creating a better place

Environment Agency

The Planning Inspectorate
Temple Quay House
Temple Quay
Bristol
Avon
BS1 6PN

**Our ref:** KT/2023/131101/01-L01
**Your ref:** 20035862

**Date:** 31 October 2023

Dear Examining Authority

**Lower Thames Crossing (TR010032) Development Consent Order Application**

Please find to follow our responses to the Examining Authority's Second Written Questions on behalf of the Environment Agency in relation to the application for a Development Consent Order for the Lower Thames Crossing made by National Highways (NH).

I hope this is helpful.

Yours sincerely

**Richard Penn**
**Environment, Planning and Engagement Manager**
Direct e-mail KSLPLANNING@environment-agency.gov.uk

creating a better place

# Environment Agency Responses to the Examining Authority's Second Written Questions

Environment Agency
Orchard House Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH
Customer services line: 03708 506 506
Email: enquiries@environment-agency.gov.uk
www.gov.uk/environment-agency

| ExQ2 | Question to: | Question | Environment Agency Response |
|---|---|---|---|
| Q6.1.2 | Applicant<br>Environment Agency<br>Local Authorities | **Limitations of existing survey**<br>The wording of GS001 in 6.3 Environmental Statement Appendices Appendix 2.2 – Code of Construction Practice, First Iteration of Environmental Management Plan [REP5-049] REAC table (Table 7.1) suggests that *"…. Supplementary ground investigations would be undertaken to assess residual contamination risks …."*. This infers that the position analysed within the ES and supporting documentation may not accurately reflect what is found on site as further ground investigations are deemed necessary.<br>• What is being proposed for intrusive ground investigations where contaminated soils are present without drilling being required? How has this been secured?<br>• Should a programme of instrumentation and monitoring, such as suggested in GS003, be appropriate with respect to all cases where contaminated land is present?<br>• If so, where would this be secured and appropriately managed? | Land contamination risk assessment and management is an iterative process, with subsequent phases being more detailed than the last.<br><br>Further detailed investigations will be required including but not exclusive to those highlighted in Table 3.1, as well as paragraphs 3.1.15 to 3.1.18 of the Environmental Statement Appendix 10.11 - Remediation Options Appraisal and Outline Remediation Strategy [REP1-165].<br>This is standard risk assessment practice for most projects of both large and small scale.<br><br>**What is being proposed for intrusive ground investigations where contaminated soils are present without drilling being required? How has this been secured?**<br>We do not know what additional works are being proposed. These will need to be assessed on a site-specific basis and agreed, prior to works, with the Environment Agency and the relevant Local Authority.<br><br>**Should a programme of instrumentation and monitoring, such as suggested in GS003, be appropriate with respect to all cases where contaminated land is present? If so, where would this be secured and appropriately managed?**<br>The risk assessment process, as per the Environment Agency's 'Land Contamination Risk Management' guidance, requires the applicant/contractor to determine whether monitoring is required to more fully characterise a site, as part of remediation to ensure no impact to receptors from site works/activities, and/or (if necessary) during verification of works (e.g., longer-term monitoring). Therefore, the requirement (or not) for monitoring will be determined on a site-specific basis, and should be |

| | | | |
|---|---|---|---|
| | | | agreed by the Environment Agency and relevant Local Authority prior to implementation.<br><br>This is set out in Section 8.6 of the Environmental Statement Appendix 10.11 - Remediation Options Appraisal and Outline Remediation Strategy [REP1-165] which regularly states in several relevant paragraphs 'following consultation and agreement with the regulatory authorities' or similar wording, which assures us that we will be involved at the appropriate stages, and the process will not commence without our prior involvement and agreement to any proposals.<br>The commitment is secured in REAC commitment GS001, for which the Environment Agency is a required consultee [REP5-049].<br><br>Please note the term 'contaminated land' is a legal term as defined in Part 2A of the Environmental Protection Act 1990 (as amended) and The Contaminated Land (England) Regulations 2006. It only applies to specific sites/areas that have been legally designated as 'contaminated land'. There are no 'contaminated land' sites within the LTC Project area. A term such as 'land affected by contamination' or 'land contamination' should be used instead. |
| Q7.1.1 | Port of London Authority, Port of Tilbury London Ltd, Environment Agency, Marine Management Organisation, | **Tunnelling techniques**<br>Do you consider that the additional controls/commitments in RDWE059 to only utilise closed face tunnelling techniques in the Code of Construction Practice [REP5-049] would be adequate? If not, please provide details and suggest updated wording for a form of tunnelling method security that you would consider to be adequate. | We are satisfied with the proposal for closed face tunnelling techniques. |

| | | | |
|---|---|---|---|
| | Local Authorities | | |
| Q7.1.2 | Management Organisation, Local Authorities, Environment Agency | **Vibration**<br>Do you consider that the controls in the Deemed Marine Licence in the dDCO [REP5-024] and the associated controls in the Code of Construction Practice [REP5-049] in respect of vibration for the tunnelling and associated works are adequate? If not, please provide details and suggested updated wording that you would consider to be adequate. | We consider all of the key best guidance and practices have been mentioned within the Code of Construction Practice document [REP5-049]. We are satisfied the mitigations stated and committed to within the Code of Construction Practice and conditions of the Deemed Marine Licence are adequate to cover most common risks to fish ecology from vibration impacts.<br><br>In an event that the extent and duration of the piling activity should increase, and if this change in vibration-noise impacts cannot be mitigated, extra mitigations and monitoring will be expected. For example, implementing vibration-noise reduction measure points in the middle of the river. Therefore, we would expect to be notified in such an event and consulted. |
| Q7.1.3 | Applicant, Port of London Authority, Port of Tilbury London Ltd, Environment Agency, Marine Management Organisation, Local Authorities | **Tunnel Depth Report**<br>Please provide an update on any further discussions in respect of the Tunnel Depth Report [REP3-146]. Please set out any outstanding areas of disagreement and what, if any additional or updated controls you would consider to be necessary. | Whilst tunnel depth should not affect water quality, the ability to dredge the river bed (or not) to required depths for future navigation needs, might affect the extent to which dredging could affect water quality. We are consulted on dredging matters by both the Marine Management Organisation and Port of London Authority.<br><br>We note that the current proposals do not envisage placement of scour protection in the navigation channel, but should this change then there will be a need to consider the scour protection layer within the context of the overall depth of burial of the tunnel.<br><br>The issue of scour protection vs no scour protection may also affect future choices about appropriate maintenance dredge methods (e.g. dispersive or non-dispersive methods), which does have some bearing on likely impacts upon water quality when undertaking the dredges. The placement of scour protection would change the nature of the benthic habitat within its footprint, and possibly dictate the need for less mechanically |

| | | | |
|---|---|---|---|
| | | | invasive dredge methods when maintenance dredging at this point in the navigation channel. Capital dredging to a deeper depth in future could be more difficult and costly if scour protection has first to be removed in order to access the bed for dredging. Capital dredging would, we anticipate, require non-dispersive “removal dredge” methods, though the exact methods would be determined by the nature of the material.<br><br>Introduction of scour protection elements could potentially cause other hydrodynamic and sedimentological issues due to a raised ‘hummock’ in the bed. For example, fluid mud/sand movement up estuary along the bed may be impeded and cause siltation of local docks downstream of the tunnel and erosion of saltmarsh and earth flood embankments upstream of the tunnel. Therefore, if scour protection is a possible future option due to cost savings on building the tunnel to shallower depth, its impacts, which could be very costly, should be modelled and understood now, not later.<br><br>Lastly, scour protection scenarios would also trigger an update to the Water Framework Directive impact assessment. |
| Q7.1.4 | Port of London Authority, Port of Tilbury London Ltd, Environment Agency, Marine Management Organisation, Local Authorities | **Ground protection tunnel**<br>Do you consider that the additional controls/commitments in GS024, RDWE017, 018a and 018b of the Code of Construction Practice [REP5-049] are sufficient? If not, please provide reasoning and suggested wording for additions/updates. | The current commitments do not include any form of groundwater quality monitoring for the ground protection tunnel. Construction of the ground protection tunnel, even if only a temporary structure, poses the same risks as the main tunnel. We would expect the same level of monitoring for the ground protection tunnel as for the main tunnel excavations (including the portals). Please see response to Q7.1.5 below.<br><br>We have had discussions with the applicant and have been provided assurances that groundwater quality monitoring can be included at detailed design stage. Nevertheless, it may be appropriate to reword the existing commitments to include |

| | | | |
|---|---|---|---|
| | | | groundwater quality monitoring (e.g. GS024 currently only mentions grout blowout).<br><br>The same is true for the use of tunnelling additives (please see answer in response to Q7.1.5).<br><br>We appreciate that as part of REAC commitment GS024 [REP5-049], we should be consulted on measures to reduce the risk of blow-out, if a ground protection tunnel is required. However, on the risk of blow-out and/or day lighting events, and how these risks are being mitigated, we should be consulted in connection to the main tunnelling works too.<br><br>**Environmental Permit Informative**<br>Should any dewatering activity in connection with any engineering works including the ground protection or main tunnel require an abstraction of water in excess of rate of 20m³/day (or 100m³/day or a period of no more than 6 months), then, an abstraction licence [or equivalent permit post the abstraction licencing regime having moved into the Environmental Permitting Regulations (EPR)] is likely to be required. |
| Q7.1.5 | Port of London Authority, Port of Tilbury London Ltd, Environment Agency, Marine Management Organisation, Local Authorities | **Tunnelling controls**<br>Do you consider that any additional or updated controls are necessary in respect of the tunnelling works? If so, please provide details and suggested wording. | We are currently discussing with the applicant updating the REAC commitment RDWE019 [REP5-049] to incorporate consultation with the Environment Agency on the tunnelling additives that may impact the water environment.<br><br>The current wording is proposed to be amended from being specific to groundwater source protection zones to 'the water environment', which covers groundwater both in and outside of source protection zones.<br><br>Groundwater quality monitoring, which we understand can be secured at detailed design stage, is also something we deem |

| | | | |
|---|---|---|---|
| | | | necessary in respect of both tunnelling works and construction of the southern portal (arrangements are already in place for the northern portal). This includes monitoring around works areas that are located within the unsaturated zone (e.g. the southern portal). The risk of indirect discharges to groundwater from proposed activities will need to be assessed. |
| Q8.1.4 | Applicant, Local Authorities and Environment Agency | **Excavated materials**<br>With regard to the Outline Materials Handling Plan [REP5-051], the Excavated Materials Assessment [APP-435] and the Code of Construction Practice [REP5-049]:<br>• Could greater certainty be provided that the quantities of excavated materials would not exceed the estimates?<br>• In the event that quantities did exceed the estimates, what remediation/mitigation could be secured?<br>Should/could the controls in the Code of Construction Practice be updated to deal with a situation where the quantities were exceeded? | We consider it would be prudent to add in a section in the Code of Construction Practice that covers the situation where the quantities were exceeded. A contingency plan under these circumstances would be a reasonable request.<br><br>We are unsure if it would be possible to more certainty on quantities of excavated materials at this time. A variety of factors may raise uncertainty as to the estimates, especially early on in the project. |
| Q8.1.5 | Applicant, Local Authorities and Environment Agency | **Waste hierarchy**<br>Could/should the wording in MW007 of the Code of Construction Practice [REP5-049] be strengthened to provide greater certainty that the waste hierarchy will be followed appropriately? Would the use of individual targets for different materials be an appropriate approach? | There are arguments for both. An overarching residual waste 'target' provides the most helpful measure of waste reduction, as this ensures a holistic view to waste is taken and reduces waste overall. Whereas individual, material specific targets incentivise the separation of these materials earlier on in the waste management process. Though this section is referring specifically to excavated materials and soils they have referred to 'all wastes' after in brackets. Any target attributed to excavated waste and soils would likely be a weight- |

| | | | |
|---|---|---|---|
| | | | based/volume target and would need to be both meaningful and achievable.<br><br>The applicant is unlikely to be in a position at this time to propose accurate individual targets hence why MW007 refers only to wastes managed in line with the waste hierarchy. The commitment to the waste hierarchy is appropriate. |
| Q11.2.1 | Applicant<br>Environmental Statutory Authorities<br>LLFAs | **West Tilbury Main Culvert**<br>1. The comment provided within the Applicant's response to ExQ1 Q10.6.5 is noted; however Badgers are nocturnal animals who do not require good vision, being dependent on hearing and smell. It has been suggested that species that are more reliant on sight require to see the 'other' end of culverts etc, to give them the assurance they require to enter the darker confines. It is recognised that culverting can affect the ecological value of the watercourse, while inhibiting the migration of some species and consequently it is suggested in industry guidance documentation that the length of culverts etc should be as short as possible. While it is acknowledged that within the answer to ExQ1 Q11.6.1 the Applicant is proposing many features to minimise detrimental effects, can the Applicant, and other IP, provide documented evidence that a culvert length of the 46 metres proposed will not act as a migration barrier? | 1. We also note the badger research and a study on culvert ledge usage in Portugal. In the Portugal study (Villalva *et al.* 2013), otters used 12% of road culverts although the presence of a dry ledge was not a key factor in their use of culverts. Foxes and badgers also used the culverts. Evidence of the effect of culvert length on usage by mammals is scarce. Consequently, it's hard to be certain that a 46 m culvert will allow mammal passage or be a barrier to it. However, a comprehensive investigation into road culverts in Aberdeen (Jacobs 2006) advised that "Such culverts and underpasses must be as short as possible to encourage their use by otters and badgers. Ideally culverts and underpasses should not be much in excess of 50m as over this length, the chances of otters and badgers readily using them significantly decreases."<br><br>The advice for underpasses over 50m is a box section of 1000mm x 2- 5m wide (Highways Agency, 1999; Grogan et al., 2001). The length of all culverts in otter habitat should be kept to a minimum (Jacobs 2006).<br><br>Therefore, the West Tilbury culvert which at 2.8 m high and 4 m wide; will constitute a design which may allow otter passage.<br><br>The culvert is also to have design features to allow it to be more attractive to mammal and fish passage, as set out in the Code of Construction Practice Register of Environmental |

| | | | |
|---|---|---|---|
| | | 2. If no guidance is available, are there examples where such a length of culvert of similar diameter etc has been proven not to act as a barrier or are there options to further reduce the length of culvert? If this is the case, what amendment will be required to be made to the submitted documentation?<br>3. What is the maximum length of culvert for the diameter proposed that will not act as a barrier to species migration thereby isolating upstream catchments etc?<br>4. It is suggested that the number of culverts being highlighted within 7.5 Design Principles Document [REP4-146] as being designed to allow mammal passage and to be as short a length as possible is only one. It is the West Tilbury Main Culvert and is listed in Table 5.5 Clause No. S9.10. Can the Applicant confirm if this is the only location for such mitigation to be introduced? | Actions and Commitments (REP5-049). There is some evidence to suggest breaking up the light/dark interface at both the entrance and exit of the culvert may be beneficial in encouraging fish migration. Some form of planting or screening to help break up any harsh light/dark interface would be considered in the design.<br><br>2. As per answer 1 and what published guidance there is, a culvert less than 50 metres long should allow mammal passage. The applicant has already reduced the length of the culvert to 46 m. They should be able to comment if further reduction is possible.<br><br>3. A comprehensive investigation into road culverts in Aberdeen (Jacobs 2006) advised that "Such culverts and underpasses must be as short as possible to encourage their use by otters and badgers. Ideally culverts and underpasses should not be much in excess of 50m as over this length, the chances of otters and badgers readily using them significantly decreases."<br>4. For the applicant to answer.<br><br>**References**<br><br>Grogan, A., Philcox, C., Macdonald, D. (2001). Nature Conservation and Roads: Advice in Relation to Otters. WILDCRU, Oxford.<br><br>Highways Agency (1999). Design Manual for Roads and Bridges: Nature Conservation Advice in Relation to Otters. HMSO, London.<br><br>Jacobs (2006) Aberdeen Western Peripheral Route Environmental Appendices Part B: Northern Leg Appendix |

| | | | |
|---|---|---|---|
| | | | A10.6 – Otter. Microsoft Word - Appendix A10.6 - Otter_MASTER (transport.gov.scot)<br><br>Villalva P., Reto D., Santos-Reis M., Revilla E. & Grilo C. (2013) Do dry ledges reduce the barrier effect of roads? Ecological Engineering, 57, 143-148. |
| Q11.2.2 | Applicant<br>Environment Agency and other IPs with interests in environmental performance and outcomes | **Culverting general**<br>Table 4.10 Structural form of water crossings in Document 6.3 Environmental Statement - Appendix 14.6 - Flood Risk Assessment - Part 10 [APP-477] provides a list of various proposed culverts.<br>• Can the Applicant confirm what are being introduced to prevent these culverts being 'environmental blackspots' through acting as barriers, reducing species movement, migration etc? How are relevant design measures being secured?<br>• Can the Environment Agency, or other IPs, confirm that the proposed culverts listed in Table 4.10, referenced above, alongside the proposed mitigation, will not decrease the ecological value of the watercourses upstream from the culverts or that the Applicant has provided sufficient mitigation or alternative routes that minimises the risk of the upstream catchments becoming disjointed and isolated? | Please see our answer to Q11.2.1 for West Tilbury Main Culvert. Ordinary watercourse culverts are for the Lead Local Flood Authority to comment on.<br><br>The applicant has stated that their contractors will adopt best practice for eel and fish passage through culverts. Good practice for the design and operation of culverts with respect to elvers is detailed in Part 10 of the Flood Risk Assessment (FRA) (ES Appendix 14.6) (see matter 2.1.4 of the Statement of Common Ground REP5-034). |

| | | | |
|---|---|---|---|
| | | Where there is limited or no opportunity to provide sufficient mitigation or alternative routes that minimises the risk of the upstream catchments becoming disjointed and isolated due to the location of the watercourses to be culverted, can the Applicant explain why the modification of the surface water body should be accepted? | |
| Q11.3.5 | Environment Agency | **Rephasing**<br>It is noted in the Environment Agency's Deadline 3 submission [REP3-158] that " …. *The two year rephasing is unlikely to change the aquatic aspects within our remit significantly but if it slips further to three- five years then we may need resurveys* ….". Given the earlier comments as to what constitutes commencement, ie the Applicant is suggesting that undertaking survey work etc may be sufficient to discharge that requirement, can the Environment Agency define their expectations of limitations in respect to approximate dates? | There is common good practice as promoted by professional institutions such as Chartered Institute of Ecology and Environmental Management – *Lifespan of ecological reports M.26 CIEEM Advice Note On the lifespan of ecological reports and surveys (April 2019).*<br><br>We would broadly agree this approach as appropriate, however where specific sensitive receptors have been identified – it would be expected for these to have their own guiding frequency of review, to be kept in pace with any material changes in either design, construction methodologies, mitigation measures and unexpected environmental changes such as major storm events.<br><br>Therefore, triggers to resurvey are likely to be dependent upon the context and degree of situational change as well as a trigger for timely updates to ensure the most up to date risks and evidence is used to inform methodology constraints. |
| Q16.1.4 | Local Authorities<br>Other Statutory Stakeholders<br>Other Interested Parties | **Environmental Management Plan (EMP) Q4**<br>Notwithstanding any other questions included in this question set about specific commitments in the Register of Environmental Actions and Commitments Table 7.1 in Document 6.3, Appendix 2.2 Code of Construction Practice (First iteration of Environmental Management Plan) v5 | The wording for REAC RDWE019 is being updated by the applicant [REP5-049]. The draft wording we have seen has broadened the commitment to incorporate the whole water environment, not just groundwater source protection zones.<br><br>We have also raised the point of groundwater quality monitoring being incorporated into the Environmental Management Plan 2; which is under discussion with the applicant. |

| | | | |
|---|---|---|---|
| | | [REP5-049], the ExA would like to receive a set of dedicated comments from Local Authorities, other Statutory Stakeholders or any other IP on any specific concerns with any of the measures (or their wording) in the Register of Environmental Actions and Commitments in Table 7.1, or indeed on any of the drafting in Document 6.3, Appendix 2.2 Code of Construction Practice (First iteration of Environmental Management Plan) v5 [REP5-049]. | We understand that commitment RDWE018b, which states that the ground protection tunnel will be backfilled with 'suitable materials', is referring to granular material in engineering which sounds like mixtures of uncontaminated rock, clay, sand, and gravel that can be compacted, not waste. In this case an environmental permit would not be required. |