

Application by Highways England for an Order Granting Development Consent for the A303 Amesbury to Berwick Down

Deadline 7 - Environment Agency comments on Highways England DL6 responses to the Examining Authority's Second Written Questions (ExQ2)

ExQ2	Question to:	Question	EA response 26 July 2019	Highways England comments to ExQ2 26 July 2019	EA response to HE comments 8 August 2019
Ag.2	<b>Agriculture</b>				
Ag.2.1	Applicant Environment Agency	<p><b>Groundwater abstractions/private water supplies</b></p> <p>i. Please provide a response to the representation made by Fowler Fortescue on behalf of the Turner family in respect of the abstraction licence and the locations of the wells and boreholes [REP4-057].</p> <p>ii. What implications does the new licence to abstract water have in respect of the development and assessments carried out?</p> <p>iii. What, if any additional monitoring or mitigation would be required?</p>	<p>i. The Groundwater Risk Assessment (ES Appx 11.4, July 2018) recognised four abstraction points (Well Points 1 – 4) related to the lapsed licence that was in the process of being re-applied for during preparation of the Environmental Statement. Well Point 5 was not on the lapsed licence but added when re-issued in June 2018 hence it was not included in data sent to the applicant by the EA prior to this date as the understanding was that the licence would be re-applied for under the same terms as the lapsed licence.</p> <p>The numerical modelling carried out to date and reported in ES Appendix 11.4 Annex 1 Numerical Model Report (July 2018) has assessed impacts on groundwater levels due to the presence of the proposed tunnel (and assuming no de-watering during construction) at Well Points 1-4 and these are deemed to be negligible with respect to seasonal fluctuations (maximum impact of 8cm rise at the nearest well to the tunnel (Well Point 1) under high groundwater level conditions. No fall in level was predicted at any of the Well Points 1-4 as a result of the tunnel under any situation.</p> <p>The model predicts no change in groundwater level under any situation at Well Point 4 which is the nearest to Well Point 5 and slightly closer to the tunnel. It is therefore not anticipated that specific assessment of groundwater level changes at Well Point 5 would identify any impact due to the proposed tunnel.</p> <p>In summary, whilst Well Point 5 has not been specifically assessed, we consider that assessment of impacts at Well Point 4 provides a conservative assessment of impacts at Well Point 5 since it is closer to the proposed scheme.</p> <p>The impact of construction and operation of the tunnel on surface and groundwater interests, including the above abstractions should be re-assessed if there are any changes to the design or construction methodology put forward by the contractor. The EA should be consulted on this and agreement sought to ensure any impacts are suitably mitigated.</p> <p>From a water quality perspective, Well Point 5 is the most southerly of the Manor Farm abstraction points, situated immediately to the south of the existing A303. Since the new road will bypass Winterbourne Stoke to the north, Well Point 5 will be further from the works than Well Point 4 which was identified in the Groundwater Risk Assessment although no assessment of impacts on specific receptors was reported.</p>	<p><b>i. Please provide a response to the representation made by Fowler Fortescue on behalf of the Turner family in respect of the abstraction licence and the locations of the wells and boreholes [REP4-057].</b></p> <p>1.The Representation [REP4-057] relates to the absence in the Environmental Statement of a fifth borehole on the Turner licence (reference Borehole E).At the time of writing the ES, the Licence for all the boreholes had expired but the impact on four boreholes was assessed. In the Environmental Statement [APP-049] paragraph 11.6.56 it is made clear that a licence was being re-applied for and also that licence details can change. Paragraph11.6.56 states:</p> <p>2.“Through the water features survey undertaken in 2018 (the results of which are provided in the GRA in Appendix 11.4) an additional expired licence has been identified at Manor Farm in Winterbourne Stoke. This licence, which covers four boreholes for agricultural (general and domestic) purposes, lapsed in March 2017 and was reapplied for in February 2018. It was included in the water features survey in case it was re-licensed, which The Applicant understands has now occurred.”</p> <p>3.The expired licence has now been re-issued by the Environment Agency and covers five wells</p> <p><b>ii.What implications does the new licence to abstract water have inrespect of the development and assessments carried out?</b></p> <p>4. None of the licensed points (including E which is approximately 200m southwest of Point D and further away from the Scheme than the other boreholes)are predicted to be impacted by the Scheme.</p> <p>5. Four of the licensed points (A-D) were included in Table 3.3 of 6.3Environmental Statement Appendix 11.4 - Groundwater Risk Assessment [APP-282]. In the ES they are referred to as Wells 1 to 4 and in the updated licence referred to as A to D.</p> <p>6. Figure 11.4 of the Water Chapter of the ES [APP-049] shows the borehole locations. An updated version of Figure 11.4 is attached at Appendix A to the response provided at Deadline 5 [REP5-003] and includes the fifth borehole and an amended key (no longer pending).</p> <p>7. The fifth abstraction point does not alter the findings of the Qualitative Risk Assessment (Annex E [APP-282]) and, irrespective of the detail of boreholes, the Environmental Statement assesses impacts on the aquifer as a whole, and there are no significant impacts (upon either the water levels, flow or quality) on the aquifer from which the boreholes draw water, or on these individual abstractions.</p> <p><b>iii.What, if any additional monitoring or mitigation would be required?</b></p> <p>8. As no likely significant adverse effects are identified for the water environment no monitoring is proposed. There were however discussions with the Turners during a visit to their boreholes by HE on 30th May 2019,with a view to carrying out the monitoring requested by borehole users (this monitoring is not required, but Highways England has agreed to undertake this where practicable).</p>	<p>We have no further comments to make beyond those made at Deadline 6.</p>

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			<p>We understand that detailed design of the drainage scheme is ongoing and approval will be secured by Requirement 10 of the DCO following consultation with the Environment Agency. We will expect the proposal to demonstrate that water quality will not be adversely impacted at existing abstraction points, including those operated by the Turner family as well as the wider aquifer.</p> <p>ii. Despite the omission of Well Point 5 in the Groundwater Risk Assessment, it is further from the proposed scheme than other points on the licence which were identified and assessed for impacts on groundwater level due to the proposed tunnel.</p> <p>We consider further assessment of risk to groundwater quality from discharges of road drainage across the whole scheme are required once the detailed drainage strategy is finalised and this should consider all existing water rights, including the points identified on the Turner family licence.</p> <p>iii. All abstraction points on the active Turner family abstraction licence should be included as potential receptors in the Groundwater Management Plan (as required by the OEMP) and the requirement for ongoing monitoring and/or mitigation identified by the plan once the final scheme design and construction methods have been confirmed.</p>	<p>9.As noted in Item 18.2.47 of "Comments on any further information requested by the ExA and received at Deadline 4" [REP5-003], Highways England, as the Scheme promoter, is responsible for ensuring that groundwater resources, including the supply and quality of groundwater, are protected during the construction and operation of the Scheme. Potential impacts on water supplies will be mitigated through the implementation of measures included within the Outline Environmental Management Plan (OEMP)[REP4-020] (at references PW-WAT1 and WAT2, and MW-WAT1, WAT2,WAT3, WAT4, WAT5, WAT6, WAT7, WAT9, WAT10, WAT14, and WAT15),which is secured through paragraph 4 of Schedule 2 to the draft Development Consent Order [REP4-018].</p>	
De.2	<b>Design</b>				
De.2.1	Applicant All Interested Parties	<b>OEMP, Chapter 4: Detailed Design [REP4-020]</b> Chapter 4 of the OEMP is headed 'Development of detailed design in the WHS'. However, para 4.4.4 deals with matters outside of the WHS, quite rightly in the ExA's view, since the detailed design aspects should be matters of concern and consistency throughout the whole Scheme. Therefore, should the title of the chapter be amended, and its scope widened?	The EA have no comments to make on signing and lighting. However, we consider this chapter title should be widened if it is to include activities outside of the WHS. In addition, if the purpose of the Stakeholder Consultation Group (SCG) includes being consulted on the detailed design of the scheme, then we consider the EA should be included in the list of stakeholders who form the SCG.	1. Highways England acknowledges this comment and agrees that the existing Chapter 4 'Development of detailed design in the WHS' should be expanded to cover design aspects outside of the WHS. The title of Chapter 4 has been amended within the OEMP submitted at Deadline 6 to 'Development of detailed design'. The scope of Chapter 4 has also been amended to include a 'Design Vision' section, which outlines the Schemes design vision and objectives, and the Principles (Table 4.1) have been updated with consideration of the entire Scheme.	We have no further comments to make beyond those made at Deadline 6, but would reiterate that if the purpose of the Stakeholder Consultation Group (SCG) includes being consulted on the detailed design of the scheme, then we consider the EA should be included in the list of stakeholders who form the SCG.
De.2.4	Applicant All Interested Parties	<b>OEMP, Chapter 4: Detailed Design [REP4-020]</b> Para 4.4.4: Should consultation also take place on: i. River Till viaduct? ii. Countess flyover? iii. Green Bridges?	As we believe the River Till viaduct would be outside of the WHS, then yes this this should be included, along with any other relevant activities outside of the WHS.  Consultation with the EA in terms of flood risk needs to occur with any part of the development which is within 8 metres of a main river and/or within the flood plain. As our flood risk permitting is included within this DCO, we will certainly need to be consulted on the River Till crossing (both temporary and permanent).	1. The OEMP [REP4-020] already requires consultation to take place with the Stakeholder Consultation Group on Green Bridge Four (para. 4.5.3 (b)1) and with Wiltshire Council on the River Till Viaduct (item D-LAN4).  2. The western facing slip roads of Countess Junction (and therefore some of the retaining walls) are within the World Heritage Site. Section 4.5.3 (b) of the OEMP submitted at Deadline 6 has been extended to include the relevant work number (1H(iii)) to ensure consultation with the renamed Stakeholder Design Consultation Group (SDGC) is undertaken on this element.  3. Section 4.5.4 (b) of the OEMP submitted at Deadline 6 has been updated to include the flyover at Countess junction. This provides for consultation with the SDCG on this element.	We have no further comments to make beyond those made at Deadline 6.

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				4. In addition to these points, Highways England can confirm that item D-LAN4 has been amended within the OEMP submitted at Deadline 6 to require consultation with Wiltshire Council on the general external appearance and finishes of Green Bridges 1 to 3 and the B3083 underbridge. Green Bridge Four has a number of controls imposed on it through items D-CH4, D-CH10 and D-CH23 of the OEMP, such that further consultation on finishes is not needed.	
DCO.2	<b>Draft Development Consent Order (dDCO)</b>				
<b>Part 2 – Works provisions</b>					
<b>Principal powers</b>					
DCO.2.15	Environment Agency	<p><b>Article 7 – Limits of deviation</b></p> <p>In the light of the Applicant's DL4 written summary of oral submissions put at the DCO hearing on 4 June 2019 [REP4-029], are there any outstanding concerns as regards the interaction between the vertical LoD of the proposed tunnel and groundwater flows?</p>	<p>We maintain our position that any deviation from the specific vertical alignment used to represent the tunnel in the numerical groundwater model (Fig. 3.9 of Environmental Statement Appendix 11.4 Annex 1: Numerical Model Report (AMW, July 2019)) or design or construction methodology proposed will require this modelling to be repeated to ensure it will not lead to greater impacts. This is because the representation of the tunnel in the model was based on the specific groundwater levels and tunnel elevations as shown in the figure.</p> <p>As suggested by the Applicant in their written summary of oral submissions put at the DCO hearing on 4 June 2019 [REP4-029], we agree that assessment of the final detailed design, including any further numerical modelling as referred to above should be included in the Groundwater Management Plan as required by MW-WAT10 of the OEMP.</p>	<p>The Applicant has responded to this point in a post hearing note included in its summary of oral submissions at the DCO ISH [REP4-029] under agenda item 3.5, reproduced below for ease of reference:</p> <p><i><b>Post Hearing Note:</b> in response to concerns raised by the Environment Agency in relation to the interaction between the vertical limits of deviation of the proposed tunnel and groundwater flows, it should be noted that the Applicant responded to this point in part at Deadline 3, as part of its comments on written representations [REP3-013]. The Environmental Statement has assessed the impacts on groundwater flows as a result of the Scheme, including the tunnel. A precautionary approach was taken in respect of the tunnel alignment and depth. The Outline Environmental Management Plan includes controls in respect of groundwater impacts, particularly by reference to the obligation in item MW-WAT10 to produce a Groundwater Management Plan in consultation with the Environment Agency. This would include a risk assessment in relation to the final design, as well as a monitoring regime with trigger levels and actions. There are therefore sufficient controls in place to ensure any impacts on groundwater flows would be mitigated adequately. It should also be added that the Environment Agency has further controls by virtue of the protective provisions for its benefit contained in Part 5 of Schedule 11 to the draft Development Consent Order."</i></p> <p>The Applicant further notes that the limits of deviation in article 7 establish the parameters for the authorised development for which the Applicant seeks development consent and it would be unnecessary to require consultation on their exercise for the reasons that the limits of deviation have been thoroughly assessed in the Environmental Assessment (see Chapter 2, [APP-040]) and that further detailed consultation continues to take place throughout this Examination. This position is consistent with that set out at Issue Specific Hearing 1 on the Development Consent Order, held on 4 June 2019 and contained within the Written Summary of Oral Submissions of that Issue Specific Hearing [REP4-029]. The Applicant considers that the measures in the OEMP referred to above would appropriately address the Environment Agency's concerns in a focussed manner, without imposing the unnecessary and duplicative requirement to consult.</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>The movement of the proposed tunnel vertical alignment within the limits of deviation <b>have not</b> been assessed to date. The numerical groundwater model simulated the presence of the tunnel by making very specific adjustments to the hydraulic conductivity of the aquifer along the tunnel's length based on the proportion of the tunnel that lay below the water table. Vertical movement of the tunnel alignment will alter this proportion and therefore has potential to alter the degree of impedance to groundwater flow and the magnitude and extent of impacts.</p> <p>A further assessment was made by the Applicant and reported in 8.23 – Implications of 2018 Ground Investigations to the Groundwater Risk Assessment submitted at DL3 where a specific vertical alignment of the tunnel was compared to potential preferential flow horizons identified from borehole logs and geological cross sections. No discussion or assessment was made of the implications of altering the vertical alignment within any stated limits of deviation. We therefore disagree with the Applicant's statement at DL6 that "the limits of deviation have been thoroughly assessed".</p> <p>We are however in agreement with the Applicant in that assessment of the final design of the scheme, including any altered vertical alignment, is expected in the Groundwater Management Plan as required by MW-WAT10 of the OEMP.</p>

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<b>Supplemental powers</b>					
DCO.2.20	Environment Agency	<p><b>Article 13 – Discharge of water</b> Please set out any proposed amendments to Article 13 in relation to groundwater together with the reasons for seeking these changes.</p>	<p>The latest draft DCO dated June 2019 has not incorporated our recommended amendments to Article 13. We therefore wish to repeat our recommendation provided in our previous representations and at the groundwater hearing which state:</p> <p>We recommend that this article be amended to include groundwater and dissolved pollutants in the text. This is required because groundwater is a sensitive resource in the vicinity of the A303 Amesbury to Berwick Down site and requires particular protection. Here is our recommended amended wording:</p> <p>“Discharge of water (5) The undertaker must take such steps as are reasonably practicable to secure that any water discharged into a watercourse or public sewer or drain <u>or to the ground</u> under this article is as free as may be practicable from gravel, soil or other solid substance, oil or matter in suspension or <u>dissolved pollutants.</u>“</p> <p>This amendment is in line with the draft DCO recently discussed at the A303 Sparkford to Ilchester DCO Examination in Somerset. Please see Part 4 (Supplemental Powers) Article 20 Discharge of water of the A303 Sparkford to Ilchester DCO.</p>	<p>The Applicant responded to this suggested drafting in its deadline 4 submission [REP4-036] at reference 12.2.2. For ease of reference, that response is reproduced below: <i>“The Applicant notes the Environment Agency’s concerns which the Applicant considers to be unwarranted in the context of article 13. The purpose and effect of article 13 is to establish a procedure whereby the Applicant can obtain the necessary proprietary right to discharge water, either to public sewers or drains, or watercourses. It does not authorise discharges to the ground. It imposes duties on the Applicant to obtain the consent of the appropriate owner before doing so (who may impose reasonable conditions) and to ensure that the water so discharged is visibly clear from “gravel, soil or other solid substance, oil or matter in suspension” to ensure that the Applicant is prevented from adversely affecting the functioning of the drainage system to which it connects.</i></p> <p><i>However, the article is not concerned with pollution control, as is expressly acknowledged in paragraph (6), which makes clear that nothing in this article overrides the requirement to obtain an environmental permit. Any discharge to a watercourse that constitutes a water discharge activity would be subject to the regulation of the Environment Agency under the Environmental Permitting (England and Wales) Regulations 2016. The Applicant further notes that the drafting of this article in the form contained in the draft development consent order is very well precedented, having been included in the majority of development consent orders made to date and has been subject to only modest changes (principally the change in paragraph (6) to reflect changes in the regulation of the discharges of water and in paragraph 7(a) to reflect the change in name of the Homes and Community Agency).</i></p> <p><i>As such, the Applicant considers that the change requested is unnecessary as it would duplicate regulation.”</i></p>	<p>We maintain our position as stated in our response to Examining Authority’s questions (EXQ2) made at Deadline 6, in particular due to the sensitivity of the groundwater in this area. We have no further comment at this time.</p>
<b>Schedule 2 – Part 1 – Requirements</b>					
DCO.2.34	Environment Agency	<p><b>Requirement 3 (1) and (2) – Preparation of detailed design etc</b> The Applicant’s DL4 written summary of oral submissions put at the DCO hearing on the 4 June 2019 [REP4-029] and the post hearing note in relation to Requirement 3 indicates that it does not consider it appropriate for the Environment Agency to be consulted by the Secretary of State when he or she is considering whether to approve a departure from the plans specified in the Requirement.</p> <p>i. Please indicate whether there are any particular circumstances in relation to this scheme that would support the need for consultation.</p>	<p>We do not consider that the Secretary of State is suitably qualified to determine whether any deviations from the plan will lead to materially new or materially adverse impacts on the environment. We consider that such assessment falls within the expertise and remit of the Environment Agency and would request that we are consulted in the same way that Requirement 3 specifies consultation with the planning authority (Wiltshire Council) on matters related to its functions.</p> <p>Due to the highly sensitive nature of groundwater and surface water resources in the vicinity of the scheme from both quantity and quality perspectives we should be consulted on any changes to the proposed design of the scheme and if any construction dewatering is deemed to be required since the assumption to date has been that no dewatering will take place.</p> <p>We consider that the Environment Agency should be consulted by the Secretary of State when he or she is considering whether to approve a departure from the plans. This is because the project crosses two river corridors (River Avon and River Till) which are SAC’s and because ground water is a very sensitive resource in the area and requires particular protection. As such we would recommend that the Environment Agency</p>	<p>The Applicant responded to this point when raised by the Environment Agency in its response to the Examining Authority’s first written question DCO.1.83. The Applicant’s comments on that response are contained in its Deadline 4 submission [REP4-036] at 12.1.6. For ease of reference the response is reproduced below: <i>“The Applicant does not consider it appropriate to specify that the Environment Agency must be consulted by the Secretary of State when he or she is considering whether to approve a departure from the plans specified in that requirement, which would not give rise to materially new or materially worse adverse environmental effects from those reported in the Environmental Statement. By its nature, any application under this requirement would necessarily be for a minor change.</i></p> <p><i>The Applicant further notes that the robustness of this justification is borne out by the fact that there is no precedent for the Environment Agency to be consulted on this kind of requirement and that there are no particular circumstances in relation to this Scheme that would appear to justify the departure from established precedent. In the event that the limited degree of flexibility afforded by an application under requirement 3 were to be exercised, construction of the Scheme would still be subject to the requirements, in particular requirement 4 which secures compliance with the OEMP under which the Environment Agency is consulted as specified, on matters relating to its functions.”</i></p> <p>The Applicant does recognise the unique nature of this scheme and that, in certain, appropriate circumstances, a minor change may nevertheless be of</p>	<p>Whilst we welcome the acknowledgement by Highways England of the sensitivity of this scheme and their inclusion of “other persons considered appropriate” within the Secretary of State’s duty to consult, we should suggest the following further amendment to Requirement 3 (1) to require the Secretary of State to consider this and consult both the planning authority and any other person considered appropriate, having regard to the proposed amendments in question, and also those with the statutory roles and responsibilities of the interested parties to the Scheme:</p> <p>Requirement 3 (1) “...following consultation with the planning authority on matters related to its functions and any other person the Secretary of State considers appropriate having regard to the proposed amendment in question <u>and the statutory roles and</u></p>

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		ii. Please comment on whether the fact that the scheme would still be subject to Requirement 4 which secures compliance with the OEMP [REP4-020] would provide sufficient safeguards and obviate the need for consultation with the Environment Agency to be included within Requirement 3?	<p>must be consulted on any departure from the plans and no development should take place until the Environment Agency has confirmed that all apparent environmental risks associated with the departure from the plans have been considered and mitigated.</p> <p>The Environment Agency does not consider that Requirement 4 is sufficient to allay concerns of not being consulted under Requirement 3 above.</p>	<p>potential significance to certain interested parties. As such revision 4 of the DCO amends this requirement to require the Secretary of State to consider this and consult both the planning authority and any other person considered appropriate, having regard to the proposed amendments in question. Further detail is provided in the Applicant's response to the Examining Authority's Second Written Question DCO.2.35.</p>	<p><u>responsibilities of the interested parties to the Scheme</u>.</p> <p>As a statutory consultee we consider it appropriate that we are consulted on any changes to the proposed scheme.</p>
DCO.2.43	Wiltshire Council National Trust Historic England English Heritage Environment Agency	<p><b>Requirement 4 – Outline Environmental Management Plan</b> The Applicant's DL4 written summary of oral submissions put at the DCO hearing on the 4 June 2019 [REP4-029], refers to the amended OEMP submitted at DL3 and the provision for consultation contained therein [REP3-006]. Do the parties have any outstanding concerns in this respect and would the provision for consultation be satisfactorily secured by the dDCO Requirement 4?</p>	<p>We note that dDCO Requirement 4 requires adherence with the OEMP. The requirement itself does not mention consultation, however the OEMP does.</p> <p>OEMP submitted at DL3 has since been updated and re-submitted at DL4.</p> <p>We are satisfied that the OEMP (submitted at DL4) includes consultation with the Environment Agency on preparation of CEMPs (PW-G1, MW-G5), revision of the CEMPs (MW-G6), preparation of management plans including Groundwater Management Plan and Water Management Plan (MW-G7) and preparation of the Handover Environmental Management Plan (MW-G11). However we consider the OEMP and dDCO Requirement 4 should state that the applicant should "consult with Environment Agency to ensure all environmental risks have been adequately assessed and <b>that suitable mitigation measures are proposed and implemented</b> to offset any impacts predicted".</p> <p>For all but the HEMP (MW-G11), the OEMP requires the contractor to submit a summary report of the consultation to the Authority including reasons should consultee's comments not be reflected in the submission. We request that this clause also be added to MW-G11 to ensure that any disagreement between the contractor and consultees is highlighted to the Authority before they determine any approval.</p>	<p>The OEMP requires the production of the CEMPs and HEMPs. The definition of OEMP in Schedule 2 of the draft DCO submitted at Deadline 6 has been amended to make this clearer. There is multiple provision for consultation of the Environment Agency throughout the provisions of the OEMP. See SWQ DCO.2.44 and 47 for the explanation of why Highways England approving the CEMP and HEMP is required and reasonable and is sufficiently regulated.</p>	<p>We maintain our position as stated in our response to EXQ2 made at Deadline 6.</p> <p>The latest OEMP does not contain this reference at MW – G11 (ie does not have the requirement for consultation and the summary report, etc). In respect of the HEMP and MW – G11 we would suggest the following amendment: "The HEMP must detail the consultation received from the interested parties and also provide whether those responses have been incorporated within the HEMP or not".</p>
DCO.2.57	Environment Agency Wiltshire Council	<p><b>Requirement 7 – Contaminated land</b> Please comment on whether any further drafting changes are necessary for this Requirement and/ or any additional Requirements are necessary in relation to contaminated land?</p>	<p>The amended Requirement 7 in the draft DCO submitted at DL4 is satisfactory for dealing with previously unidentified contamination that may be found during construction.</p> <p>However, there still does not appear to be any requirement for the applicant or their contractors to assess and if necessary remediate potential contamination that was identified in the Environmental Statement. We consider therefore that a more proactive approach should be taken to the management of contamination where it may be reasonably expected and it is not sufficient to wait until it is uncovered during construction before action is taken to assess and remediate it. This will help to ensure that any land contamination is appropriately managed and help to reduce the risk of land</p>	<p>The Applicant has responded previously to this point in its deadline 4 submission. The Applicant noted that it considers requirement 7 is drafted appropriately, see DCO.1.99 [REP2-030], responses to the Environment Agency's Written representation [REP3-13], the Applicant's comments on the Environment Agency's response to the Examining Authority's question DCO.1.100 [REP3-016] and response to B1.17 of Wiltshire Council's Local Impact Report [REP3-014].</p> <p>Regarding the additional investigations the Applicant is undertaking, this are summarised in [REP4-036] at 12.1.7. For ease of reference that response is reproduced below:</p> <p><i>"Further to Highways England's response to the Environment Agency's Written Representation [REP2-094], in paragraph 22.2.19 of the Submission - 8.18 -Comments on Written Representations [REP3-013], further explanation on the ground investigation rationale and progress to date is provided here. The Phase 7 ground investigation is a 2-year ground investigation programme split into two phases (Phase 7A and Phase 7B). The first phase (Phase 7A) is to provide identified supplemental information to inform the main works tender design. Going forward, it is Highways England's intention</i></p>	<p>We maintain our position as stated in our response to EXQ2 made at Deadline 6.</p> <p>We welcome the proposed ground investigation referred to in the Applicant's response to EXQ2. However, to ensure that any contamination discovered during these investigations does not cause delay during construction or pose unacceptable risk to the environment, we maintain that the investigations are reported on and where necessary remediation schemes agreed, prior to commencement of construction of the scheme. We consider that this should be secured by pre-commencement</p>

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			contamination identified during construction delaying construction works.	<p><i>to work with tenderers to finalise the ground investigation scope for Phase 7B to support their design whilst also taking onboard the views of stakeholders. The Phase 7A ground investigation is split into two parts; Phase 7Ai and 7Aii. Phase 7Ai commenced on Monday 10th June 2019 and is expected to last approximately 5 to 6 weeks. Phase 7Aii is planned to start after the farmers' harvest around August 2019 but precise commencement dates are still to be confirmed.</i></p> <p><i>The Phase 7Ai investigation includes for four boreholes within the former RAF Stonehenge site that is crossed by an approximate 800m length of the proposed Scheme (in tunnel). An additional 12 no. exploratory holes are planned during the Phase 7Aii ground investigation to the west of these boreholes where the proposed Scheme passes directly south of the former RAF Stonehenge site and out of the tunnel through the western tunnel portal. Phase 7Ai also includes for four boreholes in the area of the former RAF Oatlands Hill site, albeit clustered around the proposed Longbarrow Green Bridge No. 3. However, Phase 7Aii includes for wider coverage of this site with an additional 7 no. boreholes, 3 no. trial pits and 5 no. windowless sample boreholes.</i></p> <p><i>An approved Factual Report is expected at the end of September 2019 for Phase 7Ai."</i></p> <p>The matter was also discussed at the DCO ISH under agenda item 4.6. The Applicant's written summary of its oral submissions [REP4-029] and SWQs DCO.2.56 and FG2.28 set out in further detail why the Applicant considers that the drafting in requirement 7 allows for a proportionate, risk based approach to previously unidentified contamination.</p>	Requirement (in addition and separate to Requirement 7) specifying agreement with the local authority on risks to human health and the Environment Agency on risks to controlled waters.
DCO.2.64	Wiltshire Council National Trust Historic England English Heritage Environment Agency	<b>Requirement 11 - Details of consultation</b> Are there any outstanding concerns as regards the provision for consultation with relevant stakeholders and the means whereby this would be secured by the dDCO?	We are satisfied that this Requirement will ensure our views are communicated to the Authority prior to it making decisions on discharge of Requirements. However as detailed above, we consider the OEMP and dDCO Requirement 4 should state that the applicant should "consult with Environment Agency to ensure all environmental risks have been adequately assessed and <b>that suitable mitigation measures are proposed to be put in place</b> to offset any impacts predicted."	The Applicant welcomes the support of the Environment Agency of this provision. In respect of reporting on consultation, and explaining why consultee recommendations have not been followed, measures that mirror requirement 11 were included in the updated OEMP submitted at deadline 4 [REP4-021] in respect of the CEMP, see in particular measures PW-G1 in respect of the preliminary works CEMP and MW-G1 in respect of the main works CEMP. The Applicant maintains its position that as the strategic highways company, with responsibility for operating, maintaining and improving the strategic road network and for setting the standards for such roads through the Design Manual for Roads and Bridges, it is the appropriate body to approve the CEMPs.	The inclusion of the contents of Requirement 11 within the OEMP with reference to the CEMP (PW G1) provide the opportunity for the Environment Agency to make representations that "suitable mitigation measures" either have, or have not, been put in place. This will enable the Environment Agency to alert the approving authority in respect of any concerns.
DCO.2.68	Environment Agency	<b>Additional Requirements</b> Please indicate and explain further, with reference to relevant local and national policies on this topic, the contributions to improvements to waterbodies that could potentially be achieved as a result of the scheme and why it would be reasonable and necessary to secure this within the dDCO.	<p>As discussed in our previous written representations, we would recommend that a Requirement be included in the draft DCO relating to the need for an Environmental Enhancement Plan to be produced and submitted by the applicant. Alternatively we would be satisfied for the production of the plan to be included in the OEMP or HEMP. This could be included in the list of plans in OEMP reference MW-G7 and then the implementation/maintenance aspects covered in the HEMP as required.</p> <p>In terms of the contributions to improvements to waterbodies that could potentially be achieved as a result of the scheme, we can provide some specific examples, which are discussed below. These waterbodies have been impacted by previous road constructions and would benefit from being improved through the latest A303 Stonehenge road scheme.</p>	The Applicant has previously responded to this point, see paragraphs 23.2.2.42 to 23.2.47 [REP3-013] and the summary of oral representations made at ISH1 regarding the DCO, items 4.11-4.12. In summary, the Applicant considers that its Scheme meets policy requirements on environmental net gain and it would achieve modest improvements to biodiversity of waterbodies. Please also see the Applicant's response to the Examining Authority's Second Written Question DCO.2.68, which sets out why the Applicant considers the requested requirement to be unjustified, as unnecessary in the context of the applicable local and national policy.	We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.

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			<p>The Countess Channel and Bowles Hatches example provided below was submitted for the Environment Designation funding bid for 2019/20 but has currently been deferred. We understand the applicant may be relying on the Environment Designated Funds to address our concerns that the A303 Stonehenge scheme is lacking in environmental enhancement relating to the water environment. However, to date we do not have agreement for any proposals in the River Avon or River Till catchments relating to the Highways England Environment Designated funds. We therefore seek more certainty in delivering environmental enhancements that are required in these catchments, which we believe could be achieved in the production and implementation of an Environmental Enhancement Plan as part of the dDCO.</p> <p><b>Countess Channel and Bowles Hatches</b> are located on the River Avon on the northern edge of Amesbury, very close to the proposed A303 Stonehenge road scheme. Please see the attached map (Map 1). These reaches of the Upper Avon are part of the River Avon Restoration Plan. The reaches are part of SSSI unit 4 which is in unfavourable condition for inappropriate water levels, inappropriate modification of the channel form, physical processes and siltation.</p> <p>The river has been modified repeatedly through history and now has a rather complex layout. The key structures here are a weir which feeds flow toward the Countess channel, Bowles Hatches, three modern road bridges and one historic (disused) road bridge. The historic alignment of the River Avon can be inferred from examining LiDAR topographic data in conjunction with historic mapping dating back to 1879. It appears that a “double dog leg” bend upstream was removed when the A303 was built, in the 1960s. This presumably allowed the bridge to be built in the dry, on slightly higher ground, and the river was then diverted to flow under the bridge in a new excavation.</p> <p>The original channel remained downstream of the bridge and its upper end now forms the highway toe drain. Fish passage is currently impeded by Bowles hatches and the Countess weir.</p> <p>The primary restoration objectives for this reach are to remove the restriction to fish passage caused by the weir and the hatches and to improve the physical condition and habitat of the river channels. This will help towards improving the target condition, which is currently ‘unfavourable’, of the SSSI/SAC.</p> <p>The preferred option for this reach is to regrade the channel around the weir and reinstate the majority of the flow in the Countess channel, while leaving enough flow along the hatches feeder to maintain a healthy watercourse. This will create a more sustainable river system by reinstating a naturally functioning river</p>		

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			<p>channel which would adapt naturally to flood flows. This would improve drainage and preventing silt build up behind structures and within drainage channels, which potentially could impact the road network.</p> <p>This project will help natural sediment transport along the river whilst also benefiting the designated species and habitats currently not present along this reach of the River Avon.</p> <p>In 2014 the Environment Agency undertook appraisal, consultation (with landowners and fishing clubs) and drew up outline designs for this work; however, this project has not been progressed due to the complexity of the site and resources pressures within the programme. There is currently no secured funding for this work but our delivery partners are keen to progress this project if resources are available to do so. Highways England will be a key partner in this project due to the close vicinity of the A303 and their road drainage networks. This project was submitted for the Environment Designation funding bid for 2019/20 but has currently been deferred.</p> <p>The Countess Channel and Bowles Hatches proposals, as well as others in the River Avon and River Till catchments that are currently less worked up, would contribute to restoration of the rivers Avon and Till (both SAC and in unfavourable condition) which the A303 currently crosses and additional crossing proposed. We can provide more detail on the river restoration proposals if required.</p> <p>There is <u>no commitment within the current A303 Stonehenge road scheme</u> to directly enhance the area nor take advantage of existing partnership opportunities that may contribute to overall net gain and achieve multiple benefits.</p> <p>Multiple benefits could be achieved by contributing to climate change resilience, potential air quality/noise benefits from any increased (wet) woodland, wellbeing and recreational benefits from angling and other public opportunities, not least alongside species and habitat improvements from improved morphology.</p> <p>This would commit Highways England to explore and utilise the opportunities within the Hampshire Avon Catchment Partnership to deliver the River Avon Restoration Plan and its associated multiple benefits.</p> <p><b>Local and National policies</b> There are government aspirations for river restoration, net gain, partnership working and multiple benefits. These include: Making Space for Nature, Biodiversity 2020: A Green Future: 25 Year Environment Plan; National Planning Policy Framework (NPPF); SW River Basin Management Plan; and the River Avon Salmon Action Plan.</p>		

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			<p>In particular we would reference the recent Biodiversity Net Gain good practice guidance as published by CIEEM and CIRIA (and 2019 government consultation), promoting:</p> <ul style="list-style-type: none"> <li>○ Being inclusive, equitable, sharing benefits amongst stakeholders;</li> <li>○ Being additional to achieve conservation outcomes that demonstrably exceed existing obligations;</li> <li>○ Optimise sustainability and the wider environmental benefits for a sustainable society and economy.</li> </ul> <p>On a more local level the River Avon Restoration Plan sets out the aims for the River Avon catchment.</p> <p>We consider it would be reasonable and necessary to secure this within the dDCO for the reasons outlined above. In particular to fulfil the aims of the River Avon Restoration Plan; to maximise the water environment opportunities in the vicinity of the A303 road scheme; and to ensure the scheme satisfies the requirements of national and local policy.</p>		
Fg.2	<b>Flood risk, groundwater protection, geology and land contamination</b>				
Fg.2.2	Applicant Environment Agency Wiltshire Council National Farmers' Union	<p><b>Flood risk and drainage</b></p> <p>i. How would the discharge of any water from the construction phase, including any dewatering of the tunnel arisings slurry be controlled to prevent flood risk and contamination?</p> <p>ii. Should this be explicitly addressed in the OEMP?</p>	<p><b>Prevention of pollution</b></p> <p>i. Discharges to ground or surface water from the construction phase would be subject to the Environmental Permitting Regulations 2016 and may require an environmental permit. The Environment Agency should be contacted at the earliest opportunity and/or reference to the Environmental Permits pages of the GOV.uk website once the details of any discharges are known, to allow determination of whether a permit will be required. If a permit is issued it will be the responsibility of the applicant to ensure their discharge does not cause flooding or pollution. Any such requirement may be conditioned.</p> <p>ii. Since these discharges are covered by existing legislation we do not consider it necessary to address explicitly in the OEMP.</p> <p><b>Flood Risk</b></p> <p>The construction method at present does not appear to require any dewatering. It is essential that any changes to the detailed design are adequately risk assessed. The EA should be consulted on any updated design and risk assessment and agreement reached with the EA regarding conclusions and any mitigation measures proposed. No works should commence until written agreement that these plans provide appropriate measures and mitigation to protect the site and surrounding area from flood risk during construction and operation of the scheme.</p>	<p><b>i. How would the discharge of any water from the construction phase, including any dewatering of the tunnel arisings slurry be controlled to prevent flood risk and contamination?</b></p> <p>1. MW-WAT3 of the Outline Environmental Management Plan (OEMP) [REP4-020] requires the main works contractor to utilise sustainable methods for construction waste water discharges, including site drainage, surface runoff, and dewatering discharges including waste water generated through the dewatering of the tunnel arisings. This includes discharge to watercourses or groundwater subject to water quality and rate of discharges and scour assessments (for surface watercourses only) in accordance with the provisions of the draft Development Consent Order (dDCO). For discharges to mains foul or combined sewers relevant permissions will be obtained from the statutory undertaker. Discharge to watercourses or groundwater will, insofar as not dealt with in the dDCO Article 13 Discharge of Water [REP4-019], only be permitted where permits or other relevant approval has been obtained.</p> <p>2. Sufficient time will be made for the Environment Agency to issue permits in accordance with relevant legislation. The main works contractor shall ensure that site drainage meets the effluent and flood risk standards required by the sewerage undertaker and the Environment Agency, as appropriate, in accordance with the relevant permit, and will provide and maintain holding or settling tanks, separators and other measures as may be required to meet those standards. The above methods will also reflect any necessary consultation between the Environment Agency and Wiltshire Council regarding any potential surface water or groundwater flood risk that could arise from regulated discharges of water. This is reflected in the Statement of Common Ground (3.28.16) and OEMP (MW-WAT 2, MW-WAT 3, MWWAT 7, MW-WAT 10) as submitted at Deadline 6. The main works contractor shall ensure that access is provided to the undertaker and Environment Agency so that samples of discharge can be obtained and analysed, and the flows verified as required. The main works contractor shall incorporate the following measures during the construction works:</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>Depending on the level of dewatering required if the applicant does have to change their construction methodology, the amount of water from dewatering may have a potentially significant impact due to the quantity being released and the risks this may cause downstream. Therefore this would need to be adequately managed.</p> <p>We therefore recommend some wording to be included in the OEMP similar to that provided below. MW-WAT12 (Flood Risk Management Plan) would appear to be the best place to include this:  "The construction method at present does not require any dewatering. It is essential that any changes to the detailed design are adequately risk assessed. The EA should be consulted on any updated design and risk assessment, and agreement reached with the EA regarding conclusions and any mitigation measures proposed. No works should commence until written agreement that these plans provide appropriate measures and mitigation to</p>

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				<p>3. all temporary land-take will include adequate areas of land set aside for robust control measures, for example sustainable drainage control;</p> <p>4. any discharge to sewers and controlled waters will be required to be in accordance with the dDCO provisions, having regard to the relevant licensing body's requirements;</p> <p>5. water flows from sites will be limited during construction to existing runoff rates, unless otherwise agreed with the Environment Agency in accordance with relevant legislation; and</p> <p>6. the relevant sections of BS 6031: Code of Practice for Earthworks for the general control of site drainage will be followed.</p> <p>7. The principle behind the dewatering of the tunnel arisings through the Slurry Treatment Plant is to allow for the sustainable recovery and recirculation of the water/bentonite slurry through the tunnelling process for as long as practicable. There will be a limit to this sustainable re-use before fresh slurry is required and the waste water generated will require management in accordance with relevant permissions of the statutory undertaker or Environment Agency as appropriate.</p> <p><b>ii. Should this be explicitly addressed in the OEMP?</b></p> <p>8. The OEMP as submitted at Deadline 6 includes sufficient provisions to control discharges arising from construction and dewatering. In addition to the references made to the OEMP in the answer to (i), further reference to relevant measures contained in the OEMP was made in the 'Written Summaries of oral submissions at Issue Specific Hearings - Flood risk, Groundwater, Geology and Waste' [REP4-032] held on 11th June and specifically in agenda item 7.3. MW-GEO8 of the OEMP, confirms the measures required to prevent cross contamination from stockpiled materials, and to protect buried services, drainage runs and groundwater source protection zones from potential ingress of contaminants. MW-GEO6 requires contractors to control potential hazardous substances in line with COSHH guidance; MW-WAT4 requires a spill response procedure and pollution incident control plan; MW-WAT6 requires the contractor to establish measures to prevent deposition of silt or other material in any watercourse, lake or aquifer, in accordance within industry guidelines; and MW-WAT7 requires contractors to carry out handling of contaminated material treatment processes and storage that does not affect the chalk aquifer.</p>	<p>protect the site and surrounding area from flood risk during construction and operation of the scheme."</p>
Fg.2.3	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b></p> <p>i. Given the Council's statutory role should MW-WAT3 be expanded to also require consultation and/ or agreement with the Council as well as the Environment Agency?</p> <p>ii. If so, should this just be in respect of part c or more generally?</p>	<p>We agree Wiltshire Council should be consulted as well as the EA. We believe this should apply to the entirety of MW-WAT3.</p>	<p><b>i. Given the Council's statutory role should MW-WAT3 be expanded to also require consultation and/ or agreement with the Council as well as the Environment Agency?</b></p> <p>1. i and ii: The Applicant has amended the Outline Environmental Management Plan (OEMP) item, MW-WAT3 (c) at Deadline 6 to make reference to Wiltshire Council. Reference to the Council is not needed elsewhere in this item as the other references to the Environment Agency relate to legal powers that are not held by Wiltshire Council, e.g. control of discharges.</p>	<p>We welcome the amendment of MW-WAT3 in the revised OEMP submitted at DL6 that specifies agreement with Wiltshire Council over runoff rates in excess of existing rates.</p>
Fg.2.5	Applicant Environment Agency	<p><b>Flood risk and drainage</b></p> <p>Please provide an update on the discussions in respect of the FRA. In particular please outline any areas of disagreement, where additional information is required, and any</p>	<p>Since Deadline 4, we have held some useful discussions with the applicant with regard to flood risk issues. We have agreed some amendments to the OEMP in MW-WAT12 and MW-WAT13, which we believe will be reflected in the next version. This addresses our concerns in relation to flood risk matters.</p>	<p>1. All matters regarding the flood risk assessment (FRA) have now been agreed with the Environment Agency. This is reflected in the updated Outline Environmental Management Plan (OEMP) submitted at Deadline 6, 26<sup>th</sup> July 2019 and updated Statement of Common Ground (SoCG) that will be submitted at Deadline 7.</p>	<p>We agree that our previous concerns have now been resolved due to the amendments made within the updated OEMP. This is also confirmed in our SOCG as matters that have been agreed.</p>

ExQ2	Question to:	Question	EA response 26 July 2019	Highways England comments to ExQ2 26 July 2019	EA response to HE comments 8 August 2019
		consequential implications for other documents such as updates to the OEMP?	<p>Provided that our agreed amendments are incorporated into the OEMP we would have no flood risk matters in the Statement of Common Ground (SOCG) within disagreement or under discussion, as all our issues should be moved to areas within agreement in the next version of the SOCG, which we believe will be submitted at Deadline 7. We will be able to provide definite confirmation of our flood risk position, once we have reviewed the next version of the OEMP.</p> <p>At this stage we are happy with the hydrological fluvial modelling which has been completed.</p>		
Fg.2.6	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b></p> <p>i. Should the Flood Risk Management Plan be listed in MW-G7 of the OEMP and should the plan be developed in consultation with Wiltshire Council as well as the Environment Agency?</p> <p>ii. If not, why?</p>	Yes we agree that the Flood Risk Management Plan should be listed in MW-G7 of the OEMP and that the plan should be developed in consultation with both Wiltshire Council and the Environment Agency.	1. The Applicant can confirm that item MW-G7 of the Outline Environmental Management Plan (OEMP) [REP4-020] has been amended (within the updated OEMP submitted at Deadline 6) to list the Flood Risk Management Plan as part of the Water Management Plan. The Applicant can also confirm that item MW-WAT12 has been amended within the updated OEMP to make reference to the Flood Risk Management Plan being developed in consultation with Wiltshire Council (in so far as relevant to its functions as lead local flood authority).	We are pleased that MW-G7 has been amended within the OEMP to include Flood Risk Management Plan as part of the Water Management Plan. We are also satisfied with the amended wording of MW-WAT12 of the OEMP now that it has been amended as recommended. We have no further comments.
Fg.2.8	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b></p> <p>i. Please provide an update on the discussions about the climate change allowance for road drainage.</p> <p>ii. If the Applicant considers that a 30% allowance (with a 40% sensitivity check) is sufficient please respond to the Council concerns in respect of reliance on the freeboard, lack of allowance for any uncertainty and that climate change allowances may increase in the near future?</p> <p>iii. Could the Environment Agency set out its position on this matter?</p> <p>iv. Should MW-WAT12 be updated to include reference to climate change allowances in line with the comments made by the Environment Agency at DL4 [REP4-049]?</p>	<p>Further discussions with the applicant with regards to the road drainage ponds has suggested they may be able to be removed from the 1%AEP plus appropriate allowance for climate change flood extent, which will remove the impact it has on the flood plain by displacing flood water.</p> <p>As part of our strategic overview role we support Wiltshire Council with the upper allowance (40% for surface water) being applied to the road drainage design. This is due to the consequences of the testing of this allowance on the proposed design and the freeboard being used up. An alternative option for HE is to demonstrate that no increase in flood risk is caused by not designing the road drainage to the 40% allowance.</p> <p>UKCP18 projections relating to peak rainfall intensity and peak river flow are due to be released in 2019. This may result in the allowances for surface water and rivers changing and requiring reflection within this application.</p> <p>With regard to MW-WAT12 of the OEMP, we have agreed some wording that addresses our comments made in relation to climate change allowances. We believe this wording is to be included in the next version of the OEMP.</p>	<p><b>i. Please provide an update on the discussions about the climate change allowance for road drainage.</b></p> <p><b>ii. If the Applicant considers that a 30% allowance (with a 40% sensitivity check) is sufficient please respond to the Council concerns in respect of reliance on the freeboard, lack of allowance for any uncertainty and that climate change allowances may increase in the near future?</b></p> <p>1. In response to point i and ii: Discussions with Wiltshire Council (WC) and the Environment Agency (EA) have continued. A meeting attended by both parties and Highways England was held on the 20th June 2019, to clarify the rational and background information to the points raised concerning the highway drainage and climate allowance. The items discussed were,</p> <ul style="list-style-type: none"> <li>• The design is based on a 1 in 100 year+30% allowance for climate change with a 300mm freeboard being maintained.</li> <li>• The drainage treatment areas capacity was tested against an upper end allowance of 40% for climate change, the remaining freeboard is more than 250mm at each drainage treatment area.</li> <li>• To reduce the freeboard to zero the climate change allowance would have to be increased to between 66% and 84%.</li> <li>• For the highway drainage to overtop the drainage treatment areas the design year return period storm would have to be greater than a 1 in 1000year return period storm.</li> </ul> <p>2. A Technical Note confirming the above points, providing additional background information and detailing the design rationale being applied was requested by Wiltshire Council. The Technical Note was produced by HE and forwarded to WC and EA on the 4th July 2019. Comments were received from WC on 15th July 2019 and discussed with them on 22nd July 2019. Agreement was reached on the climate change allowances for road drainage and the Applicant expects to be able to confirm this agreement in the Statement of Common Ground to be submitted at Deadline 7. Currently HE are awaiting a response from the EA.</p>	<p>We continue to support Wiltshire Council on this matter, however, it is for HE and WC to agree the design of surface water features and assess the risks associated with these. Our support was concerning the correct application of Climate Change allowances taking into account the possible change from new science in the near future. The justification given within the technical note produced demonstrates a level of resilience within these features, however, Wiltshire Council as the Lead Local Flood Authority must assess the information given to determine its suitability. We are now happy that HE have correctly assessed the consequences of Climate Change on these features.</p> <p>We would be happy to comment on the assessment completed by HE if WC require our further support in this matter.</p> <p>Our concerns regarding the location of these features has been covered within the significant changes to the wording of the OEMP.</p>

ExQ2	Question to:	Question	EA response 26 July 2019	Highways England comments to ExQ2 26 July 2019	EA response to HE comments 8 August 2019
				<p><b>iv. Should MW-WAT12 be updated to include reference to climate change allowances in line with the comments made by the Environment Agency at DL4 [REP4-049]?</b></p> <p>3. A change has been made to MW-WAT12 with respect to climate change in the OEMP submitted at Deadline 6, further to the Environment Agency's comments at Deadline 4.</p>	
Fg.2.13	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b> Having regard to the provision of the additional evidence submitted to the examination, please set out an updated assessment of the proposed development in respect of the flood risk policy, including the application of the Sequential and Exception Tests, in the NPSNN?</p>	<p>Provided that the wording we have agreed with HE will be included in the next version of the OEMP (MW-WAT12 and MW-WAT13), then we would be satisfied that flood risk policy requirements have been achieved for the DCO application and for the current stage of this project.</p>	<p>1. At Deadline 3 (DL3), the Applicant submitted an updated Flood Risk Assessment (FRA) to the Examination [REP3-008], which provided updated information which supports the Environmental Statement and its conclusions in relation to flood risk.</p> <p>2. In particular section 1.4 of the updated FRA explains that:-</p> <p>3. Key updates to this document are summarised as:</p> <ul style="list-style-type: none"> <li>• Incorporation of confirmatory results from updated hydraulic modelling for the River Avon, with changes to hydrological inflows and changes in indicative areas assigned to highway drainage ponds.</li> <li>• Incorporation of confirmatory results from updated surface water hydraulic modelling for the Parsonage Down catchment, including surface water hydrology and updated drainage solutions at Parsonage Down.</li> </ul> <p>4. Details of updates to the hydraulic modelling assessments are contained within Annexes 1 and 2 of this document.</p> <p>5. The conclusions of FRA Version 2.0 remain unchanged from the version submitted with the DCO application [APP-283]. Importantly, additional hydraulic modelling undertaken confirms and shows that the proposed scheme does not increase flood risk to properties during construction or operation.</p> <p>6. Benefits were also demonstrated, in particular how the B3083 is at a greatly reduced risk of flooding when compared to the flood risk associated with the same site today.</p> <p>7. Section 4 of the updated FRA [REP3-008], Policy Context and Consultation, includes consideration of the Sequential and Exception Tests in the NPSNN. Section 4 of this document has not been changed since the original FRA was submitted to the Examination [APP-283]. In addition, these matters are considered in the Applicant's Case for the Scheme [APP-294], in Appendix A, Table 5, paragraphs 5.98 to 5.115. As nothing has changed in terms of flood risk, this review of flood policy including the Sequential and Exception tests in the NPSNN, and its conclusions relating to the Scheme, remain extant.</p>	<p>We are pleased that the wording that we have agreed with HE has been included in the latest version of the OEMP (MW-WAT12 and MW-WAT13). We are therefore satisfied that flood risk policy requirements have been achieved for the DCO application and for the current stage of this project.</p>
Fg.2.14	Applicant Environment Agency Wiltshire Council	<p><b>Drainage</b> The road drainage strategy would involve water from a sump within the tunnel being pumped beyond the eastern portal. The water would then either enter the highway drainage system or, if contaminated, be retained in an impounding sump for disposal by tanker. It appears that the switch between discharge or retention could either be automated or manual. The method is not secured (ie within the OEMP).</p>	<p>We have previously requested that retention of contaminated runoff resulting from a pollution incident in the tunnel be controlled automatically to reduce the risk that time delays in manual operation of the necessary valves will allow contaminated water to be distributed to the wider drainage network and potentially released to the environment.</p> <p>Whilst there is a risk of failure of such an automated system, we would expect the design to incorporate appropriate backup measures and fail safes to guard against inadvertent release of contaminated runoff and manual operation of the system.</p> <p>We understand that detailed design of the drainage system is ongoing and therefore we do not have sufficient information to estimate how far contaminated</p>	<p>1. As noted at the Issue Specific Hearing 4 (ISH4) item 6.5iii [REP4-032] and detailed in the Road Drainage Strategy [Environmental Statement Appendix 11.3, REP2-009], the drainage in the tunnel relies on the provision of two sumps as follows:</p> <ol style="list-style-type: none"> <li>i. a 'Low-point sump' for the collection of gravity drainage within the tunnel; and</li> <li>ii. an Impounding Sump at the Eastern portal for the discharge of contaminated drainage from the tunnel, fed by a pumping main from the low-point sump.</li> </ol> <p>2. Outside of the tunnel, the surface-water drainage system will capture and direct all water arriving on the road surface away from the tunnel portals. Inside the tunnel, drainage arriving at the low-point sump would typically consist of water being carried into the tunnel on wet vehicles and a nominal allowance for groundwater infiltration through the joints in the tunnel lining. Therefore, the quantity of drainage being captured and handled is not assessed or anticipated to be significant during normal tunnel operation, with</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>We consider that a remotely operated 'manual' system as described by the Applicant could lead to delays in operation of the necessary valves and subsequent risk of discharge to the environment if an incident were not detected and acted upon swiftly. We therefore maintain our recommendation for the system to be automated with an appropriate failsafe position.</p>

ExQ2	Question to:	Question	EA response 26 July 2019	Highways England comments to ExQ2 26 July 2019	EA response to HE comments 8 August 2019
		<p>i. What are the risks and benefits of each approach?</p> <p>ii. If a manual approach were chosen, would any time delay from a contamination incident to the manual override being initiated result in polluted water entering the wider road drainage system?</p> <p>iii. If an automated approach were chosen, what measures would be in place in the event that the automated system failed?</p> <p>iv. In view of the importance of this part of the drainage strategy, is it necessary to provide certainty on this within the OEMP?</p>	<p>water may be distributed through the wider system in the event of delays in operation of manual overrides following an incident.</p> <p>We request that an automated method of control is specified in the OEMP in order to reduce the risk of pollution of the sensitive water environment in the vicinity of the scheme should there be delays in physical attendance of emergency services following an incident in the tunnel.</p>	<p>the exception of tunnel washing during planned maintenance or in the event of an incident in the tunnel resulting in a pollution incident. It should be noted that the capacity of the low-point sump and the (low) rate of inflow during all but tunnel washing and pollution incidents would be such that the low-point sump pumps will not operate continuously.</p> <p>3. Drainage arriving at the low-point sump in the tunnel would initially be contained there and then pumped to the high point of the road alignment beyond the eastern portal. The drainage water would be categorised as “contaminated” if there were tunnel washing and maintenance activities ongoing, or a pollution incident (spillage) or fire-fighting activities in the tunnel. Otherwise, the drainage water would be categorised as “clean”. The diverter valve beyond the eastern portal would direct “clean” drainage water to the surface-water drainage system and “contaminated” drainage water to the impounding sump.</p> <p>4. As described at ISH4, this diverter valve might be manual or automatic. The following bullet points summarise the risks and benefits of each option:</p> <ul style="list-style-type: none"> <li>• <b>Valve operation</b> – the diverter valve either requires an operator to activate it from a remote location by using the tunnel control system or a physical button on a control panel (manual operation) or it can be operated by the tunnel control software automatically upon detection of agreed triggers e.g. hydrocarbon sensors in the low-point sump or activation of the vehicle incident detection system. Therefore, both manual and automatic systems are capable of being operated remotely, but automatic activation requires no human intervention.</li> <li>• <b>Availability on demand</b> – an operating procedure would be developed to exercise the valve periodically. For an automatic valve, this operating procedure could allow the valve to be cycled through its positions without operator intervention, while a manually controlled valve would require human intervention to cycle it. Therefore, an automatic valve would provide enhanced confidence of correct operation on demand.</li> <li>• <b>Potential for error</b> – a manually operated valve by definition is reliant on a person to operate it. An automatic valve is reliant only on the availability and reliability of the agreed triggers. Therefore, an automatic valve removes the potential for human error but is reliant on the availability and reliability of the triggering devices (i.e. sensors) for its correct operation.</li> <li>• <b>Failsafe operation</b> – a manually operated valve would remain in the default position unless manually instructed to operate, or unless power were lost and it moved to a previously agreed “safe” position, which would logically direct water to the impounding sump. An automatically operated valve would be able to fail to the safe position for a wide number of reasons including conflicting trigger signals, loss of power or similar. Therefore, an automatic valve provides a more robust failsafe provision. However, unnecessary operation to the failsafe position would result in a more frequent need to empty the impounding sump by tanker.</li> </ul> <p>5. Highways England’s Design Manual for Roads and Bridges (Volume 2, Section 2, Part 9 “Design of Road Tunnels” - BD78/99) requires the low point sump to have sufficient capacity to contain a spillage from a full tanker lorry. In addition, because of the very low quantities of tunnel drainage water arriving at the low point sump during normal tunnel operations (compared to the much larger quantities of water required for tunnel washing or fire fighting activities), the sump pumps will normally only be required to operate for brief periods at very infrequent intervals during normal tunnel operations. Therefore, if a spillage were to happen (itself an unusual event), by far the most likely scenario is that the spillage would be fully contained within the low point sump and there would be ample time for either a manual or an</p>	

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				<p>automatic diverter valve to be operated. Therefore, any delay in operating a manual diverter valve is mitigated by the system design which will include careful consideration of the capacity of the low-point sump in combination with the speed and operation of the pumps. The Contractor will develop the detailed design of the tunnel drainage system holistically to mitigate against the risk of contaminated water entering the surface water drainage system.</p> <p>6. If an automated approach were chosen, an operating procedure would be developed to determine what condition or triggers should be used to activate the valve to its diverted position. During detailed design development, a “failsafe” protocol would be developed for this automatic operation. Most likely the valve would be programmed to default to the “divert to impounding sump” position on loss of power or on conflict of input signals. However, the details of this operation would be a matter for agreement at the detailed design stage to enable the opportunity for innovation and direct contractor experience input.</p> <p>7. As noted at the ISH4, design approval of the tunnel drainage system is already secured by Requirements 4 and 10 of Schedule 2 of the draft development consent order (dDCO) [REP4-018]. Requirement 10 requires consultation with the planning authority and the Environment Agency and approval by the Secretary of State while Requirement 4 demands that the authorised development is carried out in accordance with the Outline Environmental Management Plan (OEMP) [REP4-020]. The OEMP includes at requirement MW-WAT14 that the surface water drainage system conforms with Requirement 10 of the dDCO and at requirement MW-G11 the provision of the Handover Environmental Management Plan (HEMP), which will include the drainage maintenance strategy. Therefore, the Applicant does not consider that it is necessary for the OEMP to address directly whether the valve is required to be automatically or manually operated. This will be decided as part of the holistic and detailed design, operation and maintenance of the integrated tunnel system and will provide appropriate systems and operations in all states.</p>	
Fg.2.15	Applicant Environment Agency Wiltshire Council	<p><b>Drainage</b> Given its significance should the impounding sump (and related infrastructure) be identified on the work plans and specified in the Works in Schedule 1 of the dDCO?</p>	<p>We are awaiting consultation on the detailed design of the drainage system for the scheme, in which we expect details of the impounding sump along with capacity of the wider system to contain and deal with contaminated runoff. Approval of the drainage strategy is secured by Requirement 10 of the DCO.</p> <p>Provided the overall scheme has sufficient ability to prevent discharge of contaminated runoff and pollution of the environment we do not consider it necessary to stipulate in the DCO that a specific impounding sump be used since other arrangements may provide equivalent levels of environmental protection.</p>	<p>1. As noted in our response to question Fg2.14, the impounding sump forms part of the tunnel drainage system, itself a part of the Road Drainage Strategy (Environmental Statement Appendix 11.3, [REP2-009]).</p> <p>2. The impounding sump is intended to be in the vicinity of the Eastern portal, however its precise capacity and location will be determined by the Contractor during the detailed design development of the project and, therefore, it would not be appropriate for it to be listed in one or another individual Work Package within Schedule 1 of the dDCO, nor to show it in a particular position on the Works Plans [APP-008]. A proportionate degree of flexibility is required to develop an appropriate solution as part of the detailed design of the Scheme.</p> <p>3. The Applicant considered that the authorisation for the impounding sump would fall within the description of the ancillary works in Schedule 1 to the DCO, under paragraph b)(iv) as “drainage works” and “pumping stations”. As a result of the Applicant’s further consideration revision 4 of the DCO for submission at Deadline 6 includes express reference to impounding sumps.</p> <p>4. It should also be noted that design approval for drainage system, which includes the impounding sump, is secured at Requirement 10 of the dDCO, which specifically requires approval in writing by the Secretary of State, following consultation with the planning authority on matters related to its land drainage functions and the Environment Agency before construction may commence. The written details of the drainage system must be based on the mitigation measures included in the Environmental Statement which includes</p>	<p>We maintain our position as stated in our response to Examining Authority questions (EXQ2) made at Deadline 6. We have no further comment at this time.</p>

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				the Road Drainage Strategy. There are therefore adequate controls on the final position and operation of the impounding sump and related tunnel drainage system.	
Fg.2.17	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b> At DL4 the Council suggested additions to MW-WAT14 [REP4-039].</p> <p>i. Given Requirement 10 would secure the details of the drainage system, why does the Council consider it necessary that this detail is set out in MW-WAT14? In responding, please provide a justification for each separate addition proposed.</p> <p>ii. Can the Applicant and the Environment Agency provide their views on whether the suggested additions are necessary?</p>	<p>We welcome that Requirement 10 requires the consultation and written agreement with the Environment Agency during detailed design of the drainage system.</p> <p>Wiltshire Council's comments are related to ensuring the details of the drainage scheme conform to certain flood risk criteria. The only suggestion we have relating to groundwater and contaminated land issues is a request that "automated control of the tunnel drainage" is specified in MW-WAT14. As stated in FG.2.14 above, we would support the stipulation in the OEMP for automated tunnel drainage control.</p> <p>Surface water needs to be managed appropriately to ensure flood risk is not caused or increased on or off the site. We would defer to the Lead Local Flood Authority on their reasons as to why the additions are required. A timetable for implementation is an important condition to ensure that mitigation is in place to ensure excess runoff is able to be mitigated for when it is produced.</p>	<p>1. The Applicant considers that Requirement 10 adequately secures control of the Scheme's drainage design and the Council's requirements could be considered through the approval and consultation process as required; meaning no OEMP amendment is required.</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6. We have no further comment at this time.</p>
Fg.2.18	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b> Requirement 10 of the dDCO requires that the drainage system is approved by the Secretary of State following consultation with the Council and the Environment Agency.</p> <p>Notwithstanding the recent addition of Requirement 11, should this be amended to secure the specific approval/ agreement of either or both the Environment Agency and the Council? Please provide detailed reasoning and, if you consider that this is necessary, why the current drafting of Requirements 10 and 11, along with the OEMP, are not adequate.</p>	<p>Due to the sensitivity of the water environment within the scheme - groundwater designated as principal aquifer with potable and agricultural use abstractions and SAC designated surface watercourses – it must be ensured that these resources are protected. Protection of controlled waters falls within the Environment Agency's remit and we therefore consider it appropriate that we have meaningful influence over the standards of environmental protection incorporated into the scheme.</p> <p>Whilst we welcome the inclusion in Requirement 10 for consultation with the Environment Agency over the final detailed drainage design and the mechanism for our opinion to be conveyed to the Secretary of State in summary form secured by Requirement 11, we consider that a specific requirement for our agreement with the proposed scheme will ensure that the most appropriate body assesses the adequacy of environmental protection measures.</p>	<p>1. The Applicant considers that such an amendment is not necessary. As discussed at the DCO hearing, the matters that are subject to a DCO requirement have been carefully considered by it; and it is considered appropriate that the Secretary of State approve the 'agenda setting' matters that have Scheme wide, cross cutting (and indeed cross authority) implications.</p> <p>2. The principles of the drainage system for the authorised development are set out in the Road Drainage Strategy [REP2-009] appended to the Environmental Statement. Requirement 10 requires the details of the drainage system to be based on the mitigation measures set out in the Environmental Statement, which includes the Road Drainage Strategy</p> <p>3. As the body with responsibility for the operation of the trunk road network under the Infrastructure Act 2015, the Applicant has particular experience and expertise in this area which may not be available to Wiltshire Council or the Environment Agency in respect of the particular considerations applicable to the trunk road network. The contributions that Wiltshire Council and the Environment Agency can make to developing the detailed design of the drainage system for the authorised development is recognised by the obligation to consult. The Applicant's response to DCO.2.44 sets out in more detail the particular statutory roles and duties that apply to Highways England and DCO.2.47(iv) explains the Applicant's concerns regarding the approval function sitting with Wiltshire Council in this respect.</p> <p>4. The Applicant notes its position on this requirement is reflected in the precedents; see the A19/A184 Testo's Junction Alteration Development Consent Order 2018, the M20 Junction 10a Development Consent Order 2017, the M4 Motorway (Junctions 3 to 12) (Smart Motorway) Development Consent Order 2016, the A14 Cambridge to Huntingdon Improvement Scheme Development Consent Order 2016. Indeed the only instance of a Highways England DCO where the approval of the drainage system function sat with the local planning authority is the A19/A1058 Coast Road (Junction Improvement) Development Consent 2016, which as noted in the Secretary of State's decision letter at paragraph 37, was an exceptional case arising</p>	<p>We note the comments made by HE and the amendments made to the draft DCO.</p> <p>We consider the amendment to DCO Requirement 11 are sufficient to allow the Environment Agency to alert the approving authority to any concerns.</p> <p>We note that Requirement 10 specifies that the mitigation measures contained within the environmental statement must be reflected within any drainage scheme together with the means of pollution control.</p>

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				<p>from the transition of the functions of the former Highways Agency to Highways England.</p> <p>5. Furthermore, the Applicant notes that where the Scheme drainage system interacts with a 'drainage work' (as defined) that is the responsibility of Wiltshire Council as LLFA and the EA, those bodies will have relevant approval rights pursuant to their protective provisions within the dDCO.</p>	
Fg.2.19	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b></p> <p>i. Could the Environment Agency and the Council set out what, if any concerns remain in respect of the updated Road Drainage Strategy [REP2-009 and REP2-010] and are requirements beyond those set out in DMRB necessary?</p> <p>ii. Could the Applicant set out its position on this matter and confirm whether a revised version is intended to be submitted?</p>	<p>REP2-009 – ES Appendix 11.3 – Road Drainage Strategy (May 2019) (Clean)</p> <p>REP2-010 – ES Appendix 11.3 – Road Drainage Strategy (May 2019) (Tracked)</p> <p>The Drainage Strategy submitted to date contains only a preliminary design and lacks details that we require to be satisfied that the risk of pollution from the scheme is acceptable.</p> <p>The details we require, and have previously requested, include the capacity of the system to contain reasonably expected volumes of contaminated runoff and the risk posed to groundwater quality in the aquifer generally and at abstractions by discharges from infiltration basins.</p> <p>We consider that the HEWRAT risk assessments presented to date at the application stage are suitable for high level risk screening, but more detailed assessments of the infiltration basins is required to demonstrate that the discharges will not pose a risk of pollution to the underlying aquifer or have adverse impact on existing abstractions. These assessments should follow targeted site investigation of the proposed basin locations and incorporate site derived values for parameters including infiltration rates and depth to groundwater.</p> <p>No justification has been provided to date that demonstrates that the requirements of HD45 will provide sufficient protection to controlled waters and that measures in excess of these, as allowed for by HD33/16 paragraph 2.1, are not required.</p> <p>With regard to flood risk issues, the only concern the EA have remaining is the location of the drainage ponds which are currently within the 1%AEP plus appropriate allowance for Climate change flood extent which causes a displacement of fluvial flood water. However, we consider this can be addressed at the detailed stage, along with consultation between Wiltshire Council and Highways England. We would recommend any component built to ensure flood risk safety of the development for its lifetime to be maintained by the applicant.</p>	<p><b>ii. Could the Applicant set out its position on this matter and confirm whether a revised version is intended to be submitted?</b></p> <p>1. Discussions with Wiltshire Council and the Environment Agency have continued. A meeting attended by both Interested Parties and Highways England was held on the 20th June 2019, to clarify the rational and background information to the points raised at the Issue Specific Hearing 4, held on the 11th June 2019 concerning the highway drainage design and climate allowance.</p> <p>2. A Technical Note providing additional background information detailing the design rationale being applied within the illustrative design was requested by Wiltshire Council. The Technical Note was produced by HE and forwarded to WC and EA on the 4th July 2019; currently HE are awaiting a response from WC and EA. On the basis of the discussions to date HE does not anticipate any need for any additional update to the Environmental Statement Appendix 11.3, Road Drainage Strategy during examination as the control and approval mechanisms offered and secured in the dDCO provide for all necessary and agreed actions.</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>Whilst there has been further discussion regarding flood risk matters, there has been no communication from the Applicant regarding pollution prevention measures and the further detail we have previously requested.</p> <p>We are therefore still not confident that standards stated in DMRB HD45 will provide sufficient protection to controlled waters and that measures in excess of these, as allowed for by HD33/16 paragraph 2.10, are not required.</p>
Fg.2.20	Applicant Environment Agency Wiltshire Council	<p><b>Flood risk and drainage</b></p> <p>Please provide an update on the discussions in respect of the maintenance responsibilities for the drainage infrastructure?</p>	<p>We consider this to be a Lead Local Flood Authority responsibility. Maintenance should therefore be agreed between Wiltshire Council and Highways England. We would recommend any component built to ensure flood risk safety of the development for its lifetime to be maintained by the applicant.</p>	<p>1. Future maintenance procedures for the drainage systems are set out within the Outline Environmental Management Plan (OEMP) (Updated at DL4 [REP4 -020] (See table 3.2b Ref. MW-G11)). This provides that a Handover Environmental Management Plan must be drawn up at the end of the construction phase, specifying maintenance obligations. The provisions of the</p>	<p>We have no further comments.</p>

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				<p>OEMP are secured within Requirement 4 which requires works to be undertaken in accordance with the OEMP.</p> <p>2. The maintenance proposals in the Drainage Strategy are secured at Requirement 10 of Schedule 2 of the draft DCO [REP4-018], which provides that written details of surface water drainage proposals for each part of the Scheme must be approved by the Secretary of State prior to commencement of development for that part. These details must be based on the mitigation measures included in the Environmental Statement (ES), which includes the Drainage Strategy, which is Appendix 11.3 (Updated at DL4, [REP-009]) to the ES.</p> <p>3. As stated in the deadline 4 (DL4) version of the draft Statement of Common Ground (SoCG) between Highways England and Wiltshire Council [REP4-023], section 3.5.17, Highways England acknowledges Wiltshire Council's concerns. The parties agree that matters relating to the highways that Wiltshire Council would become liable to maintain, as a result of the Scheme, are capable of being resolved through the terms of a legal agreement between the parties.</p> <p>4. The parties intend to conclude such an agreement before the close of the Examination. It is proposed to be addressed by the legal agreement between the parties, but remains under discussion until the precise terms of the agreement have been settled.</p>	
Fg.2.21	Applicant Environment Agency Wiltshire Council	<p><b>Drainage, groundwater and contamination</b> Reliance would be placed on natural attenuation of any contaminants that pass through the filtration material in the drainage treatment areas. Groundwater levels are relatively high in the area.</p> <p>i. What degree of confidence is there that this method is sufficient and how conservative is the design? ii. What water quality standards would be applied and how would meeting these be monitored?</p>	<p>We have not received any risk assessment to demonstrate the level of treatment provided by the proposed drainage treatment areas. We therefore do not have confidence at this stage that the proposed method of treatment will be sufficient for protecting groundwater quality. Any proprietary attenuation substance that may be installed will be limited in the chemicals that it can remove. This will typically be hydrocarbons. Any spill of other chemicals such as pesticides, herbicides etc are unlikely to be treated by such substances. This is the basis for the Environment Agency requesting the drainage design should allow for storage of chemical spill and run-off volume from rainfall event so that any such spill can be isolated before it is discharged/soaks away and where appropriate tankered away to an appropriate treatment works. The EA should therefore be consulted in the drainage design and agree that any mitigation and attenuation proposed will be sufficient to protect the water environment.</p> <p>Both Drinking Water Standards and Freshwater Environmental Quality Standards are appropriate in this scheme since groundwater supplies both potable abstractions and baseflow to the Rivers Till and Avon.</p>	<p><b>i. What degree of confidence is there that this method is sufficient and how conservative is the design?</b></p> <p>1. The Applicant is confident that the drainage system and natural attenuation are sufficient to protect groundwater. Deadline 2 Road Drainage Strategy [REP2-009] provides details of the proposed methods to attenuate contamination. For ease of reference, key features are summarised below:</p> <p>2. The existing A303 is predominantly drained by gullies which discharge directly to either filter drains or road side ditches which infiltrate the runoff to ground (paragraph 1.2.1).</p> <p>3. Runoff from the carriageway would be collected in road edge channels or gullies which outfall to carrier pipe systems. The use of carrier pipes would ensure that spillages are contained within the drainage system and do not infiltrate to ground close to source. Subsurface drainage would be provided by narrow filter drains throughout all sections of the scheme where necessary (paragraph 3.2.1).</p> <p>4. The infiltration basins would be grassed and designed with shallow slopes to integrate sympathetically into the landscape. They would include impermeable areas to capture a portion of the runoff and aid biodiversity enhancement. A proprietary treatment system would be provided in the base area within the basin to absorb contaminates before the runoff is discharged via infiltration to ground. A conceptual design of the infiltration basins is shown in Figure 3.1 (paragraph 3.2.3).</p> <p>5. The new sections of the A360, B3083 and Rolleston Cross would utilise a filter drain system with on-line soakaways to intercept and infiltrate runoff from the carriageway at or close to source. This replicates the existing drainage regime for these routes, with enhancements in terms of water quality through the specification of engineered infiltration systems (paragraph 3.2.14).</p> <p>6. The design is conservative by being based on a conservative estimate of capacity as detailed below. Furthermore, the outline design assumed a water table at extreme peak levels (based on the levels recorded in the 2014 flood</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6. We consider that further quantitative assessment of pollution risk from the infiltration basins is required.</p> <p>Much of the Applicant's response to Fg.2.21 appears to relate to attenuation of flood flows as opposed to attenuation of chemical contaminants. We consider that the latter was the intended subject of question Fg.2.21.</p> <p>Where natural attenuation (and/or proprietary treatment) of contamination is relied upon, we would expect to see quantitative demonstration that these are appropriate.</p> <p>Use of the lowest infiltration rate in an area is conservative for assessment of flood risk, but the opposite is true when considering pollution risks from infiltration of contaminated road runoff. The slower infiltration rate would overestimate the level of contaminant attenuation and consequently underestimate the risk to groundwater quality. For conservative assessment of contaminant attenuation and risk to groundwater quality, the higher infiltration rates should be used.</p>

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				<p>event) and is therefore based on a minimum unsaturated zone thickness. This is conservative given that typical winter high water levels are up to 3 metres lower than the peak levels so there will be additional attenuation in the unsaturated zone.</p> <p><b>7. Conservative Estimate of Capacity.</b> A number of soakaway tests have been undertaken and their results recorded in the Preliminary Ground Investigation Report (6.3 Environmental Statement Appendix 10.1 [APP-273]). These were used to determine the infiltration rate of the ground at the outfall locations. When calculating attenuation storage, to be conservative, the lowest recorded infiltration rate corresponding to the soakaway test closest to the area has been used with an additional factor of safety of 20 applied within the calculations. 8. In addition, the design includes the following features:</p> <ul style="list-style-type: none"> <li>• The basins include a 300mm freeboard (1 in 100 year + 30%)</li> <li>• In the event of a rainfall event exceeding the design storm (1 in 100 year +30%) exceedance routes have been identified to ensure excess water does not flow towards vulnerable properties.</li> </ul> <p>9. The illustrative design capacity was subjected to sensitivity tests in relation to global warming, and design storm return period. These tests concluded that the current design is conservative for the following reasons:</p> <ul style="list-style-type: none"> <li>• When the upper global warming allowance of 40 % was applied, the infiltration basins were found to contain the design storm without overtopping. A freeboard of some 250mm was maintained in each basin.</li> <li>• For the highway drainage to overtop the drainage treatment areas the design year return period storm would have to be greater than a 1 in 1000 year return period storm. 10. It is Highways England's submission that the precautionary approach is shown to demonstrate a high degree of confidence, that the method and approach is more than sufficient and provides for conservative standards and performance in the required design. <p><b>ii. What water quality standards would be applied and how would meeting these be monitored?</b></p> <p>11. In its response to item 9.6.1 and 9.6.4 in the Comments received to Deadline 3 [REP4-036]. HE confirmed that its groundwater samples have been compared to the UK Drinking Water Standards (see paragraph 3.10.2 of APP-282 and Table 3.6). HE is not assessing whether the water is fit to drink for water users or proposing to take on the role of the Local Authority or the Drinking Water Inspectorate (DWI) with regard to Private Water Supplies but will continue to compare groundwater quality samples with drinking water standards as part of the Groundwater Management Plan proposed at item MW-WAT10 of the OEMP [REP4-020]. This is sufficient for the protection of the groundwater resources upon which the private water supplies rely.</p> <p>12. Highways England has applied a comparison to drinking water quality standards as a highly conservative benchmark approach and this approach to continued sampling and monitoring is secured and delivered through the Groundwater Management Plan within the OEMP.</p> </li></ul>	<p>We note the reference to use of peak groundwater levels as being more conservative than typical high levels however we are not aware that these values have been used in any detailed assessment of contaminant attenuation.</p> <p>The assessment of capacity provided by the Applicant (paragraphs 7, 8 and 9 in their response) relates primarily to storage of flood water rather than containment of contaminated runoff within impermeable components of the drainage system.</p> <p>With regard to flood risk matters, please see our comments regarding Climate Change allowances within response f.g2.8 above.</p>
Fg.2.22	Applicant Environment Agency Wiltshire Council	<p><b>Groundwater monitoring</b> Groundwater monitoring (for water levels and quality) is intended to take place during construction and for 5 years post construction.</p> <p>i. For the construction phase this is dealt with in MW-</p>	The requirement for post construction monitoring is to allow any observable impacts from the scheme to be detected and if necessary, mitigation measures implemented. For this to be effective, monitoring should cover periods of high and low groundwater level and specification of a fixed duration may not achieve this. We consider that the detailed requirements for monitoring be set out in the Groundwater Management	<p><b>i. For the construction phase this is dealt with in MW-WAT10 of the OEMP. Is it intended that the post construction monitoring is secured via the HEMP? Is this sufficiently clear to ensure that adequate post construction monitoring is secured, or should the 5-year period be explicitly stated?</b></p> <p>1. Paragraph 7.2.7 in Appendix 11.4 Groundwater Risk Assessment of the ES [APP-282] states that groundwater monitoring (both level and quality information) will be undertaken during a baseline period, construction, and a minimum 5-year period post construction as requested by Wiltshire Council.</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>We note and welcome the addition of the requirement to consult Wiltshire Council during development of the Groundwater Management Plan in</p>

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		<p>WAT10 of the OEMP. Is it intended that the post construction monitoring is secured via the HEMP? Is this sufficiently clear to ensure that adequate post construction monitoring is secured, or should the 5-year period be explicitly stated?</p> <p>ii. In addition to the Environment Agency, should Wiltshire Council also be consulted on the Groundwater Management Plan?</p> <p>It appears that the principle of on-going monitoring has been agreed between the Applicant, the Environment Agency and Wiltshire Council, but that specific proposals have not yet been agreed.</p> <p>iii. To what extent would it be necessary to agree specific details at the pre-consent stage? If this is required, how would this be secured? Are the existing measures in the dDCO, the OEMP and the requirement for the production of a HEMP sufficient to ensure that the detailed proposals would be secured/ agreed appropriately?</p> <p>iv. What processes would be put in place in respect of landowner consent for the on-going monitoring?</p>	<p>Plan (MW-WAT10) and carried forward into the HEMP following completion of construction works.</p> <p>Wiltshire Council have responsibility for groundwater flooding and should therefore be consulted and provide agreement on the Groundwater Management Plan in addition to the Environment Agency.</p> <p>The details of monitoring will depend in part on the final scheme design and construction methods. It is therefore likely that any scheme detailed now would be subject to amendment following granting of the DCO. We consider that MW-WAT10 of the OEMP secures the requirement for the Groundwater Management Plan to include a groundwater level and water quality monitoring and reporting programme. This plan should be updated and amended as necessary prior to incorporation into the HEMP on completion of construction works to ensure the necessary ongoing monitoring is secured.</p> <p>Groundwater monitoring is in the interest of landowners in the area owing to the reliance on groundwater supplies.</p>	<p>However, the detail of monitoring will be discussed with Wiltshire Council and the Environment Agency when developing the Groundwater Management Plan (MW-WAT10 in the OEMP)[REP4-020]. The reference to 5 years in the ES was a record of Wiltshire Council's request at that time and may change as the detail of the monitoring is developed during the consultation that is required by MW-WAT10 (which refers to the monitoring and reporting programme forming part of the plan). The period of monitoring will therefore be able to be determined as part of that consultation process with the EA and Wiltshire Council. Once approved, that commitment will then need to be carried out as agreed.</p> <p><b>ii. In addition to the Environment Agency, should Wiltshire Council also be consulted on the Groundwater Management Plan?</b></p> <p>2. The updated version of the OEMP to be submitted at Deadline 6 has been updated to provide for consultation with Wiltshire Council as appropriate to their statutory functions. Other groundwater aspects are the responsibility of the Environment Agency. As noted above, specific monitoring proposals would be developed as part of the Groundwater Management Plan.</p> <p><b>iii. To what extent would it be necessary to agree specific details at the pre-consent stage? If this is required, how would this be secured? Are the existing measures in the dDCO, the OEMP and the requirement for the production of a HEMP sufficient to ensure that the detailed proposals would be secured/ agreed appropriately?</b></p> <p>3. Specific details are not usually developed at the pre-consent stage. The requirement to develop a Groundwater Management Plan would be sufficient, through the approvals and consultation process, to ensure that detailed monitoring proposals would be secured/ agreed appropriately. The Applicant also notes that item MW-G11 provides that the HEMP will be based on the CEMP at the time, which will include those plans appended to it such as the GMP. Item MW-G11 also sets out that the HEMP will provide the relevant information on existing and future environmental commitments and objectives that would need to be honoured and define on-going actions and risks that need to be managed, e.g. on-going monitoring, Sufficient controls are therefore in place.</p> <p><b>iv. What processes would be put in place in respect of landowner consent for the on-going monitoring?</b></p> <p>4. Highways England will continue to engage with land owners for their agreement to continue to monitor and to undertake the monitoring requested by them. Article 15 of the dDCO [REP4-018] would permit the Applicant to enter on land to undertake water monitoring in the event of consent to monitor boreholes and other water features not being forthcoming.</p>	<p>MW-WAT10 of the Revision 3 OEMP submitted at DL6.</p>
Fg.2.23	Environment Agency	<p><b>Groundwater</b></p> <p>i. Can you confirm whether you are satisfied with the provision in the OEMP for the Groundwater Management Plan?</p> <p>ii. If this is inadequate, please specify why and what amendments do you consider to be necessary?</p>	<p>We consider the Groundwater Management Plan, as required by MW-G7 and detailed in MW-WAT10, is a fundamental mechanism to provide a level of assurance that the scheme will not adversely affect the sensitive groundwater environment.</p> <p>We are satisfied with the proposed details of the plan from the outline provided in MW-WAT10</p>	<p>No response on the website.</p>	<p>No further comments.</p>
Fg.2.26	Applicant Environment Agency	<p><b>Groundwater, Geology and detailed design</b></p> <p>In its DL4 submission the Environment Agency has requested that it be consulted</p>	<p>Yes, we consider that there should be a requirement to consult the Environment Agency should there be any change to the proposed design of the tunnel from the specific design assessed in the Groundwater Risk Assessment. This is because a change to the design</p>	<p>1. The Applicant considers that this matter is adequately addressed in the OEMP, compliance with which is secured through Requirement 4.</p> <p>2. Measure MW-WAT10 requires the contractor to produce a Groundwater Management Plan which is required to address, amongst other matters:</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6. We have no further comments at this time.</p>

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		<p>on any updated design to the proposed tunnel to consider any impact on groundwater flows [REP4-049]. Requirement 3 in the dDCO requires consultation with the planning authority on matters relating to its functions.</p> <p>i. Should there be a Requirement to consult the Environment Agency where any changes are proposed to the tunnel? Please provide reasons.</p> <p>ii. If consultation is required, how should this be secured (for example by amending Requirement 3)?</p>	<p>could lead to greater impedance of groundwater flow and corresponding increase of groundwater levels to the north and fall to the south of the tunnel. Depending on the magnitude of these level changes significant impacts to abstractions and/or baseflow to rivers could result. We consider that evaluation of any assessment of such impacts falls within the remit of the Environment Agency.</p> <p>Requirement 3 specifies consultation with Wiltshire Council (the planning authority) on matters within their remit and we would expect similar consultation on matters within the Environment Agency's remit by additional wording in Requirement 3. We would also recommend that the applicant should seek agreement that the environmental risks associated with the scheme have been adequately risk assessed and suitable mitigation proposed.</p>	<p>"b) An update to the Groundwater Risk Assessment for the final design and construction Plan.</p> <p>c) The groundwater level and water quality monitoring and reporting programme.</p> <p>d) Development of baseline groundwater conditions and derivation trigger levels and action levels/mitigation/action plans for exceedances and accidents/incidents."</p> <p>3. The OEMP requires the main works contractor to consult the Environment Agency during the development of the Groundwater Management Plan.</p> <p>4. The Applicant has made further amendments to this measure in its update for submission at Deadline 6 to clarify that the plan must address the management of groundwater flood risk and to consult Wiltshire Council in so far as relevant to its functions as lead local flood authority.</p>	
Fg.2.28	Applicant Environment Agency Wiltshire Council	<p><b>Contamination</b> Requirement 7 deals with contamination found during construction.</p> <p>i. Is it necessary to also secure pre-commencement investigation and risk assessment of potentially contaminated land to minimise the risk of contamination being discovered during construction? Please provide reasons for your answer.</p> <p>ii. If this is necessary how should this be secured (ie an additional Requirement)?</p> <p>iii. It appears that some investigation is ongoing, can the Applicant provide an update on this and whether it is likely to be completed and be able to be reviewed adequately during the examination?</p>	<p>We have previously requested inclusion of a pre-commencement requirement in the DCO to undertake investigation and risk assessment of potentially contaminated land along the route alignment, particularly the former military sites.</p> <p>Potential contamination was identified in the desk study reported in the Environmental Statement and we consider that where contamination may reasonably be expected to exist, risks should be investigated prior to works commencing rather than relying on a less controlled discovery and greater potential for mobilising contamination if found during the main construction works.</p> <p>We request that an additional Requirement is included in the DCO to secure assessment and if necessary, remediation of contamination.</p>	<p><b>i. Is it necessary to also secure pre-commencement investigation and risk assessment of potentially contaminated land to minimise the risk of contamination being discovered during construction? Please provide reasons for your answer.</b></p> <p>1. As the Applicant has maintained in submissions (see DCO.1.99 [REP2-030], responses to the Environment Agency's Written representation [REP3-13], the Applicant's comments on the Environment Agency's response to the Examining Authority's question DCO.1.100 [REP3-016], response to B1.17 of Wiltshire Council's Local Impact Report [REP3-014] and summary of oral submissions at DCO issue specific hearing agenda item 4.6 [REP4-029]) it considers that it has made appropriate provision to address contaminated land.</p> <p>2. The Applicant considers that a pre-commencement requirement to carry out further investigations and risk assessment of potentially contaminated land is unnecessary. The Applicant has assessed the risks associated with contaminated land in Chapter 10 (Geology and Soils) of the Environmental Statement [APP-048]. No significant permanent or temporary effects are identified (see paragraph 10.9.15) and a low potential for contamination has been concluded. In the unlikely event that contaminated land is discovered, Requirement 7 of the draft DCO submitted at Deadline 6 makes appropriate provision for a risk-based approach (consistent with the underlying principles of the statutory contaminated land regime) that includes reporting as soon as reasonably practicable to the Environment Agency (EA) and Wiltshire Council (WC); preparation of a risk assessment of the contamination in consultation with them; if remediation is necessary the preparation of a written scheme and programme of remediation in consultation with the EA and WC for approval of the Secretary of State; and thereafter that those remediation measures are carried out in accordance with that approved scheme and programme (which in itself means that those measures cannot be taken until it is approved). Please see DCO.2.56 for further consideration of the appropriateness of the provisions of Requirement 7.</p> <p>3. Measures to manage residual risks arising from previously unidentified contaminated land included in the OEMP [REP-039] are PW-GEO2 and MWGEO2 which provide measures to first assess and, if required, manage/treat unexpected contamination in compliance with CLR11. Measure MW-GEO8 also requires the contractor to develop and implement appropriate measures in respect of land that becomes identified as being contaminated.</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>We welcome the ground investigation referred to in the Applicant's response to EXQ2. However, to ensure that any contamination discovered during these investigations does not cause delay during construction or pose unacceptable risk to the environment, we maintain that the investigations should be reported on and where necessary remediation schemes agreed, prior to commencement of construction of the scheme. We consider that this should be secured by pre-commencement Requirement (in addition and separate to Requirement 7) specifying agreement with the local authority on risks to human health and the Environment Agency on risks to controlled waters.</p> <p>We note that a report on the current ground investigation is expected in September 2019. We consider that based on this timescale, there is no reason that evaluation of the results and discharge of a specific DCO Requirement prior to commencement of construction should cause delay to a scheme for which a contractor has not yet been appointed, design finalised, preliminary works completed or preparation of the various Management Plans required by the OEMP begun.</p>

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				<p>4. As far as the prohibition or cessation of work is concerned please see the Applicant's submissions at agenda item 4.6(ii) of [REP4-029]. It is not necessary or proportionate in the circumstances of the Scheme to either prohibit commencement or require cessation of work until further investigation is carried out. The investigation so far is typical of a phased contaminated land assessment and shows the Scheme area to be of low risk. There are comprehensive risk based controls contained in Requirement 7 and the provisions of the OEMP as set out above. To the extent that the actions or omissions of the Applicant between the discovery of contamination and the carrying out of any remediation works are a concern, those are more than adequately controlled in the background statutory regime, and the obligations of the Applicant and the powers of WC and the EA contained within it. The Applicant is a Government owned company, regulated under a licence that prescribes environmental obligations (for further detail of which please see DCO.2.44). In any event, the Applicant intends to carry out surveys prior to the commencement of the main works, as considered further below.</p> <p>5. On that basis, a pre commencement requirement would be disproportionate – it prescribes a single, overly onerous mechanism which is simply not justified by the low risk already established. In doing so, it could unnecessarily delay the implementation of this nationally significant infrastructure project and the wide public benefits that it will deliver.</p> <p><b>ii. If this is necessary how should this be secured (ie an additional Requirement)?</b></p> <p>6. The Applicant considers that for the reasons stated above, a precommencement requirement would be unnecessary.</p> <p><b>iii. It appears that some investigation is ongoing, can the Applicant provide an update on this and whether it is likely to be completed and be able to be reviewed adequately during the examination?</b></p> <p>7. An explanation on the Phase 7 ground investigation rationale, schedule and progress to date has been provided in the Applicant's response to comments from the EA on Written question responses received to Deadline 3 [REP4- 036], reference item 12.1.7. The Phase 7 ground investigation is a 2-year ground investigation programme split into two phases (Phase 7A and Phase 7B). Phase 7A is further split into phases and Phase 7Ai is currently being undertaken and it includes for ground investigation works at the former RAF Stonehenge and RAF Oatlands Hill sites. There have been no changes to the ground investigation schedule and an approved Factual Report is expected at the end of September 2019 for Phase 7Ai. Whilst the Factual Report will not be submitted during the Examination period, the data will inform subsequent remediation options and strategies (if required) and will be developed in liaison with the EA prior to construction. This work should provide further comfort that the risk of unforeseen contamination being discovered during actual construction works will be low. If these investigations do discover contamination that was not foreseen in the Environmental Statement, the provisions of Requirement 7 and the OEMP will require that it is risk assessed and where required, remediated, in full consultation with the EA and WC, and with the approval of the Secretary of State.</p> <p>8. To conclude, the Applicant's environmental assessment concludes that the risks associated with contaminated land are not significant and the provisions of Requirement 7, the OEMP, background environmental legislation and Highways England's licence ensure that appropriate measures will be taken in the event that any risk materialises, and so a pre-commencement requirement to carry out such investigation and assessment is not justified on the basis of the evidence available. Nonetheless, the Applicant is carrying out</p>	

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				additional investigations as part of the process for developing the detailed design. If these investigations uncover previously unidentified contaminated land the process for addressing it would be as set out in requirement 7 supplemented by OEMP measures cited above.	
Fg.2.29	Applicant Environment Agency Wiltshire Council	<p><b>Contamination</b></p> <p>i. Should Requirement 7 be updated to clarify that, if contaminated land and/ or groundwater is found works in that area should cease until the risk assessment is completed and (if necessary) the remediation is approved?</p> <p>ii. If not, why?</p>	<p>Whether it would be necessary to cease all works in an area if contaminated land is found would depend on the nature of works being carried out, nature and extent of any contamination identified and remediation approach that may be proposed. It may be possible for certain types of non-intrusive works to continue whilst the investigation and assessment is carried out without increasing the risks of mobilisation of the contamination.</p> <p>In the interests of expediency for the contractor we do not consider that a blanket approach requiring all works to cease in every case is appropriate. We would expect the CEMP to identify the process that will be followed in reporting, investigating and remediating any contamination. This will include detailing circumstances when works should cease.</p>	<p>1. Please see responses in the written summaries of oral submissions put at the Development Consent Order hearing [REP4-029] on 4th June in section 4.6 and the Flood risk, Groundwater, Geology and Waste hearing [REP4-032] on 11th June in section 7.5, in particular the post meeting note referring to the measures in MW-GEO2 of the OEMP issued at Deadline 4 [REP4-029] to address unexpected contamination.</p> <p>2. Highways England considers that no change to the Requirement is required because:</p> <p>a. the remediation itself must be carried out in accordance with the approved scheme under Requirement 7(2), meaning that it can only proceed once the scheme is approved; and</p> <p>b. any work not consisting of remediation work and any measures required to be taken pending the approval of the remediation scheme would be adequately controlled by the background statutory obligations applying to the Applicant and the statutory powers held by Wiltshire Council and the EA.</p>	We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6. We have no further comment at this time.
Fg.2.30	Applicant Environment Agency Wiltshire Council	<p><b>Contamination</b></p> <p>i. Should MW-WAT2 and MW-WAT7 in the OEMP also require consultation with Wiltshire Council in respect of the Water Management Plan?</p> <p>ii. If not, why?</p>	Owing to their responsibility for ordinary watercourses and flooding from local sources we consider it appropriate for Wiltshire Council to be consulted on the Water Management Plan in addition to the Environment Agency.	1. Although this would have already occurred as a result of the inclusion of the Water Management Plan within item MW-G7 and the consultation requirements set out there, for clarity the OEMP has been updated at Deadline 6 to explicitly provide for Wiltshire Council consultation within items MW-WAT-2 and MW-WAT7.	We have no further comment.
Fg.2.31	Applicant Environment Agency Wiltshire Council	<p><b>Contamination</b></p> <p>Should MW-GEO1 in the OEMP be amended to also consider human health and environmental impacts of the scheme and contamination [REP4-020]?</p>	At present MW-GEO1 requires consideration of risks to human health from disturbance of contaminated land. We agree that this should be extended to also consider risks to the environment, specifically controlled waters, from disturbance of contaminated land.	1. Changes have been made to item MW-GEO1 of the OEMP in this regard at Deadline 6	We welcome the amended wording of MW-GEO1 in the Revision 3 OEMP submitted at DL6 which satisfies our previous request in response to Fg.2.31 for control of risks to the environment from disturbance of contaminated land.
Fg.2.32	Applicant Environment Agency Wiltshire Council The Stonehenge Alliance	<p><b>Contamination and groundwater flow</b></p> <p>In respect of the tunnel boring methodology and the potential for there to be a risk of pollution or impediment to groundwater flow the Environment Agency notes that OEMP: PW-G1, MW-G5, MW-G7, MW-WAT8, MW-WAT9, MW-WAT 10, MW WAT11, and MW-WAT14 provide <b>some</b> control of these activities (emphasis added) [REP4-020]. Are the controls adequate and, if not, what additional controls are required to mitigate any risks appropriately?</p>	<p>We consider that existing controls are adequate for managing the risks from construction at this stage of the scheme.</p> <p>However, we will expect detailed assessment of the effects of the construction method chosen following detailed design including the degree of invasion of drilling fluids and grouts, risk to groundwater quality from these and the long term impact on groundwater levels and flows caused by additional impedance beyond the designed cross-section of the tunnel.</p> <p>We expect this assessment to be delivered within the Groundwater Management Plan (MW-WAT10) and as part of the approval process for ground treatments (MW-WAT9).</p>	<p>1. The Applicant considers that controls are adequate. The response at Item 18.2.47 of the Deadline 5 Submission - 8.36 - Comments on any further information requested by the Examining Authority and received at Deadline 4 [REP5-003] states the following:</p> <p>2. See response to agenda item 5.1 in the oral submission report from ISH4 [REP4-032].</p> <p>3. Highways England, as the Scheme promoter, is responsible for ensuring that groundwater resources, including the supply and quality of groundwater, are protected during the construction and operation of the Scheme. Potential impacts on water supplies will be mitigated through the implementation of measures included within the Outline Environmental Management Plan (OEMP) [REP4-020] (at references PW-WAT1 and WAT2, and MW-WAT1, WAT2, WAT3, WAT4, WAT5, WAT6, WAT7, WAT9, WAT10, WAT14, and WAT15), which is secured through paragraph 4 of Schedule 2 to the draft Development Consent Order [REP4-018].</p> <p>4. This therefore provides more than an adequate control framework and delivery mechanism to manage and deliver necessary and appropriate pollution control and limitation and removal of risk for impediment to groundwater flow arising from the tunnel boring activities.</p>	We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6. We have no further comment at this time.

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Fg.2.33	Applicant Environment Agency Wiltshire Council	<p><b>Dewatering</b> The OEMP now commits to the use of closed face tunnelling techniques. This should prevent the risk of large-scale dewatering being required [REP4-020].</p> <p>i. To what extent was small-scale dewatering assessed in the Environmental Statement and does it reflect the worst-case scenario in terms of dewatering?</p> <p>ii. Should a limit on the level of smaller-scale dewatering be secured as part of the DCO to ensure that dewatering, beyond that assessed, does not take place?</p> <p>iii. Is the approval/ permitting procedure sufficient to ensure any required dewatering is adequately controlled?</p>	<p>We do not consider that there has been any assessment of dewatering in relation to this scheme to date.</p> <p>The impacts of dewatering would depend on many factors including the location of abstraction and discharge and whether other control measures are implemented. The severity of impact would therefore vary if a certain rate of dewatering was implemented at different locations.</p> <p>We therefore do not consider it appropriate to attempt to set a maximum rate of dewatering. Rather, the impacts of any proposed dewatering should be assessed by the contractor based on the specific details of the operation.</p> <p>As detailed above, any change in design or construction method should be further risk assessed and the Environment Agency consulted to ensure the risk to the environment has been suitably assessed and agreement should be sought that any mitigation is sufficient to offset any impacts on the water environment.</p> <p>Under the Water Resources Act 1991, a licence is required from the Environment Agency if dewatering is proposed at rates greater than 20 m<sup>3</sup>/day. We will expect any application to be accompanied by a detailed assessment of impacts. Early dialogue with the Environment Agency over any proposed dewatering is advised to reduce the potential for delays.</p> <p>It should be noted that the Environment Agency will not grant a licence for dewatering or any other abstraction if it cannot be demonstrated that the impacts are acceptable. By the applicant requiring EA approval for any risk assessment and mitigation through planning we should not get into a situation where planning is approved but the applicant cannot obtain a permit to undertake such activities.</p>	<p><b>i. To what extent was small-scale dewatering assessed in the Environmental Statement and does it reflect the worst-case scenario in terms of dewatering?</b></p> <p>1. Small scale dewatering is not required for the current design and construction methods and therefore there were no potential impacts to be assessed in the Environmental Statement.</p> <p>2. A response related to dewatering was provided as a post hearing note to Issue Specific Hearing 4, Deadline 4 Submission - 8.30.2 Written Summaries of oral submissions at Issue Specific Hearings – Cultural Heritage [REP4-030] Item 8.1 i) which records that: In respect of the potential for a requirement for dewatering during construction based on the current design and construction methods, no abstraction of groundwater is anticipated. It is possible that temporary and localised groundwater control could be required for the construction of the tunnel portal slab to launch the tunnel boring machine and for some cross passages for mechanical and electrical services at Stonehenge Bottom. Information can also be found in the Applicant's responses to the Examining Authority's first written questions [REP2-031], references Fg.1.11 and Fg.1.41. The Applicant has committed, through the Outline Environmental Management Plan (OEMP) [APP-187], reference MW-WAT8, to adopt construction techniques which minimise, so far as reasonably practicable, the need for and extent of dewatering and groundwater abstraction. Compliance with the OEMP is secured by requirement 4 of the draft DCO.</p> <p>3. For ease of reference, MW-WAT8 states that the main works contractor shall be responsible for obtaining the necessary approvals and permits to enable and abstraction and discharge of pumped water in an approved manner. (Deadline 4 Submission - Appendix 2.2 Outline Environmental Management Plan [REP4-020]).</p> <p><b>ii. Should a limit on the level of smaller-scale dewatering be secured as part of the DCO to ensure that dewatering, beyond that assessed, does not take place?</b></p> <p>4. A limit on the level of small scale dewatering is not necessary as part of the DCO. This is secured through the approvals process and permits referred to in MW-WAT8.</p> <p><b>iii. Is the approval/ permitting procedure sufficient to ensure any required dewatering is adequately controlled?</b></p> <p>5. The Applicant considers that the approval/permitting procedures set out in the OEMP and secured by requirement 4 of the draft DCO are sufficient to ensure any required dewatering is adequately controlled.</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6. We have no further comment at this time.</p>
Fg.2.34	Environment Agency Wiltshire Council	<p><b>Dewatering</b> Are there any residual concerns in respect of potential dewatering and to what extent would the permitting regime deal with these?</p>	<p>There has so far been no assessment of dewatering relating to this scheme.</p> <p>Should dewatering be required, the licensing regime will ensure that dewatering is only allowed where it has been demonstrated by the applicant or their contractor that the impacts of the proposed operation are acceptable. In this case, we would expect the evidence for this to be provided within the Groundwater Management Plan and CEMPs prior to any licence application.</p>	<p>No response on website.</p>	<p>No further comment.</p>
Fg.2.36	Applicant Environment Agency	<p><b>Disapplication of legislation and protective provisions</b> i. Please provide an update on discussions in respect of the disapplication of legislation</p>	<p>Discussions with the Applicant's solicitors have concluded with agreement on the protective provisions. The Protective Provisions contained within the latest published version of the DCO are consistent with the agreement reached.</p>	<p>1. Please see the response to question CA.2.23 which brings together one answer on all matters related to disapplications and protective provisions for relevant statutory bodies and statutory undertakers.</p>	<p>We have no comments to make on HE's response.</p> <p>Discussions with the Applicant's solicitors have concluded with</p>

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		<p>and the related Protective Provisions?</p> <p>ii. Please clarify whether the current proposed wording now satisfies all the relevant comments raised in [RR-2060]?</p>			<p>agreement on the protective provisions. The Protective Provisions contained within the latest published version of the DCO are consistent with the agreement reached.</p>
Fg.2.37	Applicant Environment Agency Wiltshire Council	<p><b>Soils management strategy</b> In MW-G7 the OEMP states that the main works contractor will consult with Wiltshire Council, the Environment Agency (and others) on those aspects of the various specified plans relevant to their functions [REP4-020]. In respect of the Soils Management Strategy it appears to be unclear who would be consulted. Please provide clarity on this, for example would this include Wiltshire Council. Should this be more clearly stated in the OEMP?</p>	<p>The Environment Agency should be consulted on Soil Management Plan to consider the wider environmental impact of soil management on water resources and water quality. Land contamination issues may however be considered through CL:AIRE Definition of Waste Code of Practice and as such the relevant Qualified Person, appointed by the contractor will make a declaration on the suitability of the Materials Management Plan from the perspective of contamination.</p> <p>Since soils will largely be re-used for agricultural production, we would recommend that an appropriate body should also be consulted on the proposals to ensure suitability of any restoration of agricultural land – such as Natural England Catchment Sensitive Farming, the NFU or landowner(s).</p>	<p>1. The OEMP has been amended at Deadline 6 (item MW-GEO3) to make clear that Wiltshire Council and the members of HMAG will be consulted on the Soils Management Strategy.</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>We note the addition of the requirement for consultation with Wiltshire Council and HMAG on the Soils Management Strategy in MW-GEO3 of the Revision 3 OEMP. However, we request that the Environment Agency are also consulted on aspects of the Strategy relating to hydrological implications and contamination.</p>
Fg.2.42	Applicant Environment Agency Historic England	<p><b>Blick Mead hydrogeology</b> Notwithstanding the Applicant's position that future monitoring of groundwater at the Blick Mead site is not required, it is suggested that the site could/ would be monitored more generally and more widely (with reference to MW-WAT10). The Groundwater Management Plan is proposed to be prepared in consultation with the Environment Agency only who have no heritage responsibility. In the event that groundwater levels are affected at the Blick Mead site it is unclear how any reporting and subsequent remediation would be adequately secured without any requirement to take account of the heritage assets at the site. In this context, how would any general monitoring adequately take account of the effect on archaeological remains?</p>	<p>We would recommend that Historic England are also consulted on any monitoring data pertaining to archaeological sites including Blick Mead.</p> <p>Where any monitoring data or assessment indicates any impact at Blick Mead or other archaeological site dependent on saturation, we recommend that Historic England are consulted and their guidance sought.</p>	<p>1. The Groundwater Management Plan (item MW-WAT10 of the OEMP [REP4-020]) considers the following: a. Potential effects on groundwater (resources and quality) that fall outside other regulations such as the Environmental Permitting Regulations. b. An update to the Groundwater Risk Assessment for the final design and construction plan. c. The groundwater level and water quality monitoring and reporting programme. d. Development of baseline groundwater conditions and derivation of trigger levels and action levels/mitigation/action plans for exceedances and accidents/incidents.</p> <p>2. The Groundwater Risk Assessment referred to at item b) would include Blick Mead and other water dependent heritage assets as demonstrated in Annex 3 of Appendix 11.4 of the Environmental Statement, the Blick Mead Tiered Assessment [APP-282]. The OEMP (and therefore the Groundwater Risk Assessment considering heritage assets) is secured through Schedule 2, Paragraph 4 of the DCO [REP4-018]. In the unlikely event that groundwater levels are affected at Blick Mead, in accordance with standard practice during any necessary consultation on the Groundwater Management Plan, the Environment Agency would engage with other statutory bodies as necessary to ensure that heritage assets are taken fully into account.</p> <p>3. The Applicant confirms that monitoring of surface water and groundwater is ongoing at Blick Mead even though this is not required to inform or confirm the assessment of the effects of the Scheme because all effects were found to be non-significant at Blick Mead. 4. For additional background see Deadline 1 Submission - Blick Mead – Note regarding proposals for additional monitoring [REP1-007] which explains why additional monitoring is not required to inform or confirm the assessment of the effects of the Scheme. All</p>	<p>We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6.</p> <p>Protection of heritage assets does not fall within the remit or expertise of the Environment Agency and it should therefore not be the responsibility of the Environment Agency to ensure that heritage assets are adequately considered within the risk assessments.</p> <p>Where assessments indicate <b>any</b> impact at archaeological sites or other heritage assets, responsibility should lie with the Applicant or their contractor to consult the appropriate bodies.</p>

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				<p>groundwater effects were found to be non-significant with negligible changes to the hydrogeology of the Blick Mead area (paragraph 1.2.1). Nevertheless, as stated at paragraph 1.2.6, it was agreed at a meeting with Professor Jacques in April 2018 and with the Heritage Monitoring Advisory Group in May 2018 that hydrological monitoring at Blick Mead would take place.</p> <p>5. Monitoring of surface water and groundwater in and around Blick Mead (covering a greater area than just the low lying area and intermittent spring) has taken place and is continuing (see [AS-015] Additional Submission accepted at the discretion of the Examining Authority - Blick Mead monitoring to March 2019).</p> <p>6. The existing monitoring regime will continue but the additional monitoring requested by Professor Jacques is not required to inform or confirm the assessment of the effects of the Scheme. See Deadline 1 Submission – Blick Mead - Note regarding proposals for additional monitoring [REP1-007]. As stated at 1.4.2 of that report, “additional piezometers to infill the existing array will not add significantly to the conceptual model of the groundwater flow which is supporting the wetting of the site. The Scheme will have a negligible effect on groundwater levels at the site so there is no mechanism for impacts. As such, this additional monitoring is not required to inform or confirm the assessment of the effects of the scheme”.</p>	
Fg.2.44	Applicant Environment Agency Historic England Wiltshire Council Mark Bush on behalf of the Blick Mead Project Team The Council for British Archaeology	<b>Blick Mead hydrogeology</b> The extent of the archaeological remains at the Blick Mead site is unknown. To what extent should this influence any monitoring at the site both in terms of establishing the baseline and then ongoing monitoring?	No comment.		No comment
Fg.2.46	Applicant Environment Agency Historic England Wiltshire Council	<b>Blick Mead hydrogeology</b> In the Environment Agency’s response to DL4 it was advised that any dewatering in the vicinity of the Blick Mead site has the potential to impact on groundwater levels but that this would be subject to regulation by the Environment Agency [REP4-049]. It appears that an assessment of risk to all receptors would be required prior to the issue of any licence. Would any assessment of risk extend to the effect on archaeological remains and is there sufficient expertise in the process to scrutinise any heritage impacts prior to issuing any licence?	When assessing applications for abstraction, including dewatering, as part of our conservation duties we, the Environment Agency are required to have regard for sites or objects of archaeological interest and take into account any effect on such sites or objects in our decision making.  Should any assessment of an application for dewatering identify potential impacts at Blick Mead we would consult with Historic England for advice before granting any licence as part of the usual licensing process.	<p>1. With regard to dewatering, the Outline Environmental Management Plan (OEMP), item MW-WAT10 [REP4-020] sets out a commitment to update the Groundwater Risk Assessment for the final design and construction plan. Therefore, if there are refinements to the Scheme as a result of detailed design or construction methods these refinements (including dewatering) will be assessed.</p> <p>2. The Groundwater Risk Assessment referred to at item b) of MW-WAT10 would include Blick Mead and other water dependent heritage assets as demonstrated in Annex 3 [APP-282]. The risk assessment to be undertaken as part of MW-WAT10 and secured through the dDCO will therefore take account of the effect on archaeological remains.</p> <p>3. In accordance with standard practice during any necessary consultation on the Groundwater Management Plan the Environment Agency would engage with other statutory bodies as necessary to ensure that heritage impacts are taken fully into account.</p> <p>4. Expertise in the process would therefore be provided in the form of the risk assessment submissions and compliance with the terms of the dDCO and supporting documentation set out above and from engagement with the relevant statutory bodies.</p>	<p>We maintain our position as stated in our response to the Examining Authority’s questions (EXQ2) made at Deadline 6.</p> <p>Whilst the Environment Agency would consult with external bodies as part of the determination of any application for dewatering or abstraction licence, it is not the Agency’s responsibility to consult more generally on the significance of potential impacts of the wider scheme such as would be managed through the Groundwater Management Plan.</p> <p>It is the responsibility of the Applicant or their contractor to ensure that where impacts may occur at heritage sites (except those directly attributed to abstraction/dewatering), the appropriate heritage body is consulted and appropriate mitigation agreed. This responsibility should not be passed to the Environment Agency.</p>
Fg.2.47	Applicant	<b>Blick Mead hydrogeology</b>	If any further risk assessment identifies potential impacts at Blick Mead, we would expect that Historic	1. With regard to the final design, the Outline Environmental Management Plan (OEMP), item MW-WAT10 [REP4-020] sets out a commitment to update	We maintain our position as stated in our response to the Examining

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	Environment Agency Historic England Wiltshire Council	In the Environment Agency's response to DL4 it was noted that there is potential for the final design to deviate from that assessed to date and, if this were to occur, then further assessment of risk in respect of the magnitude and extent of impacts on groundwater would be required [REP4-049]. If this were to occur what measures would there be to ensure that any further risk assessment would take account of the potential to impact on the archaeology at the Blick Mead site?	England are consulted to provide expert advice on the significance of the impacts in relation to the objects of archaeological interest.	the Groundwater Risk Assessment for the final design and construction plan. Therefore, if there are refinements to the Scheme as a result of detailed design or construction methods these refinements will be assessed. 2. The Groundwater Risk Assessment referred to at item b) of MW-WAT10 would include Blick Mead and other water dependent heritage assets as demonstrated in Annex 3 [APP-282]. The risk assessment to be undertaken as part of MW-WAT10 and secured through the dDCO will therefore take account of any potential effect on archaeological remains.  3. In accordance with standard practice during any necessary consultation on the Groundwater Management Plan the Environment Agency would engage with other statutory bodies as necessary to ensure that heritage impacts are taken fully into account.	Authority's questions (EXQ2) made at Deadline 6.  As stated above, it is not the responsibility of the Environment Agency to conduct consultations on the Applicant's scheme for them as is suggested in their response to Fg.2.42, Fg.2.46 and Fg.2.47.  Responsibility for consultation with heritage bodies and agreement of appropriate mitigation measures for the protection of assets should rest with the Applicant or their contractor.  The <b>only</b> exception to this is in relation to specific applications made to the Environment Agency for a licence for abstraction or dewatering where we are the authorising body and may consult relevant external bodies prior to issuing a licence on the specific impacts related to the licenced activity.
Fg.2.48	Applicant Environment Agency Historic England Wiltshire Council	<b>Blick Mead hydrogeology</b> Please provide a detailed response to the submissions made by Mark Bush on behalf of the Blick Mead Project Team [REP4-047]. Please have particular regard to the tiered assessment and whether it would be necessary for this to be advanced ie to tier 4?	The groundwater risk assessment completed to date suggests that there is unlikely to be any significant fall in groundwater level in the chalk aquifer beneath the Blick Mead site as a result of the proposed tunnel. There is the possibility that the deposits receive a certain degree of wetting from superficial deposits above in addition to water from the chalk below and this recharge is unlikely to be affected by the proposed tunnel.  Should the tunnel design or proposed method of construction change to such a degree as to lead to impacts in chalk groundwater level at Blick Mead, any contribution from the superficial deposits above would continue.  If subsequent risk assessment suggests impacts on groundwater level in the chalk are likely to extend to the site then further investigation of the relevant importance of wetting from the chalk or superficial deposits would allow better assessment of overall magnitude of impacts on wetting of the deposits of interest.  Preservation of archaeological remains is the remit of Historic England who are the authors of guidance on carrying out the Tiered Assessment. We therefore defer to their judgement on the adequacy of the assessment completed to date.	1. A response to the submissions made by Mark Bush on behalf of the Blick Mead Project Team [REP4-047] was provided at Deadline 5 within the 'Deadline 5 Submission - 8.36 - Comments on any additional information requested by the Examining Authority and received at Deadline 4 [REP5-003]. . Key points concerning Blick Mead have been extracted from paragraphs 34.1.63-74 and are presented below for ease of reference.  2. <i>Significance of Blick Mead</i> Please see the Applicant's written summary of its oral submissions made at ISH 2, with respect to agenda item 4 (i) and item 8 [REP4-030], regarding the significance of Blick Mead and the OUV of the WHS. Highways England agrees with Historic England's comment at ISH 2 item 4 (ii) regarding the significance of Blick Mead and its contribution to the OUV of the WHS. Namely: "[Historic England] <i>confirmed that regardless of the significance of Blick Mead, it plays no part of the OUV, although regard still has to be had to Blick Mead in order to ensure heritage is properly safeguarded and managed.</i> [Historic England] <i>explained that this is the context in which Highways England has properly undertaken its assessment of Blick Mead as well as of the OUV on the whole</i> ".  3. Highways England therefore do not accept that the Mesolithic remains illuminate consideration of matters which are part of OUV. Regarding the significance of Blick Mead, Highways England has always accepted that it is of national (high) value (see Appendix 6.8 – Cultural Heritage - Summary of non-significant effects [APP-217, page 5]) and should be treated as such in terms of the NPSNN. The ES reports No Change and a Neutral Effect on the Blick Mead archaeological site.  4. See also the Applicant's response Comments on Written Representations [REP3-013] in response to the Stonehenge Alliance regarding the WHS inscription and the Mesolithic period [REP3-013, paras. 12.3.103–105]; and to the Blick Mead Archaeology Team regarding the significance of Blick Mead as a heritage asset [REP3-013, paras. 60.2.2 & 60.2.7].  5. Extent of Blick Mead	We maintain our position as stated in our response to the Examining Authority's questions (EXQ2) made at Deadline 6. We have no further comment at this time.

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				<p>The extent of the heritage asset known as Blick Mead is described in Appendix 11.4, Annex 3 Blick Mead Tiered Assessment, Section 2.2 [APP-282], which was reviewed and accepted by Historic England and Wiltshire Council Archaeological Services.</p> <p><i>6. Harm already caused to Blick Mead</i> The applicant does not accept that installation of the two water meters has caused 'significant harm to Blick Mead'. The installation was attended by an experienced archaeologist, who inspected the arisings for artefacts and recorded the deposit sequence. No artefacts were observed in the arisings.</p> <p>7. The test of substantial or less than substantial harm hinges on the loss of significance of the asset. The applicant acknowledges that the Blick Mead site contains Mesolithic deposits of national importance. As explained by the Applicant at the ISH2 (see written summary of oral submissions [REP4-030], agenda item 8), the EIA and HIA assessed Blick Mead as of national importance, equivalent to it being a designated heritage asset and a scheduled monument but did not afford it OUV status since it is not of the periods for which the WHS is inscribed.</p> <p>8. The preservational environment, which is suggested by the Blick Mead team to be more or less permanently waterlogged, will not, on the evidence of Dr Sladen for Highways England (as recorded in the written summary of oral submissions made at ISH2, in relation to agenda item 8 (ii) [REP4-030]), have been compromised. In any case, the significance of the site as a heritage asset of national importance has not been in any way diminished by these installations.</p> <p><i>9. Risk to preservation of remains and inadequacy of assessment</i> A response was provided to the evidence and submissions at the issue specific hearing on 6 June 2019, as recorded in the Applicant's written summaries of oral submissions put at Cultural Heritage hearings on 5th and 6th June 2019 [REP4-030] with respect to Agenda item 8(iii). In those submissions it was explained that the assessment that has been undertaken was entirely appropriate and adequate, and there is no basis for suggesting it does not comply with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. It was also reiterated at the hearing (as recorded in Deadline 4 Submission - 8.30.2 Written summaries of oral submissions put at Cultural Heritage hearings on 5th and 6th June 2019, Item 8.iii) [REP4-030]) that the impact assessment presented in the Environmental Statement Chapter 11 - Road Drainage and the Water Environment [APP- 049] confirmed that no element of the Scheme is likely to have a material effect upon the hydrology of Blick Mead and no mitigation would be required to preserve the significance of Blick Mead.</p> <p>10. During the hearing it was confirmed that Highways England has followed the required guidance from Historic England in the production of the Blick Mead assessment, Historic England further confirmed this at the hearing, noting also that the assessment conducted was adequate.</p> <p>11. The submission from the Consortium seeks to attribute views to the Environment Agency which are unsupported by the evidence. There were no further questions from the Environment Agency in its Deadline 4 submission in relation to Blick Mead and therefore the Applicant refutes the suggestion that the EA has no confidence in the conceptual model and refutes the suggestion that there could be a greater impact than currently predicted. The Environment Agency confirmed at issue specific hearing 2 that "even if water was coming from a perched water table above the site, it is clear that it would not be affected by the scheme. Equally if the water was coming from the aquifer below the site there was no evidence to suggest that the presence of the tunnel would result in any effect on the Blick Mead site". (Applicant's</p>	

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				<p>Written summaries of oral submissions put at Cultural Heritage hearings on 5th and 6th June 2019, Agenda Item 8.ii) [REP4-030]).</p> <p>12. In other words, the detail of the hydrology of the site will not affect the findings of the assessment because none of the sources of water (groundwater, rainfall and drainage) which contribute to and maintain the hydrology of Blick Mead will be affected by the Scheme and it therefore follows that the hydrology of Blick Mead will not be affected by the Scheme. Further detail on this point is provided in response to paragraph 34.1.63 (Deadline 5 Submission - 8.36 - Comments on any further information requested by the Examining Authority and received at Deadline 4 [REP5-003]).</p> <p>13. The Environment Agency stated the model was a good representation of the Chalk aquifer and shows no change in groundwater levels in the Blick Mead area (REP4-030 8 iii).</p> <p>14. It is incorrect that Highways England is reluctant to be bound to the use of the closed face tunnel boring machine (TBM). The use of a closed-face TBM for the main bored tunnels has been confirmed in the revised OEMP as submitted at Deadline 4 item D-CH-32 [REP4-020].</p> <p>15. Highways England met with Professor Brown on 16 April 2018 who stated that he does not have experience of the Avon valley geology at Blick Mead. Prior to the meeting we were led to believe this was the case and expected to be provided with data for use in the assessment. Professor Brown and Dr Bradley's submissions refer to Star Carr which is not comparable. We have had several meetings with Blick Mead representatives and have had full regard to their views. Their focus on comparison with Star Carr is not appropriate (at the ISH2 Highways England explained that Star Carr was hydrologically not similar to Blick Mead, and Dr Bradley agreed with this – see agenda item 8(iii) in the written summary of oral submissions [REP4-030]) and suggests that they do not have specific expertise in the hydrology at Blick Mead. 16. It is not correct to assert that HE had previously agreed to a 12 month monitoring period. On page 4 of REP4-047 it is recorded that Highways England responded on 26.2.19 [83], denying any agreement to monitor the water table at Blick Mead over 12 months; Highways England maintained the only agreement was to conduct the tiered assessment and to carry out monitoring in accordance with that. On page 11 [REP4-047] Chris Moore confirms on behalf of Highways England that "the intention is to commence monitoring at the earliest opportunity, the monitoring will extend beyond 12 months and continue into the construction phase". This <i>ongoing</i> monitoring is being discussed and agreed as part of ongoing monitoring for the Scheme. It is not however required to support the Environmental Statement which has been assessed on a precautionary basis for a range of hydrological conditions that exceeds those that might be recorded on site.</p> <p>17. By way of further explanation see paragraph 26.3.8 of Deadline 3 Submission - 8.18 - Comments on Written Representations [REP3-013] which states that a twelve-month period is commonly used to define a hydrological baseline because it covers the seasonal lows and highs. A low water level and highwater level period have already been recorded (autumn 2018 and spring 2019) at Blick Mead [AS-022] and span the extremes of a typical twelve month period. This is sufficient as a baseline and for correlation with long term records. There is no guarantee that conditions recorded over a typical twelve months will be representative of extremes. Therefore, the effects of the Scheme were assessed under a wider range of conditions than those likely to be experienced in a single year and include data from the drought of 1976 and floods of 2014.</p>	

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				<p>18. The extent of monitoring and the scenarios under which the effects of the Scheme have been assessed are appropriate and acceptable for EIA and for the consideration and determination of the application.</p> <p><i>19. EH's Guidance</i> Please see the written summary of Highways England's oral submissions made at ISH2 in relation to Agenda Item 8 (iii) [REP4-030] with respect to the Tiered Assessment and how the appropriate level is determined. The assessment, Appendix 11.4, Annex 3 Blick Mead Tiered Assessment [APP-282] was reviewed and accepted by Historic England's Senior Science Advisor and Wiltshire Council Archaeological Services' County Archaeologist.</p> <p>20. The assertion from the Consortium misrepresents the Applicant's position. As recorded in the written summary of oral submissions made at the ISH2 [REP4-030] with respect to agenda item 8(iii), "<i>Dr Sladen [on behalf of Highways England] confirmed that the tiered assessment process is not linked to significance of the archaeological site but to the reliability of the conceptual model. Historic England agreed with this, as did the Environment Agency</i>". The reliability of the conceptual model has reached an acceptable level and has been verified by monitoring. A Tier 4 assessment is only required where mitigation is considered necessary to facilitate long-term preservation. As no significant effects were identified, no mitigation is necessary and therefore additional tiers of investigation and modelling are not required.</p> <p>21. It is of note that the first page of the guidance (Historic England 2016 Preserving archaeological remains: Decision-taking for sites under development. Swindon. Historic England) states: "The emphasis throughout is on the benefits gained, both to sustainable development and the archaeological resource from understanding:  <ul style="list-style-type: none"> <li>• the significance and current state of preservation of the archaeological material</li> <li>• the potential development impacts of the proposed scheme"</li> </ul> It is therefore important to assess the significance of effects.</p> <p>22. It is not correct to assert that there is no certainty as to how the water environment at Blick Mead operates in light of the Environment Agency's representations, nor that the Applicant's assessment is inadequate. A response to assertions about the Environment Agency's submissions is provided in response to paragraphs 98 to 103 of the Consortium's submission (ibid). The Environment Agency has been provided with a response to questions on Blick Mead (paragraphs 33.2.6, 33.2.7 and 33.2.8 in the Environment Agency Deadline 4 comments). These responses confirm that groundwater level monitoring at Blick Mead supports the conceptual model i.e. the groundwater level in the underlying aquifer is such that there will normally be upward pressure that assists in maintaining the wet conditions in the Mesolithic deposits. Rainfall will also provide a further mechanism for wetting of the Mesolithic deposits (Section 2.6 of Annex Appendix 11.4 Annex 3 Blick Mead Tiered Assessment [APP-282]). The assessment has not identified any likely significant effects for Blick Mead and as a result no mitigation plan is required.</p> <p><i>23. Note of Dr Chris Bradley's evidence</i> The groundwater levels support the conceptual model which shows that the groundwater level in the underlying aquifer is such that there will normally be upward pressure that assists in maintaining the wet conditions in the Mesolithic deposits. Rainfall will also provide a further mechanism for wetting of the Mesolithic deposits (Section 2.6 of Appendix 11.4, Annex 3, Blick Mead Tiered Assessment [APP-282]). Vertical flow components can therefore be up or down depending on the hydrological conditions and the</p>	

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				<p>degree of interconnection between layers.</p> <p>24. Near surface stratigraphy and the geological setting is provided in the Blick Mead Tiered assessment (Annex 2 of the Groundwater Risk Assessment [App-282]).</p> <p>25. Groundwater levels are provided in [AS-015] and do not demonstrate the presence of a permanent isolated shallow water table. The levels are consistent with the conceptual model of an upward head gradient with the saturated deposits at Blick Mead being fed from the Chalk aquifer beneath. The drilling results do not show any evidence of perched water or of a difference in groundwater level in different strata, and these results are consistent with the findings of the Tiered Assessment presented in Annex 3 of Appendix 11.4 - Groundwater Risk Assessment [APP-282] and the Environmental Statement. Rainfall will also provide a further mechanism for wetting of the Mesolithic deposits. (Section 2.6 of Appendix 11.4, Annex 3, Blick Mead Tiered Assessment [APP-282]).</p> <p>26. Groundwater level monitoring results are presented in the Blick Mead monitoring report [AS-015]. Groundwater levels in WS09 are generally higher than those in the shallower WS10. This does not demonstrate perched water but does verify the conceptual model of an upward head gradient with the saturated deposits at Blick Mead being fed from the Chalk aquifer beneath. In February 2019 the heads reversed as would be expected at times when rainfall recharge is occurring.</p> <p>27. The Scheme will not affect the ground surface or infiltration characteristics at Blick Mead. Groundwater in the Chalk aquifer is recharged by rain. No effect on groundwater quality is expected.</p> <p>28. It is generally accepted that dry valleys are associated with enhanced permeability. The chalk groundwater contours indicate the catchment to Blick Mead is from a dry valley to the north which may be as a result of typical enhanced permeability seen in dry valleys. The tunnel is to the west in a separate groundwater catchment outside this dry valley.</p> <p>29. A local groundwater model would have boundary conditions of chalk groundwater inflows and runoff inflows from the A303. Neither of these will change under the Scheme and therefore the predictive model would have no changes from baseline conditions. Therefore, a local model would provide no additional insights relevant to the Scheme impacts.</p> <p>30. There are no significant effects predicted at Blick Mead [APP-282]. Therefore, detailed investigations into the detail of Blick Mead would not change the outcome of the assessment.</p> <p>31. See Deadline 1 Submission - Blick Mead - Note regarding proposals for additional monitoring [REP1-007] which explains why additional monitoring is not required to inform or confirm the assessment of the effects of the Scheme.</p> <p>32. The effects of the Scheme do not extend to the area identified in the assessment as Blick Mead.</p> <p>33. The Blick Mead site assessed in the Environmental Statement is close to the low-lying area and intermittent spring. 34. It is unclear how the 'edge of the dry' is being defined. Groundwater levels will fall during drought conditions and will continue to do so. A cycle of drying and wetting currently takes place so the concept of protection by 10cm of water is not necessarily correct. Whether this is the case or not, nothing that supports the water</p>	

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				environment at Blick Mead is being altered by the Scheme and therefore no effect on water levels is predicted as a result of the Scheme.  35. As stated in response to item 108 at paragraph 34.1.45 of Deadline 5 Submission - 8.36 - Comments on any further information requested by the Examining Authority and received at Deadline 4 [REP5-003]: The reliability of the conceptual model has reached an acceptable level and has been verified by monitoring. A Tier 4 assessment is only required where mitigation is considered necessary to facilitate long-term preservation. As no significant effects were identified, no mitigation is necessary and therefore additional tiers of investigation and modelling are not required or justified.	
Ns.2	<b>Noise and vibration</b>				
Ns.2.4	Applicant Environment Agency Wiltshire Council	<b>Piling</b> i. Has the terminology for non-impact piling now been agreed? ii. Has this been consistently set out through the documentation to ensure consistency at the River Till, Countess roundabout or other areas within the site where piling may occur?	i. Yes the terminology for non-impact piling has now been agreed. We understand this to be non-percussive piling. We are therefore satisfied with the wording in the latest version of the OEMP (June 2019). ii. We have not reviewed all of the application documents to confirm whether this is consistently used throughout. However, we would require that any piling in or near to watercourses should use the same principle of non-impact piling.	<b>i.Has the terminology for non-impact piling now been agreed?</b>  1.Yes. At the Noise and Vibration Issue Specific Hearing (that took place on 12 June 2019) the Environment Agency welcomed the commitment to non-impact piling at the River Till [REP4-049]. To confirm in answer to a query raised in that submission, non-impact piling is the same as non-percussive piling – the terms can be used interchangeably. The agreement with Wiltshire Council to non-impact piling at both the River Till and Countess Junction is set out in the Statement of Common Ground (SoCG) with Wiltshire [REP4 - 022] page 3-63.  <b>ii.Has this been consistently set out through the documentation to ensure consistency at the River Till, Countess roundabout or other areas within the site where piling may occur?</b>  2.The commitment to non-impact piling is consistent throughout the OEMP(REP4-020 - items D-NOI4 at Countess Junction and MW-BIO3 at the RiverTill). In addition, MW-G9 requires the contractor to undertake environmental risk assessment for piling at Countess Junction and at the River Till. Recent discussions with Wiltshire Council have not identified any other locations where piling would be a potential cause of concern.	We have no further comment.
WM.2	<b>Waste and materials management</b>				
WM.2.1	Applicant Environment Agency Wiltshire Council	<b>Site Waste Management Plan and Materials Management Plan</b> i. Should the Site Waste Management Plan and the Materials Management Plan be prepared in consultation with either Wiltshire Council and/ or the Environment Agency? Please provide reasons for your answer. ii. Both these plans are listed in MW-G7 where there is a general requirement to consult with the relevant bodies in respect of the areas relevant to their functions. However, if required, should this consultation be explicitly set out (for example in MW_MAT1	We understand that re-use of soils will be conducted under CL:AIRE Definition of Waste Code of Practice and as such the relevant Qualified Person, appointed by the contractor will make a declaration on the suitability of the Materials Management Plan.  Under the Code of Practice there is no requirement for the Materials Management Plan to be approved by the Environment Agency. Audits of the application of the Code of Practice are managed centrally by the Environment Agency. The EA will get involved if the applicant needs to apply for a waste permit. The documents will be submitted to the EA permitting team at that stage, at which point they will review whether the documents are adequate.	<b>i. Should the Site Waste Management Plan and the Materials Management Plan be prepared in consultation with either Wiltshire Council and/ or the Environment Agency? Please provide reasons for your answer.</b>  1. The CL:AIRE Definition of Waste Development Industry Code of Practice (Version 2, March 2011) is the framework under which the Materials Management Plan will be developed. There is a requirement for the Qualified Person, who will prepare and sign the declaration on the Materials Management Plan, to see written evidence that the Local Authority and Environment Agency does not object to the proposals. Highways England therefore considers that consultation will take place between the Contractor and Wiltshire Council and the Environment Agency on the principles of the Materials Management Plan. With regards to the Site Waste Management Plan, there is no obligation to consult with statutory bodies when preparing a Site Waste Management Plan.  <b>ii. Both these plans are listed in MW-G7 where there is a general requirement to consult with the relevant bodies in respect of the areas relevant to their functions. However, if required, should this</b>	Although there is no regulatory requirement to formally consult the Environment Agency on the Materials Management Plan under CL:AIRE, due to the size of the scheme, implications could be significant if not done correctly. We would therefore welcome consultation on the MMP to allow review of potential impacts on surface or groundwater quality or hydrology from altered ground conditions.

ExQ2	Question to:	Question	EA response 26 July 2019	Highways England comments to ExQ2 26 July 2019	EA response to HE comments 8 August 2019
		and MW_MAT2 of the OEMP [REP4-020]) to provide clarity?		<p><b>consultation be explicitly set out (for example in MW_MAT1 and MW_MAT2 of the OEMP [REP4-020]) to provide clarity?</b></p> <p>2. Highways England considers the wording in MW-MAT2 in the OEMP [REP4-020] to be sufficient because it references the CL:AIRE Definition of Waste Development Industry Code of Practice (Version 2, March 2011) and hence the requirements set out in Part 1 of this response. With regards to the Site Waste Management Plan, there is no obligation to consult with statutory bodies when preparing a Site Waste Management Plan.</p>	