

**Planning and Borough Development**

Kensington Town Hall, Hornton Street, LONDON, W8 7NX

**Executive Director Planning and Borough Development**

Mr Jonathan Bore

John Pearson  
London Tideway Tunnels  
The Point (7th floor),  
37 North Wharf Road  
Paddington, London, W2 1AF

My reference: **Response to the Flood Risk Scoping Report, Thames Tunnel Project**

Please ask for: Patricia Cuervo

05 May 2011

Dear Mr Pearson,

**Response to Flood Risk Scoping Report.**

Thank you for your letter dated 7 March seeking this Council's views on the content of the Flood Risk Scoping Report in relation to the Thames Tunnel Project.

Please note that our comments have been arranged to reflect the structure of your report. The Environment Agency have included comments on Flood Risk in their response to the EIA scoping report. We have attached their comments as appendix A and we endorse them.

**1.5 Proposed Assessment Methodology**

**Paragraph 1.5.10**

It states that 'it is proposed to initially produce Level 1 site specific FRA sections'. We consider that both proposed sites in the Royal Borough are highly sensitive and will benefit from Level 2 and Level 3 FRA to identify all potential sources of flooding, their impacts and mitigation measures.

**Paragraph 1.5.10 b**

Apart from the SFRA's, other evidence base documents such as the sequential tests and Preliminary Flood Risk Assessments and indeed policies in the adopted Core Strategy should be reviewed and taken into account.

**Paragraph 1.5.12**

Levels 2 and 3 FRA should be made available for review by Local Authorities before their submission with the Development Consent Application in 2012.

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## **Reporting**

### **Paragraph 1.9.5 c**

For your information, our Core Strategy includes policy CE2 'Flooding' which should be included in for the Regulatory Position. Further evidence base is included in the Flood Risk Assessment, Sequential Test and the Preliminary Flood Risk Assessment.

A final section explaining if the site will be subject to Levels 2 and 3 FRAs should be included before point h (Conclusions).

## **Future Work**

### **Paragraph 1.10.2**

We would like to reiterate that Levels 2 and 3 FRA should be made available for review by Local Authorities before their submission with the Development Consent Application in 2012.

### **Table 2-11 Chelsea Embankment Foreshore CSO site scoping table**

### **Table 2-12 Cremorne Wharf Foreshore CSO site scoping table**

### **Potential Construction impacts/ Potential Operation impacts/ Methodology (Construction and Operation) / Mitigation (Construction and Operation)**

These sections should take into account the impacts of both potential site layouts: construction on the foreshore and inland.

### **Methodology (Construction and Operation)**

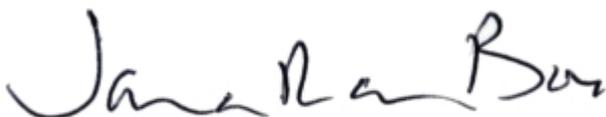
The FRA should investigate the risk of flooding from any source, not just the river. Surface water run-off and sewer water flooding is particularly important in the Borough. The FRA should also include not only direct risk to the site, but the risk to the surrounding built and natural environment.

### **Mitigation (Construction and Operation)**

Even when the main risk to the site may potentially come from river flooding, Sustainable Urban Drainage Systems should be considered and implemented.

Please do not hesitate to contact the officer Patricia Cuervo if you have any queries regarding this matter.

Yours sincerely,



Jonathan Bore  
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## Appendix A: Letter Response from the Environment Agency

creating a better place



Date: 4 April 2011

Dear Ms Cuervo

### **Scoping Report for the Thames Tunnel Project**

#### **Sites from Acton to Beckton**

We have received a consultation from Thames Water, dated 7 March 2011, consulting us on the Scoping Report for the Thames Tunnel Project.

We support the need for the Thames Tunnel as the second phase of the solution to London's combined sewer overflow problem and as a key part of London Tideway Improvements.

We are keen to work with Thames Water and yourselves to ensure that the Thames Tunnel maximises environmental benefits, identifies opportunities and uses innovative solutions to address potential impacts. In our response to the Thames Tunnel (Phase I) consultation we provided Thames Water with a set of general principles. These principles cover the design, construction and operational phases of the project and if followed, would enable Thames Water to avoid or minimise impact on the environment and propose suitable mitigation and compensation where adverse impacts are unavoidable. The general principles are given in Annex A.

It is our view that adherence to these principles must be demonstrated within the planning process. The Environmental Statement and its accompanying documents are fundamental to this.

We have reviewed the Scoping Report submitted and have further comments to make regarding Flood Risk, Waste, Ecology, Land Quality and Water Resources to ensure that the environmental issues we consider are of most importance to this proposal are appropriately addressed. We raise particular concerns regarding the scope of the Environmental Statement with respect to waste and flood risk, which we are keen to discuss in further detail with Thames Water.

Our technical comments and advice on:

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## Part A

- The approach to scoping the EIA - assessment topics
- The proposed EIA assessment methodologies
- The proposed ES structure and contents

## Part B

- General topic comments
- Project wide effects
- Site specific comments

are provided below.

### **Technical comments and advice for Part A Overview**

#### 3.0 Approach to scoping the EIA

##### Assessment topics

At this stage we are unsure as to why flood risk and waste have been excluded from the range of potential environmental effects likely to arise from the construction and operation of the Project. This approach does not appear to fulfill the requirements of Part I, Schedule 4 of The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 which sets out the information for inclusion in Environmental Statements.

The Scoping Report and the EIA processes needs to identify all the potentially significant impacts and mitigate these through design, management or other means. We will continue to liaise with Thames Water to gain a better understanding as to why they believe flood risk and waste should be excluded as topics in the Scoping Report and how they propose to demonstrate to you and ourselves that these topics will be covered within the planning process and documents submitted with the application for a DCO.

Our initial advice is provided below.

##### Flood risk

It is our current view that flood risk should be included within the EIA scoping assessment and Environmental Statement, as potentially significant environmental effects could arise as a result of the Thames Tunnel. We believe these impacts could arise from:

- Hydraulic effects on the river morphology, due to works or structures being located within the river, which may adversely affect the integrity of London's flood defence system including impacts on third party assets.
- Changes in flows and flood storage in the River Thames and its tributaries resulting in increases in flood levels. Combined tidal / fluvial effects should also be considered.

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- Reduction in the ability to inspect and implement future works to replace or repair the flood defences and to carry out raising works as required by the TE2100 project to reduce impacts associated with climate change.
- Flood risks resulting to and from the Thames Tunnel and associated infrastructure.
- Surface water issues related to flood risk. There is a potential for increased volume of runoff and change to the pluvial system due to the proposed works.

We note in section 3.3.4 of the submitted Scoping Report that the intention is to produce a Flood Risk Assessment (FRA) and to include this as an appendix to the water resources (surface water) chapter of the Environmental Statement. The FRA is due to cover both site-specific and scheme wide flood risks.

For the reasons given above, we strongly consider that flood risk should be noted within Table 3.2 and included within the EIA. The FRA should inform the EIA processes and the contents of the Environmental Statement.

3.3.5 - Settlement impacts due to tunnelling, shaft construction and other associated works should be covered with regards to the impact on the flood defences through reduced structural integrity and serviceability standards of third party flood defence assets. We have attended a meeting with Arup and Thames Water to discuss the scope of this assessment but consider that this matter should also form part of the considerations to be included in the EIA.

### Waste

It is our current view that waste should be included within the EIA Scoping Assessment and Environmental Statement. For the project as a whole, waste is likely to have a significant effect. Whilst the Scoping Report does not specify the quantities of waste arising or the types, it is estimated to be around 3 million cubic metres.

Waste could result in potentially significant environmental effects both on site where it is produced or stockpiled and offsite where it is processed, reused or disposed.

The impacts will depend on a number of factors which include:

- the way in which the waste is produced (dry or liquid)
- the type of waste (i.e. the strata through which the tunnel goes or the process resulting in the waste e.g. demolition waste),
- the quantities produced (partly related to length / route of the tunnel, diameter)
- the location at which it arises (i.e. the location of the drive sites from which waste is removed)
- the option selected for transporting the waste
- the option selected for reusing, recycling or disposing of the waste.

The impacts that could arise include (but are not limited to):

- carbon emissions from the transportation of waste

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- traffic congestion from the transportation of waste
- land take and visual intrusion from waste storage
- dust from waste storage (giving rise to health or amenity issues)
- pollution of controlled waters from waste transfer operations
- pollution of controlled waters from waste storage
- depletion of local or regional waste disposal capacity
- effect on capacity of local or regional recycling infrastructure
- habitat creation or destruction

There are many potential waste streams that could be produced from this project. These include:

- excavation waste (tunnelling waste),
- construction waste, (e.g. tunnel lining) – quantities will vary depending on whether prefabricated segments or spray lining is used.
- dredging waste – the quantities, level of contamination and sites of production are unknown,
- hazardous waste,
- operational waste - increased volumes of sewage will need to be treated and greater quantities of sludge will require managing.
- canteen / administrative / maintenance waste.

These wastes have not been included in the Scoping Report and should be considered in the Environmental Statement. Their impact will vary depending on the quantities produced, their characteristics and whether the wastes can be reused, recycled or require treatment or disposal.

The impacts of waste management should be considered at the producer site (in the case of tunnel waste that would be where the waste comes to the surface), and the destination site as the impacts at either or both may be significant.

We note the statement in paragraph 3.3.7 of Part A of the Scoping Report that the DCO application will be supported by a waste strategy which “..will include [a] Waste Options appraisal and a generic Site Waste Management Plan. The Waste Options Appraisal will identify a preferred list of management options and sites for the tunnel arisings. Where appropriate, the Waste Strategy will inform chapters within the ES as necessary”. We would welcome further discussions with Thames Water to clarify how their proposals will fulfil the requirements of the EIA processes.

We note a number of statements regarding early engagement on waste with the Environment Agency and wish to clarify those made in the following sections of the Scoping Report:

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Part A, Table 3.1 - refers to EIA position papers, one covering waste which are said to have been circulated and discussed at a meeting with Local Authorities and the Environment Agency in December 2010. We did not attend this meeting and was not in receipt of the position paper or party to the discussions. The Technical Working Group meetings took place in March 2011 and not February 2011.

#### 4. Proposed EIA assessment methodologies

##### 4.3 Ecology Aquatic

4.3.2 – A feature of the Tidal Thames Site of Metropolitan Importance is the diversity of larger plants (macrophytes) on the wall and banks of the river. These communities should be included within the river dependant habitats, and assessed within the river corridor survey.

As part of the river wall assessment, the structure of the algal mats should be incorporated.

4.3.8 - We agree with the conclusion that the proposal is unlikely to have an impact on statutory sites. However, you should be aware that Syon Park SSSI is in hydrological continuity with the project and Barnes Wetland Centre does have an occasional connection.

4.3.10 - The Tidal Thames is London's largest wildlife site, containing a diverse mosaic of habitats and species, while also providing an important corridor for both terrestrial and aquatic species. The impact of habitat connectivity both temporally and spatially needs to be assessed as part of a cumulative impact assessment.

4.3.12 & 4.3.15 – Fisheries data are limited to six sites biannually. Data for 2010 is now available.

4.3.16 - Grey seals are regularly seen upstream of QE2 Bridge and have been as far upriver as Chiswick and Richmond. They use sheltered areas of foreshore that have little disturbance to haul out and rest e.g. Chiswick Eyot.

4.3.17 - Autumn fish surveys (October) can show the presence and relative abundance of the 'young of the year' juveniles. Combined spring and autumn fish surveys give the best indication of seasonal adult and juvenile fish movements.

4.3.18 & 4.3.19 - Fish are highly mobile and the estuarine environment is highly dynamic so it may be difficult to ascribe changes to species composition and abundance locally to a particular site.

4.3.23 - Working the slack water period (either high or low water) will increase efficiency of seine netting.

4.3.34 - The impact on the extent of change to the river bed arising from scour and changes in deposition is required to assess impact on invertebrates and fish.

4.3.35 - A balance sheet approach to mitigation and compensatory habitat is recognised as appropriate for a scheme of this size. It may not be possible to fully mitigate locally, but where possible there should be habitat created that can be utilised by those species displaced or prevented using an impacted habitat. This may not always be a direct

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replacement e.g. intertidal mudflat or gravels could be partially compensated for by creating high level intertidal vegetated areas.

Though the improvements in water quality and potentially improved connectivity to the tributaries are recognised as being a mitigation measure, it is unclear whether these can be included within the quantitative balance sheet approach. An understanding of the function and productivity of habitats may enable an assessment of impact in qualitative terms.

Fish in the Tideway may also benefit from increased access to the freshwater tributaries. These are often blocked by impassable barriers close to, or at their confluence with the Thames. Physical improvements to these that would allow fish to move between the fluvial and tidal systems could have a large scale benefit in terms of improving access to new habitat. In some areas, mitigation in the form of fish passage improvements may offset negative impacts to fish populations within the Tideway. In some circumstances, temporary impacts to fish migrations could be offset by permanent improvements to migration opportunities.

4.3.37 - It is very important that the cumulative impacts of the construction period are properly assessed. For fish, this should include noise and vibration impacts within the aquatic environment, as well as hydrodynamic impacts.

#### 4.4 Ecology Terrestrial

Where surveys are undertaken to assess the likely ecological improvements from the interception of the CSO's, the comparative sites should be within a similar salinity zone and of similar habitat.

4.4.8 - The intertidal zone between mean spring low and mean spring high tide contains a range of marginal macrophytes and should be included within the wall surveys.

4.4.26 - The likelihood of invasive species occurring on sites is high. These will also need to be surveyed.

#### 4.6 Land Quality

4.6.5 - This paragraph is not in line with Table 3.2 Scoping Review, which scopes in land quality for the construction and operation phase. We do not understand why this paragraph states land quality has been scoped out of the operational phase. Land quality needs to be considered in the operational phase since leakage may lead to land contamination and new pathways may be created for land contamination which do not become apparent until after construction.

4.6.8 - Local Authority records should be added to the list of information to be obtained.

4.6.10 - The site investigation phase needs to be part of the assessment for land contamination

4.6.12 - We disagree that no land quality assessments will need to be carried out in the western part of the scheme. Some quality assessment of impermeable strata will be needed in terms of use/disposal of the excavated material and to ensure appropriate pollution prevention during storage and disposal.

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4.6.16 - The operational effects cannot be scoped out of the land quality assessment, at least until mitigation and other measures have been agreed.

#### 4.7 Noise and Vibration

There needs to be some link or reference to Aquatic Ecology and the impacts of noise and vibration. Piling and construction noise within the aquatic environment should be assessed. The construction phase will require extensive coffer dams, jetties and other intertidal and subtidal constructions, which will all have potential to have both local and wider cumulative impacts upon the aquatic environment, particularly for migrating fish species. Periods of 24 hour working, or work within narrow channels e.g. tidal creeks, may increase the impacts.

We have been two recent studies of noise and vibration within the Thames and these can be made available to you if required. We can also advise upon mitigation measures.

#### 4.11 Water Resources (Groundwater)

4.11.1 - Superficial Deposits, such as gravels appear to have been overlooked.

4.11.4 - This section should include the site investigation phase as part of the assessment for water resources.

4.11.11 - The list should include data from BGS and/or others on unlicensed borehole abstractions used for non-potable purposes.

4.11.15 - Environment Protection Regulations 2010 (EPR 2010) should be added to the list.

4.11.16 - There is no reference to risks to groundwater quality e.g. from Tunnel operation or from construction sites.

4.11.18a - Pathways for pollution can be created via the shaft and tunnels.

4.11.28 - Unacceptable change in the quality of groundwater as well as change in qualitative status should be included.

4.11.30 - Measures aimed at preventing unacceptable changes in groundwater quality are required in addition to the mitigation measures proposed.

#### 4.12 Water Resources (Surface Water)

We would wish to see inclusion of SUDS measures to reduce runoff from sites to greenfield rates and to provide wider benefits to amenity, water quality and biodiversity. This is supported by The London Plan Policy 4A.14.

4.12.2 - Further to highlighting any effects on scour and deposition on the bed and banks of the river as a result of the works, this assessment is also required to determine whether the flood defences may be undermined if there is any change in bed levels and to establish river propagation and conveyance of river flows and resulting river levels.

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Other linkages to this modelling assessment include fisheries and biodiversity interests by way of changes in velocities which may impact fish migration and navigational concerns.

4.12.9 – Bathing waters in the outer estuary will not be affected by this project.

### 5. Proposed ES structure and contents

We are satisfied with the majority of the proposed ES structure and contents. However, we have the following points to make:

- Volume 4 (Alternatives) – It must be clearly demonstrated that sites have been selected via application of the Thames Tunnel Site Selection Methodology.
- Volume 6 (Assessment Methodologies) – As mentioned in the paragraphs in ‘3.0 Approach to scoping the EIA’ above, we would like to continue discussions with Thames Water as to why flood risk and waste are not listed as topics to be included in the Scoping Report.
- Site related effects – The ES must also identify opportunities to improve environmental conditions. This must be documented in each site specific volume.

### **Technical comments and advice for Part B Scoping Results**

#### General

#### Water resources (groundwater)

In the tables for each Local Authority, drilling of an additional monitoring borehole is listed as a possible mitigation measure. It is not clear in what way the additional borehole actually provides mitigation, surely this is just a way of monitoring the effects. For monitoring purposes, there will be some sites where more than one monitoring borehole may be required.

In some of the ‘Tunnels’ sections it is stated that groundwater assessments are proposed for the sections where the tunnels are constructed in chalk. This is to assess the potential impact on abstractions and the chalk aquifer during construction and operational phases. This should also be included for any sections of the tunnel in overlying Secondary aquifers.

#### Ecology - aquatic

There are many fish species known to spawn within the tidal Thames in discrete areas dependent upon specific habitats, fluvial qualities and optimum requirements for egg survival and growth. Salmon, sea trout and eels, are known to migrate into and out of the estuary at different lifestages. Ensuring that these migrations remain unaffected is key.

Any construction works riverward of the flood defences, particularly on the foreshore and within the watercourse, may have impacts on fish resident or migrating through the area. We would require investigation and assessment of the possible damage of this habitat during construction and more detail of the methodologies to be used, along with the

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timing and duration of works. We are happy to advise Thames Water further on what piling methods are most suitable and when works within the river should take place.

Large scale abstractions or dewatering operations may also have impacts on fish. Dredging works to enable activities such as barge access may negatively impact on the habitats and species within the tidal Bow Creek and Thames, these should be investigated and assessed.

For mitigation options it recommends that any permanent structures within the river are designed in a manner that the scour will be minimised. If this requires that the area of land take is greater than that which is operationally needed, then terraces or shelves may be incorporated. We will be providing advice to Thames Water on a site specific basis. However, encroachment should not take place to create new habitat. Any encroachment must be justified in terms of operational or hydraulic requirements.

Within the mitigation options, it is recommended that river wall designs incorporating the approaches described within the Estuary Edges Guidance is incorporated. Generally the creation of intertidal vegetated areas between MHWS and MHWN will provide foraging and refuge opportunities for both juvenile and adult fish.

Further mitigation can be that temporary structures are designed in a manner to enable the successful re-instatement of habitat features with the completion of the project.

### Land quality

Within several of the Local Authority Scoping Opinions there is a statement under the 'Tunnels' section which reads, 'The potential impact of the operational tunnel would depend upon its construction. Consideration of a secondary lining is the subject of a separate study being carried out in parallel with the EIA.' We are unclear to why this is not therefore part of the whole EIA and is not referred to in Part A, Overview. This again is contradicting Part A which shows the land quality has been scoped out for the operational phase.

### 8. Project-wide effects

As above, we would question why flood risk and waste have been excluded from Table 8.1. Both these topics have the potential to cause project wide effects.

8.2.2 - This paragraph also needs to reflect the possibility that for some aspects there may be a cumulative negative impact which requires mitigation or compensation, as identified in Table 8.1.

### Site specific comments

#### All foreshore sites

- Putney Bridge Foreshore
- Cremorne Wharf Foreshore
- Chelsea Embankment Foreshore
- Victoria Embankment Foreshore

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- Albert Embankment Foreshore
- Blackfriars Bridge Foreshore
- King Edward Memorial Park Foreshore
- Borthwick Wharf Foreshore

We seek to protect the foreshore as the use of foreshore sites along the Thames is likely to lead to a number of detrimental effects to flood risk management, biodiversity and recreation. However, we support the environmental benefits the Thames Tunnel will deliver and recognise there is a need to develop as near to the river as possible. This may result in the need to develop on foreshore sites.

Where foreshore sites have been selected, yourselves and the Environment Agency should be satisfied that environmental impacts have been avoided, minimised, mitigated and compensated for by the application of the principles in Annex 1. We will support and work very closely with yourselves and Thames Water to ensure this.

### 11. London Borough of Hammersmith & Fulham

#### Hammersmith Pumping Station.

Ecology aquatic – Table 11.2 should reflect that there is potential for enhancements on this site along the rivers edge which could off set impacts caused in other areas.

### 12. London Borough of Richmond

#### Barn Elms

Land quality - Some further investigation of the area of the tanks should be undertaken.

Ecology aquatic - There are opportunities within the scheme to improve habitat availability and quality through works on and near the Beverly Brook. Improvements to Horne Lane weir, through which the CSO sewer runs, may be possible at this location. Removal, bypass or a technical fish pass are all options.

### 13. London Borough of Wandsworth

#### Bell Lane Creek

Ecology aquatic - There are opportunities within the scheme to improve habitat availability and quality through works on and near the River Wandle.

Bell Lane Weir and nearby EDF Weir are both considerable barriers to fish movement, changes to one or both of these structures would allow fish to move from the Tideway into the freshwater river upstream. We have a report advising on possible options for this area and would be happy to share this with Thames Water.

### 22. London Borough of Newham

#### Abbey Mills Pumping Station

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Ecology aquatic - Site description & potential impacts column - 'Construction of the wharf...may present a barrier to fish migration depending on design the campshed structure..would cause complete loss of river bed and bankside habitat.' The Channelsea River is important not just for its reedbed areas but for the nursery area that it provides for fish species including bass, mullet and eel. The site is even more valuable since the loss of a tidal habitat on the Lee associated with the tidal barrage. The water body and reed bed is a priority habitat in the UK BAP and is included in the delivery area of the Thames and Tributaries integrated biodiversity delivery area (IBDA).

Construction: potential significant effects column - 'Temporary land take may result in the loss of potential feeding and spawning habitat for fish'. The previous column implies that permanent loss of river habitat on the Channelsea River could be the outcome. This scenario needs to be taken into account and additional ecological compensation carried out.

Mitigation - We agree that mitigation measures such as silent piling and timings of works will lessen impacts, but we have concerns about the potential 7 year loss of river bed/banks and impediment of fish movement. Another mitigation measure should be to ensure that designs will not compromise fish movement.

We still have a preference for the use of a wharf in the Prescott Channel, which is heavily engineered and of a low ecological value versus a wharf leading to loss of natural channel and priority BAP habitats.

'The Channelsea River also provides an opportunity for habitat creation measures to compensate for impacts elsewhere'. We would support ecological enhancements such as the creation and enhancement of reedbed or the managed retreat where hard defences exist.

For information, a potential offsite mitigation site is further down on an area of existing reedbed on the east banks of the tidal Lee (at TQ3852481708). There is a need for enhancement and control of Japanese knotweed. Thames 21 are the contacts if you require further information.

Ecology terrestrial - Invertebrates are not covered in the list of surveys listed to inform the assessment. The German Hairy Snail, a red data book species that is restricted to areas with some tidal inundation is present at this site. We are satisfied that other species surveys (e.g. otter and water vole) are covered in the terrestrial section of the table.

### Beckton Sewage Treatment Works

Ecology terrestrial - The Beckton Lands South SINC is not included in the designations list.

For information, there are opportunities for offsite habitat enhancement at Ripple LNR (ditch reinstatement). Please contact us for further information.

We hope you find the above comments useful. We will continue to work closely with Thames Water on the final stages of the site selection processes. For the project as a whole, and in particular foreshore sites, we will work with Thames Water to help find solutions to avoid or minimise impact on the environment and propose suitable

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mitigation and compensation where adverse impacts are unavoidable. Importantly we will also help identify environmental opportunities throughout this project.

We would be happy to work with you and provide you with technical environmental information to better your understanding of the potential environmental impacts of the project and how these can be avoided, minimised, mitigated and compensated for and opportunities for enhancement sought. This evidence will help to inform balanced decisions within the planning processes.

I trust this is satisfactory but if you have any queries, please contact me.

Yours sincerely

**Ms Candice Beard**

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## ANNEX A

### General principles

If these are met Thames Water will be able to avoid, minimise, mitigate and compensate potential environmental impacts.

- sites must be selected via application of the Site Selection Methodology
- the project must meet all relevant statutory requirements
- the project must support relevant policies and strategic aims for the tidal Thames. This includes: aim to achieve no net loss of habitat and no increased risk of flooding
- design of both individual sites and the tunnel must minimise impacts as far as possible. For example, the footprint of disturbance (land take) must be minimised in both the construction and operational phases unless this results in net environmental improvement such as remediation of contaminated land at the site. Only essential infrastructure should be sited in the foreshore and associated works should be sited on land if possible. Encroachment to create terraces/green space is not acceptable due to potential negative environmental impacts
- construction must use best practices to minimise potential impact on the environment
- impacts must be fully mitigated against
- compensation should be offered where impacts cannot be fully mitigated against

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- re-instatement e.g. of habitat and compensation e.g. of flood storage volume, must be planned for upfront
- the project must be designed to take account of future requirements including both climate change and emerging legislation. A key opportunity is the ability to link with TE2100 Plan implementation.

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