A303 Valuation Issues

Representation 20020712 on A303 proposals

80034-R0011-01 25 April 2019

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1.0 IntroductionIdentification of issues

- 1.0.1 This representation relates purely to one issue (of disagreement) as described below.
- 1.0.2 Other than that identified issue, no other parts of the application are disagreed with. However, if the site proves to have additional value that was generally unknown at the current date and at the time of the application, the issues identified (in this representation) could become outdated.

1.1 General introduction

- 1.1.1 This representation looks at apparent errors in the methodology of the socio-economic evaluation used on the A303 project. It also looks at whether or not a proportionate option consideration (of alternatives), that reflects all the relevant policy and legal requirements, has been undertaken.
- 1.1.2 This document is produced as an expanded Written Representation. It is also produced in response to the Preliminary Meeting question under listed item: SE.1.34: Socio-economic effects.
- 1.1.3 The Highways valuation was carried out using guidance within the National Policy Statement for National Networks. The NPSNN refers (and defers) to the Treasury Green Book for specific guidance on preparing a the business case and methods of valuation needed for the business case. An extract from section 4.5 of the NSPNN, which describes this reference to sources of authority, is shown below:
 - 4.5 Applications for road and rail projects (with the exception of those for SRFIs, for which the position is covered in paragraph 4.8 below) will normally be supported by a business case prepared in accordance with Treasury Green Book principles. This business case provides the basis for investment decisions on road and rail projects. The business case will normally be developed based on the Department's Transport Business Case guidance and WebTAG guidance. The economic case prepared for a transport business case will assess the economic, environmental and social impacts of a development. The information provided will be proportionate to the development. This information will be important for the Examining Authority and the Secretary of State's consideration of the adverse impacts and benefits of a proposed development.
- 1.1.4 In summary, this representation will show that the documentation produced for the valuation of public benefit appears, based on the information available, to have overestimated the value (benefit) of the "short tunnel" proposals by a significant margin (up to £1.5bn).
- 1.1.5 For its evidence, this representation is primarily based upon the "A303 Stonehenge. Amesbury to Berwick Down Technical Appraisal Report", "A303 Stonehenge Amesbury to Berwick Down. Valuing Heritage Impacts" (additional documents to those of the TAR), the Green Book (HM Treasury) and its associated references together with miscellaneous documents provided by, and as part of, the consultation process.
- 1.1.6 The above documents and other references in this representation's text can be found in the representation's Appendix A: References. Reference and page are marked thus in the text: [ref:p:no]). Where a chapter is referred to by this representation, the reference is marked in this representation thus: [ref:chapter:no].

1.2 Executive Summary

- 1.2.1 This representation reviews concerns that the methodology applied to this particular project will set an unsustainable environmental precedent. In brief, this is to allow a project to proceed based on perceived benefits which will not be achieved in practice: Those perceived benefits have been used to generate a monetised valuation of the total project benefit. This is required for a publicly financed project to proceed.
- 1.2.2 A valuation based on perceived benefit is allowable under Green Book principles. However, an exception exists where a perceived benefit, one that individuals are willing to pay for, is known not to provide the benefit that individuals believe it would have: Society should not have to fund perceived benefits that will not exist in practice.
- 1.2.3 In layman's terms, funding a project known to not have the benefits described (see 1.2.2 above), but that some of the public incorrectly perceive to have benefits, is analogous to funding medicines known to give no benefit via the National Health Service.
- 1.2.4 The TAR quantifies this project as "medium" value for money [1:p214]. However, if the aspirations of benefit are not met by the works being done, the project could be reclassified as "low" value for money. A project that is low value for money is wasteful of limited resources and therefore detrimental on environmental grounds.
- 1.2.5 With above summary, please note that this is based on information available.

2.0 Data, methodology and assumptions used to support this submission

2.1 Overview of of valuation method

- 2.1.1 For valuation of benefit, the HM Treasury Green book suggests that Stated Preference, Revealed Preference or the Life Satisfaction Approach be used for evaluation of major schemes [14:p57]. The Green Book refers to guidance [15] on how to achieve this type of assessment.
- 2.1.2 A Contingent Valuation Survey (CVS) was used to value the benefits of this project [1:p12]. The Stated Preference (SP) method was used by the CVS for valuation, as described by the options for evaluation within the Green Book's additional guidance [15]. This method used (SP) "uses specially constructed questionnaires to elicit estimates of people's Willingness to Pay for (or Willingness to Accept) a particular outcome" [15:p7].
- 2.1.3 The Green Book provides additional guidance on meaning, included here for context:
 - "Value can be measured in two ways. Equivalent Variation (EV) is the amount of additional income the individual would need to obtain the same level of utility that they would get from consuming the non-market good".... "EV is usually used in cases when a good or service is provided and is, in this sense, often associated with the term Willingness to Pay (WTP). CV is usually used in cases when there is a reduction in the good or service and is associated with Willingness to Accept (WTA)." [15: p9]
- 2.1.4 The method chosen by the Highways documentation is described in more detail within the Green Book's technical guidance documents. An extract from that description is included here for context:
 - "Contingent valuation methods construct and present a hypothetical market to questionnaire respondents. A detailed description of a good, how it will be provided, and the method and frequency of payment are usually highlighted. Following this, questions are posed in order to infer a respondent's WTP or WTA. These valuation questions can be presented in a number of different ways, including open ended, bidding game, payment card, and dichotomous choice elicitation formats (see Annex A)." [15:p11]
- 2.1.5 The Green Book technical guidance [15: Chapter 4] also looks at disadvantages of various methods that can be used. In its conclusion [15: Chapter 7], the guidance cautions that: "Traditional preference-based approaches have provided us with many valuations over the past few decades which we have been able to use in policy analysis. They have also frequently provided us with implausible estimates." [15: p53] . It is a specific concern of this representation that the estimates of the CVS appear to be implausible.

2.2 Available documentation

2.2.1 References to the Contingent Valuation Study (CVS) can be found within the technical Appraisal in the following locations:

Volume 1^[1]:

Executive Summary [1:p12]

Chapter 11: Economic Assessment [1: p195 onwards]

Refer in particular to clauses 11.11.5 and 11.11.10

Chapter 20: Appraisal Summary [1:p195 onwards]

Refer in particular to clauses 20.1.3, 20.1.11 and 20.1.12

Appendices

The CVS is also indirectly referred to in Appendix H: Assessment summary

- 2.2.2 Note in particular that the TAR documents do not describe in any detail what benefit the respondents believe that they will be getting as a result of the Contingent Valuation Survey (CVS).
- 2.2.3 The Contingent Valuation Study (CVS) was obtained by a researcher using a Freedom of Information request. However, parts of the CVS were removed from the FOI supplied documentation. More detail on the missing documentation is described in section 2.3 below.

2.3 Reservations on the valuation survey

- 2.3.1 The guidance [15] referred to by the Green Book [14] states: "it is unlikely that reliable research for a single sample study can be carried out for less than £25-£30,000 (excluding the field survey costs)." Although not known (documentation not available), it is expected that the eventual CVS was expansive. However, because the information was not made available, this is an unknown.
- 2.3.2 The Technical Appraisal document [1: p12] defines part of its approach to valuing benefits as below:
 - "Quantifying impacts on the WHS is highly challenging and required an innovative approach. In accordance with HM Treasury Green Book guidance, a Contingent Valuation study was undertaken which sought to place a value on the benefits of removing the A303 from the vicinity of Stonehenge."
- 2.3.3 The Contingent Valuation Study (CVS) was not made available to the general public but a redacted version was released after a FOI request by a researcher. This consisted of two documents: HE551506 AA GEN SWI RP JX 000025 Redacted $^{[12]}$ and HE551506 AA GEN SWI RP JX 000026 $^{[13]}$.
- 2.3.4 Within those documents, the detailed valuation report [12: p3], clause 1.1.10 describes the survey:
 - "In total, we received 3,535 completed survey responses composed of visitors N=432, Local Population N=1,001, General Population N=2,102. Following the surveys, the respondents were redistributed into three study groups of visitors, road users, and the general population. This was because some of the general population sample were regular road users, whilst some of the local resident survey (local residents as a proxy) were not. To ensure that the study groups maintained representativeness of their respective populations, the visitor group was weighted by age, and the general population group weighted by region, gender, age group and income group to ensure representativeness of real- world populations."
- 2.3.5 The detailed valuation report^[12: p4] describes the groups used to produce values for benefit (which were then summed to get an overall benefit):
 - "We elicited WTP and WTA values across all three study groups for the following hypothetical scenario (from hereon, 'the road scheme') (note that the full text and information material is in Appendix 1):"
- 2.3.6 However, there is no "Appendix 1" in the documents. Nevertheless, a second supplied document under the Freedom of information request is assumed by us to be Appendix 1. This appears to list features in clause 1.1.8 of the TAR $^{[1:p3]}$.
- 2.3.7 The results of the larger surveys referred to above appear to have been omitted from the second document of the FOI request: (see HE551506 AA GEN SWI RP JX 000026 [13] for details). Within the second document, the Appendices appear to contain the survey results

(Appendix A of "Appendix 1"[13]), but items A2, A3 and A4 have had the full text of the survey omitted and replaced by a blank page. It is not therefore available for review.

- 2.3.8 The reason that the above (described in 2.3.4 to 2.3.7) may be a concern is that the only information available for review is a single sample study which falls outside the requirements stated as necessary for an evaluation in the Green Book guidance (see 2.3.1 above).
- 2.3.9 However, for the purposes of this representation, it is assumed that the undisclosed full survey produced similar results to that of the pilot survey (for which results were made available for review).
- 2.3.10 In summary of this section, the "identified issues" in section 2.4 (below) are based on the assumption that the undisclosed questions of the full survey are similar to those described in the pilot study.

2.4 Identified Issues with valuation

2.4.1 The public appear to not be getting what they are willing to pay for

2.4.1.1 The main report [1] indicates that the majority of the aggregate willingness to pay (which generated value/benefit) is found from general population responses:

Group	WTP/WTA variable	%	Relevant Population	Mean (£ Net Present Value)	Aggregation to national level
Visitors	Annual tax	67%	363,776	£68	£24m
	Compensation (one off)	0.5%	2,517	£188	
Road Users	Annual tax	67%	854,212	£22	£51m
	Compensation (one off)	2%	27,204	£81	
General Population	Annual tax	59%	31,653,894	£14	£1,251m
	Compensation (one off)	2%	1,229,012	£58	
Compensation (one off) 2% 27,204 £81 General Population 2% 31,653,894 £14 Compensation 2% 1,229,012 £58			£1,326m		
Total net pres	sent value (2010 p	rices and	values)		£992m

Table 11-2 Aggregate Willingness to Pay/Accept

- 11.4.48 Upper and lower bound results have also been derived based on a 95% confidence interval for the Willingness to Pay / Accept values based on the respective sample sizes. The results show a range of £1.2bn to £1.5bn. The interpretation of this analysis is that we are 95% confident that the willingness to pay (net of willingness to accept) is between £1.2bn and £1.5bn.
- 2.4.1.2 In the above, the vast majority of valued benefit was generated by the General Population survey. The second Appendix [13, p25] shows how the reasons to pay were generated: These percentages are based on pilot surveys (unfortunately the final reports were excluded from the FOI request (see section 2.3 above).
- 2.4.1.3 Below are extracts from that report:

C.3 Stonehenge General Population Pilot Debrief questions 21st September 2016

We performed a pilot survey of the online general population survey using a nationally representative panel of n=46. The pilot general population survey was performed over 20th-21st September 2016. The pilot was performed under identical conditions to the full survey. We obtained 46 completed pilot surveys and debrief questions.

Table 4 shows the reasons people gave for being willing to pay an increase in taxes. Only two people responded that they stated a WTP because they did not believe they would have to pay.

WTP for tunnel route - Reasons to pay	N.	%
A dual carriage-way would relieve traffic congestion and reduce accidents	8	22.22
A new road would benefit local community	2	5.56
I do not believe I would really have to pay	2	5.56
I support the removal of the A303 from a historic landscape	3	8.33
People should have the opportunity to visit the whole of the Stonehenge World Heritage Site and explore all its archaeological monuments without the land severance caused by the road	10	27 78
Stonehenge is a national icon that should be protected	9	25
The road spoils the tranquility of the Stonehenge World Heritage Site	2	5.56
Total	36	100

2.4.1.4 Of these reasons to pay (on which benefit is calculated):

1) The first is a question about a dual carriageway and not a tunnel. It achieved 22.22% of responses. It talks about relieving traffic congestion and reducing accidents.

However, research [21] has shown that severe accident rates [and cost rates] in tunnels were often found to be higher than those on the corresponding larger roads.

This reason to pay appears not to be applicable to the tunnel solution as it does not achieve what the correspondents think they would get by paying additional taxes: Other solutions generate more benefit of the type anticipated.

2) The stated reason to pay of the fifth item (27.27%) will not be accomplished by the scheme: Removal of the road will only give access to the "Stonehenge Landscape" of which most land is to the North of the A303. The remainder of the WHS to the South contains some bye-ways with public access. However, the monuments themselves can not be accessed except by trespass: the land is not defined as CROW accessible:

The issue with this item is that approximately 28% of respondents identified a willingness to pay for this access. However, access will not be achieved by building a tunnel [see Appendix B, item 1). Though some relatively minor access will be available to what is essentially privately held land, this does not address the benefit that the tax payers believe that they will get.

3) The stated reason to pay of the sixth item (25%) is that Stonehenge is a national icon which should be protected.

It is unclear why the respondents think that a tunnel would achieve this. In the very long term a tunnel would need additional expenditure for maintenance (not budgeted for in the above costings). Without that expenditure, the decay of the tunnel would destabilize the ground below Stonehenge. Therefore the (low) budget allowances that the tax payers think they are paying to provide protection appears to do the opposite in practice

If protection of a national icon is required over the very long term, significant additional budget allowances may be required over the tunnel's lifespan.

- 2.4.1.5 Of the above reasons to pay, only items 4 and 7 would be addressed by provision of a tunnel. This accounts for only 13.89% of the reasons to pay that have been produced in support of a tunnel.
- 2.4.1.6 On this basis, and accounting for negative impacts listed above, the tunnel appears to have inadequate cost-benefit. However, it has not been possible to identify if this lack of benefit is extensive.

2.4.2 The definition of a tunnel within the valuation documentation

- 2.4.2.1 The respondents were not informed that a choice exists between a cut and cover tunnel and a bored tunnel: Only "a tunnel". A cut and cover tunnel, which is significantly less expensive, would achieve the same description given to the correspondents. Correspondents do not appear to have been given preference choices to opt for the low-cost method of achieving the same aim:
 - 5.2.6 Respondents were first asked if they would in principle be willing to pay an increase in annual taxes over a three-year period to support the alternative scheme using the following text.

"For the next set of questions, please imagine a situation where the tunnel scenario was selected and was paid for by an increase in national taxes, for three years. Please think for a moment about how much the proposed scenario to remove the A303 from the World Heritage Site would be worth to you and your household, if anything. Would you be prepared to pay something, even if only a very small amount, to support the construction of a tunnel route?"

(extract from reference 12)

2.4.2.2 Therefore, even if a tunnel could achieve the benefit aims of the CVA (see section 2.4.1 above), a different type of tunnel appears to be able to achieve those benefits at a lower cost.

2.5 Other considerations

- 2.5.1 In the very long term, which engineering projects of this type must be designed for, vehicle use will probably become both automated and electric. This section of the representation considers one other viable alternative as an example (but note that there many be several others).
- 2.5.2 The existing TARs do not consider simple options such as keeping the existing road, making it one way to double volume, reducing the speed and making a lower speed limit mandatory (which further increases vehicle throughput).

2.5.3 In the event that a 'one way' option were considered, a second 'temporary' dual carriageway could be constructed using pre-loading of fill over a protection layer to preserve the archaeology below. In the very long term, this could have no impact on the archaeology and could be removed at a later date.

3.0 Summary

3.1 General

- 3.1.1 In summary, the documents appear, at initial review, to have overvalued the benefit of the proposals. However, this conclusion is based on pilot surveys due to the main surveys not being included within the documents provided (as a result of the FOI request).
- 3.1.2 For a project such as this to be in accordance with Green Book requirements, the costed (monetised) quantified benefit must be achieved. A belief that benefits exists, where those benefits can be shown not to exist, should not have been accounted for as a quantifiable monetised benefit. Benefits that will not exist in practice appear to have been accounted for.
- 3.1.2 The valuation of benefit in the TAR appears to apply equally to less expensive options. If less expensive options achieve the same value, it would be more usual to choose the more economic option.
- 3.1.4 The reduction in value that should be applied to this project (as described in this representation) affects the inspectorate's Assessment of Principal Issues [Reference 31: Annex B, Objective 12] [31]
- 3.1.5 In addition, other methods which achieve similar long term benefits may not have been fully considered. This may also affect the inspectorate's Assessment of Principal Issues [Reference 31: Annex B, Objective 3] [31]

3.2 Further investigation

3.2.1 It would be useful to have the full Contingent Valuation Study made available for review. It may also be useful to incorporate the FOI requests 12,13 (produced by Highways) into the examination process.

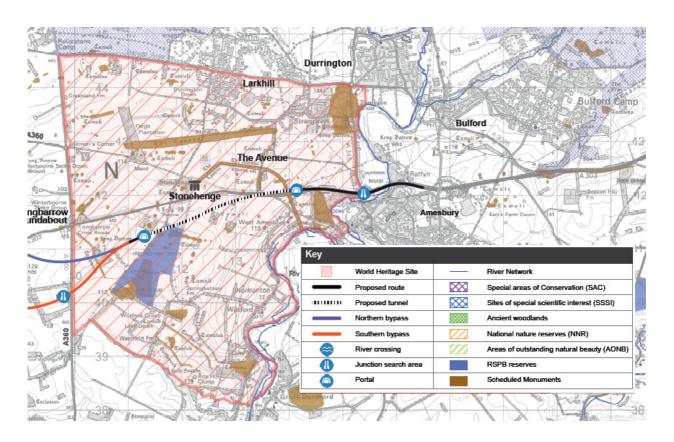
Jonathan Morris

Appendix A: References

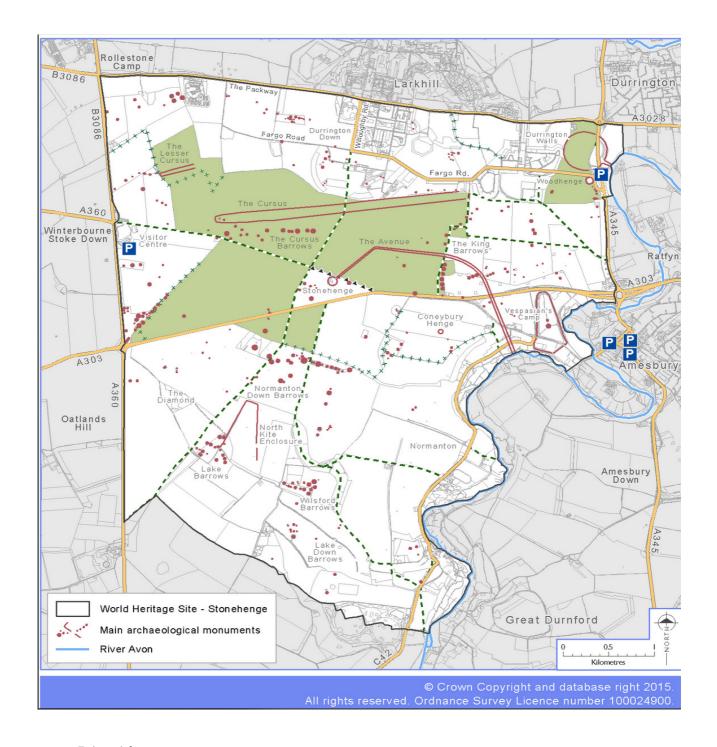
- 1[1] A303 Stonehenge. Amesbury to Berwick Down Technical Appraisal Report volume 1
- 2[1] A303 Stonehenge. Amesbury to Berwick Down TAR Appendix A (volume 2)
- 3[1] A303 Stonehenge. Amesbury to Berwick Down TAR Appendix B (volume 3)
- 4[1] A303 Stonehenge. Amesbury to Berwick Down TAR Appendix C (volume 4)
- 5[1] A303 Stonehenge. Amesbury to Berwick Down TAR Appendix D (volume 5)
- 6[1] A303 Stonehenge. Amesbury to Berwick Down TAR Appendix E (volume 6)
- 7[1] A303 Stonehenge. Amesbury to Berwick Down TAR Appendix F (volume 7)
- 8[1] A303 Stonehenge. Amesbury to Berwick Down TAR Appendix G & H (volume 8)
- 12[2] A303 Stonehenge Amesbury to Berwick Down. Valuing Heritage Impacts (HE551506 AA GEN SWI RP JX 000025 Redacted.pdf)
- 13[2] A303 Stonehenge Amesbury to Berwick Down: Valuing Heritage Impacts: Appendices (HE551506 AA GEN SWI RP JX 000026.pdf)
- 14[3] THE GREEN BOOK: Appraisal and Evaluation in Central Government
- 15[3] Daniel Fujiwara and Ross Campbell , Valuation Techniques for Social Cost-Benefit Analysis (United Kingdom: HM Treasury, July 2011
- 16[4] Area Plans. A303_A0planV2.pdf
- 21: Accident Rates in Road Tunnels and Social Cost Evaluation. Procedia Social and Behavioral Sciences, Volume 53, 3 October 2012, Pages 166-177 (open access) (Caliendo & De Guglielmo
- 31: Letter referenced Our Ref: TR010025 available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010025/TR010025-000511-190304%20TR010025%20Rule %206%20letter%20-%20Cover%20FINAL.pdf

Appendix B: Extracts

1: Value and Accessibility



Extract from general area plans showing southern zone thought to be accessible post tunnel construction

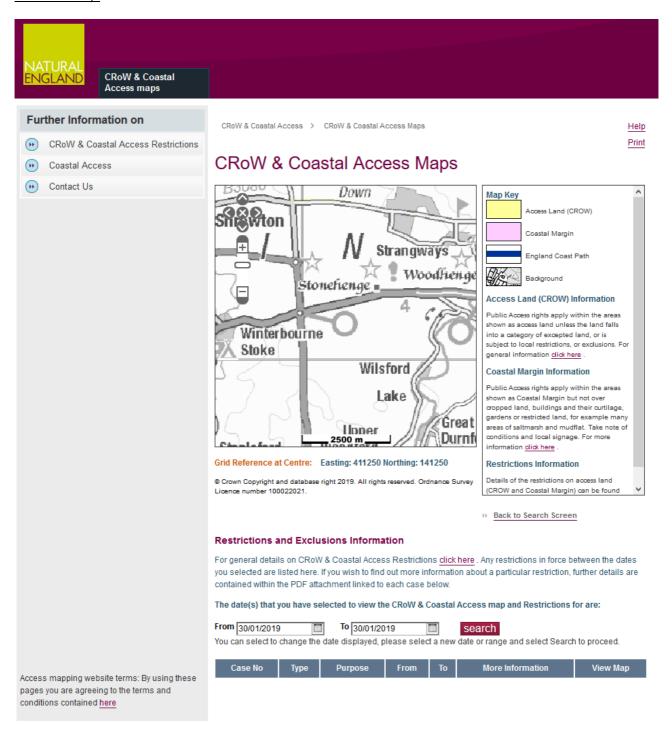


Extract from:

http://www.stonehengeandaveburywhs.org/about-us/stonehenge-avebury/

Showing extent of WHS and monument location and indicating extent of land which is currently considered to be general access (National Trust but note that, although accessible, this is not defined as Access Land)

Accessibility:



Extract from CroW showing that Land south of Stonehenge is not access land

http://www.openaccess.naturalengland.org.uk/wps/portal/oasys/maps/MapSearch/!ut/p/c5/pY_LDolwFES_xS-

4V8FSIkUMUEsRBXIsGoyGSFCIlfj4ejGu0YUzy8nk5EAOQy9FfyqL7tRcihpSylkSDhJ3tkAziDZL9NALbMG9aYD6sGdE4
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Nlc3MlME9wZW5BY2Nlc3NNYXAuanNw/

And see: https://www.gov.uk/right-of-way-open-access-land/use-your-right-to-roam