From: [redacted]
To: Richard Price
Cc: A303 Stonehenge
Subject: Stonehenge Alliance responses to Highways England"s comments on Written Representations
Date: 21 June 2019 21:07:19
Attachments: [redacted]

Dear Richard,

I attach the following responses to Highways England's comments on Stonehenge Alliance's Written Representations on:

Landscape and visual aspects of the LVIA by Andy Norfolk
Heritage and the historic environment by Kate Fielden
Concerns about consultation on the Scheme by Kate Fielden
Transport and economics by Simon Temple
Flood risk, groundwater protection and land contamination by Dr George Reeves
Vibration from tunnel boring by Rupert Thornely-Taylor
The Cultural Heritage Value Report by Alan James

The response from Clive Bentley on Highways England's comments on his WR on Tranquillity will be sent to you as soon as he is able to let me have it some time in July, as I advised you earlier by email and telephone. He is currently abroad. He and I do apologize for this and hope that the Panel will be willing to receive it late.

All best wishes –

Kate

For Stonehenge Alliance

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

Scheme reference: TR010025

Response to Highways England's comments (REP3-013)

on Written Representation on Landscape and Visual Aspects of the LVIA (REP2-137)

by

Andy Norfolk

for the Stonehenge Alliance Ref. 2001870

Introduction

The following response to Highways England's comments on Andy Norfolk's Written Representation REP2-137 on Landscape and Visual Aspects of the LVIA, for the Stonehenge Alliance, is by Andy Norfolk.

Highways England's comments appear at Section 14 of Highways England's document REP3-013: Deadline 3 Comments on Written Representations.

Andy Norfolk's responses are numbered according to Highways England's numbered comments.

Responses to Highways England's numbered comments

14.1.2
It remains the case that the tables are not consistent and use differing levels of classification. This is not related to the necessity to consider landscape and visual effects separately.

14.1.3
It remains the case that the international value of the World Heritage Site has not been taken into account in the assessment of landscape and visual effects and these have been understated precisely because this threshold has been consistently avoided in the landscape and visual impact assessment. I note that GLVIA3 paragraph 5.29 also states at bullet point 1 that "*There cannot be a standard approach as circumstances will vary from place to place*".
Clearly the Stonehenge World Heritage Site must be accorded appropriate respect and not be treated as simply any ordinary place. The Highways England (HE) approach seeks to treat this exceptional site as just another bit of land affected by a road, when it clearly is not. I also note that Table 5.1 of the GLVIA3 includes many criteria, which, if applied correctly, demonstrate beyond any doubt that the Stonehenge WHS is a very highly valued landscape requiring an appropriately very high sensitivity classification. GLVIA3 also says at bullet point one in 5.45 that "*Assessments should reflect: internationally valued landscape recognised as World Heritage sites*" and this is following a comment that the value of landscape receptors will reflect the importance of landscape designations and which lists a hierarchy of levels of designation from international to local. It is clearly not an appropriate response to suggest that the internationally designated landscape of the World Heritage Site is of no more value than areas outside it.

14.1.4
Taking into account the synthesis of the Statement of Outstanding Universal Value for the WHS (WHSMP, p. 26ff.) which explicitly refers to interrelated monuments and their associated landscapes, it must be clear that any disinterested and objective assessment of the situation must recognise that the Stonehenge WHS is uniquely susceptible to change of the type proposed. It is disingenuous to pretend otherwise.

14.1.5
This comment again pretends that a very high classification, recognising what is said in the synthesis of the SOUV, would not affect conclusions of an assessment of effects when it must be obvious that it would do just that. The failure to take into account the special characteristics of the WHS results in down-playing effects, as I have already stated.

14.1.7
An entire level of classification has been omitted, as is obvious from any objective examination of the LVIA. Pretending that this is not the case is not helpful to an objective assessment of landscape and visual effects.

14.1.~~9~~
GLVIA3 is quite explicit in paragraph 8.10 that tables and matrices "*if used and described correctly, can be effective in complementing the text, providing a useful summary of important information*". The LVIA does not include a narrative description of effects on individual landscape receptors but only a matrix in which the descriptions of effects are not properly related to landscape receptors.

The Glossary to GLVIA3 says landscape receptors are "*Defined aspects of the landscape resource that have the potential to be affected by a proposal*." GLVIA3 says at bullet point 1 in paragraph 3.21 that there must be identification of "*landscape receptors, including the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape in different areas*".
There seems to have been no systematic attempt to identify landscape receptors, for example, key landscape characteristics, landscape elements and landscape features, within each landscape character area which could be affected by the proposed development. Landscape character areas are areas of a landscape with particular and individual character resulting from aspects of the landscape and components of the landscape within them. Without examining the effects on the parts and aspects of a landscape character area that make it unique and give it its individual character, it is not possible to objectively describe and analyse effects upon it. Since these have not been identified and described in detail, there is no related systematic analysis of the potential effects upon each of these landscape receptors, how they might be affected and by how much. This kind of analysis is vital for any fair, reasoned and objective assessment of landscape effects.
There is no systematic narrative description of landscape receptors and how they would be affected by the development in the ES. Instead it relies on descriptions of effects on landscape characterisations at various levels. These are not landscape receptors, but descriptions of landscape character, which may include reference to specific elements, or key characteristics, which could be defined as receptors. The approach taken is far too broad-brush and does not get down to the detail of real landscape receptors. This is clear in Table 7.11 of Chapter 7 of the ES APP-045 and in Appendix 7.7 of APP-227 which do not itemise landscape receptors and the effects upon them. Despite claims by Highways England that receptors have been identified this has clearly has not been done. This means that there is no clear explanation of, or justification for, the conclusions about landscape effects in ES Appendix 7.7 (APP-227) and therefore, with no published "working-out" to support the conclusions, these have very limited credibility.

14.1.15
Highways England says that "*The importance of the interrelation between monuments in the Stonehenge and Avebury World Heritage Site (WHS) is considered within the landscape and visual impact assessment [APP-045] as set out in paragraph 7.8.6 (c)*." This paragraph says "c) *Avoiding the creation of new upstanding earthworks which would conflict with the inter-relationship of archaeological monuments/features within a rolling open landscape*".

Clearly this does not meet the test of identification of this interrelationship as an important landscape receptor which should be properly described and analysed as part of the assessment of landscape effects within a landscape and visual impact assessment.

14.1.17 to 14.1.22
The number of viewpoints should of course be proportionate to the development and its setting, but we are considering very substantial engineering works associated with a World Heritage Site where a very high level of detail in the consideration of effects should be taken as necessary and not optional. The problem remains that the viewpoints selected are not truly representative and do not include those with the potentially greatest effects. They do not take into account those areas from which the public would have views of the proposed engineering works in the future – and LVIA is about taking into account potential effects of a development. I have walked along the A303 through the WHS. Although the verge is narrow and uneven, I know I'm not the only one to do this. During the course of carrying out very many LVIAs during my career I have frequently walked alongside busy roads to assess potential visual effects on their users. I have no doubt that Highways England has suitably experienced staff who could have assisted with obtaining suitable views from viewpoints along the A303 within the WHS. The whole point of a landscape and visual impact assessment is not merely to look at the current situation but how that would change as the result of the development. It is simply not good enough to claim that "*the ability to walk within the footprint of the road (as proposed by the Scheme reverting the A303 to a Restricted byway) does not currently exist, and the assessment is based upon the existing situation*." In fact, this statement displays a remarkable failure to grasp the fundamental reason for carrying out a landscape and visual impact assessment.

4.1.29 to 14.1.31
I have set out above why Highways England are wrong to claim what they do about their methodology in their response.

14.1.33
My comment that Table 7.2 within the ES included both landscape and visual effects was in the context of my discussion of landscape effects at that point in my statement. My point at that section of my statement was precisely that landscape and visual effects should be considered separately.

14.1.35 and 14.1.37
I have explained above that Highways England has not in fact considered or itemised effects on specific landscape receptors within landscape character areas,

including those identified in the WHSMP. This does not comply with GLVIA3. HE's response does not deal with this issue. For example, GLVIA3 at bullet point 2 in paragraph 8.8 says that reporting should include "*systematic identification and description of potentially significant effects that are likely to occur*" and there is no such section in the ES and certainly not in APP-227.

14.1.39 to 14.1.41
HE again spectacularly fails to get the point about the assessment of landscape effects. I refer again to GLVIA3 which says at bullet point 1 in paragraph 3.21 that there must be identification of "*landscape receptors, including the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape in different areas*".
What I commented on in my representation was paragraph 8.3.7 of the WHSMP which says "*The main pressures on the landscape continue to include development and changes in land use which can alter or even destroy these often subtle, but important visual and contextual relationships. Such relationships are in themselves attributes of the OUV of the WHS*." The HE response does not deal with this issue in any meaningful way.

14.1.43
Advice on viewpoints is that it is appropriate to take a worst-case scenario approach and that they should be selected to show the greatest effects that could result from a proposed development. My point is that this does not seem to have been done. It is up to HE to find the correct viewpoints to properly illustrate the potential effects of the development

14.1.44
My point was about the views from the existing A303 which would exist in modified form from the proposed by-way which would replace it, not simply about views from green bridge 4. There will be views of the cutting at the west side of the WHS from the proposed by-way replacing the A303 and these have not been adequately considered in the ES.

14.1.46
Including comments in a different section of the ES using different methods of assessing impacts does not and cannot replace proper consideration of effects in the LVIA using the standard methodology. The visual effects on receptors along the A303 have not been properly assessed.

14.1.48
The interpretation panels are not at the places from which the proposed development may be most visible. Nor are such locations the most appropriate because by their nature people will be focussing on the panels and not the wider landscape. It would be more appropriate for viewpoints to be where panoramic views across the WHS can be seen demonstrating the interrelationships between monuments. My point stands that the viewpoints selected for the LVIA do not take this into account.

14.1.50 and 14.1.52
HE haven't bothered to provide an assessment of views from viewpoints along the

proposed by-way where people would be able to see the cutting at the west side of the WHS, but then in this response seem to think they have. In any case this response misses the point yet again. It is a stated policy of the WHSMP that more areas of the WHS will be opened up for public access. This goes well beyond a by-way to replace the A303 and the response to my points about future wider public access do not deal with this issue.

14.1.54 to 14.1.57
The HE response does not deny that in future people will be very aware of the very large scale of the engineering works for the cuttings at either end of the tunnel and of course the very large scale of the new junction west of the existing Longbarrow Crossroads. This would affect how people perceive the landscape as well as the view and is thus both a landscape and a visual effect. There is no adequate assessment of these effects within the ES. The HE response only deals with mitigation measures and not the nature, magnitude and significance of the original effects.

1.4.60
HE have again missed the point. There has been no adequate assessment of landscape effects of the proposed development adjacent to the western edge of the WHS. HE's response again deals with mitigation, rather than the lack of an assessment of the nature, magnitude and significance of effects on specific landscape receptors.

1.4.63
My point that the new engineered structures would introduce large scale structures and linear features into the landscape resulting in landscape effects has not been answered by HE. Instead the response focusses again on visual effects, which is not the point I was making, but does demonstrate the confusion between landscape and visual effects in the LVIA.

1.4.65
I've discussed this above. There is NO systematic identification and description of potentially significant effects on landscape receptors in the ES. Nor is there a "*transparent and clearly explained assessment of the significance of effects*" as required by GLVIA3 paragraph 8.8 bullet point 3.

1.4.68
The potential landscape effects have not been properly assessed as I've stated many times. The visual effects have been partially assessed but there are major flaws with that assessment. Without a proper and thorough description of effects there can be no reliable conclusions about their significance. However, my point, restated in paragraph 14.1.67 of the HE response, that beneficial and adverse effects cannot legitimately be offset one against the other in the way that has been done in the ES has not been answered at all.

1.4.69
Here again HE are ignoring landscape effects and focussing on visual effects. This response misses the point yet again. My comment was about landscape effects and not visual effects.

1.4.73
Putting a very large engineered junction at the edge of the WHS will affect the landscape. The new junction would change forever how this area of landscape is perceived and how it exists as a resource resulting in a permanent landscape effect. As is pointed out in GLVIA3 at 2.2 "*Landscape is about the relationship between people and place. It provides the setting for our day-to-day lives… People's perceptions turn land into landscape*". This complements Interim Advice Note 135/10 (IAN135) which says at 2.3 that *"It should also be noted that 'Landscapes are considerably more than just the visual perception of a combination of landform, vegetation cover and buildings – they embody the history, land use, human culture, wildlife and seasonal changes of an area. These elements combine to produce distinctive local character and continue to affect the way in which the landscape is experienced and valued. However, the landscape is also dynamic, continually evolving in response to natural or man-induced processes*" (See GLVIA para 2.3). Both explain that landscapes are not views but a very great deal more.

The response from HE again focusses on visual effects. Rounding off earthworks won't remove or lessen the landscape effect. The HE response again demonstrates a failure to understand the distinction between landscape effects and visual effects.

1.4.82 to 1.4.85
I note that these comments again fail to address the points I made. There is a clear and persistent failure by HE to understand what landscape effects are, but perhaps that should not by now be a surprise because they have failed to identify them or assess them properly. Chalk downland is a valuable habitat and restoring it is welcome. However, this could be done without the proposed large-scale extensive engineering works. No one passing through the proposed new junction west of the existing Longbarrow Crossroads will be in any doubt about the large-scale of the proposed highways works nor how much the landscape has been changed by them. The proposed planting is quite minimal compared to the scale of the junction.

1.4.187 to 1.4.189
My comment is about what is said in Chapter 1 of the ES at 1.2.2. Many people might read just the summary – the volume of documents relating to the scheme is daunting – and take what is said there at face-value. It is misleading and comments from HE do not alter that.

In conclusion it remains my professional opinion that the LVIA has not been properly carried out. Landscape receptors have not been properly identified and there has been no systematic identification and description of potentially significant effects on landscape receptors. Visual receptors have been identified, but the selection of viewpoints is flawed and does not take into account some potentially very significant views. There has been no transparent and clearly explained assessment of the significance of effects. The conclusions in the ES at APP-227 cannot be regarded as credible because they are not supported and justified by a proper assessment of potential effects.

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

Scheme reference: TR010025

Response to Highways England's comments

(REP3-013)

on Written Representation

on

Heritage and the Historic Environment

(REP2-136)

by

Kate Fielden

for the Stonehenge Alliance Ref. 2001870

Introduction

The following response to Highways England's comments on Written Representation REP2-136 on Heritage and the historic environment, for the Stonehenge Alliance, is by Kate Fielden.

Highways England's comments appear at Section 12 of Highways England's document REP3-013: Deadline 3 Comments on Written Representations.

Note: responses for Stonehenge Alliance are numbered according to Highways England's numbered comments.

Responses to Highways England's numbered comments

12.1*. General and cross-topic*

12.1.3–6

Highways England's Scheme does not comply with the Government's obligations under the World Heritage Convention to protect the WHS (and thus to sustain its OUV), as is repeatedly made clear by successive Advisory Missions to Stonehenge and Decisions of the World Heritage Committee. The 2019 Analysis and Conclusions of the UNESCO World Heritage Centre, ICOMOS and ICCROM in their Report to the World Heritage Committee on the Stonehenge, Avebury and Associated Sites World Heritage Site endorses that view. These views are echoed in a Draft Decision prepared for the Committee's consideration in early July this year which, although subject to potential amendment, would not invalidate the advice of World Heritage Centre and international specialists.

12.1.8–10

Our comment is still valid. The Scheme concentrates on improvement of the central area of the WHS with severe damage to landscape and archaeology in other parts. This is not compatible with HMG's obligations under the WH Convention.

12.2. *Alternatives*

12.2.2–9

The Scheme does not meet the Vision (p.10) of the Management Plan or the primary aim of its strategy:

"This Management Plan sets the overarching strategy for achieving the correct balance between conservation, access, the interests of the local community and the sustainable use of the Site, whether for recreation and tourism, or for agriculture. ***The primary aim of the strategy is to protect the Site to sustain its OUV as agreed by UNESCO****, provide access and interpretation for local people and visitors, and allow its continued sustainable economic use. The Aims, Policies and Actions table in Part Four sets out how partners will work together to achieve this aim."* (*Management Plan*, p.10)

The redundant A303 that would become a byway would remain in the visual and archaeological record as a major feature right across the landscape – much as the grassed-over A344 is today but with a hard surface for permitted motorised and other non-motorised vehicles.

12.2.12–15
The fact that the recommendations of Advisory Missions and the WH Committee to date have "been considered carefully" and have "informed the development of the Scheme" does not appear to have resulted in their advice being followed.

12.2.18
Arguments put forward for not placing the W tunnel portal beyond the WHS boundary remain unconvincing, especially as the cost of doing this has been estimated by Highways England.

12.3. *Cultural heritage*

12.3.2–4
Our view as set out in para.12.3.1 is unchanged. Clearly, there is no "full recognition" of HMG's obligations under the WH Convention in the Scheme proposals.

12.3.6–47
Highways England tends to confuse OUV with attributes of OUV. The 2018 Advisory Mission endorsed the methodology used for HIA but was not in agreement with the conclusions reached on the assembled data. It is not acceptable to balance adverse and positive impacts of the Scheme on attributes of OUV in order to obtain an overall view on impact – as was also made clear by ICOMOS-UK at ISH 2. The ICOMOS HIA requirement is to protect attributes of OUV in order to protect the WHS and its OUV as Highways England points out in para.12.3.24.
There is no long-standing aspiration or commitment to remove the A303 from the WHS since inscription, nor does such an aim appear in any of the WHS Management Plans to date.

Highways England's comment in para. 12.3.26 again displays muddled understanding of the difference between OUV and attributes of OUV. Para.12.3.34 confirms what we have stated (para.12.3.25), that attributes of OUV include both designated and non-designated heritage assets.

Highways England is incorrect in stating (para.12.3.36) that the adverse effect of the A303 on the OUV of the WHS is highlighted in the nomination document and all three Management Plans though this may be considered by some to be no more than a semantic point. Highways England's baseline scenario for assessment of the Scheme remains unclear. There is and never has been any aspiration/commitment to remove the A303 from the WHS (para.12.3.39); nor is there at the present time.

The Integrity of the WHS is

"a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. Examining the conditions of integrity, therefore requires assessing the extent to which the property:

a) includes all elements necessary to express its Outstanding Universal Value;
b) is of adequate size to ensure the complete representation of the features and processes which convey the property's significance;
c) suffers from adverse effects of development and/or neglect.

(UNESCO Operational Guideline 88)

Integrity is required for a WHS to be designated. It is not "one of the foundations of OUV" as Highways England suggests. Although the A303 traffic has an adverse impact on the setting and enjoyment of certain parts of the WHS, this does not justify removal of only a section of the road from the Site. We discuss this more fully in our Written Representation at Section 1.3.4.1.

12.3.50–96

The balancing exercise required by the NSPNN is one which takes all considerations into account, not simply those of impacts on attributes of OUV (para.12.3.50). NPSNN paras. 5.132 –134 are relevant in relation to the balancing of substantial and less than substantial harm to designated heritage assets against public benefit. Please see our Written Representation on Alternatives (REP2-134), Section 3.8–22 on non-compliance of the Scheme with the WH Convention, planning policy, etc.

Under para. 12.3.68, it is said that the WHS Management Plan at para.11.1.9 mentions the stakeholder reference group set up to inform the A303/A30/A358 corridor feasibility study and the technical group set up within that group – which it does not. The Scheme would obviously not meet the requirement of the Technical Working Group, against which to test options, that "the OUV of the WHS is conserved and enhanced".

In para. 12.3.74, Highways England again shows difficulty in separating the OUV of the WHS from its attributes of OUV.

12.3.98–105

Highways England has fundamentally failed to recognise that Blick Mead is a site that is likely to extend along the (ancient) riverbank and that its full extent has not been identified. There can therefore be no certainty that the site will not be impacted upon by the flyover planned beside and possibly over it – potentially impacting upon it both physically and in respect of its setting. The impact of the tunnel engineering on the site is again unknown at present. Furthermore, it ought not to be assumed that tree cover would remain indefinitely.

12.3.107–123

We do not withdraw any of the comments we have made about the impacts of the Scheme on Amesbury Abbey and park and associated structures, other Listed buildings, and the setting of Vespasian's Camp. Highways England accepts that tree cover was not so dense in earlier periods: this situation could arise again.

Reconfiguration of the landscape for the Scheme would be highly damaging and undoubtedly be of substantial harm in view of the archaeological sensitivity of the WHS.

12.3.124–128
Parts of the Bronze Age settlement and associated remains are extant. The fact that parts of the later prehistoric boundary monument are unscheduled does not diminish their importance in the archaeological record associated with the WHS.
Our reference was to barrows W of the A360 and between c.400m and 500m N of the A303. Again, levelling/above-ground destruction does not mean that the earthworks or associated archaeology are necessarily of little importance for further investigation or research.

12.3.130–145.
We see no reason to retract our statements reproduced at paras. 12.3.129, 12.3.131 12.3.135, and 12.3.139.

12.3.148–179
Please see our comments above, at Section 12.1 (General and cross-topic) and at 12.2.12–15 (Alternatives) and 12.3.50–96 (Cultural heritage).

12.3.181–196
Specialist archaeologists have confirmed, contrary to Highways England's assertions concerning the area of the proposed western cutting, that the archaeology here is of very high importance indeed. This evidence would be destroyed by the cutting and any additional land take needed for the green bridge and canopy.

12.4. *Landscape and visual*
12.4.2–17
We submit that it is vital to know the detail as part of the DCO application in points raised by us in this section, most notably in relation to any need for ground stabilisers that might be required at the tunnel portals and the potential for subsidence (12.4.11ff). We do not consider that details of this kind should be left to the contractor to determine, especially if in response to unforeseen/unexpected damage to archaeological remains arising from vibration or subsidence. Not only does it leave significant uncertainty in relation to the safety of archaeological remains within the WHS, it also gives rise to concern about mounting costs for any contractor (and ultimately the UK Government) should unexpected problems arise.
"Crossrail" chalk is not the same as the phosphatic chalk at Stonehenge.
Use of a TBM may minimize the risk of direct physical impacts on archaeology but does not exclude it. What happens if unacceptable levels of settlement occur once the TBM has been launched?
We do not know how much ground movement and vibration monitoring equipment would be employed, what it would look like and what physical interventions would be required in its operation.

There is no clear indication of how actions to control/mitigate impacts arising from settlement or vibration would be dealt with should they occur. “Ground stabilization measures including grouting” might be necessary from the surface and this is hardly likely to be appropriate in an archaeological landscape. Subsidence at ground surface would likely require grouting from surface, not from within the tunnel, whatever the “preference” might be.

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

Scheme reference: TR010025

Response to Highways England's comments

(REP3-013)

on Written Representation

on

Concerns about consultation on the Scheme (REP2-133)

by

Kate Fielden

for the Stonehenge Alliance Ref. 2001870

Stonehenge Alliance response to Highways England's comments on Written Representation REP2-133: Concerns about consultation on the Scheme by Kate Fielden

Introduction

The following response to Highways England's comments on Written Representation REP2-133 on Concerns about consultation on the Scheme, for the Stonehenge Alliance, is by Kate Fielden.

Highways England's comments appear at Section 18 of Highways England's document REP3-013: Deadline 3 Comments on Written Representations.

Note: responses for Stonehenge Alliance are numbered according to Highways England's numbered comments.

Responses to Highways England's numbered comments

18.1.3
We continue to disagree with Highways England re Consideration 24 of the EU EIA Directive, for reasons set out in our Written Representation (WR).

18.1.5, 18.1.23, 18.1.41 and **18.1.45**
Permission was given by the ExA at the Preliminary Meeting for us to raise our concerns about consultation on the Scheme.

18.1.6
Highways England may have "taken into account" the recommendations of relevant international bodies but it has not acted on their recommendations. For example: *"If a surface [bypass] route is not possible, a longer tunnel is needed, which removes or at least substantially reduces the proposed lengths of dual carriageway within the property, in order to avoid the impact on the integrity, authenticity and OUV of the property" . . ."a tunnel portal much further to the east, completely outside the property, could better protect the OUV of the property from the impact of associated dual carriageways . . . if a tunnel solution is pursued, the western portal should be re-located outside the western boundary to avoid dual carriageways within this part of the property*." (Analysis and conclusion by the WH Centre and Advisory Bodies to the 2018 WH Committee). Great weight should be given to the recommendations of international bodies with particular expertise in World Heritage matters. There is no evidence that such weight has been "taken into account".

18.1.8–22
Our views concerning Highways England's approach to and conduct of consultation on the Scheme, as set out in our WR, remain unaltered.

18.1.25–28 and 18.1.43–44

Our views are unchanged on the lack of options for consultation and inadequate description of rejected routes for comparison with the preferred route, as set out in our WR on Alternatives (REP2-134).

We submit that no full options appraisal has been undertaken for the Scheme, again as set out in our Written Representation. It is perhaps relevant to mention that there have been numerous changes, notably in planning policy and national and international guidance for the WHS since 1991; also in increased knowledge about the WHS, its archaeology and biodiversity, the latter notably in relation to the establishment of the Normanton Down reserve used by Stone Curlew. These considerations give obvious weight to the need to offer an option for consultation that involved no damage to the WHS.

18.1.30–31

Our Written Representation provides unequivocal evidence that misleading statements about the Scheme have been presented to the public. As mentioned above, insufficient information has been supplied in consultation documents for informed comparison between options rejected and the preferred route.

18.1.33–4

Once again, Highways England says that the views of consultees were “taken into account”. The majority of consultees firmly objected to the Scheme, many of them because of the damage it would cause to the WHS: their views were not acted upon and the Scheme was not changed to ensure no damage to the WHS. The extreme sensitivity of the Scheme affecting an internationally renowned WHS leaves our opinion unchanged that consultation was not wide enough, nor detailed enough.

We submit that the “wide spread of non-local response” was in large part owing to the efforts of the Stonehenge Alliance and Friends of the Earth in alerting a wider community.

Highways England’s “Disappearing Road” video is not an accurate representation of the effects of the Scheme.

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

Scheme Reference: TR010025

Comments on Highways England's Response to Stonehenge Alliance's Written Representation on Transport Planning and Economics Issues

for

The Stonehenge Alliance
(Reference No. 2001870)

by

Dr. Simon Temple

1. Overview

1.1 Highways England's comments on Stonehenge Alliance's Written Representation on Transport Planning and Economic Issues are set out on pages 207-235 of their document "Deadline 3 8.18 – Comments on Written Representations" (Reference: TR010025-000977). This short note provides our response to their comments.

1.2 We note that Highways England have chosen to comment on the basis of a series of themes they have created, such as "General and Cross Topic" and "Noise and Vibration", rather than addressing Stonehenge Alliance's Representation section by section. We think this is unhelpful and will make it harder for the Examining Authority and others to identify the specific issues in dispute. This is compounded by the fact that the topic discussed by Highways England under "Noise and Vibration" is emissions of pollutants and has nothing to do with either noise or vibration.

1.3 We also note that many of Highways England's comments simply repeat or refer to points made in their original submission to the Examination, rather than providing new information. For example, paragraph 16.2.22 simply repeats statements from the Technical Appraisal Report. The reasons why Stonehenge Alliance disagrees with Highways England are clearly set out in our Written Representation and/or in comments on Highways England's responses to the Examining Authority's initial questions (although we accept that Highways England would not have seen the latter at the time they were drafting their response to our Written Representation). Our position was further explained at Issue Specific Hearing 6 on Traffic and Transportation, held on 13th June.

1.4 We do not think it is helpful to the Examining Authority to engage in the endless repetition of previously stated positions and we have chosen not to do so in this document. Instead, we focus on a limited number of points where we consider some further explanation or clarification of Stonehenge Alliance's position would be helpful to the Examining Authority. For the avoidance of doubt, the lack of a specific response to a particular Highways England comment does not imply that we accept it. While we do not consider Highways England's approach of presenting their comments under themes is helpful, we have used it to structure our response in order to avoid further confusion. Unless otherwise stated, references to paragraph numbers below relate to the Highways England document TR010025-000977 (REP3-013).

2. General and Cross Topic

Section 6.3 Lack of Cumulative Assessment of Whole Corridor (Paras. 16.1.4 to 16.1.5)

2.1 Highways England's assumption that Stonehenge Alliance's criticism of the lack of an assessment of the whole corridor programme refers only to the three projects contained in Road Investment Strategy 1 is not correct. We consider that there is an urgent need for a full assessment of the economic and environmental impacts of the full programme to create a continuous dual carriageway Expressway between the M3 and M5. In paragraph 16.4.2 of their response, Highways England highlight that "*the Scheme is part of the Government's programme of improvements along the A303/A358 corridor designed to upgrade the route to a high-quality dual carriageway*" and this is what should be assessed. While we do not agree that the programme will generate great benefits, it is clear that any significant benefits that do arise will only be unlocked once the programme is completed. Otherwise the main effect is likely to be to move summer peak congestion from the upgraded route section to other locations on the corridor. Therefore, we consider that the A303 Stonehenge project should be judged both on its

own merits and as part of the overall corridor programme. Accordingly, we consider that it is vital that Highways England provides a business case and environmental assessment for the overall programme, so that the Inquiry can assess whether it is worthwhile. From the information provided in the recent National Audit Office report[1], we consider that it is unlikely that this will demonstrate a positive case for the programme.

3. Alternatives

Section 4.2 Public Transport Alternatives (Paras. 16.2.14 to 16.2.20)

3.1 In Paragraph 16.2.19, Highways England refer to the Technical Note contained in Appendix 8.5 to the Transport Assessment being an update of an earlier Note prepared during the corridor feasibility study. We have not seen this earlier Note, but it is clear that the Feasibility Study was wholly oriented to developing road-based solutions, as noted in Paragraph 4.2.1 of our Written Representation, which Highways England have not challenged.

3.2 Highways England dispute (paragraph 6.2.20) Stonehenge Alliance's assertion that they tested the public transport alternative against the requirement that it reduced the stress level on A303 to the level forecast for the Do Something (0.53). However this is specifically stated as a requirement in paragraph 3.6.2 of the Technical Note and this is referred to again in the conclusions (paragraph 6.2.2).

Need to Retain A303 with Option F010 (paras. 16.2.23 to 16.2.25)

3.3 In paragraph 16.2.25, Highways England state that the alleged greater impact of Option F10 on local communities was not a deciding factor in this option being dropped. However this is contradicted by para.4.5.7 of the Scheme Assessment Report which (in discussing the traffic impacts of the options) states "*the modelling also indicated that the longer F010 route option would lead to more long-distance traffic using the local road network (rat running), more than doubling the volume of traffic currently diverting through the villages of Durrington, Larkhill and Shrewton*." This may not have been the sole factor which led to F10 being dropped, but it was clearly a factor. In any case, the statement above is inconsistent with Highways England's own modelling, as noted in our response to Highways England's answer to the Examining Authority's Question AL.1.11.

Impact of Total Removal of A303 from World Heritage Site (paras. 16.2.28 to 16.2.29)

3.4 In Paragraph 16.2.29, Highways England acknowledge that options that avoid the World Heritage Site completely would bring greater benefits than those that pass through it. However there is no evidence that this was applied in estimating the Benefit to Cost Ratios of Options D61, D62 and F10.

3.5 In addition we note that paragraph 16.2.29 highlights that adverse impacts of route F010 are supposed to include that it "*would not interact effectively with the local road network, would*

[1] National Audit Office, "Improving the A303 Between Amesbury and Berwick Down", May 2019

result in higher levels of rat-running traffic, adversely affecting the quality of life in local communities…" As noted above, this contradicts the results of their own modelling and is inconsistent with their assertion that it was not a determining factor in the dropping of this option, as stated in paragraph 16.2.25.

4. Noise and Vibration

Inappropriate to implement projects which are forecast to increase emissions (para. 16.3.1 to 16.3.5)

4.1 Highways England concede that the project will increase CO^2 emissions and our position remains that it is inappropriate to implement schemes that have this effect, as set out in our Written Representation. However this was prepared before Parliament declared a Climate Emergency, and before the Prime Minister committed the UK to becoming a zero net emitter of CO^2 by 2050. These recent developments further support and reinforce our position.

5. Traffic and Transport

Section 3.3 Relationship between Traffic and Economic Growth (paras. 16.4.10 to 16.4.16)

5.1 Highways England refer to Table TRA0202 of "Transport Statistics Great Britain" (which they incorrectly call "Passenger Statistics Great Britain") and highlight an increase in traffic on rural "A" roads between 2000 and 2017. As we note in paragraph 3.3.4 there seems to have been a peak in vehicle use around 2004, with little growth since then. This is consistent with evidence from the A303 corridor. Comparing 2017 to 2004 gives 12% growth rather than the 22% that Highways England quote for the period since 2000, with this mainly occurring in the last few years, during a period when the Government has suspended increases in fuel duty, while raising regulated rail fares by more than CPI inflation.

Section 3.6 Network Resilience (paras. 16.4.24 to 16.4.28)

5.2 In paragraph 16.4.28, Highways England suggests that that improved driver information would, "by definition", result in rat-running along inappropriate routes if the A303 is blocked. This is not the case. If implemented effectively drivers could be diverted away from A303 further from the blocked section on to more appropriate main roads. The current lack of driver information systems means that drivers are poorly informed about delays until they are close to the affected location and then choose to use whatever alternatives appear to be available, however inappropriate.

Almost Two-thirds of Predicted Increase in Traffic is Induced or Diverted from Other Major Roads (para. 16.4.34 to 16.4.35)

5.3 Highways England agree that 3,000 of the extra 7,800 trips predicted by their model are induced and a further 1,000 divert from the M4 and A31. However a further 1,000 net trips divert from other A roads, leading to a total of 64% (i.e. almost two-thirds) of the extra traffic either being induced, or diverted from other main roads, as stated in our Written Representation.

Section 6.4 and 6.5 Concern About Whether M3, M5 and A358 Will Have sufficient Capacity if Whole A303 Corridor is Upgraded (paras. A6.4.78 to 16.4.79)

5.4 In their response, Highways England refer to modelled journey times between Junction 13 of the M25 and Junction 29 of the M5. It is important to recognise that they have not modelled the full A303 programme, only the three projects included in Road Investment Strategy 1. Implementation of the remaining five projects could be expected to divert more traffic onto the route. Additionally, as noted above, the modelled journey times on the M3 are not affected by changes in traffic flow, so the model is not reliable for assessing journey times for this part of the route.

Lack of Emissions Assessment for Whole Corridor Upgrade

5.5 As noted in paragraph 2.1 above, the Government intends to upgrade the whole A303/A358 corridor to Expressway standard. In Stonehenge Alliance's view, it is essential to consider the impact of the whole programme on emissions before approval is given for the project. As we note in paragraph 4.1, it is inappropriate to give consent to schemes which increase emissions, and even more so if they form part of a programme with larger cumulative impacts.

Dr. George M Reeves **CGeol CEnv PhD MSc BSc FGS FIMMM,**
HydroGEOtecH Consultants.
Lybster Caithness, Scotland **www.hydrogeotech.co.uk**

Submission to Planning Inspectorate, National Infrastructure Planning:
Ref. TR010025 **21 June 2019**

Prepared by Dr. G.M. Reeves for the **Stonehenge Alliance, Reference No. 2001870**

Response to Highways England comments (REP3-013) on Written Representation REP2-131 on Flood Risk, groundwater protection and land contamination

---

Numbered references are as in Highways England Comments Document (REP3-013), Section 17

17.1. General and cross-topic

Geotechnical Aspects of tunnel construction and legacy concerns of proposed works

17.1.1 to 17.1.4
During tunnelling, vibration may cause induced fracture migration and settlement in overlying strata transmitted upwards towards the surface. In the extreme, subsidence could migrate to surface levels, resulting in sinkholes and/or compaction. Grout migration from the TBM systems could lead to extensive permanent areas of Chalk with lowered permeability. The potential loss of fissures, fractures, void spaces, burial features, galleries, tunnels and shafts, at present undiscovered and unidentified, either by grout injection, settlement or the combined effects of both processes, could lead to the permanent loss of potentially important archaeological features. Similar detrimental effects of settlement and grout migration may also cause problems in land drainage and surface/shallow subsurface drainage systems.

Reply to Highways England comments
Since the characterisation of ground to be traversed by the proposed tunnel is incomplete (as demonstrated by continuing drilling for Highways England from 10th June onwards at NGR SU11654180 near 2001 borehole R7 at the western portal area), no thorough estimate of settlement, subsidence and grout (neither from a slurry-based closed face tunnel boring machine (TBM), nor from any remedial post TBM grouting) can be made.

As stated repeatedly, a full understanding of weak rock (especially in the Phosphatic Chalk zones) cannot be made without a rigorous 3-D Ground Model being developed, into which all geological data (lithological and structural), drilling and rock property information, geophysical data (surface and down hole) and groundwater information (including levels, flow, geochemistry and flow observations) is input, integrated and assessed.

This is as important off the tunnel line, to both north and south of the proposed tunnel route, as these areas could have a significant effect, and/or are likely to be significantly affected by the proposed tunnel.

Hence 2-dimensional plans and maps are completely inadequate to properly assess the complex 3-dimensional geological, geotechnical and hydrogeological aspects of such a difficult sub-surface environment.

No significant tunnelling scheme such as this would be instigated anywhere in the developed world without a rigorous 3-D Ground Model being part of the assessment process.

Further, it is totally unacceptable to put the onus and responsibility for this aspect of investigation and interpretation of Highways England data onto Tenderers and Contractors. If this is done, escalating costs through numerous claims, down-time (with attendant risk of formation collapse and subsidence and considerable delays in progress) can only be predicted and expected.

The demonstrable very weak nature of the Phosphatic Chalk of the Seaford and Newhaven Chalk formations (see Borehole Core Log photographs BH. R501, as presented on 11th June) show that when reasonable core quality is recovered (logged as at Rigside, immediately on recovery), deterioration due to weathering by exposure to the atmosphere results in one day, with almost complete disintegration of much of this core within 8 days of core storage. This phenomenon is evident from a number of boreholes with Phosphatic Chalk cores from this project as demonstrated in core box photographs.

If tunnelling and the advance of the TBM is halted significantly for any reason in such lithologies, the Phosphatic Chalk can be expected to react similarly with exposure to the atmosphere with consequential potential overbreak, settlement, subsidence and collapse.

17.2. Cultural Heritage

17.2.1. Geophysical Data

17.2.2

In addition, since an incomplete picture is currently held by both archaeologists and Highways England of a full inventory of shallow and deeper sub-surface archaeological features along the route of the proposed new A303 alignment, damage to any such as-yet to be discovered features by any ground disturbance caused by tunnelling and excavation damage remains a significant threat.

Reply to Highways England comments

This again is an area of inadequate ground characterisation data (at depth) and archaeological control (at shallower depth) where such key ground survey data would enhance the essential 3-D Ground Model, as described above.

17.3. Flood risk, groundwater protection, geology and land contamination

Borehole Data, Drillhole logs, Rock Quality and associated Site Investigation information

17.3.1

There is a requirement for an holistic approach to the now vast collection of ground characterisation data from all stages of the A303 Stonehenge realignments projects. Stonehenge Alliance suggest that this data could best be delivered by means of a digitally based 3-D Ground Modelling system.

Reply to Highways England comments

As stated above (and repeatedly in my submissions to the Examination), a full understanding of the weak zones of Chalk rock (especially in the Phosphatic Chalk zones), together with any understanding of the extent, interconnection and hydrogeological relevance of major fracture zones, cannot be made without a rigorous 3-D Ground Model being developed. Into such a construct, all geological data (lithological and structural data, especially on faulting), drilling and rock property information, geophysical data (surface and down hole) and groundwater information (including levels, flow, geochemistry and flow observations) can be input, integrated and assessed.

Geotechnical Aspects of tunnel construction and legacy concerns of proposed works

17.3.3

In addition to surprisingly weak rock, highly phosphatic Chalk has been identified. Although laboratory leaching tests carried out for Highways England have not identified any groundwater contamination risks, it remains a concern that changes in groundwater flow patterns caused by the proposed tunnel construction, and/or changes in groundwater quality and chemistry may cause long term concerns.

Disposal of tunnel spoil is likely to cause problems and concerns of induced phosphate contamination, especially when the status of the River Avon as a Special Area of Conservation (SAC), with existing unacceptable elevated levels of phosphate, is considered.

Reply to Highways England comments

Although leaching tests of the Phosphatic Chalk have been carried out for Highways England, they are rather basic and simplistic in that potential changes in groundwater and surface water chemistry (specifically with varying Ph and Dissolved Oxygen levels) have not been extensively investigated.

17.3.7 to 17.3.10

As a consequence of the weak rock and the relatively shallow depth of the middle portion of the tunnel route it has been proposed by Highways England that a "slurry shield" method of closed-faced tunnelling would be the most likely tunnelling method to be adopted. On completion of each tunnel drive, an annulus of unpredictable extent will surround the pathway excavated by the TBMs. If overbreak occurs at the tunnel crown or wall failure at the flanks, surface based grouting from a network alignment of new additional grout injection boreholes may be necessary. This introduced impermeable barrier gives great cause for concern for long term effects on groundwater movement.

Reply to Highways England comments

No numerical assessments have been made by Highways England of the predicted extent of penetration of grout from the TBM twin tunnels. This will be especially significant where major fractures are intercepted. (Hence again the need for a 3-D Ground Model to investigate the extent of Fracture Networks north and south and to depth away from the proposed tunnel line.

Consequently, the degree that the twin bore tunnel will act as an east-west barrier to the predominant existing north to south flow of groundwater in this area of Chalk aquifer cannot be evaluated fully.

No detailed consideration of the "Worst Possible Case" scenario of the above groundwater conditions has been part of the very coarse mesh (250m nodes) based approach of the Wessex Basin Hydrological model, as used in the very inadequate and superficial assessments of groundwater modelling and prediction carried out by Highways England consultants.

Geophysical Data

17.3.14
The use of surface geophysical survey investigations to assess rock properties especially, along the line of the proposed route has, however, been sparse, if not completely absent. (See recommendations below.) Identification of weak rock zones, weathering levels, and even poor RQD horizons is now possible using appropriate surface geophysical survey techniques, equipment and interpretive methods.

Reply to Highways England comments
Please see our response under 17.2.2.

Emergency Measures - Ground Stabilisation

17.3.16
Consideration of the possibility of emergency measures involving an extensive surface grouting programme and subsequent effects for ground stabilisation, and the issues relating to plans for the stabilisation of slopes and cuttings.

Reply to Highways England comments
More detailed and specific designs (with alternatives) would be expected at the Examination stage of such a major scheme. It is, as stated above, fundamentally unacceptable to put the onus and responsibility for this aspect of investigation and interpretation of Highways England data onto Tenderers and Contractors.
If this is done, escalating costs through numerous claims, down-time (with attendant risk of formation collapse and subsidence and considerable delays in progress) can only be predicted and expected.

Hydrological and Hydrogeological Concerns

17.3.21 to 17.3.28
The creation of a barrier to groundwater flow at depths of up to 40 metres, with grout invasion potentially penetrating some distance from the tunnel bores, will considerably affect long-term groundwater conditions.
Effects on regional and local groundwater flowpaths, as well as knock-on detrimental effects on groundwater quality, are of much concern.

Groundwater modelling and reporting is incomplete. Recent publications of a number of draft versions of reports on this groundwater monitoring and modelling work have been placed on the Planning Inspectorate website by Highways England.

This work is incomplete, inadequately referenced, and is totally inadequate to properly address concerns about future groundwater conditions. Absence of any significant authoritative and comprehensive groundwater (and associated hydrological) modelling presents an enormous gap in the assessment. Both short and long-term effects on the quantity and quality of groundwater also cause concerns.

A major campaign of groundwater resources and groundwater quality modelling, based on a robust, extensive and long-time frame database would provide a useful prediction of future consequences of the proposed construction project.

Reply to Highways England comments

This work is still grossly inadequate, at an inappropriate scale and highly incomplete, as detailed in my written and presented representations, for such an important and nationally significant project affected by and affecting groundwater in a major UK aquifer.

Dr. GM Reeves 21.06.19

RUPERT TAYLOR
ACOUSTICS - NOISE - VIBRATION

RUPERT TAYLOR LTD
SAXTEAD HALL
SAXTEAD
WOODBRIDGE
SUFFOLK
IP13 9QT
UK

A303 Amesbury to Berwick DownTR010025DM
STONEHENGE ALLIANCE REF. NO. 2001870
Vibration from tunnel boring

21 June 2019

1. MATTERS CONSIDERED

1.1 This document responds to Highways England's response to my Written Representation (WR): ref. REP3-013, "Comments on Written Representations" paragraphs 15.2.23 to 15.2.33 on the topic of vibration from the boring of the proposed A303 tunnel and its effect on archaeological remains, artefactual material and assets potentially at risk of damage or disturbance by vibration.

2. VIBRATION CRITERIA

2.1 Paragraph 15.2.27 states that "The British Museum trigger levels for museum collections are considered to be very conservative. A number of other studies of construction works affecting museums have used vibration limits for collections which range between 1 and 3 mm/s ppv."

2.2 The British Museum adopted 0.00625 mm/s as the most stringent criterion during the construction of The World Conservation and Exhibition Centre built between 2008 and 2014. A similar criterion (known as VC-D) has been used in assessing the impact of a tunnel boring machine on the National Maritime Museum in London for the construction of the London Power Tunnels.

2.3 Professor Konstantinos Vogiatzis of the Department of Civil Engineering at the at the University of Thessaly, has published work on the potential vibration effects of the construction and operation of Athens Metro on archaeologial remains. In his paper "Protection of the Cultural Heritage from Under-ground Metro Vibration and Ground-Borne Noise in Athens Centre: The Case of the Kerameikos Archaeological Museum and Gazi Cultural Centre" https://doi.org/10.20855/ijav.2012.17.2301 he states "In the case of the archaeological area and the museum of Kerameikos … a maximum vibration level of 25 μm/s rms was also applied" The figure of 25 μm/s rms (0.025 mm/s) can be compared with the British Museum's action levels in ppv. The relationship between the two is such that the ppv (peak particle velocity) may be from 1.5 to about 6 times the rms (root-mean-square) value. The figure of 25 μm/s rms is therefore comparable to the British Museum's first action level

of 0.1 mm/s, and of the order of 10 to 30 times more stringent than the range of 1 and 3 mm/s.

3. PREDICTED VIBRATION LEVELS

3.1 I have carried out numerical predictions of vibration from tunnel boring machines for tunnels in Singapore, London (Silvertown Tunnel and London Power Tunnels), County Mayo (Corrib Onshore Pipeline) and Dublin (Metro Link calibrated against Dublin Port Tunnel), and have studied data on measured vibration from tunnel boring in London (Crossrail), Hong Kong and Sweden.

3.2 While I have not created a model for the A303 tunnel the indications from my previous work are that, in the local lithology, the museum criterion of VC-D is likely to occur in the soil conditions at Stonehenge up to about 50m from the tunnel centreline. While Stonehenge itself is beyond this range, remains such as the long barrow lie within it.

3.3 It is therefore to be concluded that a full and correct assessment of the risk of damage to archaeological remains should be, and has not been, carried out.

4. CONCLUSIONS

4.1 Highways England have not provided evidence to support the opinion that significant impacts due to construction vibration are not anticipated (para 15.5.27).

Signed

Rupert Thornely-Taylor
21 June 2019

This document has been prepared by Rupert Thornely-Taylor of Rupert Taylor Ltd, consultants in acoustics, noise and vibration.

He is a Fellow of, and was a founder member of, the Institute of Acoustics (who in 2016 awarded him the Rayleigh Medal for outstanding contributions to

Acoustics), a Member of the Institute of Noise Control Engineering of the USA and a Member of the International Institute of Acoustics and Vibration. He has specialised exclusively in the subjects of noise, vibration and acoustics for 54 years. He has been an independent consultant in these subjects for the past fifty years, and heads the Rupert Taylor Ltd consultancy practice.

He is a past President and Honorary Member of the Association of Noise Consultants (who in 2013 awarded him their Outstanding Contribution award) and an officer of the International Institute of Acoustics and Vibration.

He has carried out many studies of vibration from tunnel boring machines, and was a member of the steering committee for the production of the Department for Transport report "Impacts of Tunnels in the UK".

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

Scheme Reference: TR010025

Response to Highways England

Comments on Written Representation on

The Cultural Heritage Value Report

(REP2-130)

for

The Stonehenge Alliance (Reference No. 2001870)

by Alan James

Introduction

This is a brief response to some of the comments by Highways England (HE) on my Written Representation (WR) on Cultural Heritage Value on behalf of Stonehenge Alliance, where these are of particular relevance to the case presented in my WR. The HE comments are contained in the HE document referenced above, section 13 paragraphs 13.1.1 to 13.1.67, grouped under Key Issues which I shall also use for ease of reference.

Key Issue 13.1.1 – 13.1.3: Heritage value accounts for 75% of PVB

The broad comment is that heritage value should form part of any highways scheme assessment, should be monetised if it can be and, in the context of Stonehenge, it is "not surprising" that 73% of the benefit stems from heritage value. I find it very surprising that an agency set up to deliver strategic road improvements is willing to spend over £1 billion of its limited funds on a scheme that primarily purports to deliver heritage benefits and is hopelessly uneconomic as a road scheme.

This is a question of proportion. A highways project that is fundamentally sound as a transport scheme but offers other benefits could justifiably claim the other benefits a bonus; but a project that is fundamentally unsound economically and requires other, highly questionable monetised benefits to get it over the positive BCR line is another matter.

HE repeat the earlier mistake of arguing that the scheme removes the A303 from the World Heritage Site (WHS): "*The Scheme has been designed to addresses* (sic) *the transport issues and recognises the cultural and heritage importance of the area by removing the Road from the WHS in an affordable manner"* (13.1.3). If the scheme genuinely has the objective of recognising the cultural and heritage importance of the area, and wants to address this by removing the road from the WHS, then it is an outright failure.

Key Issue 13.1.4 -13.1.8: 94% of the heritage value derives from the general population who are unlikely to experience the site

The broad comment is that non-use values deriving from altruism, future generational values, and existence value, are relevant and should be incorporated into any assessment. Leaving aside misgivings over the methodology of asking people how much they would be willing to pay when they will never have to put their money where their mouth is, this is again a question of proportion. Serious questions over the validity of doing something must be raised if only 6% of the benefit is attributed to people who actually reap the benefit directly.

I would also question existence value in this context. Stonehenge will continue to exist whether or not the tunnel scheme goes ahead, whereas a significant swathe of the assets of the WHS – including many as yet unknown – will cease to exist along much of the new road within the WHS. The Simetrica report concentrates on the visual benefit to Stonehenge visitors, yet attributes a significant proportion of the benefit to existence value where there will be a significant but underplayed negative impact.

Key Issue 13.1.10-13.1.11: Only £55 million of benefit to people experiencing the site

This is the corollary of the previous key issue.

Key issue 13.1.12-13.34: Areas of bias in the study

HE comments largely reiterate the approach, without addressing the specific criticisms in my WR. Simetrica accept in their report that the methodology is open to difficulties over bias (see my WR 4.1, 6.1 final bullet, and 8.1), but here the HE comment is that Contingent Valuation (CV) surveys can be administered "in a robust manner" (13.1.13). My argument remains that 'minimising' bias effects is not good enough, especially when the outcome is such a frail BCR.

Key issue 13.135-13.1.42: Representativeness of 'general population' sample

Simetrica transferred road users (within previous year) from the original survey group C (general population >50 miles from Stonehenge) to the 'road user' group in the subsequent analysis; and transferred non-users from the original survey group B (population <50 miles from Stonehenge) into the 'general population' group in the subsequent analysis. HE's comments appear to suggest that this transfer process nullifies any effect of possible unrepresentativeness in that it "cleaned the data to remove any such implausibility" (13.1.38). I would dispute this, as the fact remains that the original survey C sample does not appear to have been plausibly representative if 24% of the sample had been past Stonehenge in the previous year: and if it was not representative in this respect it may well have been unrepresentative in other respects.

However, the transfer process between survey groups B and C had an even more significant effect on the representativeness of the 'general population' in the main analysis. The final 'general population' group was made up of 458 non-road users living within 50 miles of Stonehenge and 1500 non-road users living elsewhere in the UK (Simetrica 6.1.4 and Figure 2). In other words **23.4% of the sample 'general population' study group lived within 50 miles of Stonehenge**, which is clearly not representative of the overall UK population. As a

null hypothesis, and accepting for the time being the assumptions underlying WTP/ WTA, it is likely that people living close to Stonehenge would have a higher WTP to 'improve' Stonehenge than people living several hundred miles away; in which case the mean WTP for the general population is likely to be overstated since 23% of the sample live so close.

HE's paragraph 13.1.39 is a non-sequitur. It states that of the 467 respondents transferred from survey group C to the road user group because they had used the road in the past year, 38% were from SE or SW England, therefore "increasing the likelihood that these individuals would have used the A303 at least once in the past year". This is rather meaningless given that we know that *every* individual amongst the 467 *had* used the A303 in the past year! It says nothing about the propensity of people living in SE or SW England to travel along the A303, and still less about people living elsewhere in the UK.

Key issue 13.1.43-13.1.49: Scenario testing

HE's comments are broadly that scenario testing done as part of the CV is in line with good practice in CV studies; that statistical confidence testing gives a high degree of certainty that the aggregate net WTP is fairly close to the mid-estimate; and that my figures on the sensitivity of overall NPV to small changes in WTP are incorrect.

HE state (13.1.47) that some scenario tests commonly done on highways schemes are not considered good practice in CV studies, but it is not stated why. My main contention, however, is that given the high degree of uncertainty in the methodology itself there should be more testing to establish the outcome should the hypothetical WTP prove to be out by a wider margin than Simetrica consider likely. I remain unconvinced that the degree of (literal, as opposed to statistical) confidence in the methodology is justified.

On statistical confidence, the conclusion that "these results show that with 95% confidence the aggregate net WTP is between £1.2 and £1.5 billion[1]" is questionable. Statistical confidence is the level of certainty that another sample using the same parameters as the first sample would give a result within the 95% (or other) confidence limits, and the width of the confidence interval is purely an expression of the degree of variability within the sample data. This is not the same as saying that there is 95% confidence that the sample results are accurate for the population as a whole, especially if (as discussed above) the sample may not be representative of the population as a whole.

There are statistical anomalies in my WR paragraph 6.4, which need more time to review than is available before the deadline for this reponse. However, my general point remains valid, that with such a large proportion of PVB attributed to the heritage values, and in particular to

[1] I am unsure where these figures come from. Simetrica Table 12 gives a range between £1.15 - £1.41 billion, around a central estimate of £1.277bn.

the WTP of the general population, it only takes relatively small changes in these values to have significant impact of the PVB/ NPV/ BCR.

Key issue 13.1.50-13.1.54: Disparity between 2001 and 2016 CV studies

HE continue to make the case that the two studies are comparable and that there is not a fivefold disparity (my WR stated fourfold in paragraph 5.2, comparing the two studies at 2010 prices). It is claimed that a 31% increase in GDP, 30% inflation, and 10% population growth would bring the 2001 study up to £1 billion value (13.1.52), but I make it barely half that figure (£552.79 million), and I would question whether there is a linear relationship between WTP and GDP. There are two claims that changes in cultural values have changed since the 2001 study, but both make the rather bland assumption that values have increased in that time, without any evidence one way or the other.

Key issue 13.1.55-13.1.57: No consideration of options outside of the WHS

HE's comments do not add to the discussion, but they do make an erroneous statement (13.1.57) that the tunnel portals would now lie outside the WHS.

13.1.58-13.1.67: Monetisation of a single aspect of cultural value, when there are other intrinsic values to the cultural heritage.

HE focus on a narrow interpretation of the 'intrinsic' value of the features that make up the Outstanding Universal Value (OUV) of the WHS, and argue that things do not have an intrinsic value that can be monetised so it is acceptable to monetise the WTP/ WTA element of the scheme but not the other aspects. I disagree fundamentally with HE's characterisation of 'intrinsic' values in this context, as *"the value of an asset in and of itself regardless of the implications and benefits it has for human beings, animals and the environment now or in the future*". The very definition of OUV in a WHS is that "*These sites are deemed worthy of preservation due to their universal value to humanity, both in the present and for future generations"* (https://www.nationaltrust.org.uk/features/what-is-a-world-heritage-site). The OUV of the WHS is all about its importance and significance to all, and HE's attempt to create a distinction between this and the 'real' value of Stonehenge to 'real' people is really rather lame.

Alan James
Dunscore, Dumfries
June 2019