

**Highways England: A303 Amesbury to Berwick Down
Project, Development Consent Order Application**

Scheme Reference: TR010025

**Responses to the Examining Authority's second Written
Questions (ExQ2)**

Prepared for the Stonehenge Alliance

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by

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Introduction

This document contains responses to questions issued by the Examining Authority for answer by Deadline 6, relating to:

- CH.2. Cultural Heritage
- De.2. Design
- Fg.2. Flood Risk, groundwater protection, geology and land contamination
- Lv.2. Landscape and Visual
- Ns.2. Noise and Vibration

The Stonehenge Alliance's earlier Written Representations and comments to the Examination to date set out our views on many of the issues covered in the questions. We therefore enlarge on or refer to those views mainly where new information is requested or where we hope it might be helpful to the ExA to reiterate earlier concerns.

CH.2 Cultural Heritage

CH.2.1. on consultation/agreement/approval

1. The statutory bodies have not, in our view, shown themselves in the case of the A303 Stonehenge scheme to "carry the greatest expertise" or to "operate in a completely independent and objective manner".

2. It is clear, from the evidence brought to the Examination by ICOMOS-UK and acknowledged experts in the field, that these experts disagree with statutory bodies represented at the Examination and HMAG (largely representatives of statutory bodies) about the findings of the HIA and the unsatisfactorily-explained separation of the cultural heritage of the WHS from its landscape when the two are obviously inseparable. The Scientific Committee was formed specifically to advise the HMAG and the Applicant who lack relevant expertise in the archaeology of the WHS. Members of the Scientific Committee who have the "required specialist skillset or expertise in a specific aspect of the landscape of the Stonehenge WHS" (Committee terms of reference) have given strong representations to the Examination in opposition to the Scheme and proposals for archaeological work prior to scheme construction. It is understood that other Scientific Committee members are similarly unhappy about the Scheme proposals (pers. comm.)

3. The Stonehenge Alliance has already expressed serious concerns about the independence and objectivity of the statutory bodies in our Written Representation on "Concerns about consultation on the Scheme" (REP2-133), Section 5: "Objectivity of the scheme assessment and

issues of conflict of interest”. Despite its length, we hope that it will be helpful to reproduce that section in full, below.

“5. Objectivity of the scheme assessment and issues of conflict of interest

5.1. The Secretary of State for Transport is the competent authority in respect of the final decision on whether the scheme should be granted a Development Consent Order. Thus, he/she will make the final decision on his/her own Department’s project. Under normal circumstances, such a situation would not necessarily be cause for concern. In respect of the A303 Stonehenge scheme, however, there are strong reasons for doubting the objectivity of the Secretary of State and the advice received by the DfT via Highways England.

5.2. The A303 Stonehenge scheme with a tunnel was announced by the Secretary of State for Transport in December 2014 and has been worked up and taken to the DCO application stage by Government-owned company Highways England.

5.3. From the outset, the Department for Transport/Highways England have received the support of Government adviser on the historic environment, Historic England, which is governed by a board appointed by the Government’s Department for Digital, Culture, Media and Sport. This body would therefore be expected to help to achieve the Government’s aims in respect of the A303 Stonehenge Scheme.

5.4. The A303 Stonehenge scheme has also been supported to date by English Heritage Trust, managers of the National Heritage Collection and of the Stonehenge visitor centre. Historic England is the sole owner of English Heritage Trust, so that there is a connection between the two bodies and thus both may be seen ultimately to be connected to the UK Government and likely to accede to its demands.

5.5. English Heritage Trust manages the Stonehenge monument itself and the “triangle” of land it stands on. Stonehenge and the triangle were given to the nation in 1918 by Sir Cecil and Lady Chubb and are now owned on our behalf by the Government’s Department for Digital Culture, Media and Sport.

5.6. Although it is not publicly stated to be the case, it may be assumed that English Heritage Trust would benefit from the A303 Stonehenge scheme, since loss of the view of Stonehenge from the A303 and no planned parking within sight of the henge to compensate for that loss would inevitably lead to higher visitor numbers at the visitor centre.

5.7. The National Trust, with over five million members, is a powerful and influential independent charity and it, too, has lent support to the Government’s A303 Stonehenge scheme. The Trust sees the c.3km tunnel (which would avoid its own land), as a means of “re-uniting” the Stonehenge landscape for the benefit of visitors in future. The tunnel scheme could provide opportunities for the National Trust to gain economic benefits from visitors to Stonehenge in future, something it is largely unable to do at present. It would be fair to say that without the support of the National Trust the scheme would not have been progressed so far.

5.8. Support for the A303 tunnel from English Heritage and the National Trust was confirmed in a letter from the Secretary of State for Transport to Alliance Chairman George McDonic in October 2014, before the announcement of a tunnel was made in Parliament, in which the Secretary of State stated that both organisations

“consider that a twin-bored tunnel of somewhere between 2.5km and 2.9km, if designed well, would have a transformational impact on the landscape of the Stonehenge World Heritage Site, removing the surface road and minimizing the harmful impacts of any tunnel scheme which lies within the boundaries of the World Heritage Site. I welcome this joined-up stance from English Heritage and the National Trust and it very much represents an important milestone in reaching a successful outcome from the study work.¹

5.9. There is an influential and powerful group of bodies supporting the Government in its A303 Stonehenge scheme, all of which, along with the UK Government, may be considered to have an interest in ensuring the scheme is implemented, despite the obligations of the World Heritage Convention and planning policy.

5.10. In our view, there are strong indications that there is a conflict of interest between the damage Highways England, for the Government as competent authority in the final instance, proposes should be done to the WHS, and Government’s duty to protect it. This conflict appears to be based primarily on what the Government considers it can afford financially. With the current support of its principal advisers who are, it appears and for whatever reason, apparently not impartial, the odds appear to be stacked firmly in favour of the Government at the expense of the WHS – in the face of widespread objections, both national and international. We therefore consider that the Government is in breach of Consideration (25) of EU Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU. The Infrastructure Planning EIA Regulations 2017, Section 35 concerning Objectivity and bias, also appears to have been breached. ²

4. The July 2019 Decision of the World Heritage Committee also calls into question the statutory bodies’ support for the Scheme. The Committee

“Notes with concern, that although the current scheme, which is now subject to the Development Consent Order (DCO) examination process, shows improvement compared with previous plans, it retains substantial exposed dual carriageway sections, particularly those at the western end of the property, which would impact adversely on the Outstanding Universal Value (OUV) of the property, especially its integrity, and therefore [the Committee] encourages

¹ Patrick McLoughlin MP to George McDonic, 23.10.14. <http://stonehengealliance.org.uk/wp-content/uploads/2015/04/SoS-DfT-response-to-SA-23Oct2014.pdf>

² SI 2017 No. 572. http://www.legislation.gov.uk/uksi/2017/572/pdfs/uksi_20170572_en.pdf

the State Party to not proceed with the A303 route upgrade for the section Amesbury to Berwick Down project in its current form” (Decision 43 COM 7B.95, para.4 (4 July 2019)).

CH.2.6. Geophysical techniques

Please see separate submission by Dr George Reeves.

CH. 2.8. Blick Mead, Vespasian’s Camp, and Amesbury Park RPG Settings

1. The Stonehenge Alliance mentions, in our Written Representation on “Heritage and the Historic Environment” (REP2-136), the potential impacts of the Scheme on the settings of Vespasian’s Camp and other nearby heritage assets including the WHS in its eastern part.

2. We are in full agreement with the concerns set out by the ExA in this Question. We are also concerned about the visual and aural impacts of the scheme on the ancient Avenue in this area: the topography and monuments seen from its path to/from the river are very likely to have had meaning for those who constructed and used it or looked towards it, possibly during ceremonial events, from other parts of the landscape, such as the heights of Vespasian’s Camp.

CH.2.9. DAMS DL4 Version [REP4-024]

CH.2.9.i. *Comments are invited on the expanded sections of the Archaeological Research Strategy, including the Research Questions. Can any light be shed on theories concerning changing populations over time, and the idea of a funerary zone to the west characterised by lithics, and a living zone to the east characterised by ceramics?*

A. The Stonehenge Alliance does not have the expertise to comment on the questions raised here. However, it is our opinion, expressed in our comments on the dDAMS (REP4-024) at Deadline 5, that without full recovery of archaeological evidence from the topsoil and from sub-soil features, the research questions posed cannot be properly answered.

CH.2.9. ii. *Comments are invited on [DAMS DL4 version] paras 5.2.7 and 5.2.8, which include detail on Tunnel movement monitoring stations. Should movement parameters be specified and trigger points set for the instigation of remedial measures to be put forward by the Contractor for agreement? Should movement monitors also be located elsewhere to safeguard archaeology, and should similar measures be put in place for vibration risks?*

Stonehenge Alliance response (with input from Dr George Reeves and Rupert Thornely-Taylor)

1. To monitor vibration and movement accurately during operation of the TBM, it would be necessary first to understand fully the strength and competence of the rock through which the tunnels would be bored, including the rock conditions above and below the tunnels. The Applicant has not yet demonstrated such an understanding. This could be aided by the

preparation of a 3-D model of what is acknowledged to be complicated geology of variable rock quality, with the existence of major fissures as well as fissures and voids of unknown size and extent.

2. A full understanding of sub-surface conditions could help in devising suitable monitoring procedures fit for the specific location and conditions that would be encountered. There is no method known to us by which to judge the method proposed by the Applicant and it is therefore not possible for us to answer the ExA's questions on it. Rupert Thornely-Taylor, vibration specialist, has advised us that

"A methodology for monitoring would have to be worked out as there are major uncertainties associated with measurement of vibration in soil, mainly due to the effect of transducer attachment." (email to K. Fielden, 22.7.19)

3. Clearly, there is no point in monitoring for movement if there is uncertainty as to how much movement would cause damage and what could be done to prevent it. Highways England has not provided a convincing methodology for monitoring or preventing damage from vibration or settlement (the latter said to be up to 2–3cm.). In our view, there is a possibility that settlement could be greater, if voids are caused to migrate. There is no detailed knowledge of the full archeological potential along the line of the tunnel, so it is not possible to say how much movement would cause damage to what; nevertheless, a precautionary approach needs to be taken.

In the opinion of Rupert Thornely-Taylor,

"If monitoring reveals levels of vibration from the TBM which are likely to have significant effects on archaeological remains, no mitigation is available other than stopping the TBM. Reducing its rotation speed or thrust force have a very small effect." (email to K. Fielden, 22.7.19)

4. Dr Reeves advises:

"Problems encountered during tunneling advances, causing significant halts in machine progress and grout pressure maintenance (for example when encountering a horizon of large flint boulders, or simply a TBM breakdown), could trigger ground movements, even up to ground surface level. When this occurs, significant damage to surface features (archaeological and others) could occur. Once this has happened, it is too late to rectify, and monitoring will only indicate the extent of damage. To obviate such eventualities, it is therefore necessary to understand the ground conditions below this World Heritage Site in great detail. This again indicates the necessity of creating a fully populated and informed 3-dimensional Ground Model for the whole tunnel and road route." (email to K.Fielden, 26.7.19)

5. It should also be borne in mind that there could be movement of the tunnel itself when in operation in the future, possibly as a result of local settlement arising from vibration from traffic, rock solution or changes in groundwater movement over time.

De.2. Design

DE.2.1. OEMP, Chapter 4: Detailed Design [REP4-020]

A. We agree that the title of this chapter should be amended and its scope widened to include areas outside the WHS affected by the Scheme. It needs to be borne in mind that the boundary of the WHS might be extended in future so that the same attention should be given to detailed design both within and without the WHS. The Scheme also lies within a designated Special Landscape Area.

De.2.2. OEMP, Chapter 4: Detailed Design - Design Vision [REP4-020]

A. The Stonehenge Alliance agrees that an overall design vision for the WHS and its setting is necessary and that for a Scheme of international importance such as this, it is not appropriate to leave the design to the contractor. Ideally, we would wish to see a design vision that is compatible with the Vision of the WHS Management Plan which has been agreed by all key stakeholders, including Wiltshire Council, Historic England and English Heritage and forwarded unchanged (presumably agreed) by DCMS to UNESCO. (Management Plan, Vision, p.10)
http://www.stonehengeandaveburywhs.org/assets/2015-MANAGEMENT-PLAN_LOW-RES.pdf

De.2.3. OEMP, Chapter 4: Detailed Design [REP4-020], para.4.4.3

A. We consider that there should be consultation on the fencing or any other safety measures preventing access to the cutting. It is vital that whatever measures are required for safety are not only effective but also low-key, with minimal impact in views over the wider landscape. The most appropriate measures might be more expensive which is, in part, why they should be consulted on and agreed beforehand.

DE.2.4. OEMP, Chapter 4: Detailed Design [REP4-020], para.4.4.4.

A. The Alliance considers that there should be consultation on the appearance of i) the River Till viaduct; ii) Countess flyover; and iii) Green bridges. Very little detail has been given in the DCO application documents on these substantial features which would have a major impact on their surroundings, along with associated safety and other measures such as noise and lighting screens.

Fg.2. Flood Risk, groundwater protection, geology and land contamination

For responses to ExQ2 Fg.2.23, 2.26, 2.32, 2.33 and 2.40, also DCO.2.15, please see the separate submission by Dr Reeves for the Stonehenge Alliance

Fg.2.39. Geology and soils

Stonehenge Alliance response (with advice from Dr George Reeves)

1. The Stonehenge Alliance has serious doubts about the Applicant's assurances that archaeological remains can be protected from any impacts arising from vibration and settlement, notably during use of the TBM but also in tunnel operation. We set out our latest observations on these matters under ExQ. CH.2.9; Ns.2.7 and Ns.2.8, below.

2. We do not consider that the Applicant's documentation to date provides adequate mitigation or protection for archaeology from tunnelling. There are requirements in the OEMP that monitoring strategies for vibration and ground movement will be prepared; the Heritage Management Plan is to show how the historic environment will be protected; and the contractor is to develop contingencies and identify measures to ensure the protection of such assets. No detail is given on how the assets are to be protected, thus "securing strategies" gives no confidence at this stage that archaeology would be protected in the event of vibration or settlement.

3. A thorough knowledge of the ground conditions along the line of the tunnel still appears to be lacking; while proposals to slow down the TBM and introduce grouting, should adverse impacts of vibration or settlement become apparent (as detailed in our response (point 4) to ExQ2. CH.2.9.ii, above) would not be effective in preventing damage. In the absence of established monitoring and mitigation methods for preventing damage to archaeology from tunnelling and given the unreliable stability of the Chalk Rock at Stonehenge, we are unable to recommend the use of the methods proposed. Nor are we able to advise on any alternatives, for the same reasons.

4. We hope that the ExA would wish to have confidence at the DCO stage in the strategies to be employed and that such important matters ought not to be left to the contractor.

Fg.2.40

Please see separate submission by Dr George Reeves for the Stonehenge Alliance

LV.2 Landscape and visual

(Stonehenge Alliance responses have been agreed with Andy Norfolk, Landscape Architect)

LV.2.1. Integrity of landscape and cultural heritage

LV.2.1.i.

A. It is important that the quotation on page 23 of the HIA is taken as a whole:

"The Scheme has been developed to avoid known concentrations of archaeological remains that make a significant contribution to the OUV of the WHS."

It is not simply “concentrations of archaeological remains” that contribute significantly to the OUV of the WHS, as the criteria and list of attributes of OUV make clear (see *WHS Management Plan*, pp. 26-34).

By avoiding “known concentrations of archaeological remains” the scheme does not take into account the possibility that there might be unknown concentrations of archaeological remains on the chosen route – as indeed has proved to be the case in the likely identification of settlement traces in the area of the proposed western road cutting.

LV.2.1.iii.

A. One long barrow was discovered in 2017 while another, known about but flattened by ploughing, was re-identified. The group of long barrows is a uniquely dense cluster of such monuments around the head of a dry valley which descends to Stonehenge Bottom and thence to the Avon. Their interconnectedness is obvious but the reasons for their spatial disposition are yet to be fully explored. Future research might provide answers but major intervention in the landscape could preclude better understanding. The proposed physical interruption and destruction of the topography within this group of barrows displays extreme absence of sensitivity to what makes the WHS of OUV to mankind.

LV.2.1.iv.

A. We agree with Paul Garwood’s findings and would underline that the Bronze Age barrow groups were often formed in alignment with the topography (on ridge tops) and sometimes behind and in alignment with earlier long barrows. There was an obvious relationship – perhaps in the form of respect for the ancestors– between Neolithic and Bronze Age barrows constructed over a period of some 2000 years; there may also have been significance in the topographical disposition and interrelationships of these barrows, Stonehenge, and other major monuments in the landscape.

LV.2.1.v.

A. This is a considerable drawback. Lack of images of these fascinating and obviously significant connections has meant that most people commenting on the Scheme would not realise that such connections either exist or are important.

LV.2.1.vi.

A. The Stonehenge, Avebury and Associated Sites WHS was designated at a time when buffer zones were not mandatory but only required “whenever necessary” (*Operational Guidelines* 1984, para. 14. <https://whc.unesco.org/archive/opguide84.pdf>). For some years after designation it was thought that a buffer zone would not be necessary. Subsequently, large-scale Government visitor-centre and road projects at Stonehenge presumably made the lack of a buffer zone at Stonehenge convenient. Over time, with the expansion of military building at Larkhill, the construction of a new visitor centre and vehicle parks at Airman’s Corner and the extensive roofscape of Solstice Park, east of Amesbury, the setting of the Stonehenge part of the WHS has been compromised in large part. It is therefore all the more important that what remains of the setting of the WHS should be protected from further major development.

LV.2.1.vii

A. We agree with the observation made here concerning the Longbarrow junction works. There would be little point in extending the WHS boundary in this location were the Scheme to go ahead. Similarly, the proposed re-configured junction at Rollestone Crossroads would be prominent and intrusive on the northwestern boundary of the WHS, impinging on views from the WHS itself as well as its setting.

LV.2.3. Visual receptors associated with the route of the existing A303 and Green Bridge 4

LV.2.3.i and ii

A. The Alliance's landscape specialist, Andy Norfolk, has given his professional opinion on the lack of analyses by Highways England of the visual effects of the Scheme from the ex-A303 and Green Bridge 4 (Written Representation REP2-137, paras. 23 and 24). We have asked for dynamic images of these views but they have, so far, not been provided by the Applicant. Common sense indicates that these views would show the Scheme to be wholly out of keeping with the character of the WHS and its landscape and strongly disruptive of any potential for enjoyment, identification and contemplation of the attributes of OUV in these locations.

LV.2.4. Tranquillity

Please see separate submission for the Alliance by Clive Bentley of Sharps Redmore

Ns.2. Noise and Vibration

Ns.2.1. Tranquillity.

Please see separate submission for the Alliance by Clive Bentley of Sharps Redmore

Ns.2.7. Vibration effects on archaeology

NS.2.7.i–iv

A. The Stonehenge Alliance has not been asked to give answers to these questions and they do not appear necessarily to relate specifically to vibration caused by a tunnel boring machine. In addition to our comments given under ExQ. CH.2.9, above, vibration specialist Rupert Thornely-Taylor has, however, offered the following comments to each question (by email to K. Fielden 22.7.19):

"i) There are no standards applicable to protecting archaeological remains that I am aware of. A methodology for monitoring would have to be worked out as there are major uncertainties

associated with measurement of vibration in soil, mainly due to the effect of transducer attachment.

“ii) The precautionary approach is to base significance thresholds on ambient vibration levels. Sources of ambient vibration are the passage of vehicles on the nearby roads, footfalls, wind turbulence at Stonehenge and seismic activity. Both footfall vibration (which would obviously be greatest at the solstice event) and seismic activity occur infrequently. Earthquakes are felt in Wiltshire (February 2018 attracted attention). Unfortunately converting earthquake magnitudes into vibration units is not straightforward. They are of very low frequency, compared to TBM vibration which extends up into the audible range.

“iii) Please see second sentence under comment i), above.

“iv) If monitoring reveals levels of vibration from the TBM which are likely to have significant effects on archaeological remains, no mitigation is available other than stopping the TBM. Reducing its rotation speed or thrust force have a very small effect.”

Ns.2.8. Settlement effects on archaeology

Ns.2.8.i–v

A. Again, the Stonehenge Alliance has not been asked to answer these questions. In addition to comments by Mr Thornely-Taylor under ExQ CH.2.9, we would, however, like to make the following comments on the itemized questions.

i) We know of no agreed methodology for measuring settlement or what standards could be used to safeguard archaeological remains of differing kinds and fragility from damage arising from tunnel boring or the tunnels in operation.

ii) Again, without knowing what archaeological remains would be involved, it is difficult to suggest the level of settlement at which significant effects would occur.

iii) We know of no current method of monitoring settlement to protect archaeology; nor do we know if the methods suggested by the Applicant would be effective in both monitoring and protecting archaeological remains.

iv) As with the impacts of vibration on archaeological remains, the only certain method of preventing damage is to stop the TBM. Given the uncertainty of how best to monitor settlement, we cannot advise on positions of monitoring locations.

Further comments from Dr Reeves (email to K. Fielden 26.7.19):

“Thorough and complete ground characterization along the project route, and especially along the proposed tunnel alignment, has not been achieved by Highways England.

“Problems encountered during tunnelling advances, causing significant halts in machine progress and grout pressure maintenance, (for example when encountering a horizon of large flint boulders, or simply a TBM breakdown), could trigger ground movements, even up to ground surface level. When this occurs, significant damage to surface features (archaeological and others) could occur. Once this has happened, it is too late to rectify, and monitoring will only indicate the extent of damage. To obviate such eventualities, it is therefore necessary to understand the ground conditions below this World Heritage Site in great detail.

“This again indicates the necessity of creating a fully populated and informed 3-dimensional Ground Model for the whole tunnel and road route prior to any discussions with potential contractors, let alone the awarding of any contracts.”

Ns.2.9. Noise

A. The experience of walking along the ex-A303 and in the region of the Winterbourne Stoke Barrow Group would obviously not be improved by the distraction close by of a major road cutting and tunnel portals, fast-moving traffic, noise including decelerating on the slip roads and vehicle lights at night.