These are sufficient to allow a large vehicle to pass a cyclist. The modifications will necessarily detract from the quality of the cycling experience but should not pose an undue risk to cyclist safety. It is essential that measures to promote the safety of cyclists are included in the Traffic Management Plan to be agreed for this site. The requirement for details of such measures to be agreed under the Code of Construction Practice Part A is appropriate.

3.2.26 The Code of Construction Practice part B states that a minimum lane width of 3.25m will be required. This is insufficient to comfortably accommodate cyclists alongside vehicular traffic. This figure needs to be increased to a minimum of 4 m to ensure that cyclists do not become hemmed in by motor vehicles.

Buses/ public transport

3.2.27 The impact of the development on the operation of the 360 bus route is not considered to be significant. The route (Royal Albert Hall direction only) would require a temporary diversion during the landscaping works at the end of the project. It is likely that this impact would not result in undue delay or inconvenience.

3.2.28 The site has poor public transport accessibility (PTAL=2). Notwithstanding the number of trips that would be generated by the development (a maximum of 65 in the peak hour) this would have no significant impact on local public transport services. A travel plan is to be agreed pursuant to a requirement to encourage sustainable travel.

Servicing

3.2.29 Thames Water's plant on the site would generate a low servicing requirement of two to four visits per year with more significant maintenance required every ten years. This servicing would take place off the highway on a newly provided area of public domain. The operation of the completed development would have no significant impact on the highway. There is no conflict with Local Plan Policy CR7.

Streetscape

3.2.30 When the tunnel works are complete, the temporary works site would be largely removed leaving a permanent structure on the foreshore. This structure would provide a new area of public domain opposite the bull ring on the south side of the embankment. The bull ring and the new area of public domain would be integrated with one another through a unified pavement treatment/ landscaping. The proposal to landscape this area should not have detrimental transport impacts subject to a suitable detailed design being agreed pursuant to a 'requirement'. The scope of the works should incorporate the footway on the northern side of the Bullring. The spatial limit of the draft Development Control Order should be increased accordingly. The public domain design must ensure that the new space created on the foreshore is not used for parking save for infrequent servicing. The provision of an uninterrupted kerb line on the south side of the carriageway should prevent parking from occurring on the new riverside space and should be included within the detailed design.

Parking

3.2.31 There would be no change to on-street parking (resident and pay and display) or private parking in the vicinity of the site as a result of the construction works. The ten resident parking bays in the Bull Ring would be temporarily restricted for a short period when landscaping works are taking place. This impact is not considered significant.

Noise and vibration and odour

3.2.32 The Code of Construction Practice Part B has been recently revised to align with the Council's normal working hours of 8am to 6.30pm on Mondays to Fridays and 8am to 1pm on Saturdays. The noise and vibration mitigation and control measures contained in the Code of Construction Practice Part A will apply to this site. The Council is satisfied that the procedure for application for Prior Consent under section 61 of the Control of Pollution Act 1974 given in the Code of Construction Practice Part A will allow a detailed examination and approval for works at this site.

Construction: Foreshore site assessment

- 3.2.33 Volume 13 of the Environmental Assessment explains that project wide noise and vibration impacts are included in Volume 3 'Project Wide effects assessment'. The two sites in the borough, are isolated by distance one from the other and will have no cumulative construction noise and vibration impacts. The one project wide issue is the possibility of ground borne noise from the tunnel boring machine excavating the main tunnel. Volume 3 Figure 9.5.4 in Volume 3 shows the contour plot of surface ground borne noise from the tunnel boring machine; this propagates to not more than 29dBLAmax(s) within the existing north bank river wall. Noise levels propagated to within residential dwellings which lie further beyond this point will therefore be lower. The route of the main tunnel also curves to the south at this point turning away from the Borough. Even allowing for predictive uncertainty and possible room modes within buildings, ground borne noise from tunnelling should not be a significant issue for building occupants. Tunnel boring is also a temporary transient event with the potential to affect dwellings only during the time the tunnel boring machine passes a specific location. The level above is the peak level as it passes.
- 3.2.34 Section 9 of Volume 13 covers the assessment of noise and vibration in both the construction and operational phases at Chelsea Embankment, section 3 covers the Proposed Development at Chelsea Embankment and Appendix G, to Volume 13, covers the ambient noise surveys data and the likely construction noise predictions.
- 3.2.35 The method used for the establishment of significance criteria of construction noise impact is the ABC method of BS5228:2009. This has resulted in various significance criterion levels for residential receptors at this site. The predictions of construction noise have resulted in establishing that construction noise at any time of the day does not exceed the significance criteria at this site.
- 3.2.36 Part 6 of the Code of Construction Practice Part A deals with mitigation of construction noise and vibration impacts which have project wide implications. The requirements in regard to the s61 process including noise and vibration monitoring are acceptable. The s61 detailed construction noise prediction process will establish if construction noise impacts reach the trigger levels that will implement the noise insulation and re-housing policy. Also included in part 6 are a sound insulation and a temporary re-housing scheme. Should noise after the applying of mitigation and best practicable means exceed certain trigger levels, then the scheme will be available to exposed residents.
- 3.2.37 All s61 applications prior to being submitted, will go through a screening and approval process to be undertaken by specialist consultants. On the basis of the preliminary construction noise predictions in Volume 13 of the Environmental Statement the construction noise impact should be within acceptable limits. The Council will have detailed s61 submissions. With good site management and adherence to s61 conditions and the requirements of

the Code of Construction Practice it is not envisaged that construction will unduly affect residents at this site by way of noise or vibration. Monitoring of construction noise levels is required.

Construction Road Traffic: Noise

3.2.38 The location of the Chelsea Embankment site gives almost direct access to major routes through London. Over the three and a half year construction programme peak HGV's movements to and from the site will be 84; i.e. 42 vehicles. Of the current traffic flows on Chelsea Bridge Road and Chelsea Embankment the proportion of HGV's varies from 7.4% to 15.3% respectively. The addition of the HGV's construction traffic and other traffic from this site to these existing traffic flows, and any increase in noise, will be negligible.

River Barge Traffic: Noise

3.2.39 It is proposed that the works will require three barges. A barge plus tug and a further tug operating with a pair of barges. These operations will occur at distances of between 70m and 100m from adjacent dwellings. Noise from these operations at the receptors will be more than 10dB below the existing ambient noise levels and therefore not significant.

Operational: Noise and Vibration

3.2.40 During the operation of the Thames Tideway Tunnel, triggered by combined sewage being diverted to the combined sewer overflow, noise and or vibration generated is not likely to cause any noticeable impact. The only issue is the noise generated by the effluent diverted to the combined sewer overflow falling down the drop shaft. However, this falling water will generate a vortex and this will reduce impact noise. The interceptor chamber and filter chamber will also help contain noise to within the drop shaft acting, partially, as noise reducing plenums. The ventilation stacks here are also passive with a very low efflux and influx velocity; audible air movement noise is unlikely to be generated. The limited use throughout a year of about twenty hours will ensure operational noise is negligible. There will be service located plant which will need to meet the appropriate noise emission limits of Table 9.6.1. The plant to be installed will operate very intermittently and compliance with the noise emission limit when the plant is in operation will need to be shown by way of submission of a noise report.

Operational: Odour

3.2.41 During the operational phase odour was perceived as a potential impact. However, Chelsea Embankment is a passive vent site that will only emit air displaced by combined effluent rising up the combined sewer overflow drop shaft. The vent will also allow air entry when the system is emptying. The top of the drop shaft will be interrupted by an activated carbon filter chamber, intended to remove odour from the air flow passed to the vents. The air flow rate is 160 litres per second and the filters have a capacity to treat 500 litres per second. All expelled air will therefore be treated. Maintenance of the filters is an important consideration. Maintenance visits are programmed to occur every two to three months. Emitted concentrations of hydrogen sulphide after dispersal from the vents to atmosphere and at receiver positions are predicted to be and are likely to be at undetectable concentrations. Air is predicted to be

expelled infrequently from the drop shaft and for not more than twenty hours in any year. This vent will also open to allow air to enter the system when the main tunnel is emptied.

3.2.42 When the system is empty constant ventilation and air changes of the main tunnel will be provided by fans sited at Acton, Carnworth Road and Abbey Mills. These fans will draw air through the tunnel to the atmosphere. Air circulation will be achieved by air entering and then moving through the tunnel from Hammersmith pumping station, Blackfriars Bridge and the two sites at Beckton. No air is therefore expelled at Chelsea Embankment when the tunnel is empty and no potential odour can result at this site

Land Quality

3.2.43 The Chelsea Embankment development site has not had any historical potentially contaminative land uses. However, the material used for the construction of the embankment in the late 1800s could contain contamination and therefore the risk should not be overlooked. Similar to Cremorne Wharf, the geology of the area would facilitate the migration of contamination on to the site from offsite sources due to its porous nature as well as from on-site to off-site receptors. This will need to be considered in the further assessment of this site.

3.2.44 The Environmental Statement provides information from the testing of the foreshore sediments near the site. One to two samples show elevated levels of several Polycyclic Aromatic Hydrocarbons compounds above the residential scenario assessment criteria and this was put down to the industrial legacy of the Thames. No samples have been analysed from the terrestrial part of the site, however it is acknowledged within the Environmental Statement that contamination may be present due to atmospheric deposition of contaminants. The unknown nature of the materials that were used to construct the embankment and the potential for these to be contaminated is not included in the list of potential sources of contamination.

3.2.45 Development works at Chelsea Embankment will consist of dredging and the construction of a cofferdam, construction of a camp shed within the foreshore and a new section of river wall, construction of pits, chambers, drainage, the combined sewer overflow drop shaft and connection tunnel.

3.2.46 Construction workers have been identified as the main receptor in terms of being at risk from contamination on the site and these risks will be mitigated through implementation of the Code of Construction Practice. With these measures in place the assessed impact on above ground construction workers has been estimated as negligible and minor adverse for intensive below ground works. The Environmental Statement has assessed the impact on residential receptors as minor adverse once the mitigation measures in the Code of Construction Practice are implemented. A negligible effect is likely to be experienced by the adjacent commercial/retail land users, the Thames

Path users and recreational users (Ranelagh Gardens). This may need to be updated pending the findings of further investigation.

- 3.2.47 The assessment of the effects of the construction on construction workers and nearby receptors is based on limited site investigation information and the assessment assumes that the mitigation measures contained within the Code of Construction Practice (such as further investigation, risk assessment and specific remedial measures if necessary) are being implemented. The scope of the measures within the Code of Construction Practice is broadly acceptable, however, their applicability will need to be further reviewed once the site is fully investigated and risk assessed.
- 3.2.48 Paragraph 8.2.8 of Volume 13 of the Environmental Statement states that further intrusive investigations and remediation works will be unnecessary prior to construction at the Chelsea Embankment Site. This means that no further information will be collated about the ground conditions within the foreshore sediments and no information at all will be gathered for the terrestrial part of the site. The Council is concerned that with this lack of information about the ground conditions on the site, the potential risks to construction workers and adjacent site users will not be adequately assessed. This approach is contrary to the Council's Local Plan Policy CE7 within its Core Strategy, which requires the investigation of the potential risks, to ensure that they are adequately mitigated before the development proceeds. Although the Code of Construction Practice Part A requires that the contractor undertakes a site assessment/risk assessment, the wording within paragraph 8.2.8 is misleading and needs to be amended.
- 3.2.49 The assessment provides a fair evaluation of the impacts provided the site is investigated adequately in order to identify any mitigation measures that are necessary. No significant negative impacts on nearby residents and users of the commercial premises during either the construction works or the operational phase of the development are foreseen.
- 3.2.50 The operational phase of the development is not considered as part of the Environmental Impact Assessment as it was determined that no significant effects would be likely. It is expected that the operational phase will be considered as part of the remediation strategy once further assessment has taken place. Any removal or remediation of contamination on site is likely to have a beneficial impact on the general land quality of the area.
- 3.2.51 Thames Water has confirmed that off site receptors will be considered as part of the investigation, risk assessment and remediation strategy. If the site assessment shows that on site contamination has migrated off site and potentially poses a risk to sensitive receptors, remedial action may have to be taken outside of the site boundary. This needs to be made clear within the draft Development Consent Order regarding contamination originating on site that may have migrated off site.

- 3.2.52 The Environmental Impact Assessment relates to the impact of the development whereas under the National Planning Policy Framework the Council must consider the suitability of the site for its proposed use. This means that it should be ensured that any existing contamination is not having an impact on off-site sensitive receptors.
- 3.2.53 If the investigation shows that contamination is likely to have migrated offsite and offsite receptors are not considered as part of a remediation strategy as required by the National Planning Policy Framework, the Council will need to consider further assessment of the impacted site through Part 2A of the Environmental Protection Act 1990, if the risk was deemed to be significant.
- 3.2.54 The draft Development Consent Order includes a requirement for the submission of a site specific remediation strategy which must include a preliminary risk assessment, site investigation and remediation strategy, which will be agreed by the local planning authority. A requirement is also included for the development works to cease if unexpected contamination is encountered, a remediation strategy must then be produced and approved by the Council. The new revised contamination requirement 'CREEF11' needs to apply to all works at Chelsea Embankment, Work No. 12a to 12c
- 3.2.55 Within the Code of Construction Practice the requirement for site assessments and investigations is included in Chapter 9 and Thames Water has confirmed that any necessary measures will be agreed with the relevant local authority. The Code of Construction Practice needs to be updated to reflect the revised wording of CREEF11 within the draft Development Consent Order. All stages of investigation will need to be agreed with the local planning authority, rather than the remedial measures only.
- 3.2.56 Although the draft Development Consent Order contains a requirement for the submission of a remediation strategy, assessing contaminated land is a phased approach and it is essential that the required steps leading up to the formation of a remediation strategy are also agreed with the Council. Without this agreement, the remediation strategy may not be considered acceptable and the earlier phases, such as site investigation, may need to be revisited. This could have a significant impact on the project delivery in terms of costs and delays. The following wording should be included at the start of CREEF11 (1), 1c and 1d: 'No development works shall commence, unless otherwise agreed by the local planning authority that a set extent of the development is required in order to fulfil this requirement, until a (...)'. This will ensure that the relevant works can commence in order to allow the different stages of the contamination assessment to take place, for example site investigation works may not be able to take place until buildings on site have been demolished.

Air Quality

- 3.2.57 There will be impacts on the local air quality from construction vehicles, construction plant, an increase in emissions due to congestion, river barges and dust from construction activities. The Environmental Statement contains an air quality assessment that has assessed this impact in terms of the effect on annual and hourly/daily mean concentrations of nitrogen dioxide (NO₂) and particulate matter (PM₁₀) (as relevant) during the four years of construction.
- 3.2.58 The air quality assessment has been carried out on the assumption that only 10% of excavated material will be removed from site by road and that 90% will be removed by river barge. If these percentages change in any way, the results of the assessment will be incorrect. It is expected a commitment that this will remain the case throughout the development, as if more material is to be moved by road transport, the increased number of HGV's will have a detrimental impact on the local air quality.
- 3.2.59 There are several concerns about the assessment and its accuracy and therefore it is unclear whether the assessed impacts on local residents will be as predicted. Further comments on the issues with the air quality assessment are detailed below.
- 3.2.60 The assessment has calculated that the annual mean concentration of NO₂ will increase at four of the receptor locations, the River Thames, Thames Path, Ranelagh Gardens and Royal Hospital Gardens. However, the annual mean objective level is not applicable at these receptor locations due to the likely exposure durations associated with these land uses. Therefore the increase in annual mean levels at these locations is predicted to have a negligible impact on these receptors.
- 3.2.61 The assessment has calculated that there will be a negligible impact on nearby residential receptors (Lister Hospital and Royal Chelsea Hospital). However, the hourly objective/limit value is likely to be exceeded at the Thames Path receptor location and therefore the impact here has been assessed as minor adverse.
- 3.2.62 For PM₁₀, the assessment has calculated that there will be no increase in the annual mean concentrations at the residential receptor locations which therefore will mean a negligible impact from the construction works. The assessment predicts that there would be a small increase in the number of days when the daily mean is exceeded at the Thames Path receptor location during the construction works. The impact on the daily mean concentrations at all other receptor locations is predicted to be negligible. The impact on PM₁₀ concentrations and on the identified receptors is concluded to be negligible.
- 3.2.63 The receptor locations chosen for the assessment were not agreed with the Council. Thames Water has clarified that all receptors were modelled at a height of 1.5 metres above the ground and are at the facades of the buildings. Some of the receptors highlighted are not buildings and therefore more detailed information should be supplied (i.e. distance from road, coordinates

etc). It is uncertain whether all the receptor locations chosen for the assessment are applicable as no information has been supplied that sets out the exact location that was modelled.

3.2.64 The predicted baseline concentrations of NO₂ and PM₁₀ for the future construction year (2017) are extremely low. At one receptor location the model predicts a 24µg/m³ reduction in the annual mean concentration between 2010 and 2018. At the Thames Path receptor it has been predicted that the concentrations will decrease by over 30µg/m³ in the next 5 years. This is because a background concentration of 27µg/m³ has been used in the assessment, whereas background emission factors from the DEFRA 2010 based Background Maps predict a background concentration of 35µg/m³ for this area of the Borough (measured levels at the borough's background monitoring site shows concentrations between 2010-12 have been 37, 36 and 36µg/m³ respectively). Also our monitoring has shown only a very slight reduction in background concentrations over the longer term at some locations, with roadside locations showing increases. Therefore there is no evidence that these reductions will be achieved. Further evidence is also available that diesel vehicles operating in urban driving conditions are not meeting the latest Euro emission standards. Thames Water has carried out sensitivity analysis, following the production of the Environmental Statement. The results of this sensitivity analysis have not been provided to the Council and although Thames Water states that the use of the up to date emission factors and background data are unlikely to affect the magnitude of impact of the project and the associated significance, The Council will need to see the results before commenting further

3.2.65 The predicted 2010 baseline for the Thames Path receptor (CEFR 6) is very high. Thames Water has clarified that the Thames Path receptor is a worse case scenario receptor and represents the pollution contribution from the nearby four way junction and slowing vehicles. It would be helpful if all the monitoring data (rather than the annual means only) collected for the baseline assessment and the verification calculations are provided.

3.2.66 Paragraph 4.8.1 in the Environmental Statement, states that no mitigation is required as there are no significant effects from the development. This statement is misleading as a commitment to implement mitigation measures is included in the Code of Construction Practice. Similarly Table 4.10.1 should not state that mitigation measures are not required, the table should refer to the Code of Construction Practice. Agreement to this must be given.

Transport

3.2.67 The Transport assessment predicts that traffic flows on the road links around the Chelsea Embankment site will increase by 8.7% between 2009 and 2018. This figure is likely to be based on a worst case scenario as traffic levels over the London wide area have not seen a significant increase over the last few years. This predicted increase in traffic does not tie in with the significant reductions in concentrations of NO₂ and PM₁₀ that have been predicted by the model at the receptor locations around the site for 2018.

- 3.2.68 Paragraph 4.2.3 of the Environmental Statement explains that the average daily number of vehicle movements during the peak month in year three of construction, would be approximately 84 movements per day. This average number of vehicles is not reflected in the Traffic data table in the Appendices (Table B.1) which shows an increase of very few vehicles along Chelsea Embankment (an increase of 18 vehicles over the baseline). The traffic data used for the air quality assessment does not match up with the details of the expected traffic levels.
- 3.2.69 The method for how the emissions from the tug boats for the river barges were calculated is not provided within the Environmental Statement. The information supplied within Appendix B3 includes the assumed emissions per river tug. However, the source of this data is not specified and therefore we cannot be certain of its accuracy. Figures 4.5.4 and 4.5.8 show the impact of the peak construction year on NO₂ and PM₁₀ concentrations and no increase in concentrations is shown along the Thames. The Council will require more detailed emissions data for the river tugs before we can accept that the conclusion within the Environmental Statement is accurate.
- 3.2.70 The development is in an Air Quality Management Area and the results of diffusion tube monitoring undertaken by Thames Water in 2011-2012 show that annual mean concentrations of NO₂ already exceed the objective/limit value at all monitored locations around the site. The main impact on air quality from the proposed development will be from additional traffic and emissions from construction plant and river barges during the construction period of four years. There are problems with the way the air quality assessment has been carried out and therefore the Council cannot accept that the impact of the development on air quality has been adequately assessed within the Environmental Statement. Therefore it is unclear if the proposed development will comply with Policy CE5 of the Local Plan until an appropriate assessment of the impacts is carried out.

Construction dust

- 3.2.71 The Environmental Statement includes an assessment of the risk from construction dust from the activities that will take place on site. The assessment has been undertaken in line with the Institute of Air Quality Management guidance and has been classified as posing a high risk. With the application of the control measures outlined in the Code of Construction Practice it has been predicted that the site would have a minor adverse impact on receptors within 20 metres of the site. For receptors over 20 metres away from the site there would be a negligible impact.
- 3.2.72 The draft Development Consent Order includes a requirement for Parts A and B of the Code of Construction Practice to be adhered to. This will require dust and emissions control measures to be implemented during the construction period. No real time particulate monitoring has been proposed for the Chelsea Embankment site and it is agreed that this is not necessary.

3.2.73 However, the Council is concerned about the level of detail included in the Code of Construction Practice. The mitigation measures set out are vague and the Council has previously raised this issue in comments on a draft version of the Code of Construction Practice.

3.2.74 Thames Water has confirmed that a more detailed Construction Environmental Management Plan will be developed by the contractor if the scheme proceeds, however the Code of Construction Practice Part A, does not explicitly set out what the contents of the Construction Environmental Management's should be. A full list of all the possible mitigation measures should be provided in the Code of Construction Practice, from which the contractor producing the Construction Environmental Management can select the most appropriate measures.

3.2.75 Currently the Code of Construction Practice Part A is vague and only states that an Air Quality Management Plan including details of dust and air pollution control measures, vehicle and plant emissions and odour should be included in the Construction Environmental Management. It is essential that contractors are compulsorily required to implement all the appropriate best practice mitigation measures to ensure that the impact of the construction on nearby receptors is reduced as much as possible.

3.2.76 The Council does not agree with the conclusion that a minor adverse impact will be experienced by receptors within 20 metres of the site at the current time. The assessment assumes that the control measures within the Code of Construction Practice are being implemented. However, as the exact control measures that are to be implemented are unknown, it is impossible to state whether the predicted minor adverse impact is an appropriate assessment. Further detail about the proposed mitigation measures for construction dust is required before it is agreed that there will be a minor adverse impact on residents and visitors, this is in order to comply with the Local Plan Policy CE5.

Operational phase

3.2.77 Only odour impacts were considered as part of the operational phase in the Environmental Impact Assessment, as it was considered that no significant effects would be likely. The main impacts on air quality would be during the four year construction period.

Ecology

3.2.78 Ranelagh Gardens is a Borough Grade II Site of Importance for Nature Conservation. Thames foreshore forms part of a Metropolitan Site of Importance for Nature Conservation. This site is located on the foreshore of Chelsea Embankment. The works associated with this site involves the creation of a cofferdam, the occupation of intertidal and sub tidal foreshore and potential for dredging.

- 3.2.79 The stretch of the Thames from the mouth of Chelsea Creek to Kensington Borough Wharf includes areas of extensive inter-tidal mud, while mud and shingle are exposed at low tide between Kensington Borough Wharf and Battersea Bridge where there is also a small sand beach. These features, along with the muddy channel of Chelsea Creek, are particularly valuable for birds, with black-headed gull, grey wagtail, heron and mallard reported in the annual borough bird survey, not to mention fish breeding populations.
- 3.2.80 The construction of permanent structures on the foreshore will result in a permanent medium negative effect through the loss of intertidal habitat. There is limited mitigation available for this loss of habitat. Further consideration around the mitigation for this is required and that any mitigation should maximise its ecological value.

Ecology Ranelagh Gardens

- 3.2.81 Part of the works includes the removal of the southern Boundary Wall and the removal of shrubs throughout this stage of the project. The site includes areas of woodland, a rare habitat in inner London and two London notable plant species - deadly nightshade and perfoliate alexanders (probably colonised from the nearby Chelsea Physic Garden). Blocks of amenity shrubbery, particularly in more secluded areas provide valuable nesting and foraging areas for common birds. Eight species were noted during the current survey, while green and greater spotted woodpeckers were reported. The Council would discourage any impact to this habitat. Any vegetation to be removed should be checked for nesting birds and removed outside of nesting season where necessary following the procedures and guidelines set out in the Code of Construction Practice.

Impact on trees

- 3.2.82 Three of the mature London planes on the Embankment would have to be felled and approximately ten trees will be lost from a southern portion of Ranelagh Gardens. Most of these appear to be fairly small specimens. Two new trees would be planted onto new area which protrudes into the river and this would certainly help to mitigate the above mentioned tree losses. Any vegetation removed should be replaced with like for like or with species that have a higher ecological value.
- 3.2.83 This project, although having an impact on the ecological value of the above site, also has the potential to provide a great opportunity for ecological enhancement to the existing habitats and site. This will benefit the wildlife should recommendations be followed and implemented.

Socio-economics

- 3.2.84 As per the Cremorne Wharf site, the Council welcomes the fact that a large proportion of the predicted work force for the site (around 65 persons) will come from the local area and includes local trainees.
- 3.2.85 The availability of alternative options in the Thames Path whilst the work is taking place is an important consideration. It is noted that the presence of both a pavement on the northern side of Chelsea Embankment and the

pathways running through Ranelagh Gardens could provide alternatives to pedestrians using the Thames Path, although the pathways through Ranelagh Gardens are subject to limited opening hours. The Council agrees that users of the path will only be inconvenienced in a minor way by the works, whether they take place on the foreshore or in Ranelagh Gardens.

3.2.86 With regard to the users of the National Cycle Route 4 (NCR4) the route is traffic free in this location, which cannot be said for the majority of the route. However, cyclists will be able to use the Embankment road at this point without any significant detour and the extent of the works is limited. On this basis it is considered that the impact will be minor.

3.2.87 The effect on public open space, in Ranelagh Gardens will have short term implications for income generation for the Royal Hospital and the Chelsea Flower Show organised by the Royal Horticultural Society. In a similar manner, any works which may have an effect on the Chelsea Flower Show and the ability of the Royal Horticultural Society to generate the income which is necessary to continue their activities is of great concern to the Council. Regarding the new public open space created on the foreshore as a result of the proposed development, the Council is concerned about who will be in charge of the maintenance and this issue is still under review in the Statement of Common Ground and the Section 106 agreement.

3.2.88 In terms of the value of Ranelagh Gardens to local residents it is acknowledged that the Gardens are heavily planted with trees, shrubs and flowers. These landscape arrangements form a barrier between traffic on the Chelsea Embankment roadway and the users of the park and provide a valued secluded environment in this busy and somewhat noisy location. The Gardens also provide a contrast with the more formal planting in the Royal Hospital grounds which are characterised by open lawns and avenues of mature trees. During pedestrian surveys by Thames Water the use of the Gardens was noted as light, but it was used by young families. There are also residential properties on the opposite side of Chelsea Bridge Road in the City of Westminster and two institutions in relatively close proximity – the Lister Hospital and the Royal Hospital infirmary. It is noted that the noise effects on residents are unlikely to be significant.

Water Resources and Flood Risk

Groundwater

3.2.89 The Environmental Statement Volume 13, section 13 explains that the effects of the project on groundwater are negligible both during construction and operation. The Council was previously concerned about the lack of mitigation and monitoring measures. It is understood that a revised Groundwater Environmental Monitoring Strategy is been reviewed by the Environment Agency at the moment. The Council will support the Agency's comments.

Surface Water

- 3.2.90 The combined sewer overflow spills a volume of 283,000m³ and 71t of sewage derived litter a year, a much smaller amount than the combined sewer overflow in Cremorne Wharf. However, the effects on water quality will be again positive as there will be a considerable reduction of the volume spilt into the river. This will have a positive impact in river ecology, river users health and aesthetics.
- 3.2.91 Construction impact on surface water quality is likely to be negligible if the appropriate site measures used to control pollutants in the general site run-off are in place. These measures are proposed in the Environmental Assessment and the Code of Construction Practice Part A (section 8).
- 3.2.92 The foreshore will be heavily modified with the construction of the cofferdam to build and sink the shaft. During operation, the land take, although smaller than the cofferdam will be permanent and lead to morphological changes which will have an impact on river flows and cause changes in depositions on sediments around the foreshore and scour having an effect on local ecology. These impacts have been classified as minor adverse in the Environmental Statement and therefore no mitigation measures are proposed. The monitoring of these effects is only proposed for three years after installation. It is not clear if this period of time will be enough to rectify any problems in relation to scour and accretion.

Flood Risk

- 3.2.93 The site is located by the river in Flood Risk Zone 3a (functional floodplain). The tidal Thames flood defence wall between the site and the embankment will be temporary removed during construction to allow for site access after the cofferdam has been constructed. There is potential for the associated works to affect the integrity of the flood defences during construction, and lead to settlement.
- 3.2.94 The Code of Construction Practice includes measures that the contractor will implement to monitor and maintain a continuous flood defence level and safe access egress and refuge in the event of a flood event. If these measures are in place and the construction is closely monitored, there should not be an increase in tidal and fluvial flood risk. A new flood defence wall is part of the permanent works. The proposed development also includes raising the foreshore to adjacent land levels. Both these measures will change the flood risk designation of the majority of the site, changing from Flood Risk Zone 3b (the functional flood plain) to Flood Risk Zone 3a, and therefore reducing the flood risk. Part of the permanent open space, the intertidal terraces or floodable public realm, would be set below the flood defence and therefore floodable occasionally. The Environment Agency considered that further assessment of the flooding defences needed to be undertaken. As a result, a Flood Defence Asset Interpretative Report was produced and more detailed mitigation measures were suggested. Those measures need to be incorporated in the Code of Construction Practice. The Council will support the comments that the Environment Agency has regarding the report.

3.2.95 Permanent scour protection at the base of the new flood defence is also proposed. It is unlikely that there will be an increase in fluvial, groundwater, sewer and artificial sources flood risk as a result of the development. The site run-off will discharge directly into the Thames but this seems not to have a significant impact on flood risk. The Council supports the Environment Agency comments in regards to water resources and flood risk.