Submission of 'Outline OUV Impacts Assessments'

TR010025

Amesbury to Berwick Down (Stonehenge)

May 2019

We take our role as custodians of the Stonehenge Landscape very seriously and have therefore conducted four assessments of the Highways England proposals.

These were all carried out using ICOMOS International's Guidance on Heritage Impact Assessments for World Heritage Properties (2011).

They are best read in order, as they assess iterations of the proposed road scheme chronologically as the proposals developed.

	Date	Document Name
1	Dec 2014	Preliminary Outline Assessment of the impact of A303 improvements on the Outstanding Universal Value of the Stonehenge Avebury and Associated Sites World Heritage property
2	Mar 2017	Stonehenge A303 improvement: outline assessment of the impacts on the Outstanding Universal Value of the World Heritage property of potential route options presented by Highways England for January 2017
3	Mar 2017	Stonehenge A303 improvement: Addendum to outline assessment of the impacts on the Outstanding Universal Value of the World Heritage property of potential route options presented by Highways England for January 2017 Assessment of route option D081C
4	Apr 2018	Assessment of aspects of the Preferred Route (as at 4th December 2017)

In addition, all of the assessments are available on the National Trust website at: https://www.nationaltrust.org.uk/stonehenge-landscape/projects/our-ouv-impacts-assessments-

Preliminary Outline Assessment of the impact of A303 improvements on the Outstanding Universal Value of the Stonehenge Avebury and Associated Sites World Heritage property

Nicola Snashall BA MA PhD MIfA
National Trust

Christopher Young BA MA DPhil FSA
Christopher Young Heritage Consultancy

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ENGLISH HERITAGE

National Trust

Executive Summary

The Government have asked the Highways Agency to prepare feasibility studies for the improvement of six strategic highways in the UK. One of these is the A303 including the single carriageway passing Stonehenge. This study has been commissioned by English Heritage and the National Trust to make an outline preliminary assessment of the potential impact of such road improvements on the Outstanding Universal Value of the World Heritage property.

A full impact assessment, compliant with the ICOMOS guidance and with EU and UK regulations for Environmental Impact Assessment (EIA) would be a much larger task than this preliminary assessment. It would be prepared by the promoter of a road scheme and would require more supporting material and more detailed analysis of impacts. The present study is an outline preliminary assessment intended to inform the advice provided by the National Trust and English Heritage to the Highways Agency and the Department for Transport. It deals only with impact on Outstanding Universal Value and does not examine impacts on nationally or locally significant heritage.

The objectives of the study can be summarised as:

1. Review changes in international and national policy and in our understanding of the Outstanding Universal Value of the World Heritage property to set the context for the assessment of impact of potential options for improvement of the A303;
2. Assess the impact of four options for bored tunnels and associated road construction within the World Heritage property on its Outstanding Universal Value in the light of those changes.

<u>The Policy Context</u> (see Chapters 4, 7)

Highway improvements of the A303 were last considered in 2003 – 2007 when the Published Scheme for a 2.1km tunnel was put forward. Since 2004, when the Public Inquiry was held into this scheme, there have been significant changes to international and national policy.

Internationally, the UNESCO World Heritage Committee, through successive editions of the Operational Guidelines to the World Heritage Convention, has placed more emphasis on the need for effective management to protect the Outstanding Universal Value, as agreed by them, of each World Heritage property. Heritage Impact Assessment is now requested for developments affecting World Heritage property. The Committee has endorsed the guidance for this developed by ICOMOS International (ICOMOS 2011).(see Chapter 3 for the methodology used in this study)

Nationally, there is now a greater focus on the need to identify and protect significance. The National Planning Policy Framework and its accompanying Policy Guidance have confirmed this, as well as emphasising the need to protect setting. They also contain guidance on the need specifically to protect the Outstanding Universal Value of World Heritage properties, which are regarded as heritage designations of the highest significance. Substantial harm to them should be wholly exceptional and only justifiable by substantial public benefits outweighing the harm. World Heritage

properties should have Management Plans. Relevant policies in them should be taken into account in local authorities' spatial plans and decisions on development proposals.

A Statement of Significance, developed with the steering groups for Avebury and Stonehenge, was submitted by the UK government and agreed by the UNESCO World Heritage Committee in 2008. It was subsumed into an overall Statement of Outstanding Universal Value (now including assessments of integrity and authenticity) agreed by the Committee in 2013. The 2009 Stonehenge World Heritage Site Management Plan defined seven attributes of Outstanding Universal Value, based on the Statement of Significance, along with assessments of integrity and authenticity.

The Statement and Management Plan make clear that all Neolithic and Early Bronze Age funerary and ceremonial monuments and associated sites, together with their relationships with each other and with the landscape are attributes of Outstanding Universal Value and need to be treated as such. This is a decisive move away from the focus on Stonehenge and the Stonehenge Bowl which underpinned the 2009 EH/ NT Master Plan, the 2000 Management Plan and the Highways Agency Published Scheme, to a much wider view of the Outstanding Universal Value of the property which means that all the physical attributes of Outstanding Universal Value have to be given more equal consideration.

Assessment of the impact of alternative improvement schemes for the A303 on the Outstanding Universal Value of the World Heritage property (see Chapters 5, 6, 7)

The study assesses the impact of four options for bored tunnels and their associated dual carriageway and infrastructure. The length of each option was determined by the location of its portals. As a base line the current impact of the A303 on the World Heritage property was assessed. For illustrative purposes the impact of the 4.5km tunnel proposed by some conservation bodies in 2004 was evaluated. Assessment methodology was based on the ICOMOS guidance. Each of these six situations was assessed against the seven attributes of Outstanding Universal Value, and the integrity and authenticity of the World Heritage property.

The impact of the current A303 has (using the ICOMOS HIA terminology) a major adverse impact of very large significance on the World Heritage property. There are major visual and aural impacts on Stonehenge itself and on a large number of other sites which are attributes of Outstanding Universal value. Because of its high visibility in the landscape, it has a major adverse impact of very high significance on the various visual linkages between monuments and between the monuments and the landscape. Because of its traffic load, it also acts as an effective divider of the World Heritage property which is a major adverse impact on the property's integrity, as are the aural and visual effects.

A bored 4.5km tunnel, starting in the present A303 cutting close to Countess Road roundabout and finishing west of the western boundary of the World Heritage property, would remove the A303 totally from the property, apart from c1km of existing dual carriageway on its eastern side and located in cutting. This would be a major beneficial change of very large significance (the highest rating possible under the ICOMOS guidance). This assessment was prepared for comparative purposes only.

The four bored tunnel options have different impacts:

The 2.1km Published Scheme put to the 2004 Public Inquiry started just to the east of King Barrow Ridge and finished north of Normanton Gorse. There would be no road visible from Stonehenge itself. Access between the two halves of the World Heritage property would be improved. Because of the tunnel's depth, it would be constructed by cut-and-cover in Stonehenge Bottom which could have a long-term visual impact. Its eastern portal would have an adverse visual and aural impact on monuments along King Barrow Ridge. At its western end, it could have a physical impact on the long barrow just next to the portal (because 30m of tunnel next to the portal has to be constructed by cut-and-cover technology in any of the four options) and would certainly have a major adverse visual impact on that barrow group. The Published Scheme would necessitate the largest amount (1.6km) of new dual carriageway construction within the World Heritage property on the surface or within cutting which would have an adverse impact on integrity and authenticity. The junction with the A360 would still be very close to the Winterbourne Stoke Barrow Group. Balancing the adverse impacts against the positive ones, the overall assessment of the 2.1km tunnel (the Published Scheme) in the context of the current definition of Outstanding Universal value is that it would have a negligible beneficial impact of slight significance on the World Heritage property as a whole.

The remaining options all had the same eastern portal a further 200m away from King Barrow Ridge. The western portal for the 2.5km scheme would be 200m west of that for the Published Scheme and that for the 2.9km online scheme a further 700m west in the bottom of the small dry valley north of Normanton Gorse. The remaining option was for an offline route, also 2.9km long, with its portal in the bottom of the dry valley west of Normanton Gorse and a new road line running to a junction with the A360 700m south of the current one. In each case the new road would be dual carriageway in cutting with potentially positive impacts on visibility and noise.

All these options would have the same positive impacts as the Published Scheme in the central part of the World Heritage property, and without the impact of a cut-and-cover tunnel section in Stonehenge Bottom. Additionally, the location of their eastern portal would reduce impact on the monuments along King Barrow Ridge down to Coneybury Barrow. They would not have the same negative impact on the barrow group north of Normanton Gorse and the length of new dual carriageway road in the World Heritage property would be less (1.4km for the 2.5km tunnel and 1km for both 2.9km options). The two on-line options (2.5 and 2.9km bored tunnels) would still have junctions close to the Winterbourne Stoke Barrow Group whereas the 2.9km offline route would significantly reduce adverse impact on that group, though it might be intrusive in views between the Lake and Winterbourne Stoke Barrow Groups.

In ICOMOS HIA terminology, all three options (2.5km and 2.9km online and 2.9km offline) can be assessed as having a moderate beneficial impact of large/ very large significance. Within that scale of judgement, on present information the 2.9km offline version has the most positive benefits for the World Heritage property. The next best alternative would be the 2.9kms tunnel online option, followed by the 2.5km option. Any of these three tunnel options would achieve a beneficial change of large/ very large significance in the impact of the A303 on the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property.

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Chapter 1 Introduction

The Department for Transport is carrying out a feasibility study of the potential improvement of the A303 as a major trunk route to the west of England, which includes considering its future where it crosses the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property. This is one of six studies being carried out on potential road schemes in the UK. In addition to deciding on its response to any proposals within the context of UK legislation and needs, the Government will also need to consider its commitment under the 1972 World Heritage Convention to identify, protect, conserve, present and transmit to future generations places of Outstanding Universal Value 'to the utmost of its own resources' (UNESCO 1972, Article 4).

The last attempt to improve the A303 here was the A303 Stonehenge Improvement Scheme, leading to a public inquiry in 2004. Since then, there have been changes in planning and conservation policy both nationally and internationally, requiring a new review of the impact of potential schemes on the Outstanding Universal Value of the World Heritage property, and a review of the implications of that impact on what solution may be acceptable.

This study has been commissioned by English Heritage and the National Trust as a preliminary outline assessment of the impact of potential proposals for improvement of the A303 on the Outstanding Universal Value of the World Heritage property. There are two components to the work. The first is a review of the direct and indirect impacts of new road construction resulting in physical loss of the whole or part of archaeological sites and monuments which are attributes of the OUV of the WHS. This work (Chapter 6) has been undertaken by Dr. Nick Snashall, National Trust Archaeologist for Stonehenge and Avebury WHS. The second component is a review of changes in international and national policy and guidance since 2004, and also a review of the non-physical direct and indirect impacts on the attributes of Outstanding Universal Value. This component was commissioned from Dr Christopher Young, heritage consultant (see Appendix 1 for the brief for this component). Both aspects of the work feed into the outline conclusions as an integrated whole. The conclusions and the Non-Technical Summary have been written jointly by both authors. Throughout, we have worked together to ensure that the assessment reflects the full range of factors affecting each option.

The tasks required of the report are to:

1. Summarise the context in which the work has been commissioned and the methodology adopted to carry it out. (Chapters 2 and 3)

2. Review changes in international and national policy and guidance; in management policies for this WHS; in our understanding of the archaeological significance of the WHS; and in the articulation of its Outstanding Universal Value as agreed by the UNESCO World Heritage Committee under the terms of the World Heritage Convention and seen by them as the baseline for the future management of the property. (Chapter 4)

3. Consider the relative *direct and indirect* impacts, including physical impacts on archaeological features, of each option upon Outstanding Universal Value in the light of current policy, guidance and understanding of significance. The work will consider each option (2.1km tunnel (the 'Published Scheme); 2.5km bored tunnel; 2.9km bored tunnel on-line, 2.9km bored tunnel off-line) with regard to the Statement of Outstanding Universal Value, including its assessments of integrity, authenticity and its definition of needs for future management and protection. This must take into account the articulation in the 2009 WHS Management Plan of Attributes identified in the Statement of Outstanding Universal Value, and have regard to impacts on setting (aural and visual, including lighting), physical loss of the whole or part of archaeological sites and monuments, and on access insofar as relevant information is available within the constrained timescale necessary to complete the work. (Chapters 5 and 6)

4. In addition to the impact of the tunnel options themselves, the study will consider the impact of dual carriageway construction within the WHS on Outstanding Universal Value outwith the tunnelled part of each option. (Chapters 5 and 6)

5. To provide both a baseline and spectrum of the impact on Outstanding Universal Value, the assessment should briefly consider the impact on Outstanding Universal Value of the current road within the WHS and of the 4.5km tunnel. (Chapter 5)

This study is solely a preliminary outline assessment of the perceived impacts on the property's Outstanding Universal Value of the existing road, the 4.5kms tunnel (for illustrative purposes only) and the four tunnel options specified by the National Trust and English Heritage, and made within the limitations of the available information. It is not a recommendation for an actual solution but intended to provide input into deciding what that might be. Any decision on an actual route will need to be taken within the constraints of Government policy, bearing in mind the UK's international responsibilities for Stonehenge under the World Heritage Convention. The four options provided the basis for assessment but the actual solution will need careful consideration to ensure the protection of the Outstanding Universal Value of the World Heritage property and to avoid putting it at risk of being included on the World Heritage in Danger list or even delisted altogether as was the case with Dresden Elbe Cultural Landscape.

Chapter 2 Context

The improvement of the A303 at Stonehenge is a potential scheme within a Department for Transport (DfT) Feasibility Study of route options on the A303/A30/A358 Corridor. Stonehenge will be considered along with other potential improvements along the corridor. The Study is in a competitive process as one of six routes nationally. The renewed focus on the A303 presents an opportunity to achieve a solution to the ongoing road performance issues, reunite the World Heritage property and create a more tranquil and permeable landscape for visitors within the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage Site (WHS). It also carries risks in the potential for harm to the Outstanding Universal Value (OUV) of the Stonehenge WHS as options to be considered by DfT may include surface dualling.

Surface dualling of the whole route through the Stonehenge component of the World Heritage property, whether on-line or off-line, would cause substantial harm to the significance and Outstanding Universal Value of the WHS, and DfT has been advised accordingly. Exhaustive work was undertaken to assess the impact of surface dualling options within the WHS as part of the work to identify an acceptable route option in the 1990s and 2000s. The significant adverse impacts that such options were likely to have on Outstanding Universal Value were identified at the time and the current context for Outstanding Universal Value impact assessment will certainly reinforce those conclusions. As a result, surface dualling options across the whole World Heritage property without bored tunnels are not considered further in this study.

Since the 2.1 km Published Scheme (A303 Stonehenge Improvement) was last considered at the 2004 Public Inquiry and in the Highways Agency's (HA) Options Appraisal in 2006-7, there have been changes in international and national policy and guidance; in management policies for this WHS; in our understanding of the archaeological significance of the WHS; and in the articulation of its Outstanding Universal Value as agreed by the UNESCO World Heritage Committee under the terms of the World Heritage Convention and seen by them as the baseline for the future management of the property. These changes mean that the advice to DfT/HA provided by both EH and NT on the 2.1km Published Scheme, both as part of the A303 Stonehenge Improvement options appraisal in 2006 and previously, is unlikely to remain valid. A fresh, outline preliminary assessment of impact on Outstanding Universal Value based on current criteria, policy and guidance is required to inform their mutual positions on what may form an acceptable road scheme at Stonehenge.

At the 2004 Public Inquiry (from which sprang the 2006 Highways Agency options appraisal), English Heritage supported the 2.1km twin-bored tunnel (the Published Scheme), whilst the National Trust supported a longer bored tunnel that was as long as possible. Although the Public Inquiry accepted on balance the case for the 2.1km tunnel, the scheme was cancelled by Government in December 2007, following the Highways Agency options appraisal of 2006. While cancelling the scheme, the government restated its view that *due to significant environmental constraints across the whole of the World Heritage Site, there are no acceptable alternatives to the 2.1km bored tunnel scheme. However, when set against our wider objectives and priorities, we have concluded that allocating more than £500m for the implementation of this scheme cannot be justified and would not represent best use of taxpayers' money* (Department for Transport 2007). The government therefore accepted that no surface scheme through or round the World Heritage property would be acceptable.

The 2004 Inquiry and subsequent decisions were made under the international and national policy guidance and regulations then applying, and within policies of the 2000 *Stonehenge World Heritage Site Management Plan* **(**English Heritage 2000). Since then, there have been changes

1. in policy and guidance ;
2. in management policies for this WHS;
3. in our understanding of the archaeological significance of the WHS; and
4. in the articulation of its Outstanding Universal Value as agreed by the UNESCO World Heritage Committee under the terms of the World Heritage Convention.

In policy and management guidance terms these changes include revisions in the 2005 and later editions of the UNESCO *Operational Guidelines for the Implementation of the World Heritage Convention* (UNESCO 2002, 2005, 2013) the *National Planning Policy Framework*, (DCLG 2012); the *Planning Practice Guidance* (DCLG 2014), the English Heritage published guidance *The Setting of Heritage Assets*, (English Heritage 2011) and *Conservation Principles*, (English Heritage 2008); ICOMOS *Guidance on Heritage Impact assessments for Cultural World Heritage Properties*, (ICOMOS 2011), the Statement of Outstanding Universal Value for the World Heritage Property adopted by the World Heritage Committee in June 2013; and the revised WHS Management Plan 2009-2015 (English Heritage 2009a).

The present DfT Feasibility Study raises once again the potential for achieving a sustainable road improvement scheme at Stonehenge. Accepting the overarching principle that a bored tunnel is the only road improvement method that has the potential to avoid substantial harm to the WHS, this report assesses the relative benefits versus harm to Outstanding Universal Value that a range of bored tunnel options may present. The range of options to be assessed does not include one for a 4.5kms tunnel as proposed at the last Inquiry by a number of conservation bodies but it is considered briefly in order to provide one end of a spectrum of impact. The existing surface road which marks the other end of that range is also assessed as a baseline against which to judge the impacts of the options for a bored tunnel.

Chapter 3 Methodology

This report addresses two aspects of what is necessary to assess the impact of various options for the improvement of the A303 through the Stonehenge World Heritage property. Firstly the policy and guidance context in which any impact must be assessed is considered. Secondly the potential impact of four specific options for bored tunnels of different lengths, including an assessment of the impact of dualling sections of the road within the World Heritage property in a cutting (Tata 2014, 12), is assessed. Apart from the 2.1 km Published Scheme, the lengths of the other bored tunnel options are determined by suitable locations for the tunnel portals (see pp. 27 - 28 for further discussion of this)

The evaluation is divided into an assessment of permanent direct and indirect impacts of new road construction resulting in physical loss of the whole or part of archaeological sites and monuments which are attributes of the Outstanding Universal Value of the WHS, and of the non-physical impacts on attributes of Outstanding Universal Value. This study looks solely at the implications for the World Heritage property. It concentrates on the impact on attributes of Outstanding Universal Value and therefore on the property's international values. It does not focus on impacts on cultural heritage of national or local significance except insofar as these also have international significance. It is beyond the study's scope to examine any wider implications, such as, for example, the Winterbourne Stoke bypass or other improvements further west. These clearly will need to be borne in mind both for their impact on heritage assets, natural or cultural, of national or local significance, as well as for their impact on the Outstanding Universal Value of the World Heritage property in its wider setting.

Changes in policy and guidance since 2004

The first task is to identify changes in the policy framework since the last Public Inquiry in 2004 and the subsequent review of options by the Highways Agency in 2006. The policy and regulatory areas reviewed are:

1. Changes and developments since 2004 in policy and guidance for the implementation of the UNESCO World Heritage Convention in respect of the protection of World Heritage properties, particularly with regard to the *Operational Guidelines for the Implementation of the World Heritage Convention*(UNESCO 2013a);

2. Guidance produced by the Advisory Bodies to the World Heritage Convention and endorsed by the World Heritage Committee, particularly the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*(ICOMOS 2011) which has been recommended for use in many of its decisions;

3. Changes and developments since 2004 in policy and guidance for the implementation of the English planning system for the protection and sustainable use of the historic environment, particularly the introduction of the National Planning Policy Framework (NPPF) in 2012 (Department for Communities and Local Government 2012), and of the Planning Policy Guidance in 2014 (Department for Communities and Local Government 2014);

4. Significant policy statements since 2004 by English Heritage on the methodology to be used for the protection of the historic environment, particularly the English Heritage *Conservation Principles, Policy and Guidance* (2008), and *The Setting of Heritage Assets: English Heritage Guidance* (2011);

5. The Statement of Outstanding Universal Value for the Stonehenge, Avebury and Associated Sites World Heritage property, proposed by the UK Government in January 2011 and adopted by the UNESCO World Heritage Committee as the baseline for the future protection of the World Heritage property;

6. Changes in policies in the *Stonehenge World Heritage Site Management Plan 2009* (English Heritage 2009a), compared to those in the 2000 version.

In each section the position in 2004 is briefly summarised. Changes in the last decade are then described and their implications discussed. This section of the report finishes with an analysis of the impact of various changes on the overall approach required for any assessment of impact of changes to the A303 on the Outstanding Universal Value of the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property.

Impact assessment

It has not been possible to carry out a full Heritage Impact Assessment of any of the options outlined in the brief for improvement of the A303. Apart from the time constraints, the available information is only in outline. It would in any case be the responsibility of the Project Sponsor for a road scheme to produce a full Heritage Impact Assessment.

The position of the tunnel portals is known for each option. It is taken as a given that any tunnel will be bored, not cut-and-cover (it should be noted here that the 2.1km Published Scheme which is assessed here was planned to be a bored tunnel for most of its length with a cut and cover component at Stonehenge Bottom). Beyond that, nothing is certain. The assessment is made on the basis of assumptions informed by the A303 Tunnel Feasibility Review commissioned by the National Trust from Tata Steel Projects (Tata 2014). Apart from the Published Scheme (a small part of which outside the tunnel would have been at surface at the west end but otherwise in cutting), these assumptions include the construction of surface elements of each option in cutting with vertical 'green walls' to minimise visual and aural impact. Tata have also provided estimates of the amount of landtake required for each option as well as comments on potential lighting and other needs. The Published Scheme proposed a flyover at the Countess Road junction on the eastern edge of the World Heritage property, within the footprint of the existing dual carriageway and cutting. For the junction of the A303 and A360, the Published Scheme proposed a grade-separated junction with the A360 at grade over the A303 in a cutting. The present junction at Longbarrow Crossroads is very sensitive because of its closeness to the Winterbourne Stoke Barrow Group. Only permanent Impacts have been assessed and no attempt has been made to assess temporary impacts during construction.

The basic methodology used has been that recommended in the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011). This has effectively been endorsed by the UNESCO World Heritage Committee through various decisions and therefore provides a model likely to be acceptable to them. It is also similar to the methodology developed in the Highways Agency *Design Manual for Roads and Bridges* which has been tried and tested in England, not least at Stonehenge. One of the key aspects of the methodology is that the impact on Outstanding Universal Value has to be assessed as a whole and not atomised into impact on individual attributes which can be misleading. However, in order to reach such an overall assessment it is still necessary to assess impact on individual attributes as the basis for the final conclusions.

In carrying out this preliminary assessment of impact on Outstanding Universal Value, we have received no full scoping opinion and have no details of any potential road scheme from HA or DfT. We have been instructed to consider the impact of four different combinations of portal locations, with resultant bored tunnels of 2.1km, 2.5km, 2.9 km (all online) and 2.9km offline, with the remainder of the road dualled in cutting, except for a short length of the 2.1km Published Scheme which would be on the surface in the hollow just east of the junction with the A360. Essentially though we have focused on the key elements of the ICOMOS HIA methodology:

- Identification of heritage at risk and its contribution to the Outstanding Universal Value of the property
- How change or development will impact on Outstanding Universal Value, positively or negatively

Impact has been scored according to the ICOMOS methodology. This postulates a scale of values for attributes of:

- Very high
- High
- Medium
- Low
- Negligible
- Unknown

All attributes of Outstanding Universal Value considered in this case have been ranked as 'Very High' because they are by definition of international significance. The scale of impact of proposed changes has been ranked as:

- No change
- Negligible change
- Minor change
- Moderate change
- Major change

Change can be adverse or beneficial. This gives a nine-point scale with 'neutral' as its central point:

- Major beneficial
- Moderate beneficial
- Minor beneficial
- Negligible beneficial
- Neutral
- Negligible adverse
- Minor adverse
- Moderate adverse
- Major adverse

The significance of the impact of the change is scored as a function of the importance of the attribute and the scale of change. For any feature of international significance (ie World Heritage properties and their attributes of Outstanding Universal Value), the result of this scoring is as follows:

VALUE OF HERITAGE ASSET	**SCALE & SEVERITY OF CHANGE/IMPACT**				
		Negligible change	**Minor change**	**Moderate change**	**Major change**
For WH properties Very High – attributes which convey OUV	**SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OR BENEFICIAL)**				
	Neutral	Slight	Moderate/ Large	Large/very Large	Very Large

Fig 1: significance of impacts on World Heritage properties and their attributes (ICOMOS 2010, 9)

According to the ICOMOS HIA Guidance, therefore, any moderate or major impact on an attribute of Outstanding Universal Value results in a large or very large beneficial or adverse impact.

This is an unusual HIA in that the property is already affected by a large/ very large adverse impact on its Outstanding Universal Value in the form of the present A303. Any of the proposed options would lessen this impact though large/ very large adverse impacts to individual attributes would remain and additional adverse impacts may also be introduced in some instances. The removal of an adverse impact from any attribute so that it no longer exists in the new situation is in fact a positive impact on that attribute and needs to be recorded as such.

This assessment has been carried out for each physical attribute selected for examination in this study. Following that process, it has been necessary to aggregate the results to give an overall assessment of impact on Outstanding Universal Value of the Stonehenge part of the World Heritage

property as a whole. This has inevitably involved the use of professional judgement, particularly as, for each of the bored tunnel options, gains in one part of the World Heritage property may be accompanied by losses in another.

Outstanding Universal Value has been agreed for the whole World Heritage property and attributes have been previously defined for the Stonehenge component in the 2009 Management Plan which has been endorsed by all the key stakeholders (English Heritage 2009a pp28-33). The seven identified attributes, all securely based in the agreed Statement of Outstanding Universal Value, are:

1. Stonehenge itself as a globally famous and iconic monument.
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.
3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.
5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.
6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.
7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

The first two of these are physical attributes consisting of surviving archaeological sites above or below ground. No. 6 singles out the landscape formed by the interrelationship of the physical attributes with their natural environment and thus applies holistically to the whole property. It relates closely to the integrity of the property. Nos. 3 and 5 are about the relationships of the individual physical attributes with the landscape and with each other. No. 4 deals with astronomical alignments and is therefore also about relationships of the physical attributes, in this case with beliefs and their physical expression. No. 7 is about the influence of the physical attributes and their relationships, particularly in the landscape, on artists, architects and other disciplines.

Integrity and authenticity are also deemed by the UNESCO World Heritage Committee to be part of the Outstanding Universal Value of the property. The impact of the A303 as it is now, and the changes in that impact resulting from the various bored tunnel options must also be assessed.

The present A303 has been rapidly assessed for its impact on those attributes selected for assessment, supported by field visits as necessary and as time permitted. The scale and system used for measuring impact is that recommended by ICOMOS, as was that used for grading assets. Following that, the same process was applied for the impact of a 4.5kms tunnel. These provide the two extreme positions of maximum and minimum impact of the A303 on the Outstanding Universal Value of the World Heritage property, given that the brief for this study ruled out on-line surface dualling through the full width of the World Heritage property (see above **Chapter 2 Context**). The

same process was then applied to the four bored tunnel options provided by English Heritage and the National Trust. Only the impact of permanent changes has been assessed.

There are over 661 known archaeological sites and monuments within the Stonehenge component of the World Heritage property (Wessex Archaeology 2012). Many of these are physical attributes of the Outstanding Universal Value of the site, as the physical remains of Neolithic and Bronze Age funerary and ceremonial monuments and associated sites. They are also parts of other attributes dealing with relationships between them and their landscape. Many of them will be in view of the A303, or interlinkages between them will be affected by the A303. It has not been possible with the time or resources available to assess every possible impact.

It must be stressed that a full impact assessment, fully compliant with the ICOMOS guidance and with EU and UK regulations for Environmental Impact Assessment (EIA) would be a much larger piece of work than has been possible within the time and resources available for this preliminary assessment. It would also require much more supporting material such as a full description of the Stonehenge component of the World Heritage property with a gazetteer of all the sites considered. There would also need to be a much more thorough and detailed analysis of impacts on relationships. This study is a preliminary assessment intended for the National Trust and English Heritage to inform their advice to the Highways Agency. It is in no way a full impact assessment which remains to be done in the future.

For the part of the study not dealing with the physical impact of new road construction on archaeology, the approach therefore has necessarily had to be selective. We have attempted a rapid assessment of key attributes of Outstanding Universal Value (see Chapter 5) with the main focus on visual relationships (Attributes 3, 5, 6). This has been addressed by selecting 17 key groups of attributes, such as barrow groups and Stonehenge itself, whose relationships are affected by the visible presence or absence of the A303. It is hoped that this will produce a preliminary but clear result representative of the outcome of a full HIA based on a more detailed scheme. The method of assessing impacts is that recommended by the ICOMOS guidance.

Listed roughly from north-east to south-west, these are (See Fig. 2):

1. Durrington Wall
2. Woodhenge
3. The Avenue east of King Barrow Ridge
4. Unnamed barrow group either side of this stretch of the Avenue
5. King Barrows (Old and New)
6. Coneybury Henge
7. Coneybury Barrow (King Barrow) south of Coneybury Henge
8. The Cursus E end
9. The Cursus centre
10. The Cursus W end
11. Cursus Barrows
12. Stonehenge
13. Stonehenge Down Barrows
14. Normanton Down Barrows
15. The unnamed group either side of the A303 close to the potential positions of Portals B and C
16. Lake Barrows
17. Winterbourne Stoke Barrows

[Fig 2 around here]

For linear monuments or extended barrow groups, it has been necessary to select a focus from which to judge visual impact. For the Avenue east of King Barrow Ridge (3), this is the point at which the line of the Avenue crosses the A303, and for the associated barrow group to the north of the A303 (4), it is the point at which the Avenue intersects the east-west line of burial mounds. The Cursus is so long, and its visual connections so varied, that it has been divided into three sectors, the high east (8) and west (10) ends, and the low part where it crosses Stonehenge Bottom (9). For barrow groups, we have used the approximate centre as the focal point.

Results are based on field observation and map work and no digital analysis has been possible in the time available. It has only been possible to access rights of way and National Trust permissive open access land where it was not under crop at the time of field visits (spread over three days between 7th and 17th July), as was the case with Coneybury Henge. We have also made use of observations reported in *Stonehenge Landscapes* (Exon, Gaffney, Woodward, Yorston 2000) where these are applicable. In many cases viewsheds are obscured by woodland, particularly during July when the site visits were made, and here reasoned judgements have had to be made as to what should be visible. This is also the case with sites which it was not possible to access physically.

The ICOMOS guidance also advises assessment of impact on the integrity and authenticity of the World Heritage property, and this too has been attempted for each option. A baseline for this is provided by the 2009 World Heritage Management Plan which contains brief assessments of the integrity and authenticity of the Stonehenge component of the World Heritage property.

In order to undertake this work, details of the expected road and tunnel construction were required. The National Trust commissioned Tata Steel Projects to provide this technical detail in their A303 Tunnel Feasibility Review, (Tata Steel Projects 2014). The Tata Steel report examines the technical aspects of tunnel and highways construction for the four options and draws on all the available details of the 2006 2.1km Published Scheme, making clearly stated assumptions where detail was lacking or new portal locations required technical detail amendment. As part of this work Tata Steel set out putative footprints for the four road options and their related infrastructure.

The assessment of the impact of physical damage to archaeological sites caused by new construction work first identified all archaeological sites and monuments which are attributes of the Outstanding Universal Value of the World Heritage Site which are located either within the footprint, or immediately adjacent to the footprint, of each road option. In line with the Statement of Outstanding Universal Value this has been taken to mean all Neolithic and Bronze Age funerary and ceremonial monuments and associated sites dating to between 3700 and 1600 BC (i.e. Neolithic or Early Bronze Age in date). For the purposes of this study all ring ditches (including undated examples) have been assumed to be the relict remains of Early Bronze Age round barrows and therefore to be attributes of Outstanding Universal Value of the World Heritage property.

Sites and monuments were identified using the Wiltshire Historic Environment Record (HER) supplemented by information from interim plots and reports from the Stonehenge Hidden Landscapes Project (an extensive geophysical survey being undertaken within the World Heritage

property by the University of Birmingham and the Ludwig Boltzmann Institute). Potential physical impact on those sites and monuments was then assessed according to the ICOMOS methodology.

Because of the nature of this assessment no distinction has been drawn between scheduled and unscheduled monuments. Only the physical impacts on archaeological sites and monuments that are attributes of the Outstanding Universal Value of the WHS have been assessed. Where these are also Scheduled Monuments the Scheduled Monument number has been provided in addition to the Wiltshire HER reference. Scatters of surface material and spot finds have been excluded from the assessment as lithic scatters in particular, though varying greatly in density, appear to be ubiquitous across much of the Stonehenge World Heritage Site.

The assessment on physical archaeological impacts was undertaken on a portal by portal basis and the results then combined to provide an assessment of the impact of each of the four road options. Chapter 7 brings together these conclusions with those of other sections of this report to reach an overall assessment of impact.

Chapter 4 Policy developments since 2004

The World Heritage Convention

The UNESCO World Heritage Convention (UNESCO 1972) states that it is the responsibility of each state party to identify, protect, conserve, present and transmit to future generations its property of Outstanding Universal value to the utmost of its own resources (Article 4). It is up to each state party to choose the ways in which it does so. The Convention provides for sites at risk to be placed on the World Heritage in Danger List as an indication of the need for support and help from the international community to resolve problems.

How the Convention should be implemented is articulated in *The Operational Guidelines for the Implementation of the World Heritage Convention*. First adopted in 1976 by the Convention's governing body, the UNESCO World Heritage Committee, they have been periodically amended since then. The last major revision was completed in 2005 (UNESCO 2005) and the current 2013 edition is essentially that of 2005 with some relatively minor amendments (UNESCO 2013a).

The 2004 Inquiry and the subsequent roads review by the Highways Agency therefore took place in the context of the 2002 Operational Guidelines (UNESCO 2002). These were quite light on management and protection. While containing guidance on the operation of the procedures for in-danger listing and deletion of properties from the World Heritage List, there was little on management. States parties were asked *to prepare plans for the management of each natural site nominated and for the safeguarding of each cultural property nominated* (UNESCO 2002, para 21).

The 2002 Guidelines said that, to be considered of Outstanding Universal Value, a property must meet at least one of the criteria for Outstanding Universal Value, must have *authenticity in design, material, workmanship or setting and in the case of cultural landscapes their distinctive character and components* (UNESCO 2002, para 24 (b) (i)) if it is a cultural property, and integrity if it is a natural one. At that point, there was no requirement for cultural World Heritage properties to have integrity.

The 2002 Guidelines said that properties must:

> *have adequate legal and/or contractual and/or traditional protection and management mechanisms to ensure the conservation of the nominated cultural properties or cultural landscapes. . . . . Assurances of the effective implementation of these laws and/or contractual and/or traditional protection as well as of these management mechanisms are also expected. Furthermore, in order to preserve the integrity of cultural sites, particularly those open to large numbers of visitors, the State Party concerned should be able to provide evidence of suitable administrative arrangements to cover the management of the property, its conservation and its accessibility to the public.* (UNESCO 2002, para 24 (b) (ii))

There was no requirement for a property to have a clear official statement of why it had Outstanding Universal Value. To find out why a site had been inscribed on the World Heritage List, it was necessary to check back to the record of Committee decisions which often contained no justification

for inclusion on the List, and to the evaluation of the property submitted by the Advisory Bodies (IUCN for natural, and ICOMOS International for cultural ones) to the Committee.

The 2005 Operational Guidelines (UNESCO 2005) introduced a number of significant changes. These were:

1. The introduction of a definition of Outstanding Universal Value *as cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity* (UNESCO 2005, para 49).

2. Integrity (the definition of the wholeness and completeness of the property) is now a condition of Outstanding Universal Value for cultural properties as well as natural ones, alongside the existing requirement for authenticity (UNESCO 2005, paras 87-88).

   Integrity 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.

   For cultural properties, *the physical fabric of the property and/or its significant features should be in good condition, and the impact of deterioration processes controlled. A significant proportion of the elements necessary to convey the totality of the value conveyed by the property should be included. Relationships and dynamic functions present in cultural landscapes, historic towns or other living properties essential to their distinctive character should also be maintained* (UNESCO 2005 para 89).

3. The Committee decided that *To be deemed of Outstanding Universal Value, a property must also meet the conditions of integrity and/or authenticity and must have an adequate protection and management system to ensure its safeguarding* (para 78). Meeting one or more criteria for Outstanding Universal Value, having integrity and/or authenticity, and the existence of adequate protection and management are seen as the three pillars supporting Outstanding Universal Value as a whole. Failure to meet any of these three can jeopardise the property's overall status on the World Heritage List.

4. The Committee also decided that:

   At the time of inscription of a property on the World Heritage List, the Committee adopts a Statement of Outstanding Universal Value (see paragraph 154) which will be the key reference for the future effective protection and management of the property. (UNESCO 2005 para 51)

> *The Statement of Outstanding Universal Value should include a summary of the Committee's determination that the property has Outstanding Universal Value, identifying the criteria under which the property was inscribed, including the assessments of the conditions of integrity or authenticity, and of the protection and management in force and the requirements for protection and management. The Statement of Outstanding Universal Value shall be the basis for the future protection and management of the property.* (*UNESCO* 2005 para 155)
>
> For sites already inscribed on the World Heritage List, the Committee has adopted retrospective Statements of Outstanding Universal Value, based on documentation considered by them at the actual time of inscription.

5. The Committee also adopted more substantial guidance on protection and management of World Heritage properties (UNESCO *2005*, paras 96 – 119). The broad requirements outlined in 2005 (paras 108 – 114) were in line with current UK practice but stated these explicitly for the first time as necessary for meeting responsibilities to implement the Convention.

This section was subsequently modified in 2011. The full section of the Guidelines as they exist in 2014 (UNESCO 2013a) is attached at Appendix 2. Changes since the 2005 edition are shown in red in Appendix 2. Apart from clarification and elaboration of the wording, the principal changes have been to emphasise the needs for integrated planning, both within the World Heritage property and in its wider setting, and to introduce a specific requirement for impact assessment of development proposals.

There are therefore some significant shifts from the position in 2002 which applied during the previous consideration of the A303 Published Scheme for a 2.1km bored tunnel a decade ago. In particular, the introduction of Statements of Outstanding Universal Value as the baseline for management of individual properties provides much firmer foundations for assessment of impact of development proposals. This is very much in line with developments within the English planning system which bases management of the historic environment on its significance. It also means that in future it should be much more possible to state clearly whether a development proposal does have a positive or negative impact on Outstanding Universal Value.

The effect of these changes on the operation of the World Heritage Committee has been gradual. A Statement of Significance, covering just the first pillar of OUV was adopted for Stonehenge and Avebury in 2008 (English Heritage 2009a, pp.26-7), and a full Statement of Outstanding Universal Value in 2013. The latter (Appendix 3) is now the basis for the assessment of the impact of any future proposals affecting either part of the World Heritage property. The attributes identified in the 2009 Stonehenge World Heritage Site Management Plan are an elaboration of what has become the first section of the Statement of Outstanding Universal Value.

In recent years, the Committee's decisions on the state of conservation of individual properties have increasingly focused on the need to have impact assessments. Guidance has now been published for both cultural and natural properties (see below for discussion of ICOMOS guidance). Many decisions

now mention the need for, or request a Heritage Impact Assessment in line with the ICOMOS Guidance. Should the Committee consider that Outstanding Universal Value is at risk, it can offer advice or assistance, and in severe cases can place a property on the List of World Heritage in Danger. If the Committee decides that Outstanding Universal Value has been irretrievably damaged, it can remove a property from the World Heritage List, as happened in the Dresden case. Any action such as this would apply to the World Heritage property as a whole and not just to its Stonehenge component.

The Committee has also shown itself since 2004 to be very concerned over the impact of major transport infrastructure projects on World Heritage properties. Examples in Europe include the construction of bridges in the Dresden Elbe property, eventually removed from the World Heritage List because of the impact of this bridge, in the Middle Rhine Valley, and across the Golden Horn in Istanbul. These cases all involved bridges but any major new road construction in a World Heritage property is likely to attract their attention and concern.

Advice produced by the Advisory Bodies

The World Heritage Committee has asked for increasing amounts of guidance over the last decade. This has been produced principally by the three Advisory Bodies recognised formally in the World Heritage Convention, the International Union for the Conservation of Nature (IUCN), the International Council of Monuments and Sites (ICOMOS) and the Rome Centre for Conservation (ICCROM). While both IUCN and ICOMOS have national committees in the UK, it is their international centres which are the direct advisors to the Committee and the UNESCO World Heritage Centre.

Guidance includes resource manuals on *Managing Disaster Risks for World Heritage* (UNESCO 2010), *Managing Natural World Heritage* (UNESCO 2012) and *Managing Cultural World Heritage* (UNESCO 2013b). All focus on the need to protect Outstanding Universal Value, as does *Preparing World Heritage Nominations* (UNESCO 2011). This last manual has an extensive discussion on Outstanding Universal Value, emphasising the need to consider all three pillars (attributes; integrity/ authenticity; adequate protection and management) in assessing it as a whole for a property, and the need for that definition to be the focus of future management of the property. Compared to 10 years ago, the emphasis on clear definition of Outstanding Universal Value in the first place, followed by its use as the baseline for management of a World Heritage property, has increased enormously.

Both IUCN and ICOMOS have published guidance on impact assessment. That produced by ICOMOS (ICOMOS 2011) was first published in 2010 and has been widely used. It is compatible with systems used in the UK and has provided the basic methodological approach used in this report (see Chapter 3).

Changes in the English planning system

While each state party to the Convention has accepted the responsibility to protect its World Heritage properties 'to the utmost of its resources', it is up to each national government to decide

how it is going to do this. In the UK, the Convention has never been adopted formally into UK primary legislation and its provisions have been applied through policy and guidance and through some regulation in the spatial planning system. The UK Government therefore protects World Heritage properties in England in two ways:

- individual buildings, monuments and landscapes are designated under the Planning (Listed Buildings and Conservation Areas) Act 1990 and the 1979 Ancient Monuments and Archaeological Areas Act,
- through the UK Spatial Planning system under the provisions of the Town and Country Planning Acts.

The first guidance on the protection of World Heritage properties in England was published 20 years ago in Planning Policy Guidance no. 15 (PPG15) (Department of the Environment 1994). This (see Appendix 4 for full text) stated that World Heritage properties were a key material consideration in the planning system and that local authorities should include appropriate policies for their protection in their development plans, placing great emphasis on the need to protect them for future generations. It was recognised that development in or near World Heritage properties might be appropriate but should always be carefully scrutinised for their likely effect on the site or its setting in the longer term. Formal environmental assessment of proposals would normally be required. The development of management plans for each property was recommended. This remained the basis for protection of English World Heritage properties for 15 years, and was in force when the previous A303 scheme was under consideration.

In 2010 PPG15 was replaced by Planning Policy Statement 5 (PPS 5), supported by English Heritage Practice Guidance. These had been supplemented by a DCLG Circular CLG07/09 on protection of World Heritage (Department for Communities and Local Government 2009). This reiterated and elaborated what had been said in PPG15, and consolidated subsequent advice.

The Circular placed more emphasis on the need for sustainable use of World Heritage properties, when compatible with the protection of their Outstanding Universal Value, and on the involvement of local communities. The main objective remained the protection of each World Heritage Site through conservation and preservation of its Outstanding Universal Value. Use of local plans was still seen as the primary way of achieving this. Emphasis was placed on the role of World Heritage Site Management Plans, relevant policies of which should be treated by local authorities as key material considerations in making plans and planning decisions. Emphasis was placed on the protection of the setting of World Heritage properties so that their Outstanding Universal Value, integrity, authenticity and significance is not adversely affected by inappropriate change or development. The setting of a World Heritage Site was defined as the area around it in which change or development is capable of having an adverse impact on the World Heritage Site, including an impact on views to or from the Site.

The Circular provided that local authorities must refer to the Secretary of State planning applications affecting World Heritage properties *to which English Heritage maintains an objection and which would have an adverse impact on the outstanding universal value, integrity, authenticity and significance of a World Heritage Site or its setting, including any buffer zone*, for him to consider

whether to call them in for his own decision. World Heritage properties were added to Article 1(5) Land so that permitted developments within them was restricted in line with what happens in National Parks and Areas of Outstanding Natural Beauty. The Circular was supported by additional English Heritage guidance (English Heritage 2009b). The Circular was cancelled when the Government's Planning Practice Guidance was published in March 2014.

The English planning system underwent major changes following 2010, so that basically there are now two major government advisory documents. These are the National Planning Policy Framework (Department for Communities and Local Government 2012) and Planning Practice Guidance (Department for Communities and Local Government 2014) (see Appendix 5 for the main provisions of both relating to World Heritage). Underpinning the whole system is the need for sustainable development to underpin the economy and communities. Sustainable development was defined as having three roles – economic, social and environmental. The last should contribute to protecting and enhancing our natural, built and historic environment.

The National Planning Policy Framework summarised the major provisions of PPS5 with an increased emphasis on the need to protect significance (in the case of World Heritage properties defined as Outstanding Universal Value). Local authorities should include a positive strategy for the historic environment in their Local Plans, recognising that heritage assets are an irreplaceable resource and conserving them in a manner appropriate to their significance (para 126). World Heritage properties are defined as designated assets for the purposes of the Framework.

Assessment of significance of a heritage asset is seen as a key element in coming to a decision on whether or not to permit a development. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be (para 132). Substantial harm to heritage assets of the highest significance, including World Heritage properties, should be wholly exceptional. In such cases, consent should be refused unless it can be clearly and convincingly demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss (para 133). Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use (para 134)

Para 138 recognises that not all elements of a World Heritage Site will necessarily contribute to its significance. Loss of an element which makes a positive contribution to the significance (ie Outstanding Universal Value) of the World Heritage Site should be treated either as substantial harm or less than substantial harm, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the World Heritage Site as a whole. In para 137 local planning authorities are advised to look for opportunities for new development within World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of the asset should be treated favourably.

The Planning Practice Guidance published in March 2014 contains more advice on World Heritage properties brought forward mainly from Circular 09/07 (Department for Communities and Local Government 2014). Generally, the Guidance continues the emphasis on the need to manage the historic environment within the planning system to protect significance. This emphasis is carried through to the need to protect World Heritage properties. The agreed Outstanding Universal Value for each property indicates its importance as a heritage asset of the highest significance. Effective management of World Heritage properties involves the identification and promotion of positive change that will conserve and enhance their Outstanding Universal Value, authenticity and integrity, with modification or mitigation of changes which have a negative impact on their values.

The Guidance says that Statements of Outstanding Universal Value are key reference documents for the protection and management of each property. National Planning Policy Framework policies apply to Outstanding Universal Value as they do to any other heritage significance. The Framework also makes clear that significance derives from the setting as well as from the physical presence of the heritage asset. The same requirements in local plan making are applied to World Heritage properties as previously. Local authorities should aim to satisfy the following principles:

- protecting the World Heritage Site and its setting, including any buffer zone, from inappropriate development;
- striking a balance between the needs of conservation, biodiversity, access, the interests of the local community, the public benefits of a development and the sustainable economic use of the World Heritage Site in its setting, including any buffer zone;
- protecting a World Heritage Site from the effect of changes which are relatively minor but which, on a cumulative basis, could have a significant effect;
- enhancing the World Heritage Site and its setting where appropriate and possible through positive management;
- protecting the World Heritage Site from climate change but ensuring that mitigation and adaptation is not at the expense of integrity or authenticity.

World Heritage Management Plans are still a requirement and relevant policies in them need to be taken into account by local planning authorities both in strategies for the historic environment and in determining relevant planning applications. Local authorities must still refer to the Secretary of State for consideration for call-in any planning applications for which they are minded to grant consent to which English Heritage continues to maintain an objection and which would have an adverse impact on Outstanding Universal Value, integrity and authenticity. World Heritage properties remain defined as Article 1(5) Land which restricts permitted development rights. World Heritage sites are sensitive areas for the purposes of determining if an Environmental Impact Assessment is required and lower size thresholds apply in them to the requirement for Design and Access Statements. It is noted that the ICOMOS guidance on Heritage Impact Assessments may be helpful to applicants.

Overall, government policy for the protection of World Heritage properties has been maintained through these most recent changes, and has been updated to take account of the key role of Statements of Outstanding Universal Value in the management and protection of World Heritage

properties. The recognition of the Statements as key reference documents for the protection and management of each site is crucial to the sustainable future of all English World Heritage properties.

Wiltshire Council's emerging draft Core Strategy reflects this government guidance:

> **Core Policy 59**
>
> **The Stonehenge, Avebury and associated sites World Heritage Site**
>
> The Outstanding Universal Value (OUV) of the World Heritage Site and its setting will be protected and enhanced by:
>
> i. giving precedence to the protection of the OUV of the World Heritage Site and its setting
>
> ii. development not adversely affecting the OUV of the World Heritage Site, its significance, authenticity or integrity, or its setting. This includes the physical fabric, character, appearance, setting or views into or out of the World Heritage Site
>
> iii. seeking opportunities to support and sustain the positive management of the OUV of the World Heritage Site through development that delivers improved conservation, presentation and interpretation and reduces the negative impact of traffic and visitor pressure
>
> iv. requiring developments to demonstrate that full account has been taken of their impact upon the OUV of the World Heritage Site and its setting. Proposals will need to demonstrate that the development will have no individual, cumulative or consequential adverse affect upon the OUV. Consideration of opportunities for enhancing OUV should also be demonstrated. This will include proposals for climate change mitigation and renewable energy schemes.
>
> **Targets:** Progress towards objectives of the adopted WHS Management Plans.
>
> **Monitoring and Review:** WHS Co-ordinators.
>
> **Delivery Responsibility:** Wiltshire Council.

The commentary in the draft core strategy notes that particular reference should be made to the Statement of Outstanding Universal Value for the property and to its Management Plan. The Plan also says that an acceptable solution to the need for dualling the A303 is needed, which must incorporate environmental measures to mitigate impacts upon the Stonehenge WHS and other outstanding landscapes.

Until this Core Strategy is adopted, the existing 2012 South Wiltshire Core Strategy remains in place. It includes policies for protection and enhancement of Stonehenge. The need to find a solution to return Stonehenge to a more respectful status in keeping with its international status is a part of Strategic Objective Five, and Core Policy 13 says:

Core Policy 13 - Stonehenge

New visitor facilities will be permitted where they:

- Return Stonehenge to a more respectful setting befitting of it World Heritage Site status
- Include measures to mitigate the negative impacts of the roads
- Introduce a greatly enhanced visitor experience in a high quality visitor centre
- Implement an environmentally sensitive method of managing visitors to and from Stonehenge

• Include a tourist information element, which highlights other attractions and facilities on offer in the surrounding area and raises the profile of Wiltshire.

It also saved some policies from the 2003 Salisbury District Local Plan, including CN24 which refers to Stonehenge:

Policy CN24
There are additional restrictions on development in the vicinity of Stonehenge in order to protect the landscape setting of the monument and the archaeological importance of the surrounding land. Permitted development rights relating to agricultural and forestry operations within an area of seven and a half square miles around Stonehenge have been withdrawn since 1962 by a Direction under Article 3 of the Town and Country Planning General Development Order 1950 (now Article 4 of the 1988 Order). Consideration will be given to extending the Article 4 Direction to cover the entire World Heritage Site.

Advice from English Heritage

English Heritage has also published its *Conservation Principles* (2008) and its guidance on setting (English Heritage 2011). Both documents place an emphasis on the management of the historic environment in general to protect significance which accords well with similar moves by the UNESCO World Heritage Committee and its advisors to make Outstanding Universal Value the focus for the protection of World Heritage properties.

Conservation Principles set out six principles for the sustainable management of the historic environment, as a self-contained text under six headlines:

1 The historic environment is a shared resource
2 Everyone should be able to participate in sustaining the historic environment
3 Understanding the significance of places is vital
4 Significant places should be managed to sustain their values
5 Decisions about change must be reasonable, transparent and consistent
6 Recording and learning from decisions is essential

Key to this approach is the definition and understanding of the significance of historic places, and using that significance as the basis for their management. Conservation is defined as the process of managing change to a significant place in its setting in ways that will best sustain its heritage values, while recognising opportunities to reveal or reinforce those values for present and future generations.

Conservation Principles advise that assessment of significance should be based on the evaluation of four groups of heritage values:

- Evidential value: the potential of a place to yield evidence about past human activity.
- Historical value: the ways in which past people, events and aspects of life can be connected

through a place to the present - it tends to be illustrative or associative.

- Aesthetic value: the ways in which people draw sensory and intellectual stimulation from a place.
- Communal value: the meanings of a place for the people who relate to it, and for whom it figures in their collective experience or memory.

This focus on the identification and protection of significance fits well with current approaches to the identification and protection of the Outstanding Universal Value of World Heritage properties.

Both national and international guidance note the need to protect historic places within their setting. This is defined in English Heritage's *The Setting of Heritage Assets* (English Heritage 2011) and in the National Planning Policy Framework (NPPF) as the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Setting is a well-established concept in the UK planning system. Essentially, the English Heritage guidance elaborates and enlarges on existing government statements. A key development that has come about subsequent to discussions of setting in the context of the last A303 scheme is the recognition that archaeological sites not visible above ground have a setting.

Within and around the Stonehenge World Heritage property individual attributes will have their own setting. The World Heritage property will also have its own setting surrounding it.

<u>The Statement for Outstanding Universal Value for Stonehenge, Avebury and Associated Sites</u> (Appendix 3)

A major change since the last A303 scheme has been the development and adoption in 2013 of a Statement of Outstanding Universal Value for the World Heritage property. In the run up to the 2004 public inquiry and in the preparation of 2000 Management Plan, there was no authoritative statement of why Stonehenge and Avebury had been inscribed on the World Heritage List. While the landscape qualities and wide extent of archaeological features were recognised, there was a tendency for plans for the A303 to focus on the protection of Stonehenge and its immediate setting, known as the Stonehenge Bowl, and bounded by the closer ridge lines rather than on the World Heritage property as a whole (see English Heritage 2000, Fig. 3 and Appendix C). One of the principal aims of the Highways Agency's Published Scheme was to remove the main roads from within sight of Stonehenge itself. The 2.1 km bored tunnel would have achieved this but the remainder of the road would have been a new dual carriageway partly on the surface but mostly in cutting within the World Heritage property.

For Stonehenge and Avebury, the first stage was the adoption by the World Heritage Committee of a Statement of Significance in 2008. Based on the ICOMOS evaluation of the original nomination dossier, prepared in 1986, it was able to achieve greater precision in its definition of Outstanding Universal Value. While there is necessarily a focus on the great stone circles of Avebury and Stonehenge, there is also much more attention paid to the complex of and relationships between Neolithic and Bronze Age funerary and ceremonial monuments and associated sites which together form a landscape without parallel.

Following this the UK proposed the draft Statement of Outstanding Universal Value for Stonehenge and Avebury which was drafted in consultation with the steering groups of both parts of the property and was adopted by the World Heritage Committee in June 2013. The first part of the Statement is almost identical to the 2008 Statement of Significance. There is therefore the same assessment of the importance of all these sites as a complex in a landscape and of the landscape itself. The remainder of the Statement of Outstanding Universal Value deals first with Integrity and Authenticity and then with protection and management. The statement of Integrity notes the extensive nature of the Avebury and Stonehenge landscapes which capture the relationships between the monuments as well as their landscape setting. The statement of Authenticity says that the form and design of the principal monuments are well-preserved and that their location, setting and interrelationships, in combination representing landscapes without parallel, can be easily appreciated. The adverse impacts of roads severing relationships between monuments are specifically noted. The definition of Outstanding Universal Value is thus more clearly and also more broadly defined than was the case in the run up to the 2004 Inquiry.

The Management Plan for Stonehenge, Avebury and Associated Sites

World Heritage Management Plans reflect the context in which they were prepared. Stonehenge has had two World Heritage Site Management Plans. The first was published in 2000 and the second in 2009. A third iteration, being prepared jointly for both Stonehenge and Avebury, is currently being prepared.

The 2000 Plan was written within the context of government/ English Heritage/ National Trust initiative to deal with the problems of the main roads running through the property and of the obtrusive and inadequate visitor facilities at Stonehenge itself. A Master Plan to achieve these objectives had been published by English Heritage and the National Trust in 1999. The Management Plan contained a policy to place the A303 in a tunnel of appropriate length to free the Stonehenge Bowl of traffic. A significant part of its focus was facilitating the objectives dealing with the road and the removal of the visitor centre.

The 2009 Plan was prepared in the aftermath of the government decision in December 2007 not to go forward with the Published Scheme. At the time, it seemed likely that there would be no progress on the A303 for many years, and the Plan merely said that the long-term objective of reducing the impact of the A303 should be kept under review, with the intention of having firm proposals in the next revision of the Plan.

It did however make considerable advances in the recognition of the property's Outstanding Universal Value. Much of the Plan is based on the Statement of Significance adopted by the World Heritage Committee in 2008, recognising that the concept of a core zone around Stonehenge itself was no longer a useful tool for site management (para 2.4.2). The Statement was used to develop a more detailed set of attributes of Outstanding Universal Value for the Stonehenge component of the World Heritage property. These attributes then formed the basis for the management policies in the Plan:

1. Stonehenge itself as a globally famous and iconic monument.
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.
3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.
5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.
6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.
7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

These attributes recognise the overall significance of the World Heritage property as a whole. The Management Plan also contained the first attempts to define the integrity and authenticity of the Stonehenge component of the property. Together these form a more holistic approach to the Outstanding Universal Value of the World Heritage property. The introduction of a requirement for cultural properties to meet the conditions of integrity is a significant shift in understanding of the significance of such World Heritage properties.

Conclusion

Taken as a whole, the policy changes at international, national and local levels since 2004 mark a decisive shift towards values-led heritage management with a great focus on managing historic places to protect and enhance their significance. This is linked to a clear move towards the better definition of significance, in the case of World Heritage properties through the adoption of Statements of Outstanding Universal Value for each property. Within the World Heritage system there is now great emphasis on the need for impact assessment, with particular use of the ICOMOS guidance on Heritage Impact Assessment.

In England, government guidance has taken on board many of the changes made by the UNESCO World Heritage Committee. Outstanding Universal Value is recognised as a form of significance, and Statements of Outstanding Universal Value are recognised as the baseline for the management of World Heritage properties. The Planning Practice Guidance notes the potential usefulness of the ICOMOS guidance on Heritage Impact Assessment.

Any proposal for dealing with the A303 will have to take into account these changes in policy and the clarification of the definition of the property's Outstanding Universal Value. This means that all options for bored tunnels have to be evaluated in this new context.

Chapter 5 Impacts of the A303 on the Outstanding Universal Value of the Stonehenge component of the World Heritage property

The Stonehenge, Avebury and Associated Sites World Heritage Site was inscribed in 1986. It is in two parts, some 27 km apart, focused respectively on the great stone circles of Stonehenge and Avebury.

Stonehenge is among the most iconic and best known internationally of archaeological sites. The Stonehenge part of the World Heritage Site (WHS) covers 2,600 hectares around Stonehenge itself, and comprises one of the richest concentrations of early prehistoric monuments in the world. Stonehenge monument itself attracts around 900,000 visitors each year, but the WHS is also a place where people live and work and much of it is farmed. Managing the various interests and concerns affecting the Site to protect and enhance its Outstanding Universal Value (OUV) is complex and challenging. (English Heritage 2009, 10)

While the focus of the Stonehenge component of the property is obviously Stonehenge itself, the area of the property is large and includes very many archaeological sites associated with ceremonial and funerary use in the Neolithic and Bronze Age. Stonehenge lies at the heart of a very dense archaeological landscape comprising a significant group of long barrows, ridge-top cemeteries mainly of round barrows, and other major monuments such as henges and their avenues, and the Cursus. Used over a period of around two millennia, the area had become a focus for ritual activity before Stonehenge itself was constructed. Interrelationships between the various monuments clearly remained important over thousands of years.

The topography is rolling downland with a series of ridges and dry valleys on the southern edge of Salisbury Plain. In the bottom of the dry valleys views are normally confined but can be surprisingly long. From the ridge tops, which are often flattish and wide, there are long distant views. From higher points in the property, it is possible to see over 8kms east and west to Beacon Hill and Yarnbury Castle with distant views of the A303 climbing both ridges. Even so, some areas of the property are very self-contained visually. East of King Barrow Ridge, for example long views are outside the property to the east and south-east rather than to the west. Within the property, the A303 is very visible, and audible, from many places and runs close to some key archaeological sites including Stonehenge itself. As one of the two principal routes from London to the south-west, it is a major transport artery.

The A303 runs from east to west as far as Stonehenge Bottom. From its junction with the former A344, the road then runs slightly south of west to its junction with the north-south A360 (the western boundary of the World Heritage property) at Longbarrow Crossroads, close to the Winterbourne Stoke Barrow Group. The total length of the A303 within the World Heritage property between the Countess Roundabout in the east and the Longbarrow junction in the west is 5.5kms. Of this 1.8kms at the eastern end are dual carriageway which finishes at the top of King Barrow Ridge. The easternmost 1 km of this stretch is in deep cutting around Vespasian's Camp and is not visible from most viewpoints. From the top of King Barrow Ridge the road is single carriageway through the rest of the World Heritage property. The road runs on a high embankment in Stonehenge Bottom and is embanked again across a small dry valley west of Normanton Gorse. The road is slightly elevated from there to the Longbarrow junction.

The A303 is therefore a prominent intrusive feature within the World Heritage property. This was noted in the 2000 Management Plan and its removal has been a long-term aim for decades and was a key objective of that Plan. The 2009 Management Plan also notes the adverse impact of the A303 on the integrity and authenticity of the World Heritage property, as does the Statement of Outstanding Universal Value proposed by the UK government and agreed by the UNESCO World Heritage Committee.

It is therefore necessary to assess the current impact of the A303 on the Outstanding Universal Value of the property so that the changes possible through the various options under discussion can be assessed. An assessment of the potential impact of the 4.5kms tunnel proposed in 2004 is included for comparative purposes.

The four tunnel options specified by the National Trust and English Heritage are then considered. In each case the tunnel length, as noted in Chapter 3, is determined by the preferred portal locations, chosen to minimise impact (Fig 3). It should be noted also that the Tata report suggests that the construction of each portal will require 30m of cut-and-cover construction and this needs to be taken into account in assessment of impact.

This chapter assesses the direct and indirect non-physical impacts of the proposed options on each of the attributes of Outstanding Universal Value, as well as on the property's agreed integrity and authenticity. Direct physical impacts of new construction are considered in Chapter 6. Based on these analyses, the overall impact on the Outstanding Universal Value of the property as a whole for the existing A303, the 4.5km tunnel (for illustrative purposes only) and for each tunnel option is summarised in Chapter 7.

[insert Fig 3 around here]

The options are:

1 4.5 km bored tunnel as proposed by some conservation bodies during the public inquiry in 2004 (included for illustrative purposes)

The eastern entrance to the tunnel would have started 600m east of the start of the 2.1km Published Scheme. This would have been to the east of the point at which the line of the Avenue crosses the present road, within the stretch which is currently in a cutting.

The western terminal of the tunnel would have been outside of the western boundary of the World Heritage property. This would mean that the junction with the A360, currently next to the Winterbourne Stoke Barrow Group, would have been moved down the slope of the Till valley and away from this important barrow group.

This option would remove from the World Heritage property 1km of dual carriageway and 3.5km of single carriageway. 1km of existing dual carriageway, in cutting, would remain running from Countess Roundabout at the east end of the A303 in the World Heritage property.

2 2.1 km tunnel (Highways Agency Published Scheme in 2004): portal D to portal C (Figs 4, 5)

This tunnel would have begun approximately 30 metres east of Stonehenge Cottages, just over King Barrow Ridge and out of sight of Stonehenge itself (Fig 3, Portal D). Within the footprint of the existing A303 the actual monument itself is thought not to have survived the construction of the dual carriageway.

The western terminal was just over a slight crest of the road by Normanton Down (Figs 3), Portal C), and so also out of sight of Stonehenge. It is just to the west of the so-called unnamed barrow group which is divided by the current A303. The tunnel portal would have been very close to this barrow group. If 30m cut-and-cover construction is essential for building the portal, this would have come very close to, if not actually impacted on the long barrow in this group. The remaining 1.6km of the road from there to a new grade-separated junction with the A360 just to the south of the Winterbourne Stoke Barrow Group would have been partially in a cutting so that the A360 would have remained at ground level above the A303.

The tunnel would have been bored except in Stonehenge Bottom, within view of Stonehenge itself. Here its crown would have been so shallow that this stretch would have had to be constructed by cut-and-cover.

This option would remove 2.1km of single carriageway and replace 1.6km of single carriageway with dual carriageway. This would result in 3.4km of dual carriageway on surface or in cutting in the World Heritage property.

3 2.5km bored tunnel: portal E to portal B [1](Figs 6, 7)

This proposal locates the east portal 200m east of the eastern entrance to the 2.1km tunnel (Fig 3, Portal E). This would move the entrance further away from the concentration of monuments along the crest of King Barrow Ridge. The line of the Avenue east of the Ridge would be severed by the cutting running into the tunnel.

The western terminal would be 200m west of Portal C for the 2.1km Published Scheme (Fig 3, Portal B). This would be further away from the unnamed barrow group and from the Normanton Down Group. This position would also place the portal lower down the slope of the small dry valley west of Normanton Gorse. There would be a further 1.4kms of new dual carriageway in cutting, to the western edge of the World Heritage property and the junction with the A360.

This option would remove 2.3km of single carriageway and, at the eastern end, 0.2km of dual carriageway. At the west end 1.4km of single carriageway would be replaced with dual carriageway, giving a total length of 3km of dual carriageway on surface or in cutting in the World Heritage property.

[1] NB that this is not the same tunnel as proposed by the National Trust in 2004

4 2.9km bored tunnel on line: portal E to portal A2 (Figs 6, 8)

The eastern terminal would remain as for the 2.5 km tunnel. The western terminal would be a further 400m to the west of Portal B in the dip in the ground west of Normanton Down (Fig.3, Portal A2). This would have the advantage of bringing the tunnel out at a less visible point at the lowest point of this small dry valley. From there the new dual carriageway would run for around 1km to the junction with the A360.

This option would remove 2.7km of single carriageway and, at the eastern end, 0.2km of dual carriageway. 1.4km of single carriageway would be replaced by dual carriageway at the western end. The end result would be 2.6km of dual carriageway on surface or in cutting in the World Heritage property. With the exception of the 4.5km tunnel, of the online options, this would have the shortest stretch of new dual carriageway within the World Heritage property.

5 2.9km tunnel off line: portal E to portal A1(Fig 6, 9)

The eastern portal of this proposal would be in the same position as for Option 3 above. The tunnel would then run off the line of the A303 to a western entrance in the low ground some 400m south of the present road. From there a new road would run to a new junction with the A360 south of the present Longbarrow junction. This would free up the Winterbourne Stoke Barrow Group. It would create around 1km of new dual carriageway but would remove a further 1km stretch of the existing A303 within the World Heritage property compared with the online options.

3.7km of single carriageway and, at the eastern end, 0.2km of dual carriageway of the present A303 would be removed. 1km of new dual carriageway would be created in the World Heritage property on a new alignment but further away from the sensitive Winterbourne Stoke Barrow Group.

The methodology used in this assessment is described in Chapter 3 (pp. 6 – 12)The key part of this is to assess the current impact of the A303 together with that of a putative 4.5km tunnel (for illustrative purposes) and the four bored tunnel options included in the brief for this study and listed above This assessment is of the impact on the Outstanding Universal Value as set out in the agreed Statement of Outstanding Universal Value for the property (Appendix 3). The first part of the agreed Statement is taken from a shorter Statement of Significance (not including integrity and authenticity) agreed by the World Heritage Committee in 2008 (see English Heritage 2009, 26-27). Each of the six situations is assessed against the attributes of Outstanding Universal Value elaborated in the 2009 Management Plan (English Heritage 2009, 28-32), and in terms of its impact on the integrity and authenticity of the World Heritage property.

The seven identified attributes of Outstanding Universal Value are:

1. Stonehenge itself as a globally famous and iconic monument.
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.

3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.
5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.
6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.
7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

Direct impacts of new road construction are examined in the next Chapter and the overall result of the assessment is pulled together in Chapter 7. Looking at the impacts on each of these attributes in turn, and using the HIA scales of assessment (see pp. 7 - 8), our assessment is as follows.

1 Stonehenge itself as a globally famous and iconic monument

The image of Stonehenge in its downland landscape is world-renowned. It is an important and enduring symbol of humanity's prehistoric past and an internationally recognised symbol of Britain. This iconic view has long been adversely impacted by the roads close to it. Heavy traffic in particular mars the view and distracts visitors from it. Since 2013, the closure of the A344 next to the monument has lessened the visual and aural impact of traffic. The adverse impacts of heavy traffic on the A303 remain, particularly in views to the east up King Barrow Ridge. This affects both views of the monument itself, and also views from the monument of its place in the landscape, as well as causing an adverse aural impact.

This is a major adverse impact on the monument of very high significance. Any of the four bored tunnel options would remove this impact and would constitute a major beneficial impact on the monument. However, the 2.1km tunnel would be constructed by cut and cover in Stonehenge Bottom. This would be a major adverse impact on Stonehenge during construction and would leave a scar in the landscape for a long period which should probably be assessed as a moderate adverse impact of large significance. It is also possible that there may remain an adverse aural impact from the locations of the western tunnel portal for the 2.1km and 2.5km bored tunnel options. It would nonetheless be an improvement on the present position.

2. **The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.**

Physical impacts of new road construction are dealt with in the next section. The A303 is close to many of the physical attributes of Outstanding Universal Value but, as far as is known, has had direct physical impacts on comparatively few of them. During the construction work during the previous widening of the A303, a Later Neolithic pit containing a decorated chalk plaque and almost certainly of ceremonial significance was discovered by Faith Vatcher close to King Barrow Ridge. It is possible

that the A303 may have destroyed other attributes of Outstanding Universal Value when it was first constructed or during subsequent modifications. Nonetheless the A303 is a prominent feature in the setting of many surviving physical attributes of Outstanding Universal Value, and so has adverse visual impacts on them. Visual impacts in the context of the relationship of the sites and monuments in relation to the landscape, and their relationship to each other (attributes 3, 5 and 6) are dealt with below. General setting impacts are touched on in this section.

The major existing physical impacts on the physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites from east to west are:

- The Avenue east of King Barrow Ridge has been severed by the A303. It is probable that nothing survives beneath the footprint of the existing A303 but removal of the road would allow the line of the Avenue to be better appreciated.
- On the west slope of King Barrow Ridge a round barrow has been partially removed by the remodelling of the single carriageway part of the road in the late 1960's.
- The road also passes between a long barrow to its south and two round barrows to its north in the small unnamed barrow group north of Normanton Group (attribute 15). Evaluation by Wessex Archaeology for the Published Scheme showed that the long barrow had been badly disturbed, though not by construction of the A303 (Leivers, Moore 2008, 19-21). Similarly, their work showed that the road had not disturbed the round barrow across on the north side of the A303 (Leivers, Moore 2008, 30-31).

There is a major adverse visual impact of very large significance on the setting of these monuments. More generally, the current A303 has a major adverse impact of very large significance on the setting of all monuments from which it is visible.

The work carried out by Wessex Archaeology involved intensive field survey and trial trenching along the line of the A303. While a variety of new archaeological features were discovered, few of them were identifiable as attributes of Outstanding Universal value (Leivers, Moore 2008).

Clearly the present impact of the road on the Avenue east of King Barrow Ridge and on the truncated barrow on the western slope of the ridge must be recognised as major adverse impacts on attributes of Outstanding Universal Value, and of very large adverse significance for those particular attributes. The impact on the long barrow and round barrows near Normanton Gorse is clearly an adverse one since the road divides what was presumably a coherent barrow group. This again can be considered to be a major adverse impact of very large significance for those attributes, as is that on the setting of other sites in view of the A303, giving a major adverse impact of very large significance for the property as a whole.

The removal of the road in all the Options 2 – 5 would free the barrow on the west slope of the King Barrow Ridge and the small unnamed barrow group, as well as having a major beneficial impact on the setting of all those sites no longer in view of the A303. However, the western portal of the 2.1km tunnel is so close to the long barrow that the 30m stretch of cut and cover tunnel east of the portal would be very close indeed to the long barrow, if not actually impacting on it.

In terms of setting, the 2.1km tunnel would still have a major adverse impact on the small barrow group near Normanton Gorse because the western portal would be located so close to it. It might also impact physically on the long barrow. This could still constitute an adverse impact on this group of barrows, reducing the overall positive impact of the 2.1km Published Scheme. Overall the impact of three longer options on this barrow group can probably be assessed as moderately beneficial of large/ very large significance but that of the 2.1kms as only negligible beneficial of slight significance.

The Avenue east of King Barrow Ridge would be positively affected only by the 4.5km tunnel, included only for illustrative purposes. The remaining options, apart probably from the Published Scheme, would all place this part of the A303 in a cutting approaching the eastern tunnel portals and would remove any evidence which might remain on the road line plus any evidence, for example of the ditches, which survives on either side, in land to be taken into the road cutting. This must be considered as a minor adverse impact on the Avenue given the degree of damage that has already occurred in this location. . The significance of this impact on the Avenue as an attribute of Outstanding Universal Value would be moderate/ large, according to the ICOMOS HIA methodology. Given the importance of the Avenue within the World Heritage property, this might count as a minor adverse impact on the World Heritage property as a whole.

However, in considering the effects of Options 2 – 5 the adverse impact on the Avenue has to be offset against the positive impact on the other sites which are directly impacted by the A303. There would be major improvements to the setting of monuments no longer in view of the A303, but the impact on the setting of other monuments east and west of the tunnel portals would remain. Its extent would depend on how the road is designed and how much of it would be in cutting. This remains a particular issue for Winterbourne Stoke barrows. The effect of creating new dual carriageway in the World Heritage property could also be adverse aurally though the extent of this would depend on how much of the new road is in cutting and on the dampening effect of vertical 'green cuttings'.

Any overall assessment of the impact on this attribute of the Outstanding Universal Value of the World Heritage property has to balance the very positive gains to many sites against the continued adverse impacts on others. The impact on this attribute is therefore assessed at minor to moderate beneficial of moderate to very large significance to the World Heritage property as a whole on the basis of this very preliminary outline assessment. Because of the adverse impact of the 2.1km tunnel on the barrow group next to its western portal and the length of new dual carriageway in the World Heritage property, its benefit is significantly less than that of the other options. Probably with regard to this attribute, the impact of the 2.1km bored tunnel (the Published Scheme) should be assessed as negligible beneficial impact of slight significance while the longer tunnels would be of moderate beneficial impact of large/ very large significance.

3. **The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.**

This attribute is discussed further below with attributes 5 and 6.

4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.

A number of sites within the World Heritage property are aligned on the midsummer sunrise and midwinter sunset axis. Of these, the only one affected by the A303 is the midsummer sunrise/ midwinter sunset solstitial axis at Stonehenge itself. This midwinter sunset occurs south-west of the monument behind an apparent horizon outside the World Heritage property to the west. The axis crosses the line of the A303 slightly to the east of the junction of the road with Byway 12. The lights of traffic along the present road adversely affect the ability to observe the midwinter sunset so that there is currently an adverse impact, probably to be assessed as minor, with a moderate adverse significance according to the HIA scale. Direct impact on the line of the axis will cease with any of the tunnel options, a beneficial impact, but excessive or inappropriate lighting of the road to the west could have some adverse impact on this alignment. This would be least likely with the 4.5km tunnel in which the whole of the road in the World Heritage property would be in tunnel. The Tata report (Tata Steel 2014) notes that, with a speed limit of 60mph, lighting of the surface carriageway would not be required, though the tunnels themselves would have to be lit. Overall, any of the tunnel options can be seen as providing a minor beneficial change, of moderate/ large significance.

3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.

5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.

6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.

All these attributes are essentially about the visual relationships of physical attributes within the World Heritage property. The siting and visibility of the A303 can affect the ability to understand and appreciate the relationship of monuments to the surrounding landscape (Attribute 3). The road can also affect the ability to appreciate the way in which these monuments form a landscape without parallel (Attribute 6). Lastly and most directly, the road interferes visually with relationships between monuments which are themselves attributes of Outstanding Universal Value (Attribute 5).

Study of visual relationships has focused primarily on this last aspect but, in doing so, also demonstrates the extent to which the road affects the ability to appreciate and understand the other two relationship-based attributes. To some extent therefore, assessment of Attribute 5 has been used as a proxy for assessing Attributes 4 and 6. This is unavoidable in the short time available for carrying out this work.

As noted in Chapter 3 (pp.9 – 10 and Fig 2), the methodological approach has been to select 17 monuments or groups of sites visible from the A303 and then to analyse how the A303 affects relationships between them. The selected physical attributes are:

1. Durrington Walls
2. Woodhenge

3. The Avenue east of King Barrow Ridge
4. Unnamed barrow group either side of this stretch of the Avenue
5. King Barrows (Old and New)
6. Coneybury Henge
7. Coneybury Barrow (King Barrow) south of Coneybury Henge
8. The Cursus E end
9. The Cursus centre
10. The Cursus W end
11. Cursus Barrows
12. Stonehenge
13. Stonehenge Down Barrows
14. Normanton Down Barrows
15. The unnamed group either side of the A303 close to the potential positions of Portals B and C
16. Lake Barrows
17. Winterbourne Stoke Barrows

Table 1 shows visual links between the 17 sites/ groups of sites within the provisos listed in Chapter 3. Table 2 shows the same information but giving the distances between sites where visual linkages do exist since it is thought that distance will influence the quality of the view. 70 linkages are identified.

Table 3 takes all the linkages identified in Tables 1 and 3 and assesses the present impact of the A303 and the change in that impact arising from the implementation of Options 1 to 5. Impact is assessed from both ends of each linkage since it may differ according to the direction of view.

- Impact has been assessed as major of very large significance when the A303 severs a visual connection or is very prominent in a view of one (eg the view from Stonehenge to Old and New King Barrows).
- Impact has been assessed as moderate of large/ very large significance where the A303 is visible but does not sever the viewline and is not central in the view.
- Impact is assessed as minor of moderate/ large significance when the A303 is barely visible or a distant backdrop in a view (eg the view from Durrington Walls to Woodhenge).
- Where there is no impact, the value has been given as none

The effect of the various tunnel proposals is varied. In most cases, the adverse impact is removed in which case the result is noted as an equivalent positive benefit to the previous adverse impact (ie a major adverse impact will be replaced by a major beneficial impact, a minor adverse impact by a minor beneficial one). Where an adverse impact is not totally reversed, the new level of impact is stated as such.

Overall the tables show that the A303 currently has a major adverse impact of very large significance on the relationships of the 17 sites/ site groups selected. It can therefore be judged as having a major adverse impact of very large significance on the World Heritage property as a whole.

Of the various tunnel possibilities, the 4.5km tunnel included for comparative purposes has the biggest positive impact on the Outstanding Universal Value of the World Heritage property, since it removes virtually all adverse visual impacts. Because the eastern tunnel portals would be within the cutting of the existing A303 and the western ones outside the World Heritage property altogether there would be very few negative impacts and overall a major beneficial impact of very great significance. In particular there would be considerable benefits for the Avenue and for the

Winterbourne Stoke Barrows Group and its links to other physical attributes in the western part of the World Heritage property.

The four shorter tunnel options would not significantly reduce the adverse impacts on the Avenue east of King Barrow Ridge. The siting of the portal for Options 3 – 5 (2.5kms and 2.9kms bored tunnels) would have a minor beneficial impact of moderate/ large significance on the monuments along King Barrow Ridge by moving the start of surface dual carriageway further away from them and thus reducing both visual and aural impact. They would all remove most of the adverse impacts in the central areas of the World Heritage property around Stonehenge and more widely. It is uncertain how far they would reduce adverse impacts on visual links to the western part of the World Heritage property since this would depend to some extent on how the new road was constructed. *Prima facie* the longer the tunnel the less the overall impact on the World Heritage property would be.

There may be significant differences between the visual impacts of the 2.9km on-line and off-line options. This is particularly relevant to the Winterbourne Stoke Barrow Group, visible in many long views from the east, for example from Coneybury and from King Barrow Ridge. However, the linkages with the Lake Group to the south are also important and need to be considered. All the tunnel options interpose new dual carriageway within this visual linkage. The effect might be greater for Option 5 since the new road would be overlooked from the higher ground of both the Lake and Winterbourne Stoke Groups and might be more visible, even in cutting. On the other hand, the on-line routes remain very close to the Winterbourne Stoke Group and would mean that the junction with the A360 would also remain next to that barrow group.

Overall, for these three attributes, all dealing with visual linkages, the impact of any of the four tunnel options on the whole World Heritage property can be assessed as moderate beneficial of large/very large significance.

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Table 1 Visual interlinkages between selected sites in the Stonehenge WHS (Y = visual link exists; N = there is no visual link)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		Durrington Walls	Woodhenge	Avenue E of King Barrow Ridge	Barrow group near Avenue	King Barrows (Old & New)	Coneybury Henge	Coneybury Barrow	Cursus E end	Cursus centre	Cursus W end	Cursus Barrows	Stonehenge	Stonehenge Down Barrows	Normanton Down Barrows	Unnamed group nr Portals B & C	Lake Barrows	Winterbourne Stoke Barrows
1	Durrington Wall		Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N
2	Woodhenge	Y		Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
3	Avenue E of King Barrow Ridge	Y	Y		Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
4	Barrow group near Avenue	Y	Y	Y		Y	Y	Y	N	N	N	N	N	N	N	N	N	N
5	King Barrows (Old & New)	N	Y	Y	Y		Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
6	Coneybury Henge	Y	Y	Y	Y	Y		Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
7	Coneybury Barrow	Y	Y	Y	Y	Y	Y		Y	Y	N	Y	Y	Y	Y	Y	Y	Y
8	Cursus E end	N	N	N	N	N	Y	Y		N	Y	Y	Y	Y	Y	Y	Y	Y
9	Cursus centre	N	N	N	N	N	Y	Y	N		N	N	Y	N	N	N	N	N
10	Cursus W end	N	N	N	N	Y	N	N	Y	N		Y	N	N	N	N	N	N
11	Cursus Barrows	N	N	N	N	Y	Y	Y	Y	N	Y		Y	Y	N	N	N	Y
12	Stonehenge	N	N	N	N	Y	Y	Y	Y	Y	N	Y		Y	Y	N	Y	N
13	Stonehenge Down Barrows	N	N	N	N	Y	Y	Y	Y	N	N	N	Y		Y	N	N	N
14	Normanton Down Barrows	N	N	N	N	N	Y	Y	Y	N	N	N	Y	Y		Y	Y	Y
15	Unnamed group near Portals B and C	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	Y		Y	Y
16	Lake Barrows	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	N	N	Y		Y
17	Winterbourne Stoke Barrows	N	N	N	N	Y	Y	Y	Y	N	N	Y	N	N	Y	Y	Y	

Table 2 Visual interlinkages between selected sites in the Stonehenge WHS showing distances between them (N = no visual link exists)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		Durrington Walls	Woodhenge	Avenue E of King Barrow Ridge	Barrow group near Avenue	King Barrows (Old & New)	Coneybury Henge	Coneybury Barrow	Cursus E end	Cursus centre	Cursus W end	Cursus Barrows	Stonehenge	Stonehenge Down Barrows	Normanton Down Barrows	Unnamed group nr Portals B & C	Lake Barrows	Winterbourne Stoke Barrows
1	Durrington Wall		0.4	2.0	1.8	N	2.3	2.5	N	N	N	N	N	N	N	N	N	N
2	Woodhenge	0.4		1.7	1.6	1.8	2.4	2.5	N	N	N	N	N	N	N	N	N	N
3	Avenue E of King Barrow Ridge	2.0	1.7		0.1	0.7	0.7	0.8	N	N	N	N	N	N	N	N	N	N
4	Barrow group near Avenue	2.0	1.7	0.1		0.4	0.7	0.9	N	N	N	N	N	N	N	N	N	N
5	King Barrows (Old & New)	N	1.8	0.7	0.4		0.9	1.1	0.7	N	2.6	1.8	1.3	1.5	2.0	2.0	3.3	3.3
6	Coneybury Henge	2.3	2.4	0.7	0.7	0.9		0.3	1.6	1.6	N	2.1	1.3	1.7	1.6	1.8	2.8	3.2
7	Coneybury Barrow	2.5	2.5	0.8	0.9	1.1	0.3		1.8	1.9	N	2.5	1.5	1.6	1.7	2.0	2.8	3.3
8	Cursus E end	N	N	N	N	N	1.6Y	1.8		N	2.7	1.8	1.8	2.0	2.6	2.6	4.0	3.7
9	Cursus centre	N	N	N	N	N	1.6	1.9	N		N	N	1.0	N	N	N	N	N
10	Cursus W end	N	N	N	N	2.6	N	N	2.7	N		0.8	N	N	N	N	N	N
11	Cursus Barrows	N	N	N	N	1.8	2.1	2.5	1.8	N	0.8		1.0	0.8	N	N	N	1.8
12	Stonehenge	N	N	N	N	1.3	1.3	1.5	1.8	1.0	N	1.0		0.4	0.9	N	2.3	N
13	Stonehenge Down Barrows	N	N	N	N	1.5	1.7	1.6	2.0	N	N	N	0.4		0.8	N	N	N
14	Normanton Down Barrows	N	N	N	N	N	1.6	1.7	2.6	N	N	N	0.9	0.8		0.5	0.4	1.7
15	Unnamed group near Portals B and C	N	N	N	N	2.0	1.8	2.0	2.6	N	N	N	N	N	0.5		1.6	1.3
16	Lake Barrows	N	N	N	N	3.3	2.8	2.8	4.0	N	N	N	2.3	N	N	1.6		1.7
17	Winterbourne Stoke Barrows	N	N	N	N	3.3	3.2	3.3	Y	N	N	Y	N	N	1.7	1.3	1.7	

Table 3 Visual Links between selected groups of monuments in the Stonehenge World Heritage Property

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.							
A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
Durrington Walls							
1. Durrington Walls	Woodhenge	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse	Minor Adverse	Minor adverse
2. Durrington Walls	Avenue E of King Barrow Ridge	Moderate adverse	Moderate beneficial	Moderate adverse	Minor Adverse	Minor Adverse	Minor Adverse
3. Durrington Walls	Barrows nr Avenue	Moderate adverse	Moderate beneficial	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
4. Durrington Walls	Coneybury Henge	Moderate	Moderate beneficial	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
5. Durrington Walls	Coneybury Barrow	Moderate	Moderate beneficial	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
Woodhenge							
6. Woodhenge	Durrington Walls	None	None	None	None	None	None
7. Woodhenge	Avenue E of King Barrow Ridge	Moderate adverse	Moderate beneficial	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
8. Woodhenge	Barrows nr Avenue	Moderate adverse	Moderate beneficial	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
9. Woodhenge	King Barrows (Old & New)	Minor adverse	Minor beneficial	Minor adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
10. Woodhenge	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
11. Woodhenge	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
Avenue east of King Barrow Ridge							
12. Avenue E of King Barrow Ridge	Durrington Walls	None	None	None	None	None	None
13. Avenue E of King Barrow Ridge	Woodhenge	None	None	None	None	None	None
14. Avenue E of King Barrow Ridge	Barrows nr Avenue	None	None	None	None	None	None
15. Avenue E of King Barrow Ridge	King Barrows (Old & New)	None	None	None	None	None	None
16. Avenue E of King Barrow Ridge	Coneybury Henge	Major adverse	Major beneficial	Major adverse	Major adverse	Major adverse	Major adverse
17. Avenue E of King Barrow Ridge	Coneybury Barrow	Major adverse	Major beneficial	Major adverse	Major adverse	Major adverse	Major adverse
Barrows near Avenue east of King Barrow Ridge							
18. Barrows nr Avenue	Durrington Walls	None	None	None	None	None	None
19. Barrows nr Avenue	Woodhenge	None	None	None	None	None	None
20. Barrows nr Avenue	Avenue E of King Barrow Ridge	Major adverse	Major beneficial	Major adverse	Major adverse	Major adverse	Major adverse
21. Barrows nr Avenue	King Barrows (Old & New)	Minor adverse	Minor beneficial	Minor beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
22. Barrows nr Avenue	Coneybury Henge	Major adverse	Major beneficial	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse
23. Barrows nr Avenue	Coneybury Barrow	Major adverse	Major beneficial	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse
King Barrows (Old and New)							
24. King Barrows (Old and New)	Woodhenge	None	None	None	None	None	None
25. King Barrows (Old and New)	Avenue E of King Barrow Ridge	Moderate adverse	Moderate beneficial	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
26. King Barrows (Old and New)	Barrows nr Avenue	Minor adverse	Minor beneficial	Minor adverse	Minor adverse	Minor adverse	Minor adverse
27. King Barrows (Old and New)	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
28. King Barrows (Old and New)	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
29. King Barrows (Old and New)	Cursus E end	None	None	None	None	None	None
30. King Barrows (Old and New)	Cursus W end	None	None	None	None	None	None
31. King Barrows (Old and New)	Cursus Barrows	None	None	None	None	None	None
32. King Barrows (Old and New)	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
33. King Barrows (Old and New)	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
34. King Barrows (Old and New)	Normanton Down Barrows	Major adverse	Major beneficial	Minor adverse	Major beneficial	Major beneficial	Major beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
35. King Barrows (Old and New)	Barrows nr Portals B & C	Major adverse	Major beneficial	Minor adverse	Minor adverse	Major beneficial	Major beneficial
36. King Barrows (Old and New)	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
37. King Barrows (Old and New)	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Minor adverse	Major beneficial
Coneybury Henge							
38. Coneybury Henge	Durrington Walls	Major adverse	Minor adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
39. Coneybury Henge	Woodhenge	Major adverse	Minor adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
40. Coneybury Henge	Avenue E of King Barrow Ridge	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
41. Coneybury Henge	Barrows nr Avenue	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
42. Coneybury Henge	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
43. Coneybury Henge	Coneybury Barrow	None	None	None	None	None	None
44. Coneybury Henge	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
45. Coneybury Henge	Cursus Centre	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
46. Coneybury Henge	Cursus Barrows	Major	Major	Major	Major	Major	Major

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial
47. Coneybury Henge	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
48. Coneybury Henge	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
49. Coneybury Henge	Normanton Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
50. Coneybury Henge	Barrows nr Portals B & C	Major adverse	Major beneficial	Minor beneficial	Minor beneficial	Major beneficial	Major beneficial
51. Coneybury Henge	Lake Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
52. Coneybury Henge	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Minor adverse	Major adverse
Coneybury Barrow							
53. Coneybury Barrow	Durrington Walls	Major adverse	Minor adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
54. Coneybury Barrow	Woodhenge	Major adverse	Minor adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
55. Coneybury Barrow	Avenue E of King Barrow Ridge	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
56. Coneybury Barrow	Barrows nr Avenue	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
57. Coneybury Barrow	King Barrows (Old & New)	Major	Major	Major	Major	Major	Major

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial
58. Coneybury Barrow	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
59. Coneybury Barrow	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
60. Coneybury Barrow	Cursus Centre	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
61. Coneybury Barrow	Cursus Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
62. Coneybury Barrow	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
63. Coneybury Barrow	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
64. Coneybury Barrow	Normanton Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
65. Coneybury Barrow	Barrows nr Portals B & C	Major adverse	Major beneficial	Minor adverse	Minor adverse	Major beneficial	Major beneficial
66. Coneybury Barrow	Lake Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
67. Coneybury Barrow	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Major beneficial	Major beneficial
Cursus East End							
68. Cursus E end	King Barrows (Old & New)	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial
69. Cursus E end	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
70. Cursus E end	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
71. Cursus E end	Cursus W end	None	None	None	None	None	None
72. Cursus E end	Cursus Barrows	None	None	None	None	None	None
73. Cursus E end	Stonehenge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
74. Cursus E end	Stonehenge Down Barrows	Moderate	None	None	None	None	None
75. Cursus E end	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
76. Cursus E end	Barrows nr Portals B & C	Major adverse	None	Moderate adverse	Minor	None	None
77. Cursus E end	Lake Barrows	Major adverse	None	None	None	None	None
78. Cursus E end	Winterborne Stoke Barrows	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Minor adverse	Major beneficial
Cursus Centre							
79. Cursus Centre	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
80. Cursus Centre	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
81. Cursus Centre	Stonehenge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Cursus West End							
82. Cursus W end	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
83. Cursus W end	Cursus E end	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
84. Cursus W end	Cursus Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
Cursus Barrows							
85. Cursus Barrows	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
86. Cursus Barrows	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
87. Cursus Barrows	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
88. Cursus Barrows	Cursus E end	None	None	None	None	None	None
89. Cursus Barrows	Cursus W end	None	None	None	None	None	None
90. Cursus Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
91. Cursus Barrows	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
92. Cursus Barrows	Winterbourne Stoke Barrows	None	None	None	None	None	None
Stonehenge							
93. Stonehenge	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
94. Stonehenge	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
95. Stonehenge	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
96. Stonehenge	Cursus E end	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
97. Stonehenge	Cursus Centre	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
98. Stonehenge	Cursus Barrows	None	None	None	None	None	None
99. Stonehenge	Stonehenge Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
100. Stonehenge	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
101. Stonehenge	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Stonehenge Down Barrows							
102. Stonehenge Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
103. Stonehenge Down Barrows	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
104. Stonehenge Down	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
105. Stonehenge Down Barrows	Cursus E end	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
106. Stonehenge Down Barrows	Cursus Barrows	None	None	None	None	None	None
107. Stonehenge Down Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
108. Stonehenge Down Barrows	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Normanton Down Barrows							
109. Normanton Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
110. Normanton Down Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
111. Normanton Down Barrows	Coneybury Barrow	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
112. Normanton Down Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
113. Normanton Down Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
114. Normanton Down Barrows	Stonehenge Down Barrows	Major	Major	Major	Major	Major	Major

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

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		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial
115. Normanton Down Barrows	Barrows nr Portals B & C	Major adverse	Major beneficial	Moderate adverse	Minor adverse	Major beneficial	Major beneficial
116. Normanton Down Barrows	Lake Barrows	None	None	None	None	None	None
117. Normanton Down Barrows	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Moderate adverse	Major beneficial
Barrows near Portals B and C							
118. Barrows nr Portals B & C	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
119. Barrows nr Portals B & C	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
120. Barrows nr Portals B & C	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
121. Barrows nr Portals B & C	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
122. Barrows nr Portals B & C	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
123. Barrows nr Portals B & C	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
124. Barrows nr Portals B & C	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Moderate adverse	Minor adverse	Minor adverse	Major beneficial
Lake Barrows							

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

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		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
125. Lake Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
126. Lake Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
127. Lake Barrows	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
128. Lake Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
129. Lake Barrows	Stonehenge	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
130. Lake Barrows	Normanton Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
131. Lake Barrows	Barrows nr Portals B & C	Major adverse	Major beneficial	Moderate adverse	Minor adverse	Major beneficial	Major beneficial
132. Lake Barrows	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
Winterbourne Stoke Barrows							
133. Winterbourne Stoke Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Minor adverse	Major beneficial
134. Winterbourne Stoke Barrows	Coneybury Henge	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Minor adverse	Major beneficial
135. Winterbourne Stoke Barrows	Coneybury Barrow	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Minor adverse	Major beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

A	B	C	D	E	F	G	H
		Scale of Impact of current position and various options					
View from	**To**	**Current A303**	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5 kms tunnel**	**2.9kms on line tunnel**	**2.9kms off line tunnel**
136. Winterborne Stoke Barrows	Cursus E end	Moderate adverse	Moderate beneficial	Minor adverse	Minor adverse	Minor adverse	Moderate beneficial
137. Winterborne Stoke Barrows	Cursus Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
138. Winterbourne Stoke Barrows	Normanton Down Barrows	Major adverse	Major beneficial	Major adverse	Major adverse	Major adverse	Major beneficial
139. Winterbourne Stoke Barrows	Barrows nr Portals B & C	Major adverse	Major beneficial	Major adverse	Major adverse	Moderate adverse	Major beneficial
140. Winterbourne Stoke Barrows	Lake Barrows	Major adverse	Major beneficial	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse

7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

Stonehenge in particular has been the subject of numerous artists, including J M W Turner, and figures in many books, both fiction such as *Tess of the D'Urbervilles* and academic. It has also inspired many architects from Inigo Jones onwards and has been the subject of antiquarian and archaeological study and speculation for more than three hundred years. The present A303 is highly visible in many views in the landscape and must be a deterrent to artistic appreciation. On the other hand, the view of Stonehenge from vehicles descending from King Barrow Ridge to Stonehenge Bottom is highly appreciated by many, though it would still be possible to appreciate it on foot. Overall, the A303 should probably be judged to have a minor adverse impact of moderate/ large significance on this attribute. Any of the tunnel options would remove the A303 from the key views which have inspired artists and others over the years. This can be judged as a minor beneficial change of moderate/ large significance.

Integrity

Integrity is part of one of the three pillars of Outstanding Universal Value. According to the *Operational Guidelines*

> *Integrity 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 2005 paras 87-88)
>
> For cultural properties, *the physical fabric of the property and/or its significant features should be in good condition, and the impact of deterioration processes controlled. A significant proportion of the elements necessary to convey the totality of the value conveyed by the property should be included. Relationships and dynamic functions present in cultural landscapes, historic towns or other living properties essential to their distinctive character should also be maintained* (UNESCO 2005 para 89).

The agreed Statement of Outstanding Universal Value says that *the presence of busy main roads through the World Heritage property impacts adversely on its integrity*. It also says that *The A303 continues to have a negative impact on the setting of Stonehenge, the integrity of the property and visitor access to some parts of the wider landscape* (see Appendix 3). Integrity of the property was further evaluated in the 2009 Management Plan (English Heritage 2009, 33-4), which noted the major adverse impact of the A303 and A344, and also noted that more intensive use of the roads had had an impact on the visual integrity of the property since it was inscribed in 1986. The A344 has now been removed.

The A303 has visual, aural and access impacts on the World Heritage property:
Visual: this is the most apparent impact on integrity since, as noted above, the A303 cuts across the landscape and disrupts many visual links and the ability to appreciate the landscape as a whole. At times when the traffic is heavy or even stationary it can have a very high impact on visual aspects of this part of the property.

Aural: traffic noise can be considerable at Stonehenge itself and elsewhere along the line of the A303. The extent of the impact can vary according to weather conditions and the amount of traffic but is often oppressive. The reduction of traffic noise resulting from the closure of the A344 is notable away from the A303.

Access: in many ways the greatest adverse impact of the A303 on the integrity of the property is its role as a barrier between the whole north and south of the World Heritage property. There are no controlled crossing points of the A303 within the World Heritage property. While the A303 is crossed by Byway 12, actually crossing the road is very dangerous in most traffic conditions. Access to the World Heritage property for most visitors is *de facto* confined to its northern part. Most visitors, indeed, are probably unaware that around half of the World Heritage property is south of the A303

Overall the impact of the A303 on the integrity of the World Heritage property is major adverse of very large significance. Any of the road alternatives under consideration would improve the integrity of the property. All will greatly improve the ability to access all parts of the World Heritage property by removing significant lengths of the A303. They would also reduce aural and visual impact where the road would be in a tunnel.

The 4.5kms tunnel would have the most positive effect, reuniting the World Heritage property for most of the length of the road. The four tunnel options included in the brief would allow access across the former line of the A303 between King Barrow Ridge in the east and the western portal position. This would be a very substantial improvement. Noise levels would be greatly reduced where the A303 is placed in a tunnel, though aural impact could be greater where new dual carriageway is created even if in a cutting. This would hopefully be reduced by the use of 'green cuttings' since vegetation on the sides of the cuttings would absorb some sound. Visual impact of the A303 would be removed where the A303 is placed in a tunnel. These would be major beneficial change.

However, where the road was not in a tunnel, there would be stretches of new dual carriageway road of between 1 and 1.6kms. These would have an adverse impact on the Outstanding Universal Value of the World Heritage property. This adverse impact would be greatest for the Published Scheme and least for either of the two 2.9km bored tunnel options.

[Insert Table 5 showing relative footprints of different tunnel schemes here]

None of the tunnel options would deal with the severance of the line of the Avenue. New dual carriageway outwith a tunnel will inevitably have an adverse impact on the property's integrity. A further factor is the location and design of the junction between the A303 and the A360 and its

impact on the Winterbourne Stoke Barrow Group. This is probably a moderate adverse impact of large/ very large significance.

It is necessary to balance the beneficial and negative impacts on the integrity of the property. The 4.5km tunnel can be assessed as major beneficial change of very large significance as there are no negative impacts on integrity. The 2.1km Published Scheme can be assessed as having a negligible beneficial impact of slight significance. The remaining three tunnel options can be assessed as moderate beneficial change of large/ very large significance, since the adverse impact of new dual carriageway within the World Heritage property has to be taken into account. The most advantageous in terms of impact on Outstanding Universal Value would be one of the 2.9km routes.

Authenticity

Authenticity is about the truthfulness of the evidence for Outstanding Universal Value and the ability to appreciate that evidence. The *Operational Guidelines* (para 82) list a number of tests for authenticity including form and design, materials and substance, location and setting, and spirit and feeling. Authenticity is considered in the 2009 Management Plan (English Heritage 2009, 32-33). The impact of the road on materials and substance and form and design is comparatively limited (see discussion of Attribute 2 above). The road has a greater impact on location and setting and spirit and feeling. It is a dominant feature in many views of the World Heritage property with an adverse impact on the setting of the property and both its visual and aural impact is disruptive to the spirit and feeling of the property.

Overall, the A303 has a major adverse impact, of very large significance, on the authenticity of the property. As with the assessment of integrity, the 4.5km tunnel would be a major change of very large beneficial significance. For the same reasons, including the impact of new road construction, as in the assessment of integrity, the 2.1km Published Scheme can be assessed as having a negligible beneficial impact of slight significance. The remaining three tunnel options can be assessed as moderate beneficial change of large/ very large significance.

Chapter 6 Physical impacts of new road construction on archaeological features of Outstanding Universal Value

It is not possible accurately to assess the physical impacts of the construction of the existing A303 as there is no way of knowing what archaeological sites and monuments were destroyed without record during its original construction. The adverse impacts that are still evident or were recorded in subsequent widening of the A303 in the 1960s are set out in outline in Section 5 (above). No attempt has been made here to assess the physical impacts of the construction of a 4.5km bored tunnel (option 1) on archaeological sites and monuments that are attributes of Outstanding Universal Value as these would be limited to the impacts of any eastern portal and any associated infrastructure (such as control buildings) and no details of these are available. It is likely that such impacts would in any case be within the existing cutting of the present A303 dual carriageway.

The methodology used to assess the physical impacts on archaeological sites and monuments that would occur as a result of the construction of bored tunnel options 2-5 together with their associated above ground dual carriageway and related infrastructure is set out in **Chapter 3 Methodology** (above). The results of that assessment are set out on a portal by portal basis in Tables 6 to 11. These results have then been aggregated (Tables 12 to15) to show the permanent impacts of the construction of the various options. All of the impacts assessed are adverse as destruction of physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites that are themselves an attribute of Outstanding Universal Value can only be a negative impact. The assessment of whether the impact is negligible, minor, moderate or major is necessarily a matter of subjective professional judgement. Factors taken into consideration when making that assessment included:

- The proportion of the site or monument affected
- The degree to which the part of the site or monument would be affected; this could range between minor surface disturbance and wholesale destruction.
- The condition of the site or monument at present

In accordance with the ICOMOS impact assessment Guidelines, as all of the archaeological features identified as subject to physical impacts are attributes of Outstanding Universal Value and therefore of high importance negligible impacts will be of slight significance; impacts of minor scale will be of moderate / large significance; impacts of moderate scale will be of large / very large significance and major impacts will be of very large significance.

In summary the number of archaeological attributes of Outstanding Universal Value that are impacted is low for all four bored tunnel options. The highest level of adverse impact would result from the 2.1 km Published Scheme, followed by the 2.9km off line option. Both of these options could be assessed as having a minor adverse impact of moderate significance to the World Heritage Property as a whole (although the adverse impact of the 2.9km off line option could be reduced further by moving the road line a few metres south of the footprint identified in the Tata report which would reduce the adverse impacts further). The 2.5km bored tunnel and the 2.9km on-line bored tunnel would both result in negligible adverse impacts of slight significance to the OUV of the World Heritage Property.

Table 6 Physical impacts on archaeological sites and monuments that are attributes of OUV: portal A1 to eastern WHS boundary

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**	**Comments**
SU14SW62K SM 10481	A circular mark visible on aerial photographs. Possibly plough truncated remains of a round barrow ditch.	Major Adverse (but see comments)	Dropping line of road 50 metres further south would avoid adverse impact to this monument without creating further adverse direct archaeological impacts to attributes of OUV. This would result in an impact of No Change
SU14SW997	Possible levelled long barrow visible as a soil mark.	Major Adverse	Known only from aerial photographs
SU14SW807, 808, 809,810,811,812,813, 814 SM10480	Bronze Age barrows	No change	Proposed A1 road / cutting runs immediately south of this asset. No direct physical impact on the archaeology of the Scheduled Monument (or the individual assets within it) but dropping the line of the road further south (as recommended above) would ensure no unintended adverse impacts during construction works.
SU14SW64G	Ring ditch. Site of an undated round barrow	Major adverse	Known only from aerial photographs. Any surviving elements of ring ditch likely to be totally destroyed as a result of road construction.

Table 7 Physical impacts on archaeological sites and monuments that are attributes of OUV: portal A2 to western WHS boundary

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**	**Comments**
SU14SW839 SM 10477	Round barrow	No change	No direct physical impact to archaeological asset

Table 8 Physical impacts on archaeological sites and monuments that are attributes of OUV: portal B to western WHS boundary

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**	**Comments**
SU14SW184	Two excavated Bronze Age burials	No change	No longer extant, fully excavated (Leivers & Moore 2008)
SU14SW839 SM 10477	Round barrow	Minor adverse	Asset in very close proximity to footprint of road / cutting. Some direct physical impact to archaeological asset during construction therefore assessed as likely to be unavoidable

Table 9 Physical impacts on archaeological sites and monuments that are attributes of OUV: portal C to western WHS boundary

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**	**Comments**
SU14SW184	Two excavated Bronze Age burials	No change	No longer extant, fully excavated (Leivers & Moore 2008)
SU14SW839 SM 10477	Round barrow	Minor adverse	Asset in very close proximity to footprint of road / cutting. Some direct physical impact to archaeological asset during construction therefore assessed as likely to be unavoidable
SU14SW127 SM10313	Long Barrow north of Normanton Gorse	Minor adverse	Asset in very close proximity to footprint of road / cutting / cut and cover portion of tunnel. Some direct physical impact to archaeological asset during construction therefore assessed as highly likely.
SU14SW836, 837, 838 SM 103 12	Three bowl barrows north of Normanton Gorse	No change	SU14SW836 and SU14SW 837 extant, SU14SW838 now levelled

Table 10 Physical impacts on archaeological sites and monuments that are attributes of OUV: portal D to eastern WHS boundary plus cut and cover at Stonehenge Bottom

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**	**Comments**
SU14SW758 SM 10497	An undated levelled barrow East of King Barrow Ridge	Minor Adverse	Partially excavated in 1980. The southern half was destroyed by the construction of the present A303. Asset in such close proximity to footprint of road that some direct physical impact to archaeological asset during construction is assessed as likely to be unavoidable.
SU14SW141	Later Neolithic pit containing Grooved Ware, flint work and macrofossils (including beans)	Major Adverse	
SU14SW175	Ditches, pits & post-holes containing Bronze Age pottery, worked flint, stone, animal bone & plant remains	Major Adverse	
SU14SW168 SM 10390	The Avenue	Minor Adverse	Geophysical survey by the Hidden Landscape team immediately south of the point where the A303 cuts the Avenue has shown that the truncated ditches survive below ground. No similar survey has been undertaken immediately north of the A303 but it is likely the ditches survive in similar condition in that area.
SU14SW889 SM 10498	Undated levelled bowl barrow.	Major Adverse	

Table 11 Physical impacts on archaeological sites and monuments that are attributes of OUV: portal E to eastern WHS boundary

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**	**Comments**
SU14SW168 SM 10390	The Avenue	Minor Adverse	Recent geophysical survey carried out as part of the Hidden Landscapes Project immediately to the south of the present A303 where it crosses the Avenue have shown that despite the effects of ploughing the truncated ditches survive below ground. Although no similar survey has yet been undertaken immediately north of the A303 it is likely that the truncated ditches also survive in similar condition in this area.

Table 12 2.1km bored tunnel with cut and cover at Stonehenge Bottom ('Published Scheme') portal C to portal D: Physical impacts on archaeological sites and monuments that are attributes of OUV

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**
SU14SW839 SM 10477	Round barrow	Minor adverse
SU14SW127 SM10313	Long Barrow north of Normanton Gorse	Minor adverse
SU14SW758 SM 10497	An undated levelled barrow East of King Barrow Ridge	Minor Adverse
SU14SW141	Later Neolithic pit containing Grooved Ware, flint work and macrofossils (including beans)	Major Adverse
SU14SW175	Features including ditches, pits and post-holes containing Bronze Age pottery, worked flint, stone, animal bone and plant remains	Major Adverse
SU14SW168 SM 10390	The Avenue	Minor Adverse
SU14SW889 SM 10498	Undated levelled bowl barrow.	Major Adverse

Table 13 2.5km bored tunnel portal B to portal E: Physical impacts on archaeological sites and monuments that are attributes of OUV

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**
SU14SW839 SM 10477	Round barrow	Minor adverse
SU14SW168 SM 10390	The Avenue	Minor Adverse

Table 14 2.9km on-line bored tunnel portal A2 to portal E: Physical impacts on archaeological sites and monuments that are attributes of OUV

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**
SU14SW168 SM 10390	The Avenue	Minor Adverse

Table 15 2.9km off-line bored tunnel portal A1 to portal E: Physical impacts on archaeological sites and monuments that are attributes of OUV

Wilts. HER Pref. Ref. Scheduled Monument No.	**Site name / description**	**Impact**
SU14SW62K SM 10481	A circular mark visible on aerial photographs. Possibly plough truncated remains of a round barrow ditch.	Major Adverse (but see comments)
SU14SW997	Possible levelled long barrow visible as a soil mark.	Major Adverse
SU14SW64G	Ring ditch. Site of an undated round barrow	Major adverse

Chapter 7 Conclusions and Recommendations

This chapter pulls together the various strands covered in earlier sections of the report to offer an overall view of the potential impact on the Outstanding Universal Value of the World Heritage property of four bored tunnel options for the improvement of the A303, along with necessary lengths of new dual carriageway within the Stonehenge component of the property. This is a preliminary outline assessment. It is not a full Heritage Impact Assessment. Such a study would need to be much more thorough and would take much longer. It would also need to have a much clearer scoping opinion from the Highways Agency as to the potential design of any of the four options we were asked to consider.

This study, therefore, outlines developments in the policy context for conservation of the historic environment, and particularly of World Heritage properties, since the public inquiry into the Published Scheme for a 2.1km bored tunnel in 2004 (Chapter 4). In the light of this discussion it then provides a preliminary outline assessment of the perceived impacts on the property's Outstanding Universal Value of the existing road, the 4.5kms tunnel (for illustrative purposes only) and the four tunnel options specified by the National Trust and English Heritage (Chapters 5 and 6). The assessment is made within the limitations of the available information, though it has been informed by the helpful Tata study *A303 Feasibility Review* (Tata 2014), which was commissioned by the National Trust as part of their input to the review.

The study is not a recommendation for an actual solution but intended to provide input into deciding what that might be. Any decision on an actual route will need to be taken within the constraints of Government policy and available funding, bearing in mind the UK's international responsibilities for Stonehenge under the World Heritage Convention. The four options provide the basis for assessment but the actual solution will need careful discussion and negotiation to achieve an optimum solution within the constraints of Government policy and of the Government's obligation to maintain the Outstanding Universal Value of the World Heritage property in accordance with UK membership of the World Heritage Convention. Failure to meet those obligations could put the property at risk of being included on the World Heritage in Danger list or even delisted altogether as was the case with the Dresden Elbe Cultural Landscape when the UNESCO World Heritage Committee decided that a new bridge fatally damaged the property's Outstanding Universal value.

Policy Background

The policy background has moved decisively since 2004 towards values led management and the need to protect significance. Internationally, the UNESCO World Heritage Committee, through successive editions of the Operational Guidelines to the World Heritage Convention, has placed more emphasis on the need for effective management to protect the Outstanding Universal Value, as agreed by them, of each World Heritage property. Heritage Impact Assessment is now requested for developments affecting World Heritage property. The Committee has endorsed the guidance for this developed by ICOMOS International (ICOMOS 2011) (see Chapter 3 for the methodology used in this study).

These were key themes in PPS5 and English Heritage's Conservation Principles and they have been carried through into the National Policy Planning Framework (NPPF) and Planning Practice Guidance (PPG). English Heritage has also published Setting Guidance spelling out the importance of protecting the setting of a heritage place in order to protect its significance. A key change from 2004 is the explicit recognition that an archaeological site which may be invisible on the surface is capable of having a setting.

The NPPF and PPG say that World Heritage properties are designations of the highest importance and should be managed to protect their Outstanding Universal Value, as set out in the Statement of Outstanding Universal Value agreed by the UNESCO World Heritage Committee. Protection of agreed Outstanding Universal Value is therefore a key requirement within English planning guidance.

A Statement of Outstanding Universal Value was adopted by the World Heritage Committee in 2013. It was proposed by the UK government and drafted in discussion with the Stonehenge and Avebury Steering Groups. The Statement makes clear that all funerary and ceremonial archaeological sites of Neolithic and Early Bronze Age, together with their relationships with each other and with the landscape are attributes of Outstanding Universal Value and need to be treated as such. The Statement also comments on the impact of roads on the integrity of the World Heritage property. The 2009 Management Plan elaborates the definition of these attributes and makes clear the need to manage the whole World Heritage property to protect its Outstanding Universal Value. The Statement of Outstanding Universal Value and the Management Plan have together moved us decisively away from the focus on Stonehenge and the Stonehenge Bowl which underpinned the 1999 English Heritage/ National Trust Master Plan, the 2000 Management Plan and the Highways Agency Published Scheme, to a much wider view of the Outstanding Universal Value of the property which means that all the physical attributes of Outstanding Universal Value have to be given more equal consideration.

These changes in policy and the fuller recognition of the character of the Outstanding Universal Value of the property justify the view of the Trust and English Heritage view that North or South surface alternatives within the World Heritage property would be wholly unacceptable in terms of impact on Outstanding Universal Value, let alone archaeology and landscape of national or local significance. The changes also justify the English Heritage and National Trust decision to examine again the potential for a bored tunnel to improve the situation vis-à-vis the A303. A bored tunnel of appropriate length has the potential greatly to improve the integrity of the World Heritage property and to reverse past damage to its Outstanding Universal Value.

Assessment of the impact on Outstanding Universal Value of the A303 and the various tunnel options

The National Trust and English Heritage have therefore commissioned this study of four potential bored tunnels of different lengths, determined by the location of the portals of each option. They also requested an assessment of the current impact of the present A303 on the Outstanding Universal Value of the World Heritage property to provide a baseline against which the impacts of the different tunnel options can be compared. For illustrative purposes, we were also asked to

review the impact of a 4.5km tunnel such as was suggested by a number of conservation bodies during the 2004 Public Inquiry into the Published Scheme for a 2.1km bored tunnel. This study does not review impact on heritage of national, regional or local value. Nor has it assessed the impact of temporary works associated with any road improvements, such as contractors' compounds or bunded de-watering recharge areas.

This section of the conclusions summarises the impact on Outstanding Universal Value of the current position, a 4.5km tunnel (for illustrative purposes only) and the four options outlined by the National Trust and English Heritage. It brings together for each of these cases the relevant information from the more detailed discussions in Chapters 5 and 6. For each case, the permanent impact on the seven agreed attributes of Outstanding Universal Value, and on integrity and authenticity is assessed. The methodology used for this impact assessment is based on that recommended in *ICOMOS Guidance on Heritage Impact Assessment* (ICOMOS 2011) and is discussed further in Chapter 3.

The impact of the current A303

The A303 as presently built has a major adverse impact of very large significance on the World Heritage property. It has a major visual and aural impact on Stonehenge itself and on a large number of sites which are attributes of Outstanding Universal Value. Past road construction has caused physical damage to the Avenue east of King Barrow Ridge and to at least one barrow on the western slope of King Barrow Ridge. It is unknown what other damage may have been caused during past phases of road construction going back to the 18th century. The A303 passes very close to other burial mounds and has a major adverse impact on their setting.

The A303 is highly visible in the landscape. It therefore has a major adverse impact on the various visual linkages between monuments and between the monuments and the landscape, as well as to the ability to perceive their disposition within the landscape. Traffic on the A303 also provides light pollution on at least one key astronomical alignment. Lastly, the A303 has introduced a large amount of tarmac into this downland landscape. Because of its traffic levels, it also acts as an effective divider of the World Heritage property so that access across it is very dangerous. It therefore impacts on the integrity of the property visually, aurally and in terms of access.

The impact of the 4.5km bored tunnel (included for illustrative purposes only)

This bored tunnel option, as described in 2004, would have started in the cutting of the present dual carriageway at the eastern side of the World Heritage property. Its western portal would be outside the western boundary of the World Heritage property. Apart from 1km of existing dual carriageway in cutting past Vespasian's Camp on the eastern edge of the World Heritage property, the A303 would be removed altogether from the property. There is limited visibility of this stretch of road from north and south. In the rest of the World Heritage property all the present adverse impacts of the road would be removed. It would be possible to restore the line of the Avenue east of King Barrow Ridge. Such a tunnel would have a major beneficial impact of very large significance.

The impact of a 2.1km on-line bored tunnel (the Published Scheme) (Fig. 3 Portal D to Portal C)

The tunnel would begin 100m east of Stonehenge Cottages on King Barrow Ridge and end just to the west of the long barrow north of Normanton Gorse. The remainder of the road from there to Longbarrow Crossroads would be 1.6km of new dual carriageway constructed on the surface or mainly in cutting. The junction with the A360 would be grade separated and close to the Winterbourne Stoke Barrow Group. This would be a major new construction within the World Heritage property though being mainly in cutting would make it less visible from most directions. It could interfere in some of the views, for example between Lake and Winterbourne Stoke Barrow Groups.

Construction of the portals (requiring 30m of cut-and-cover tunnel) could have a physical impact on the long barrow north of Normanton Gorse. It would in any case have a major adverse impact on the setting of this barrow and the round barrows to its north on the other side of the present A303. At the eastern end, the position of the portal is close to King Barrow Ridge so there would still be some adverse impact on the setting of monuments along that ridge.

More positively, the scheme would remove 2.1km of road from the central part of the World Heritage property. This would improve the setting of all the sites within the so-called Stonehenge Bowl. Noise would be greatly reduced for visitors to Stonehenge and the surrounding landscape and access between the northern and southern parts of the World Heritage property would be improved. Because of the relatively shallow depth of this tunnel, cut-and-cover construction would be necessary in Stonehenge Bottom. This would have considerable visual and aural impacts during construction. There would be some risk to any extant archaeology along the line of the cut-and-cover section and in the construction compound. There would probably be a long-term scar showing the line of the cut-and-cover section.

Balancing these beneficial and adverse impacts to arrive at an overall assessment of impact on the Outstanding Universal Value of the World Heritage property is not easy and is essentially a matter of professional judgement. Given the impacts on the barrow group north of Normanton Gorse, continuing impact on the setting of King Barrow Ridge, including the Coneybury monuments, and the amount of new road construction outside the tunnel and within the World Heritage property, the overall assessment is that the impact of the Published Scheme on the Outstanding Universal Value, including integrity and authenticity, of the property would be negligible beneficial of slight significance.

The impact of a 2.5km on-line bored tunnel (Fig. 3 Portal E to Portal B)

The eastern portal of this scheme is 200m east of that for the published scheme and the western one 200m west of that for the published scheme. The scheme would require 1.4km of new dual carriageway at the west end leading to the Longbarrow Crossroads junction with the A360.

Because the portal is lower down the side of the small dry valley crossing the A303 to the west of Normanton Gorse, the new dual carriageway would be in cutting for its whole length and probably less visible. The road junction at Longbarrow Crossroads would still be close to Winterbourne Stoke

Barrow Group. Depending on how deep the cutting is, the new road could interfere in some of the views, for example between Lake and Winterbourne Stoke Barrow Groups.

At the east end, moving the portal east by 200m will help to reduce the impact of the A303 on the monuments along King Barrow Ridge, including Coneybury Henge and Coneybury Barrow. There will be an adverse impact on the Avenue since its line will be severed by the cutting leading to the tunnel portal.

West of King Barrow Ridge, there will be major beneficial changes of very large significance for Stonehenge and the monuments within sight of it. There will also be significant improvements to integrity through the reduction of visual and aural impact of the road. Access between the northern and southern parts of the World Heritage property would be greatly improved.

Balancing the beneficial and adverse impacts, this scheme is a significant improvement on the Published Scheme since the movement of the portals lessens or removes many of the negative impacts noted for that option. There will still be some negative impacts at the western end as a result of the construction of 1.4km of new dual carriageway. Overall, the impact on the Outstanding Universal Value, including integrity and authenticity, of the World Heritage property can be assessed as a moderate beneficial impact of large/ very large significance.

<u>The impact of a 2.9km on-line tunnel (Fig. 3 Portal E to Portal A2)</u>

The eastern portal is in the same position as for the 2.5km option. The western portal would be a further 400m to the west at the bottom of the small dry valley west of Normanton Gorse. It should therefore be less visible than for the 2.1 and 2.5km options. Only 1km of new dual carriageway would need to be constructed at the western end of the World Heritage property. All this road would be in cutting to the junction with the A360 close to the Winterbourne Stoke Barrow Group. Depending on how deep the cutting is, the new road could interfere in some of the views, for example between Lake and Winterbourne Stoke Barrow Groups.

Impacts at the eastern end of the tunnel and in the centre of the World Heritage property would be the same as for the 2.5km scheme. There would be similar improvements to integrity through reduction of visual and aural impact. Improvements to access between the two halves of the World Heritage property would also be similar.

At the west end, impact would be reduced, compared to the 2.5km scheme because there would be less new road within the World Heritage property. The road junction would still be very close to the Winterbourne Stoke Barrow Group.

Balancing the beneficial and adverse impacts, this scheme is a significant improvement on the shorter schemes. There will still be some negative visual impacts at the western end as a result of the construction of 1.0km of new dual carriageway. Overall, the impact on the Outstanding Universal Value, including integrity and authenticity, of the World Heritage property can be assessed as a moderate beneficial impact of large/ very large significance.

The impact of a 2.9km off-line tunnel (Fig. **3** Portal E to Portal A1)

The eastern portal is in the same position as for the previous two options. The tunnel would however be constructed off-line with its western portal about 500m south of the present line of the A303 low down in the dry valley running west of Normanton Gorse. From the portal, 1km of dual carriageway would run in cutting on a new line to a new junction with the A360 c.700m south of the present Longbarrow Crossroads junction, and there would need to be no road on the current line of the A303. This would significantly lessen the impact of the new road on the Winterbourne Stoke Barrow Group. Depending on how deep the cutting is, the new road could interfere in some of the views, for example between Lake and Winterbourne Stoke Barrow Groups.

As presently suggested, the new road could have some direct physical impacts on known archaeological features which are probably burial mounds. This could be a significant adverse impact of very large significance. These impacts could be avoided if the road line could be moved a further 50m to the south.

Impacts at the eastern end of the tunnel and in the centre of the World Heritage property would be the same as for the 2.5km scheme. There would be similar improvements to integrity through reduction of visual and aural impact. Aural impact close to the Winterbourne Stoke Barrow Group would be considerably reduced. Improvements to access between the two halves of the World Heritage property would also be similar.

At the west end, impact would be reduced, compared to the 2.5km scheme because there would be less new road within the World Heritage property. It would be further reduced compared to the 2.9km on-line option because the new road would be further away from the Winterbourne Stoke Barrow Group as would the relocated junction with the A360.

Balancing the beneficial and adverse impacts, this scheme is a significant improvement on the other options, particularly if the road line can be moved to avoid direct physical impacts on archaeological features. There will still be some negative visual impacts at the western end as a result of the construction of 1.0km of new dual carriageway. Overall, the impact on the Outstanding Universal Value, including integrity and authenticity, of the World Heritage property can be assessed as a moderate beneficial impact of large/ very large significance.

Overall impact on Outstanding Universal Value of WHS

Table 15 attempts to summarise the overall impact of the present A303, the 4.5kms tunnel and the four options for tunnels on the seven attributes of Outstanding Universal Value, Integrity and Authenticity. The last row of the table gives an overall assessment of the impact of the A303 on the Outstanding Universal value of the World Heritage property. The argumentation on which the table is based is contained in the previous sections of this chapter as well as in Chapters 5 and 6. This is of course only a preliminary outline assessment and not a full Heritage Impact Assessment. Any actual solution will need careful discussion and negotiation to achieve an optimum solution which ensures the protection of the Outstanding Universal Value of the WHS.

Overall, the A303 can be assessed as now having a major adverse impact of very large significance on the Outstanding Universal Value, including integrity and authenticity, of the World Heritage property. The biggest positive change would be provided by the 4.5kms tunnel, included here only for illustrative purposes. This has been rated as a major beneficial impact of very large significance. The Published Scheme for a 2.1km tunnel can be rated as minor beneficial impact of moderate/ large significance. The remaining three options for bored tunnels are rated as having a moderate beneficial impact of large/ very large significance. The reasons for this are the continuing impact on the line of the Avenue east of King Barrow Ridge, and the impacts of new road construction within the western edge of the World Heritage property for up to 1.4kms.

Within the ICOMOS HIA methodology, it is difficult to differentiate the impact of these three bored tunnels on the Outstanding Universal Value of the property as a whole. It is possible to achieve some differentiation by examining the detail impacts on individual physical attributes as set out in Table 3. In particular, the four tunnel options affect the Winterbourne Stoke Barrow Group to differing extents by reason of their proximity to the group, by the length of new dual carriageway close to the Group, and by their impact on views to and from the Winterbourne Stoke Group from other physical attributes of Outstanding Universal Value, particularly in western parts of the property.

In a different approach, Table 16 has attempted a numerical scoring of the different impacts. While this may appear somewhat mechanistic, it does provide a means of analysing further the differences between options which in the ICOMOS HIA system score the same. On the basis of the information currently to hand the 2.9kms offline tunnel has the lowest impact on the World Heritage property, provided that the new road is not too intrusive in views from Lake to Winterbourne Stoke. The next best alternative would be the 2.9kms tunnel online option, followed by the 2.5km option. Any of these three tunnel options would achieve a beneficial change of large/ very large significance in the impact of the A303 on the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property.

Table 15 Overall Assessment of impacts on Outstanding Universal Value of the World Heritage property

	A	B	C	D	E	F	G
This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.							
		Scale of Impact of current position and various options					
		Current A303	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5kms tunnel**	**2.9 kms online tunnel**	**2.9 kms offline tunnel**
Attribute of Outstanding Universal Value							
1	Stonehenge itself as a globally famous and iconic monument	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
2.	The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.	Major adverse	Moderate beneficial	Negligible beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
4.	The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
3. 5. 6.	The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.	Major adverse	Major beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
7.	The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
Integrity		Major adverse	Major beneficial	Negligible beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Authenticity		Major adverse	Moderate beneficial	Negligible beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.						
A	**B**	**C**	**D**	**E**	**F**	**G**
	Scale of Impact of current position and various options					
	Current A303	**4.5 kms tunnel**	**2.1 kms tunnel**	**2.5kms tunnel**	**2.9 kms online tunnel**	**2.9 kms offline tunnel**
Overall assessment of impact on the Outstanding Universal Value of the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property	**Major adverse**	**Major beneficial**	**Negligible beneficial**	**Moderate beneficial**	**Moderate beneficial**	**Moderate beneficial**
Overall assessment of the significance of the impact on the Outstanding Universal Value of the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property	**Very large negative**	**Very large positive**	**Slight positive**	**Large/ very large positive**	**Large/ very large positive**	**Large/ very large positive**

Table 16: Outstanding Universal Value Assessment Outcomes

	Current A303	4.5 km	2.1 km	2.5 km	2.9km on-line	2.9km off-line
Durrington Walls	-14	+10	-14	-10	-10	-10
Woodhenge	-14	+14	-14	-6	-5	-5
Avenue east of KBR	-8	+8	-8	-8	-8	-8
Barrows near Avenue east of KBR	-14	+14	-10	-7	-7	-7
King Barrows	-37	+37	+8	+14	+21	+27
Coneybury Henge	-45	+45	+29	+29	+32	+31
Coneybury Barrow	-56	+42	+22	+12	+13	+16
Cursus E	-33	+22	+12	+13	+16	+22
Cursus Centre	-11	+11	+11	+11	+11	+11
Cursus W	-8	+8	+8	+8	+8	+8
Cursus Barrows	-19	+19	+19	+19	+19	+19
Stonehenge	-29	+29	+29	+29	+29	+29
SH Down Barrows	-23	+23	+23	+23	+23	+23
Normanton Barrows	-29	+29	+15	+16	+22	+29
Barrows near Portals B & C	-28	+28	+21	+22	+22	+28
Lake Barrows	-27	+27	+13	+14	+20	+20
Winterbourne Stoke Barrows	-30	+30	-19	-19	-15	+23
Sub-total adverse / beneficial	-425	+396	-65 / +210	-50 / +220	-45 / +259	-30 / +306
Sub-total aggregate	-425	+396	+145	+170	+214	+276
Direct archaeological impacts	Not assessed	Not assessed	-20	-4	-2	-12 (*or -8)
Total adverse / beneficial	-425	+396	-85 / +210	-54 / +220	-47 / +259	-42 / +306 (*or -38 / + 306)
Total Aggregate	-425	+396	+125	+150	+195	+255 (*or +259)

***** Alternative score if footprint of road adjusted to run slightly to the south at the western end

Numeric values have been ascribed on the following basis:

Major adverse	-4	Negligible beneficial	+1
Moderate adverse	-3	Minor beneficial	+2
Minor adverse	-2	Moderate beneficial	+3
Negligible adverse	-1	Major beneficial	+4
No change	0		

Appendix 1: Brief for the preliminary assessment of A303 proposals on the Outstanding Universal Value of the Stonehenge, Avebury and Associated Sites World Heritage property

BRIEF FOR HERITAGE CONSULTANCY SERVICES

IN CONFIDENCE

Stonehenge A303 Improvement Options: outline preliminary assessment of OUV impact

1. BACKGROUND

The A303 at Stonehenge has been shortlisted as a potential scheme as part of a Department for Transport (DfT) Feasibility Study of route options on the A303/A30/A358 Corridor. Stonehenge will be considered along with other potential improvements along the corridor, and the Study is in a competitive process as one of six routes nationally. The renewed focus on the A303 may present an opportunity to achieve the tunnelling of the road through a substantial part of the Stonehenge, Avebury & Associated Sites World Heritage Site (WHS). It also carries risks in the potential for harm to the Outstanding Universal Value (OUV) of the Stonehenge WHS as options to be considered by DfT may include surface dualling.

Surface dualling, whether on-line or off-line, would cause substantial harm to the significance and Outstanding Universal Value of the WHS. We are clear on the scale of these new impacts and DfT has been advised accordingly. Exhaustive work has been undertaken to assess the impact of surface dualling options within the WHS as part of the work to identify an acceptable route option in the 1990s and 2000s. The significant adverse impacts that such options were likely to have on Outstanding Universal Value were identified at the time and current Outstanding Universal Value impact assessment criteria will certainly reinforce those conclusions. As a result, surface dualling options are not considered further in this Brief.

Since the A303 Stonehenge Improvement was last considered in 2006-7, within the Highways Agency's (HA) Options Appraisal, there have been changes in national policy & guidance; in management policies for this WHS; in our understanding of the archaeological significance of the WHS; and in the articulation of its Outstanding Universal Value as agreed by the UNESCO World Heritage Committee under the terms of the World Heritage Convention and seen by them as the baseline for the future management of the property.

In policy and management guidance terms these changes include the National Planning Policy Framework, 2012; the Planning Practice Guidance (NPPG); 2014, the EH published guidance "The Setting of Heritage Assets", October 2011; Conservation Principles, 2008;; ICOMOS Guidance on Heritage Impact assessments for Cultural World Heritage Properties, 2011, the Statement of Outstanding Universal Value for the WHS adopted by the World Heritage Committee in June 2013; and the revised WHS Management Plan 2009-2015.

To varying degrees, either subtly or profoundly, these documents change how we understand, assess and quantify harm and/or benefits arising from development proposals affecting the WHS.

Additionally, there have been substantial advances in archaeological research within the WHS which gives us a greater understanding of the significance of the property and its landscape. These include:

- Durrington Walls has been shown to be the site of one of the best preserved Neolithic settlements in Europe. Dating suggests it belongs to the builders of Stonehenge (Stonehenge Riverside Project).
- A direct link has been demonstrated between Durrington Walls and Stonehenge - via a ceremonial Avenue and the River Avon. (Stonehenge Riverside Project and archaeological mitigation undertaken as part of the Stonehenge Environmental Improvements Project).
- Extensive geophysical surveys have revealed previously unknown sites and monuments across the Stonehenge landscape - many of them apparently of Neolithic and Bronze Age date, (and therefore expressions of the attributes of Outstanding Universal Value of the WHS). (Hidden Landscapes Project – Birmingham University & the Ludwig Boltzmann Institute; Bournemouth University and the German Archaeological Institute).

These changes mean that the advice to DfT/HA provided by both English Heritage and the National Trust on the A303 Stonehenge Improvement options appraisal 2006 is unlikely to remain valid and a fresh, outline assessment of Outstanding Universal Value impact based on current criteria, policy & guidance is required to inform our mutual positions on what may form an acceptable road scheme at Stonehenge.

At the 2004 Public Inquiry (from which sprang the 2006 HA options appraisal), English Heritage supported the 2.1km twin-bored tunnel known as the Published Scheme, whilst the National Trust supported a longer bored tunnel that was as long as possible. Although the Public Inquiry accepted on balance the case for the 2.1km tunnel, the scheme was later shelved by Govt. on cost grounds.

The present DfT Feasibility Study raises once again the potential for achieving a sustainable road improvement scheme at Stonehenge. Accepting the overarching principle that a bored tunnel is the only road improvement method that has the potential to avoid substantial harm to the WHS, this Brief sets out the scope of an outline assessment methodology that may allow both English Heritage and the National Trust to understand the relative benefits vs. harm to OUV that a range of tunnel options may present. The Brief is mindful of DfT's Feasibility Study criteria, that schemes being put forward to Govt. must be *Affordable*, *Deliverable* and *Value For Money*.

2. SCOPE OF THIS OUTLINE ASSESSMENT

The outline assessment will consider the impact upon Outstanding Universal Value of three tunnel options and their anticipated construction impacts (see plan, Appendix 1, for location of these options). Two of these will be on-line options: the 2.1km Published Scheme considered at Inquiry in 2004 and a 2.5km option which seeks additional benefits to Outstanding Universal Value by relatively modest extensions of the Published Scheme to east and west. The third option to be considered is a 2.9km tunnel with an eastern portal in the same location as the 2.5km options and whose western portal is off-line, to the south of the present road. This location is intended to take advantage of the natural land form in this area to minimise adverse impacts to the Outstanding Universal Value of the WHS.

The outline assessment should also consider the Outstanding Universal Value impact of dual carriageway construction within the WHS outwith the tunnelled part of each option. The work will have the benefit of the results of engineering assessments commissioned by the National Trust and undertaken by their consultants Tata to inform the potential impacts of each option.

The work will comprise two aspects. Part 1. A review of the *direct and indirect* impacts resulting in physical loss of the whole or part of archaeological sites and monuments which are attributes of the OUV of the WHS .This will be undertaken by Dr. Nick Snashall, National Trust Archaeologist for Stonehenge and Avebury WHS. This work is being directly undertaken by the National Trust and does **not** from part of the work to be commissioned under this Brief. The work to be commissioned via this Brief (Part 2) will consider the relative *direct and indirect* impacts, but not including physical impacts on archaeological features (covered in Part 1 of the review), of each option upon OUV in light of current policy, guidance and understanding of significance, as outlined above and to include the 2011 ICOMOS guidance on Heritage Impact Assessments in Cultural World Heritage Properties. However both reviews of *direct and indirect* impacts are of equal importance in arriving at outline conclusions in terms of Outstanding Universal Value impacts. Both aspects of the work will feed into the outline conclusions as an integrated whole. To this end the author of the assessment commissioned via the Brief must work in conjunction with Dr Snashall to ensure that the assessment reflects the full range of factors affecting each option.

As noted above, the work to be commissioned via this Brief (Part 2) will consider the relative *direct and indirect* impacts, but not including physical impacts on archaeological features (covered in Part 1 of the review), of each option upon Outstanding Universal Value in light of current policy, guidance and understanding of significance, as outlined above and to include the 2011 ICOMOS guidance on Heritage Impact Assessments in Cultural World Heritage Properties.

The work will consider each option with regard to the Statement of Outstanding Universal Value, including its assessments of integrity, authenticity and its definition of needs for future management and protection, taking into account the articulation in the 2009 WHS Management Plan of Attributes identified in the Statement of Outstanding Universal Value, and with regard to impacts on setting (aural and visual, including lighting) and access insofar as relevant information is available within the constrained timescale necessary to complete the work. Information will be available to inform the work from a number of sources including DfT, Highways Agency and their consultants CH2M Hill, but also via the National Trust commissioned engineering studies carried out by Tata, who will provide the results of their work to inform the study on 9th July 2014. Where such information is not available, the assessment will caveat its conclusions accordingly.

The assessment report should summarise the context in which it has been commissioned and the methodology adopted. To provide both a baseline and spectrum of Outstanding Universal Value impact, the assessment should briefly consider the impact on Outstanding Universal Value of the current road within the WHS and of the 4.5km tunnel, This latter option would result in the least harm to Outstanding Universal Value, but is acknowledged as being beyond the criteria in which DfT are presently considering road improvements – *Affordable*, *Deliverable* and *Value for Money.*

The commissioning bodies will provide the consultant with a digital copy of a map showing the three options for tunnels (2.1km, 2.5km, 2.9km).

3. Timescale

This rapid outline assessment will take place in a compressed timescale made necessary by DfT's own very short timescale for delivery of their recommendations to Govt. DfT's deadline for the receipt of comments and advice is the 15th August 2014. It is essential that we have the results of the study in hand before this date. This document will inform EH & NT's proposals to address "*the range of solutions that may address the traffic problems along the route*" (DfT Feasibility Study Scope Document February 2014). It is a key opportunity for English Heritage and the National Trust to advise on the nature of an acceptable scheme within the Stonehenge WHS.

It is essential that we feed into the DfT's work within their timescale. Given the need for each organisation to understand and discuss the emerging conclusions of the work before we advise DfT, we will require the results of the assessment to be available before mid-August 2014. The results must therefore be presented to English Heritage and the National Trust at or prior to our outline assessment review meeting in the second week of August.

The outline assessment report will be provided in both digital and printed copies.

The outline assessment of Outstanding Universal Value (Part 2) is estimated to take 10 working days, with a contingency of 2 working days

Cost details removed

5 Monitoring

The English Heritage Inspector of Ancient Monuments, Phil Mcmahon, and the National Trust A303 Project Manager, Cassandra French, will monitor the work. Due to the very short timescale involved, it is not envisaged that formal monitoring meetings will take place during the course of the work, beyond the August meeting (date to be arranged)to receive the outline assessment report.

Day-to-day monitoring will take place via an email circle. All correspondence and draft reports etc should be circulated to each member of the project board, which will comprise Cassandra French, Dr Nick Snashall (National Trust) and Phil Mcmahon (English Heritage). In the event of an urgent matter arising, the Consultant should contact one or more of the members. Contact details for relevant personnel are:

Contact details removed

Appendix 2 **Operational Guidelines 2013 Text on Protection and Management.**

NB changes in 2011 shown in red

II.F Protection and management

96 Protection and management of World Heritage properties should ensure that their Outstanding Universal Value, including the conditions of integrity and/or authenticity at the time of inscription, are sustained or enhanced over time. A regular review of the general state of conservation of properties, and thus also their Outstanding Universal Value, shall be done within a framework of monitoring processes for World Heritage properties, as specified within the *Operational Guidelines.*

97 All properties inscribed on the World Heritage List must have adequate long-term legislative, regulatory, institutional and/or traditional protection and management to ensure their safeguarding. This protection should include adequately delineated boundaries. Similarly States Parties should demonstrate adequate protection at the national, regional, municipal, and/or traditional level for the nominated property. They should append appropriate texts to the nomination with a clear explanation of the way this protection operates to protect the property.

Legislative, regulatory and contractual measures for protection

98 Legislative and regulatory measures at national and local levels should assure the survival of the property and its protection against development and change that might negatively impact the Outstanding Universal Value, or the integrity and/or authenticity of the property. States Parties should also assure the full and effective implementation of such measures.

Boundaries for effective protection

99 The delineation of boundaries is an essential requirement in the establishment of effective protection of nominated properties. Boundaries should be drawn to ensure the full expression of the Outstanding Universal Value and the integrity and/or authenticity of the property.

100 For properties nominated under criteria (i) - (vi), boundaries should be drawn to include all those areas and attributes which are a direct tangible expression of the Outstanding Universal Value of the property, as well as those areas which in the light of future research possibilities offer potential to contribute to and enhance such understanding.

101 For properties nominated under criteria (vii) - (x), boundaries should reflect the spatial requirements of habitats, species, processes or phenomena that provide the basis for their inscription on the World Heritage List. The boundaries should include sufficient areas immediately adjacent to the area of Outstanding Universal Value in order to protect the

property's heritage values from direct effect of human encroachments and impacts of resource use outside of the nominated area.

102 The boundaries of the nominated property may coincide with one or more existing or proposed protected areas, such as national parks or nature reserves, biosphere reserves or protected historic districts. While such established areas for protection may contain several management zones, only some of those zones may satisfy criteria for inscription.

Buffer zones

103 Wherever necessary for the proper protection of the property, an adequate buffer zone should be provided.

104 For the purposes of effective protection of the nominated property, a buffer zone is an area surrounding the nominated property which has complementary legal and/or customary restrictions placed on its use and development to give an added layer of protection to the property. This should include the immediate setting of the nominated property, important views and other areas or attributes that are functionally important as a support to the property and its protection. The area constituting the buffer zone should be determined in each case through appropriate mechanisms. Details on the size, characteristics and authorized uses of a buffer zone, as well as a map indicating the precise boundaries of the property and its buffer zone, should be provided in the nomination.

105 A clear explanation of how the buffer zone protects the property should also be provided.

106 Where no buffer zone is proposed, the nomination should include a statement as to why a buffer zone is not required.

107 Although buffer zones are not part of the nominated property, any modifications to or creation of buffer zones subsequent to inscription of a property on the World Heritage List should be approved by the World Heritage Committee using the procedure for a minor boundary modification (see paragraph 164 and Annex 11). The creation of buffer zones subsequent to inscription is normally considered to be a minor boundary modification.

Management systems

108 Each nominated property should have an appropriate management plan or other documented management system which must specify how the Outstanding Universal Value of a property should be preserved, preferably through participatory means.

109 The purpose of a management system is to ensure the effective protection of the nominated property for present and future generations.

110 An effective management system depends on the type, characteristics and needs of the nominated property and its cultural and natural context. Management systems may vary

according to different cultural perspectives, the resources available and other factors. They may incorporate traditional practices, existing urban or regional planning instruments, and other planning control mechanisms, both formal and informal. Impact assessments for proposed interventions are essential for all World Heritage properties.

111 In recognizing the diversity mentioned above, common elements of an effective management system could include:

a) a thorough shared understanding of the property by all stakeholders;

b) a cycle of planning, implementation, monitoring, evaluation and feedback;

c) the monitoring and assessment of the impacts of trends, changes, and of proposed interventions;

d) the involvement of partners and stakeholders;

e) the allocation of necessary resources;

f) capacity-building; and

g) an accountable, transparent description of how the management system functions.

112 Effective management involves a cycle of short, medium and long-term actions to protect, conserve and present the nominated property. An integrated approach to planning and management is essential to guide the evolution of properties over time and to ensure maintenance of all aspects of their Outstanding Universal Value. This approach goes beyond the property to include any buffer zone(s), as well as the broader setting.

113 Moreover, in the context of the implementation of the *Convention,* the World Heritage Committee has established a process of Reactive Monitoring (see Chapter IV) and a process of Periodic Reporting (see Chapter V).

114 In the case of serial properties, a management system or mechanisms for ensuring the co-ordinated management of the separate components are essential and should be documented in the nomination (see paragraphs 137 – 139)

115 In some circumstances, a management plan or other management system may not be fully in place at the time when a property is nominated for the consideration of the World Heritage Committee. The State Party concerned should then indicate when the management plan or system will be fully in place, and how it proposes to mobilize the resources required to achieve this. The State Party should also provide documentation which will guide the management of the site until the management plan or system is finalized fully in place.

116 Where the intrinsic qualities of a property nominated are threatened by action of man and yet meet the criteria and the conditions of authenticity or integrity set out in paragraphs 78 - 95 an action plan outlining the corrective measures required should be submitted with the nomination file. Should the corrective measures submitted by the nominating State Party not be taken within the time proposed by the State Party, the property will be considered by the Committee for delisting in accordance with the procedure adopted by the Committee (see Chapter IV.C).

117 States Parties are responsible for implementing effective management activities for a World Heritage property. State Parties should do so in close collaboration with property managers, the agency with management authority and other partners, and stakeholders in property management.

118 The Committee recommends that States Parties include risk preparedness as an element in their World Heritage site management plans and training strategies.

Sustainable use

119 World Heritage properties may support a variety of ongoing and proposed uses that are ecologically and culturally sustainable and which may contribute to the quality of life of communities concerned. The State Party and its partners must ensure that such sustainable use or any other change does not impact adversely on the Outstanding Universal Value of the property. For some properties, human use would not be appropriate. Legislations, policies and strategies affecting World Heritage properties should ensure the protection of the Outstanding Universal Value, support the wider conservation of natural and cultural heritage, and promote and encourage the active participation of the communities and stakeholders concerned with the property as necessary conditions to its sustainable protection, conservation, management and presentation.

Appendix 3 Statement of Outstanding Universal Value, agreed June 2013

Property	Stonehenge, Avebury and Associated Sites
State Party	United Kingdom of Great Britain and Northern Ireland
Id. N°	373bis
Date of inscription	1986 – 2008

Brief synthesis

The World Heritage property Stonehenge, Avebury and Associated Sites is internationally important for its complexes of outstanding prehistoric monuments. Stonehenge is the most architecturally sophisticated prehistoric stone circle in the world, while Avebury is the largest. Together with inter-related monuments, and their associated landscapes, they demonstrate Neolithic and Bronze Age ceremonial and mortuary practices resulting from around 2000 years of continuous use and monument building between *circa* 3700 and 1600 BC. As such they represent a unique embodiment of our collective heritage.

The World Heritage property comprises two areas of Chalkland in southern Britain within which complexes of Neolithic and Bronze Age ceremonial and funerary monuments and associated sites were built. Each area contains a focal stone circle and henge and many other major monuments. At Stonehenge these include the Avenue, the Cursuses, Durrington Walls, Woodhenge, and the densest concentration of burial mounds in Britain. At Avebury they include Windmill Hill, the West Kennet Long Barrow, the Sanctuary, Silbury Hill, the West Kennet and Beckhampton Avenues, the West Kennet Palisaded Enclosures, and important barrows.

Stonehenge is one of the most impressive prehistoric megalithic monuments in the world on account of the sheer size of its megaliths, the sophistication of its concentric plan and architectural design, the shaping of the stones - uniquely using both Wiltshire Sarsen sandstone and Pembroke Bluestone - and the precision with which it was built.

At Avebury, the massive Henge, containing the largest prehistoric stone circle in the world, and Silbury Hill, the largest prehistoric mound in Europe, demonstrate the outstanding engineering skills which were used to create masterpieces of earthen and megalithic architecture.

There is an exceptional survival of prehistoric monuments and sites within the World Heritage property including settlements, burial grounds, and large constructions of earth and stone. Today, together with their settings, they form landscapes without parallel. These complexes would have been of major significance to those who created them, as is apparent by the huge investment of time and effort they represent. They provide an insight into the mortuary and ceremonial practices of the period, and are evidence of prehistoric technology, architecture and astronomy. The careful siting of monuments in relation to the landscape helps us to further understand the Neolithic and Bronze Age.

Criterion (i): The monuments of the Stonehenge, Avebury and Associated Sites demonstrate outstanding creative and technological achievements in prehistoric times.

Stonehenge is the most architecturally sophisticated prehistoric stone circle in the world. It is unrivalled in its design and unique engineering, featuring huge horizontal stone lintels capping the outer circle and the trilithons, locked together by carefully shaped joints. It is distinguished by the unique use of two different kinds of stones (Bluestones and Sarsens), their size (the largest weighing over 40 t) and the distance they were transported (up to 240 km). The sheer scale of some of the surrounding monuments is also remarkable: the Stonehenge Cursus and the Avenue are both about 3 km long, while Durrington Walls is the largest known henge in Britain, around 500 m in diameter, demonstrating the ability of prehistoric peoples to conceive, design and construct features of great size and complexity.

Avebury prehistoric stone circle is the largest in the world. The encircling henge consists of a huge bank and ditch 1.3 km in circumference, within which 180 local, unshaped standing stones formed the large outer and two smaller inner circles. Leading from two of its four entrances, the West Kennet and Beckhampton Avenues of parallel standing stones still connect it with other monuments in the landscape. Another outstanding monument, Silbury Hill, is the largest prehistoric mound in Europe. Built around 2400 BC, it stands 39.5 m high and comprises half a million tonnes of chalk. The purpose of this imposing, skilfully engineered monument remains obscure.

Criterion (ii): The World Heritage property provides an outstanding illustration of the evolution of monument construction and of the continual use and shaping of the landscape over more than 2000 years, from the early Neolithic to the Bronze Age. The monuments and landscape have had an unwavering influence on architects, artists, historians and archaeologists, and still retain a huge potential for future research.

The megalithic and earthen monuments of the World Heritage property demonstrate the shaping of the landscape through monument building for around 2000 years from *circa* 3700 BC, reflecting the importance and wide influence of both areas.

Since the 12th century when Stonehenge was considered one of the wonders of the world by the chroniclers Henry de Huntington and Geoffrey de Monmouth, the Stonehenge and Avebury Sites have excited curiosity and been the subject of study and speculation. Since early investigations by John Aubrey (1626-1697), Inigo Jones (1573-1652), and William Stukeley (1687-1765), they have had an unwavering influence on architects, archaeologists, artists and historians. The two parts of the World Heritage property provide an excellent opportunity for further research.

Today, the property has spiritual associations for some.

Criterion (iii): The complexes of monuments at Stonehenge and Avebury provide an exceptional insight into the funerary and ceremonial practices in Britain in the Neolithic and Bronze Age. Together with their settings and associated sites, they form landscapes without parallel.

The design, position and interrelationship of the monuments and sites are evidence of a wealthy and highly organised prehistoric society able to impose its concepts on the environment. An outstanding example is the alignment of the Stonehenge Avenue (probably a processional route) and Stonehenge stone circle on the axis of the midsummer sunrise and midwinter sunset, indicating their ceremonial and astronomical character. At Avebury the length and size of some of the features such as the West Kennet Avenue, which connects the Henge to the Sanctuary over 2 km away, are further evidence of this.

A profound insight into the changing mortuary culture of the periods is provided by the use of Stonehenge as a cremation cemetery, by the West Kennet Long Barrow, the largest known Neolithic stone-chambered collective tomb in southern England, and by the hundreds of other burial sites illustrating evolving funerary rites.

Integrity

The boundaries of the property capture the attributes that together convey Outstanding Universal Value at Stonehenge and Avebury. They contain the major Neolithic and Bronze Age monuments that exemplify the creative genius and technological skills for which the property is inscribed. The Avebury and Stonehenge landscapes are extensive, both being around 25 square kilometres, and capture the relationship between the monuments as well as their landscape setting.

At Avebury the boundary was extended in 2008 to include East Kennet Long Barrow and Fyfield Down with its extensive Bronze Age field system and naturally occurring Sarsen Stones. At Stonehenge the boundary will be reviewed to consider the possible inclusion of related, significant monuments nearby such as Robin Hood's Ball, a Neolithic causewayed enclosure.

The setting of some key monuments extends beyond the boundary. Provision of buffer zones or planning guidance based on a comprehensive setting study should be considered to protect the setting of both individual monuments and the overall setting of the property.

The survival of the Neolithic and Bronze Age monuments at both Stonehenge and Avebury is exceptional and remarkable given their age – they were built and used between around 3700 and 1600 BC. Stone and earth monuments retain their original design and materials. The timber structures have disappeared but postholes indicate their location. Monuments have been regularly maintained and repaired as necessary.

The presence of busy main roads going through the World Heritage property impacts adversely on its integrity.The roads sever the relationship between Stonehenge and its surrounding monuments, notably the A344 which separates the Stone Circle from the Avenue.At Avebury, roads cut through some key monuments including the Henge and the West Kennet Avenue. The A4 separates the Sanctuary from its barrow group at Overton Hill.

Roads and vehicles also cause damage to the fabric of some monuments while traffic noise and visual intrusion have a negative impact on their settings. The incremental impact of highway-related clutter needs to be carefully managed.

Development pressures are present and require careful management. Impacts from existing intrusive development should be mitigated where possible.

Authenticity

Interventions have been limited mainly to excavations and the re-erection of some fallen or buried stones to their known positions in the early and mid-twentieth century in order to improve understanding. Ploughing, burrowing animals and early excavation have resulted in some losses but what remains is remarkable in its completeness and concentration. The materials and substance of the archaeology supported by the archaeological archives continue to provide an authentic testimony to prehistoric technological and creative achievement.

This survival and the huge potential of buried archaeology make the property an extremely important resource for archaeological research, which continues to uncover new evidence and expand our understanding of prehistory. Present day research has enormously improved our understanding of the property.

The known principal monuments largely remain *in situ* and many are still dominant features in the rural landscape. Their form and design are well-preserved and visitors are easily able to appreciate their location, setting and interrelationships which in combination represent landscapes without parallel.

At Stonehenge several monuments have retained their alignment on the Solstice sunrise and sunset, including the Stone Circle, the Avenue, Woodhenge, and the Durrington Walls Southern Circle and its Avenue.

Although the original ceremonial use of the monuments is not known, they retain spiritual significance for some people, and many still gather at both stone circles to celebrate the Solstice and other observations. Stonehenge is known and valued by many more as the most famous prehistoric monument in the world.

There is a need to strengthen understanding of the overall relationship between remains, both buried and standing, at Stonehenge and at Avebury.

Protection and management requirements

The UK Government protects World Heritage properties in England in two ways: firstly, individual buildings, monuments and landscapes are designated under the Planning (Listed Buildings and Conservation Areas) Act 1990 and the 1979 Ancient Monuments and Archaeological Areas Act, and secondly through the UK Spatial Planning system under the provisions of the Town and Country Planning Acts. The individual sites within the property are

protected through the Government's designation of individual buildings, monuments, gardens and landscapes.

Government guidance on protecting the Historic Environment and World Heritage is set out in National Planning Policy Framework and Circular 07/09. Policies to protect, promote, conserve and enhance World Heritage properties, their settings and buffer zones are also found in statutory planning documents. The protection of the property and its setting from inappropriate development could be further strengthened through the adoption of a specific Supplementary Planning Document.

At a local level, the property is protected by the legal designation of all its principal monuments. There is a specific policy in the Local Development Framework to protect the Outstanding Universal Value of the property from inappropriate development, along with adequate references in relevant strategies and plans at all levels. The Wiltshire Core Strategy includes a specific World Heritage Property policy. This policy states that additional planning guidance will be produced to ensure its effective implementation and thereby the protection of the World Heritage property from inappropriate development. The policy also recognises the need to produce a setting study to enable this. Once the review of the Stonehenge boundary is completed, work on the setting study shall begin. The Local Planning Authority is responsible for continued protection through policy development and its effective implementation in deciding planning applications with the management plans for Stonehenge and Avebury as a key material consideration. These plans also take into account the range of other values relevant to the site in addition to Outstanding Universal Value. Avebury lies within the North Wessex Downs Area of Outstanding Natural Beauty, a national statutory designation to ensure the conservation and enhancement of the natural beauty of the landscape.

About a third of the property at both Stonehenge and Avebury is owned and managed by conservation bodies: English Heritage, a non-departmental government body, and the National Trust and the Royal Society for the Protection of Birds which are both charities. Agri-environment schemes, an example of partnership working between private landowners and Natural England (a non-departmental government body), are very important for protecting and enhancing the setting of prehistoric monuments through measures such as grass restoration and scrub control. Much of the property can be accessed through public rights of way as well as permissive paths and open access provided by some agri-environment schemes. Managed open access is provided at Solstice. There are a significant number of private households within the property and local residents therefore have an important role in its stewardship

The property has effective management plans, coordinators and steering groups at both Stonehenge and Avebury. There is a need for an overall integrated management system for the property which will be addressed by the establishment of a coordinating Stonehenge and Avebury Partnership Panel whilst retaining the Stonehenge and Avebury steering groups to enable specific local issues to be addressed and to maintain the meaningful engagement of the community. A single property management plan will replace the two separatemanagement plans.

An overall visitor management and interpretation strategy, together with a landscape strategy needs to be put in place to optimise access to and understanding of the property. This should include improved interpretation for visitors and the local community both on site and in local museums, holding collections excavated from the property as well as through publications and the web. These objectives are being addressed at Stonehenge through the development of a visitor centre and the Interpretation, Learning and Participation Strategy. The updated Management Plan will include a similar strategy for Avebury. Visitor management and sustainable tourism challenges and opportunities are addressed by specific objectives in both the Stonehenge and Avebury Management Plans.

An understanding of the overall relationship between buried and standing remains continues to be developed through research projects such as the "Between the Monuments" project and extensive geophysical surveys. Research Frameworks have been published for the Site and are regularly reviewed. These encourage further relevant research. The Woodland Strategy, an example of a landscape level management project, once complete, can be built on to include other elements of landscape scale planning.

It is important to maintain and enhance the improvements to monuments achieved through grass restoration and to avoid erosion of earthen monuments and buried archaeology through visitor pressure and burrowing animals.

At the time of inscription the State Party agreed to remove the A344 road to reunite Stonehenge and its Avenue and improve the setting of the Stone Circle. Work to deliver the closure of the A344 will be complete in 2013. The project also includes a new Stonehenge visitor centre. This will provide world class visitor facilities including interpretation of the wider World Heritage property landscape and the removal of modern clutter from the setting of the Stone Circle. Although substantial progress is being made, the impact of roads and traffic remains a major challenge in both parts of the World Heritage property. The A303 continues to have a negative impact on the setting of Stonehenge, the integrity of the property and visitor access to some parts of the wider landscape. A long-term solution remains to be found. At Avebury, a World Heritage Site Traffic Strategy will be developed to establish guidance and identify a holistic set of actions to address the negative impacts that the dominance of roads, traffic and related clutter has on integrity, the condition and setting of monuments and the ease and confidence with which visitors and the local community are able to explore the wider property.

Appendix 4: *Planning Policy Guidance 15: Planning and the Historic Environment* Extracts relating to World Heritage properties

2. Development Plans and Development Control

World Heritage Sites

2.22 Details of World Heritage Sites in England are given in paragraph 6.35. No additional statutory controls follow from the inclusion of a site in the World Heritage list. Inclusion does, however, highlight the outstanding international importance of the site as a key material consideration to be taken into account by local planning authorities in determining planning and listed building consent applications, and by the Secretary of State in determining cases on appeal or following call-in.

2.23 Each local authority concerned, taking account of World Heritage Site designation and other relevant statutory designations, should formulate specific planning policies for protecting these sites and include these policies in their development plans. Policies should reflect the fact that all these sites have been designated for their outstanding universal value, and they should place great weight on the need to protect them for the benefit of future generations as well as our own. Development proposals affecting these sites or their setting may be compatible with this objective, but should always be carefully scrutinised for their likely effect on the site or its setting in the longer term. Significant development proposals affecting World Heritage Sites will generally require formal environmental assessment, to ensure that their immediate impact and their implications for the longer term are fully evaluated (see paragraph 2.13 above).

6.35 The World Heritage Convention (adopted by UNESCO in 1972) was ratified by the United Kingdom in 1984. The Convention provides for the identification, protection, conservation and presentation of cultural and natural sites of outstanding universal value, and requires a World Heritage List to be established under the management of an inter-governmental World Heritage Committee, which is advised by the International Council on Monuments and Sites (ICOMOS) and the World Conservation Union (IUCN). Individual governments are responsible for the nomination of sites, and for ensuring the protection of sites which are inscribed in the List. There are, at present, ten World Heritage Sites in England :

Durham Cathedral and Castle
Fountains Abbey, St. Mary's Church and Studley Royal Park
Ironbridge Gorge
Stonehenge, Avebury and associated sites
Blenheim Palace and Park Palace of Westminster and Westminster Abbey
City of Bath
Hadrian's Wall Military Zone
The Tower of London
Canterbury Cathedral (with St. Augustine's Abbey and St. Martin's Church).

6.36 Full details of the operation of the World Heritage Convention, including the selection criteria for cultural and natural sites, are contained in the *Operational Guidelines for the Implementation of the World Heritage Convention*.

6.37 The significance of World Heritage designation for local authorities' exercise of planning controls is set out in section 2 (paragraphs 2.22-2.23). Local planning authorities are also encouraged to work with owners and managers of World Heritage Sites in their areas, and with other agencies, to ensure that comprehensive management plans are in place. These plans should:

- appraise the significance and condition of the site;
- ensure the physical conservation of the site to the highest standards;
- protect the site and its setting from damaging development;
- provide clear policies for tourism as it may affect the site.

ICOMOS can provide advice and assistance in carrying forward this work.

Appendix 5: National Planning Policy Guidance and Planning Practice Guidance Extracts relating to World Heritage properties

National Planning Policy Framework:

132. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.

133. Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- the nature of the heritage asset prevents all reasonable uses of the site; and
- no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and
- conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and
- the harm or loss is outweighed by the benefit of bringing the site back into use.

134. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

135. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

136. Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

137. Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably.

138. Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 133 or less than substantial harm under paragraph 134, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.

144. When determining planning applications [for mineral extraction], local planning authorities should:

- give great weight to the benefits of the mineral extraction, including to the economy;
- as far as is practical, provide for the maintenance of landbanks of non-energy minerals from outside National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage sites, Scheduled Monuments and Conservation Areas;
- ensure, in granting planning permission for mineral development, that there are no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety, and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality;
- ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source,31 and establish appropriate noise limits for extraction in proximity to noise sensitive properties;
- not grant planning permission for peat extraction from new or extended sites;
- provide for restoration and aftercare at the earliest opportunity to be carried out to high environmental standards, through the application of appropriate conditions, where necessary. Bonds or other financial guarantees to underpin planning conditions should only be sought in exceptional circumstances;
- not normally permit other development proposals in mineral safeguarding areas where they might constrain potential future use for these purposes;
- consider how to meet any demand for small-scale extraction of building stone at, or close to, relic quarries needed for the repair of heritage assets, taking account of the need to protect designated sites; and
- recognise the small-scale nature and impact of building and roofing stone quarries, and the need for a flexible approach to the potentially long duration of planning permissions reflecting the intermittent or low rate of working at many sites.

Annex 2: Glossary

Designated heritage asset: A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.

Planning Practice Guidance

How are World Heritage Sites protected and managed in England?

England protects its World Heritage Sites and their settings, including any buffer zones or equivalent, through the statutory designation process and through the planning system.

The Outstanding Universal Value of a World Heritage Site, set out in a Statement of Outstanding Universal Value, indicates its importance as a heritage asset of the highest significance to be taken into account by:

- the relevant authorities in plan-making, determining planning and related consents (including listed building consent, development consent and Transport and Works Act Orders)
- and by the Secretary of State in determining such cases on appeal or following call in

Effective management of World Heritage Sites involves the identification and promotion of positive change that will conserve and enhance their Outstanding Universal Value, authenticity, integrity and with the modification or mitigation of changes which have a negative impact on those values.

How is the importance of World Heritage Sites reflected in the National Planning Policy Framework?

World Heritage Sites are defined as designated heritage assets in the National Planning Policy Framework. The National Planning Policy Framework sets out detailed policies for the conservation and enhancement of the historic environment, including World Heritage Sites, through both plan-making and decision-taking.

Further guidance on World Heritage Sites.

Related policy:

National Planning Policy Framework

- Annex 2 – Glossary

4. Further guidance on World Heritage Sites

Further guidance on World Heritage Sites

Why are World Heritage Sites important?

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Committee inscribes World Heritage Properties onto its World Heritage List for their Outstanding Universal Value – *cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity*. World Heritage Properties are referred to in the National Planning Policy Framework and in this guidance as 'World Heritage Sites' and are defined as designated heritage assets in the National Planning Policy Framework.

The Government is a State Party to the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage (known as the World Heritage Convention) and it was ratified by the UK in 1984.

How is the importance of each Site recognised internationally?

A Statement of Outstanding Universal Value is agreed and adopted by the World Heritage Committee for each Site on inscription. The Statement sets out what the World Heritage Committee considers to be of Outstanding Universal Value about the Site in relation to the World Heritage Convention and includes statements of integrity and, in relation to cultural sites or the cultural aspects of 'mixed' Sites, authenticity, and the requirements for protection and management.

Statements of Outstanding Universal Value are key reference documents for the protection and management of each Site and can only be amended or altered by the World Heritage Committee.

How many World Heritage Sites are there and where are they?

There are currently 17 cultural World Heritage Sites wholly or partly in England and one natural World Heritage Site. Details of each can be found on the National Heritage List for England available on the English Heritage website.

How does the terminology used by UNESCO relate to the policies of the National Planning Policy Framework?

The international policies concerning World Heritage Sites use different terminology to that in the National Planning Policy Framework. World Heritage Sites are inscribed for their 'Outstanding Universal Value' and each World Heritage Site has defined its 'attributes and components' the tangible remains, visual and cultural links that embody that value. The cultural heritage within the description of the Outstanding Universal Value will be part of the World Heritage Site's heritage significance and National Planning Policy Framework policies will apply to the Outstanding Universal Value as they do to any other heritage significance they hold. As the National Planning Policy Framework makes clear, the significance of the designated heritage asset derives not only from its physical presence, but also from its setting.

What principles should inform the development of a positive strategy for the conservation and enjoyment of World Heritage Sites?

In line with the National Planning Policy Framework, policy frameworks at all levels should conserve the Outstanding Universal Value, integrity and authenticity (where relevant for cultural or 'mixed' sites) of each World Heritage Site and its setting, including any buffer zone or equivalent. World Heritage Sites are designated heritage assets of the highest significance. Appropriate policies for the protection and sustainable use of World Heritage Sites, including enhancement where

appropriate, should be included in relevant plans. These policies should take account of international and national requirements as well as specific local circumstances.

When developing Local Plan policies to protect and enhance World Heritage Sites and their Outstanding Universal Value, local planning authorities, should aim to satisfy the following principles:

- protecting the World Heritage Site and its setting, including any buffer zone, from inappropriate development
- striking a balance between the needs of conservation, biodiversity, access, the interests of the local community, the public benefits of a development and the sustainable economic use of the World Heritage Site in its setting, including any buffer zone
- protecting a World Heritage Site from the effect of changes which are relatively minor but which, on a cumulative basis, could have a significant effect
- enhancing the World Heritage Site and its setting where appropriate and possible through positive management
- protecting the World Heritage Site from climate change but ensuring that mitigation and adaptation is not at the expense of integrity or authenticity

Planning authorities need to take these principles and the resultant policies into account when making decisions.

<u>How is the setting of a World Heritage Site protected?</u>

The UNESCO *Operational Guidelines* seek protection of "the immediate setting" of each World Heritage Site, of "important views and other areas or attributes that are functionally important as a support to the Property" and suggest designation of a buffer zone wherever this may be necessary. A buffer zone is defined as an area surrounding the World Heritage Site which has complementary legal restrictions placed on its use and development to give an added layer of protection to the World Heritage Site. The buffer zone forms part of the setting of the World Heritage Site.

It may be appropriate to protect the setting of World Heritage Sites in other ways, for example by the protection of specific views and viewpoints. Other landscape designations may also prove effective in protecting the setting of a World Heritage Site. However it is intended to protect the setting, it will be essential to explain how this is to be done in the Local Plan.

Decisions on buffer zones are made on a case by case basis at the time of nomination and reviewed subsequently through the World Heritage Site Management Plan review process. Proposals to add or amend buffer zones following inscription are submitted by government for approval by the World Heritage Committee who will consider and adopt the proposals as appropriate.

<u>What are World Heritage Site management plans?</u>

Each World Heritage Site has a management plan which contains both long term and day to day actions to protect, conserve and present the Site. Steering Groups, made up of key representatives from a range of national and local bodies, are responsible for the formulation and implementation of

the plan, and public consultation at key stages of its development. The relevant planning authority will often lead the Steering Group.

Management plans need to be developed in a participatory way, fully involving all interested parties and in particular those responsible for managing, owning or administering the Site. Each plan should be attuned to the particular characteristics and needs of the site and incorporate sustainable development principles. Each plan will:

- contain the location and Site boundary details
- specify how the Outstanding Universal Value, authenticity and integrity of each site is to be maintained
- identify attributes
- examine issues affecting its conservation and enjoyment

Management plans will usually cover topics such as its boundaries, development, tourism, interpretation, education and transport.

Given their importance in helping to sustain and enhance the significance of the World Heritage Site, relevant policies in management plans need to be taken into account by local planning authorities in developing their strategy for the historic or natural environment (as appropriate) and in determining relevant planning applications.

<u>What approach should be taken to assessing the impact of development on World Heritage Sites?</u>

Applicants proposing change that might affect the Outstanding Universal Value, integrity and, where applicable, authenticity of a World Heritage Site through development within the Site or affecting its setting or buffer zone (or equivalent) need to submit sufficient information with their applications to enable assessment of impact on Outstanding Universal Value. This may include visual impact assessments, archaeological data or historical information. In many cases this will form part of an Environment Statement. Applicants may find it helpful to use the approach set out in the International Council on Monuments and Sites's *Heritage Impact Assessment* guidelines and English Heritage's guidance on setting and views.

World Heritage Sites are 'sensitive areas' for the purposes of determining if an Environmental Impact Assessment is required for a particular development proposal. Lower development size thresholds apply to the requirement for Design and Access Statements within World Heritage Sites as compared with the norm.

<u>What consultation is required in relation to proposals that affect a World Heritage Site?</u>

The World Heritage Committee Operational Guidelines ask governments to inform it at an early stage of proposals that may affect the Outstanding Universal Value of the Site and "before making any decisions that would be difficult to reverse, so that the Committee may assist in seeking appropriate solutions to ensure that the Outstanding Universal Value is fully preserved". Therefore, it would be very helpful if planning authorities could consult English Heritage (for cultural Sites) or

Natural England (for natural Sites) and Department for Culture, Media and Sport (DCMS) at an early stage and preferably pre-application.
Planning authorities are required to consult the Secretary of State for Communities and Local Government before approving any planning application to which English Heritage maintains an objection and which would have an adverse impact on the Outstanding Universal Value, integrity, authenticity and significance of a World Heritage Site or its setting, including any buffer zone or its equivalent. The Secretary of State then has the discretion as to whether to call-in the application for his/her own determination. Further information on the Secretary of State's involvement in deciding an application can be found in Determining a planning application section of guidance.

Are permitted development rights restricted in World Heritage Sites?

World Heritage Sites are defined as Article 1(5) land in the Town and Country Planning (General Permitted Development) Order 1995. This means that certain permitted development rights are restricted within the Site. Planning authorities can restrict further development by using article 4 and article 7 (minerals operations) directions under the 1995 Order.

Where can I find further information about World Heritage Sites?

Further information on World Heritage Sites can be found on the Department for Culture, Media and Sport's website and on the UNESCO website.

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Stonehenge A303 improvement: outline assessment of the impacts on the Outstanding Universal Value of the World Heritage property of potential route options presented by Highways England for January 2017

Nicola Snashall BA MA PhD MCIfA
National Trust

Christopher Young BA MA DPhil FSA
Christopher Young Heritage Consultancy

January 2017

Historic England

National Trust

Executive Summary

Introduction

In 2014, English Heritage (now Historic England) and the National Trust commissioned an assessment (Snashall, Young 2014) on the potential impact of new road options, including a tunnel, for the A303 within the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property. Since at that time, there were no detailed proposals, that report considered four possible alternatives and concluded that, of these, an off-line route with a tunnel of 2.9kms length would be the most deliverable solution.

The government remains committed to improving the A303 and to funding sufficient for a tunnel of at least 2.9kms length within the World Heritage property. Highways England are consulting in early 2017 on route options developed since 2014 for this road scheme through the World Heritage property and bypassing Winterbourne Stoke village to the west. This report is an outline assessment of these initial options on the Outstanding Universal Value (OUV) of the World Heritage property. It has been commissioned to assess the impact of the latest road options in the light of updated archaeological information. Major changes in archaeological knowledge since 2014 relating to attributes of OUV of the World Heritage property are summarised in Chapter 2, together with any other relevant changes in the context of the current proposals. Chapter 3 describes the methodology used. Chapter 4 briefly describes the latest road options as far as they are developed and sets out the approach we have adopted. This is followed by the actual assessment of the non-physical impacts of the road options. Chapter 5 assesses the physical impact and a final chapter draws overall conclusions on the likely impact of the options presented and discusses possible mitigation measures. This assessment is still outline and provisional since detailed design of the scheme has not yet been developed at this stage of the Highways England process. It is part of an iterative process design and assessment, and its purpose is to inform Historic England and the National Trust in their consideration of current proposals and their discussions with Highways England.

Based on a number of assumptions, Highways England has proposed a route which would cross the A345 by flyover with grade separated junction at Countess Roundabout. It would enter a tunnel east of the line of the Avenue. The western portal of the tunnel would be south of Normanton Gorse and closer to the Normanton Down Barrow Group than the offline route evaluated in 2014. From the western portal, Highways England is considering two alignments. Both would run through the Diamond copse. D061 would run on a more northerly alignment, crossing the A360 some 700m south of Long Barrow Crossroads. D062 would have a more southerly alignment crossing the A360 at a lower point at the Park. For both routes, the surface sections would be constructed at grade. The A360 would be crossed by a flyover for either the A303 or the A360. This would be 8m high. There would also be a grade separated junction, location to be determined.

Changes in context since 2014

This report reviews changes in the wider context since our last preliminary assessment in 2014 (Chapter 2). It notes that the ICOMOS/ UNESCO Advisory Mission in October 2015 considered that the scheme could have beneficial impacts on the OUV of the World Heritage property, but also noted that *the siting and design of the tunnel portals, approach cuttings, embankments, entry/ exit ramps, mitigation measures and the temporary construction works have the potential to adversely impact OUV* (ICOMOS/ UNESCO 2016, 24).

Since 2014, further archaeological work has been carried out by Historic England as part of their investigation of the southern part of the World Heritage property. Wessex Archaeology have also undertaken assessment and evaluation for Highways England. The most significant results relevant to the OUV of the World Heritage property and that could be impacted by the scheme have been the discovery/ confirmation of the existence of two long barrows and a hengiform monument in the area around the Diamond copse. This has led us to recognise a new key attribute group for this assessment, the Diamond group, located north and west of the Diamond. We have also recognised that the boundaries of the Normanton Down Barrow Group were drawn too tightly for our 2014 assessment. We have extended its boundaries to include Normanton Gorse itself, the Sun Barrow north of that wood, and the unnamed barrow group divided by the current A303 (see Fig. 2 for all key attribute groups).

Methodology

For comparative purposes, potential impacts have been assessed using the same methodology as last time, based on the 2011 ICOMOS Guidance on Heritage Impact Assessment (ICOMOS 2011) (Chapter 3). Separate assessments were carried out for visual and other impacts, looking in detail at the impact of the road proposals on the relationships between key attribute groups (Chapter 4) and for direct physical impacts on physical attributes (Chapter 5). We have also assessed the impact of the proposals on each of the seven principal attributes of OUV (see list on p.7) and on integrity and authenticity of the World Heritage property. Evidence for these evaluations is set out in a series of tables and overall conclusions are discussed in Chapter 6.

This study builds on the work carried out in 2014 by the same authors (Snashall, Young 2014) in assessing options for a bored tunnel solution in the World Heritage property. As far as possible information from that report has not been duplicated here, and this new assessment should be read in conjunction with the earlier report. The earlier report contains additional information on the World Heritage property and fully considers the broader policy context and guidance affecting World Heritage properties. It also contains the initial assessment of the benchmark 4.5kms tunnel and the four options evaluated at the time. These are not repeated in this report.

Conclusions

The starting point for any assessment is the impact of the current A303 and new proposals need to be evaluated against this baseline. The 2014 report established that the current A303 has a severe adverse impact on the OUV of the World Heritage property.

Both the options presented by Highways England (D061 (1) and D062 (1)) would have a less adverse impact than the current situation. On the basis of present knowledge, there would be no direct physical impacts from either option, though further archaeological work would be required to confirm this. The flyover and grade-separated junction with the A345 would have adverse local impacts but not on key attribute groups. At the east end, moving the tunnel portal east of the Avenue is highly beneficial and the impact of the road east of King Barrow Ridge and Coneybury Hill would be greatly reduced. In the central part of the World Heritage property the adverse impacts of the current A303 would be removed entirely except possibly for some distant views from King Barrow Ridge and Coneybury Hill of the surface stretches of road beyond Normanton Gorse.

However, there are issues around the location of the western portal and the surface stretches of road from there to the western boundary of the World Heritage property as currently presented.

Physically D061 (all variants) splits the Diamond key attributes group. The western portal is very close to the Normanton Down Barrow Group while both surface routes have adverse visual and aural impacts on the surrounding Winterbourne Stoke, Normanton Down , Lake and Diamond Groups (nearly a quarter of the identified key attribute groups). Crossing of the A360 is achieved by a bridge 8m high, either of the A303 over the A360 or vice versa, with a grade separated junction. Both alignments (D061 (1) and D062 (1)) are unacceptable in this form.

The 2015 ICOMOS/ UNESCO mission, quoted earlier in this summary, specifically drew attention to the potential for the surface parts of any scheme to have an adverse impact on OUV. Mitigation west of Normanton Down Barrow Group is essential and we have therefore considered five further options for each route (D061 (2-6) and D062 (2-6)) in addition to the Highways England options, considered as D061 (1) and D062 (1).

Both the D061 (1) and D062 (1) routes could be mitigated, and impact on the four western barrow groups reduced by greater concealment of the road by placing it in cutting, crossing the A360 by means of an underpass and by placing any junction with the A360 to the west of the existing line of the A360 (D061 (2) and D062 (2)). Further mitigation would be achieved by moving the apparent western exit from the tunnel by construction of a landbridge/ canopy which reflects the existing landform (D061 (3) – (6) D062 (3) – (6)). This would have the effects of moving the apparent exit away from the Normanton Down Barrow Group, and also of shortening the amount of road visible in the western part of the World Heritage property. The most effective mitigation would be achieved by D061 (6) and D062 (6). However, even in that scenario D061 (all variants) would still divide the Diamond Group, which would be unacceptable.

It has not been possible or appropriate in this report to carry out a full Heritage Impact Assessment of the new proposed route for the A303, since the available information is only in outline. We have had to make a number of assumptions (outlined in Chapter 4) in order to make this assessment. It would in any case be the responsibility of Highways England as the scheme promoter to produce a full Heritage Impact Assessment as an integral part of an iterative design process (as called for by the ICOMOS and UNESCO Advisory Mission). This would allow the scheme to respond to and accommodate further developments in archaeological understanding, and produce a final scheme which ensures the protection of the OUV of the World Heritage property.

Contents

Chapter 1 Introduction

This assessment of the potential impact of road proposals on the Outstanding Universal Value (OUV) of the Stonehenge component of the Stonehenge, Avebury and Associated Sites World Heritage property has been commissioned by Historic England and the National Trust to inform them in their consideration of new road scheme options being developed by Highways England, (D061 (1) and D062 (1)) and in the light of updated archaeological information. This study builds on the work carried out in 2014 by the same authors (Snashall, Young 2014) in assessing options for a bored tunnel solution in the World Heritage property. As far as possible information from that report has not been duplicated here, and this new assessment should be read in conjunction with the earlier report. The earlier report contains additional information on the World Heritage property and fully considers the broader policy context and guidance affecting World Heritage properties. It also contains the initial assessment of the benchmark 4.5kms tunnel and the four options evaluated at the time. These are not repeated in this report.

The 2014 study examined options for improvements to the A303 through the Stonehenge part of the World Heritage property. Assessment covered both direct and indirect physical impacts on the attributes of OUV (including archaeology and visual impact), integrity and authenticity. Since at that time Highways England had not begun work on a route for the A303, it took the form of an assessment of four possible scenarios. These were:

1. Published Scheme on the line of the present A303 with a 2.1kms tunnel, which was the subject of a Public Inquiry in 2004
2. On-line road with 2.5kms tunnel
3. On-line road with 2.9kms tunnel
4. Off line road with 2.9kms tunnel. The eastern portal was proposed on the line of the A303 200m to the east of the top of King Barrow Ridge. Its western portal was c.500m south of the current A303; new dual carriageway then ran in cutting to the western boundary of the World Heritage property, crossing under the A360 some 700m south of Long Barrow Cross Roads.

In addition, it assessed the impact of the existing A303 since this is the baseline for evaluating new road options. It also evaluated the impact of a hypothetical 4.5kms tunnel, proposed by objectors at the 2004 Public Inquiry, as a benchmark. The assessment was based on archaeological knowledge at that time and on a series of assumptions about where a road with tunnel could be constructed and how this might be done.

The conclusion of the 2014 study was that the current A303 has a major adverse impact of very large impact on the OUV, including integrity and authenticity, of the World Heritage property. The 4.5kms tunnel would have a major beneficial impact of very large significance. The Published Scheme for a 2.1kms tunnel could be rated as having a negligible beneficial impact of slight significance. The remaining three options for bored tunnels were rated as having a moderate beneficial impact of large/ very large significance.

Within the ICOMOS HIA methodology (see Chapter 3 below), it was difficult to differentiate the impact of these three bored tunnels on the OUV of the property as a whole. It was possible to

achieve some differentiation by examining the detailed impacts on individual physical attributes. In particular, the four tunnel options affected the Winterbourne Stoke Barrow Group to differing extents by reason of their proximity to the group, by the length of new dual carriageway close to the Group, and by their impact on views to and from the Winterbourne Stoke Group from other physical attributes of OUV, particularly in western parts of the property.

On the basis of the information then to hand the 2.9kms offline tunnel had the most beneficial impact on the World Heritage property, provided that the new road was not too intrusive in views from Lake Barrow Group to Winterbourne Stoke Barrow Group. The next best alternative would be the 2.9kms tunnel online option, followed by the 2.5km option. (Snashall, Young 2014, 76)

Since then, further assessment work has been carried out on the archaeology of the potential road corridor, and Highways England have developed their initial options for a scheme including a tunnel of at least 2.9kms length (D061 (1) and D062 (1)). The east portal is located to the east of the Avenue while the western portal is closer to the Normanton Down Barrow Group than any of the options previously considered. The new dual carriageway in the western part of the property would run at grade and there would be a flyover of 8m high where the two roads crossed. There are two possible routes from the western portal to the A360.

This present report has been commissioned to assess the impact of the latest road options in the light of updated archaeological information. Major changes in archaeological knowledge relating to attributes of OUV of the World Heritage property are summarised in Chapter 2, together with any other relevant changes in the context of the current proposals. Chapter 3 describes the methodology used. Chapter 4 briefly describes the latest road options as far as they are developed and sets out the approach we have adopted. This is followed by the actual assessment of the non-physical impacts of the road options. Chapter 5 assesses the physical impact and a final chapter draws overall conclusions on the likely impact of the options presented and discusses possible mitigation measures. This assessment is still outline and provisional since detailed design of the scheme has not yet been developed at this stage of the Highways England process.

It must be stressed that a full impact assessment, fully compliant with the ICOMOS guidance and with EU and UK regulations for Environmental Impact Assessment (EIA) would be a much larger piece of work. It would require much more supporting material such as a full description of the Stonehenge component of the World Heritage property with a gazetteer of all the sites considered. There would also need to be a much more thorough and detailed analysis of impacts on relationships. This study is an outline assessment intended for the National Trust and Historic England to inform their response to Highways England. It is in no way a full OUV impact assessment which remains to be done in the future, and which will be prepared by Highways England as the scheme promoters.

Chapter 2 Changes in the context

The wider policy context was set out in Chapter 4 of the 2014 report (Snashall and Young 2014, 14 - 25). Government policies on spatial planning and its road programme have not changed significantly since then. Government remains committed to improving the A303 as a major link to the South-West. It has committed funds sufficient for a tunnel at least 2.9kms in length as part of resolving the bottleneck at Stonehenge by dualling the road through the World Heritage property. The government is also committed through its ratification of the World Heritage Convention to the protection of its World Heritage properties 'to the utmost of its own resources' (UNESCO 1972, Article 4). The National Trust and Historic England remain committed to working with Highways England to ensure that what is proposed is appropriate within the provisions of the World Heritage Convention.

There have been three significant developments in the context of the A303 proposals since 2014.

The UK government has involved ICOMOS International and the secretariat of the Convention (the World Heritage Centre) in the planning process for the A303 through invitation of an Advisory Mission which visited the site in October 2015 and published its report in Spring 2016. The mission made a number of important recommendations and concluded:

The mission considers that the project for the relocation of the existing road underground into a "tunnel of at least 2.9k" could readily adopt appropriate well-established construction methods and spatial planning approaches. Hence, with good design and construction controls, and respecting essential archaeological and heritage management measures, the tunnelled length of the road would be expected to have a beneficial impact on the attributes of Outstanding Universal Value (OUV). However, the siting and design of the tunnel portals, approach cuttings/embankments, entry/exit ramps, mitigation measures and the temporary construction works have the potential to adversely impact OUV. These latter aspects of the scheme, in particular, will require rigorous investigation, evaluation, iterative design and assessment if they are to protect the attributes of OUV within the World Heritage site and the surrounding Archaeological Priority Area (APA). (ICOMOS/ UNESCO 2016, 24)

It is planned for there to be further Advisory Missions which should provide a helpful international perspective on the development of proposals for the road.

A considerable amount of archaeological investigation has been carried out since the last report in 2014. This has involved both non-intrusive survey, mainly geophysical prospection, and also some excavation. Work has taken place around the possible location of both portals and on areas that could be affected by new road construction outside the tunnel. This work has been carried out directly by Historic England (as part of a wider programme of archaeological survey and investigation of the portion of the World Heritage property south of the A303) or commissioned by Highways England and carried out by Wessex Archaeology who have long experience of working within the World Heritage property, much of it on the evaluation of road-related proposals.

Relevant work includes:

- Multi-disciplinary archaeological survey and investigation by Historic England as phase 1 of the Stonehenge World Heritage property Southern Landscape Survey. Elements include:
    - Desk-based assessment
    - Aerial Investigation and Mapping
    - Geophysical Surveys
    - Small-scale archaeological investigation

- Archaeological assessment and evaluation undertaken by Wessex Archaeology for Highways England along the potential footprint of aspects of the "working assumption" route for a twin-bored tunnel scheme. Elements include:
    - Extensive geophysical surveys, including both east and west portal locations
    - Archaeological evaluation of the potential western portal location and part of the potential route of the new surface dual carriageway leading from the western portal to the western border of the World Heritage property.

The principal results affecting the assessment of the potential impact of the road scheme are the identification of two Neolithic long barrows and a middle Neolithic hengiform monument in the area adjacent to the Diamond close to the proposed road line from the western portal to the western boundary of the World Heritage property. This has caused us to identify a further key group of monuments including the long barrows and the hengiform north and west of the Diamond and named as the Diamond Group (see Fig. 2 and further below p.8)**.**

The third major change in context is that Highways England will consult in early 2017 on proposed route options for the A303 from Amesbury to Berwick Down, which include revised alignments to avoid the significant Neolithic archaeology noted above. These routes within the World Heritage property are the subject of this outline assessment. They are both off-line from the present route of the A303 and include a tunnel with its eastern portal to the east of the Avenue and its western portal south of Normanton Gorse (Fig. 3). There are two potential alignments from the western portal to the western boundary of the World Heritage property that runs along the A360. The details of the routes are further described in Chapter 4 below.

Chapter 3 Methodology

The evaluation is divided into an assessment of permanent direct and indirect impacts of new road construction resulting in physical loss of the whole or part of archaeological sites and monuments which are attributes of the OUV of the World Heritage property, and of the non-physical impacts on attributes of OUV. This study looks solely at the implications for the World Heritage property. It concentrates on the impact on attributes of OUV and therefore on the property's international values. It does not focus on impacts on cultural heritage of national or local significance except insofar as these also have international significance. It is beyond the study's scope to examine any wider implications, such as, for example, the Winterbourne Stoke bypass or other improvements further west. These clearly will need to be borne in mind both for their impact on heritage assets, natural or cultural, of national or local significance.

Impact assessment

It has not been possible in this report to carry out a full Heritage Impact Assessment of the new proposed route for the A303, since the available information is only in outline. We have had to make a number of assumptions (outlined in Chapter 4) in order to make this assessment. It would in any case be the responsibility of Highways England as the scheme promoter to produce a full Heritage Impact Assessment. This report is intended to inform the position of Historic England and the National Trust in their response to Highways England and their discussions with other key stakeholders.

The basic methodology used has been that recommended in the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011). This has effectively been endorsed by the UNESCO World Heritage Committee through various decisions and therefore provides a model likely to be acceptable to them. It is also similar to the methodology developed in the Highways Agency *Design Manual for Roads and Bridges* which has been tried and tested in England, not least at Stonehenge. One of the key aspects of the ICOMOS methodology is that the impact on OUV has to be assessed as a whole and not atomised into impact on individual attributes which can be misleading. However, in order to reach such an overall assessment it is still necessary to assess impact on individual attributes as the basis for the final conclusions.

Essentially we have focused on the key elements of the ICOMOS HIA methodology:

- Identification of heritage potentially at risk and its contribution to the OUV of the property
- How change or development will impact on OUV, positively or negatively
- How change or development will impact on integrity and authenticity, positively or negatively
- Consideration of how adverse impacts of the scheme might be mitigated

The ICOMOS methodology postulates a scale of values for attributes of:

- Very high
- High
- Medium
- Low
- Negligible
- Unknown

All attributes of OUV considered in this case have been ranked as 'Very High' because they are by definition of international significance.

Impact on these has been scored according to the ICOMOS methodology. The scale of impact of proposed changes has been ranked as:

- No change
- Negligible change
- Minor change
- Moderate change
- Major change

Change can be adverse or beneficial. This gives a nine-point scale with 'neutral' as its central point:

- Major beneficial
- Moderate beneficial
- Minor beneficial
- Negligible beneficial
- Neutral
- Negligible adverse
- Minor adverse
- Moderate adverse
- Major adverse

The significance of the impact of the change is scored as a function of the importance of the attribute and the scale of change. For any feature of international significance (i.e. World Heritage properties and their attributes of OUV) the result of this scoring is as follows:

VALUE OF HERITAGE ASSET	**SCALE & SEVERITY OF CHANGE/IMPACT**				
	No change	**Negligible change**	**Minor change**	**Moderate change**	**Major change**
For WH properties Very High – attributes which convey OUV	**SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OR BENEFICIAL)**				
	Neutral	Slight	Moderate/ Large	Large/very Large	Very Large

Fig 1: significance of impacts on World Heritage properties and their attributes (ICOMOS 2011, 9)

According to the ICOMOS HIA Guidance, therefore, any moderate or major impact on an attribute of OUV results in a large or very large beneficial or adverse impact.

This is an unusual HIA in that the property is already affected by a large/ very large adverse impact on its OUV in the form of the present A303, which is to be replaced by the new road. Any reduction of this impact would lessen this damage, though large/ very large adverse impacts to individual

attributes could remain and additional adverse impacts might also be introduced in some instances. The removal of an adverse impact from any attribute so that it no longer exists in the new situation is in fact a positive impact on that attribute and needs to be recorded as such.

This assessment has been carried out for each physical attribute selected for examination in this study. Following that process, it has been necessary to aggregate the results to give an overall assessment of impact on the OUV of the Stonehenge part of the World Heritage property as a whole. This has inevitably involved the use of professional judgement, particularly as gains in one part of the World Heritage property may be accompanied by losses in another.

OUV has been agreed for the whole World Heritage property and attributes were first defined for the Stonehenge component in the 2009 Management Plan which was endorsed by all the key stakeholders (English Heritage 2009a pp28-33). The seven identified attributes, all securely based in the agreed Statement of Outstanding Universal Value (see Appendix 2), are:

1. Stonehenge itself as a globally famous and iconic monument.
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.
3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.
5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.
6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.
7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

The first two of these are physical attributes consisting of surviving archaeological sites above or below ground. No. 6 singles out the landscape formed by the interrelationship of the physical attributes with their natural environment and thus applies holistically to the whole property. It relates closely to the integrity of the property. Nos. 3 and 5 are about the relationships of the individual physical attributes with the landscape and with each other. No. 4 deals with astronomical alignments and is therefore also about relationships of the physical attributes, in this case with beliefs and their physical expression. No. 7 is about the influence of the physical attributes and their relationships, particularly in the landscape, on artists, architects and other disciplines.

Integrity and authenticity are also deemed by the UNESCO World Heritage Committee to be part of the OUV of the property. The impact of the A303 as it is now, and the changes in that impact on integrity and authenticity resulting from the various bored tunnel options must also be assessed (see pp.52 - 54 below).

The present A303 was assessed in 2014 for its impact on those attributes selected for assessment, supported by field visits as necessary and as time permitted. The scale and system used for measuring impact was that recommended by ICOMOS, as was that used for grading assets. Following that, the same process was applied for the impact of a 4.5kms tunnel. These provided the baseline and a benchmark (one negative and one beneficial) of potential impact of the A303 on the OUV of the World Heritage property. The same process was then applied to the four bored tunnel scenarios provided by English Heritage and the National Trust. Only the impact of permanent changes was assessed. These assessments formed the basis for the 2014 report (Snashall, Young 2014) and the assessment of the impact of the present A303 has been used again in this report as the baseline against which to measure the impacts of the new options (see Chapters 4 and 5).

There are approaching 700 known archaeological sites and monuments within the Stonehenge component of the World Heritage property (Wessex Archaeology 2012). Many of these are physical attributes of the OUV of the site, as the physical remains of Neolithic and Bronze Age funerary and ceremonial monuments and associated sites. They are also parts of other attributes dealing with relationships between them and their landscape. Many of them are now in view of the A303, and/or interlinkages between them are now affected by the A303. Because this is only an outline assessment to inform the position of Historic England and the National Trust, we have not attempted to assess every impact and in any case the design is not yet at a stage to allow such a detailed evaluation.

Non-Physical Impacts

For the part of the study not dealing with the physical impact of new road construction on archaeology we have attempted an assessment of key groups of attributes of OUV (see Chapter 4) with the main focus on visual relationships (Attributes 3, 5, 6). This was addressed in 2014 by selecting 17 key groups of attributes, such as barrow groups and Stonehenge itself, whose relationships are affected by the visible presence or absence of the A303. The intention was that this approach would produce a preliminary but clear result representative of the outcome of a full HIA based on a more detailed scheme proposal. The method of assessing impacts was that recommended by the ICOMOS Guidance (ICOMOS 2011).

This approach was accepted by Historic England and the National Trust and by others, including the ICOMOS/ UNESCO Advisory Mission. Broadly the same approach has also been used for this outline assessment. The identification of the key groups of attributes has been adjusted slightly to reflect the results of archaeological survey work carried out since 2014.

Re-assessment of the Normanton Down Group has suggested that its boundaries were drawn too tightly in the2014 report (in part a product of the dominance of the existing A303 in current thinking). Its boundaries have been extended to the south to include encompass barrows on the side of the valley south of the group of barrows on Normanton Down identified in the 2014 report. Its boundaries have also been extended to the north and west to include Normanton Gorse itself which contains at least one large barrow, the Sun Barrow north of the wood and the so-called unnamed group by the A303 (formerly listed as Group 15). To avoid changes to numbering of remaining groups, this extended Normanton Down Group has been numbered as 14/15 in the list below and in the assessment tables.

As noted above, the discovery of one previously unknown long barrow and the confirmation of the existence of a previously dismissed long barrow (the existence of which had been questioned on the

basis of the interpretation of aerial photographs but which has now been confirmed by excavation) together with the discovery of a previously unknown hengiform monument near to the Diamond wood has led us to identify this dispersed group of monuments as the Diamond Group. It has been numbered as 18. These are the only changes. Otherwise, the list of key groups of attributes remains unchanged.

As previously indicated, a further and full assessment will need to be undertaken by Highways England in due course, and form an integral part of an iterative design process (as called for by the ICOMOS and UNESCO Advisory Mission) allowing schemes to respond to and accommodate further developments in archaeological understanding, as has been the case for this report.

Listed roughly from north-east to south-west, the 17 key groups of attributes are (See Fig. 2):

1. Durrington Wall
2. Woodhenge
3. The Avenue east of King Barrow Ridge
4. Unnamed barrow group either side of this stretch of the Avenue
5. King Barrows (Old and New)
6. Coneybury Henge
7. Coneybury Barrow (King Barrow) south of Coneybury Henge
8. The Cursus E end
9. The Cursus centre
10. The Cursus W end
11. Cursus Barrows
12. Stonehenge
13. Stonehenge Down Barrows

14/15 Normanton Down Barrows, now including the unnamed group either side of the A303

16. Lake Barrows
17. Winterbourne Stoke Barrows
18. The Diamond group

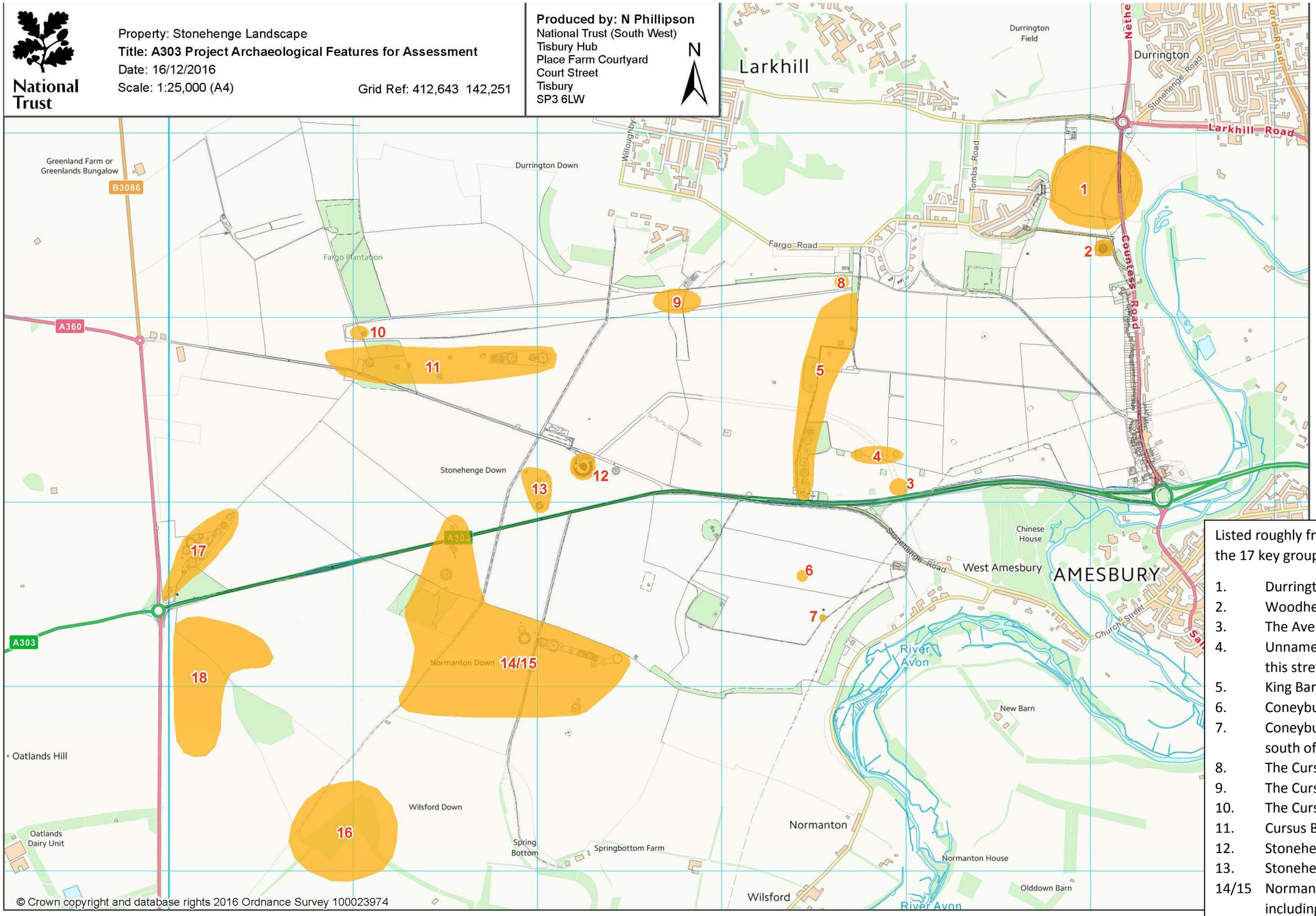

Fig. 2 Key groups of attributes of OUV in the Stonehenge World Heritage property

Listed roughly from north-east to south-west, the 17 key groups of attributes are (See Fig. 2):

1. Durrington Wall
2. Woodhenge
3. The Avenue east of King Barrow Ridge
4. Unnamed barrow group either side of this stretch of the Avenue
5. King Barrows (Old and New)
6. Coneybury Henge
7. Coneybury Barrow (King Barrow) south of Coneybury Henge
8. The Cursus E end
9. The Cursus centre
10. The Cursus W end
11. Cursus Barrows
12. Stonehenge
13. Stonehenge Down Barrows
14/15 Normanton Down Barrows, now including the unnamed group either side of the A303
16. Lake Barrows
17. Winterbourne Stoke Barrows
18. The Diamond group

For linear monuments or extended barrow groups, it has been necessary to select a focus from which to judge visual impact. For the Avenue east of King Barrow Ridge (3), this is the point at which the line of the Avenue crosses the existing A303, and for the associated barrow group to the north of the A303 (4), it is the point at which the Avenue intersects the east-west line of burial mounds. The Cursus is so long, and its visual connections so varied, that it has been divided into three sectors, the high east (8) and west (10) ends, and the low part where it crosses Stonehenge Bottom (9). For barrow groups, we have used the approximate centre as the focal point. Nonetheless, even when it is stated that there is intervisibility between two key attributes, this does not necessarily mean that every part of one key attribute is fully visible from every point of the second one.

Results are based on field observation and map work. They are therefore records of observations made on specific days and are subject to weather and other conditions prevalent on the day. On both days of field visits, the day was dry and visibility was excellent. Access was achieved via rights of way and National Trust permissive open access land where it was not under crop or otherwise inaccessible at the time of field visits (18th November and 13th December, 2016), as was the case, for example with Coneybury Henge (6) or the Diamond (18). In many cases viewsheds are obscured by woodland (in part coniferous), and here reasoned judgements have had to be made as to what should be visible. This is also the case with sites which it was not possible to access physically.

Integrity and Authenticity

The ICOMOS guidance also advises assessment of impact on the integrity and authenticity of the World Heritage property, and this too has been attempted for each option. A baseline for this is provided by the 2009 World Heritage Management Plan which first developed brief assessments of the integrity and authenticity of the World Heritage property (English Heritage 2009).

Direct Physical Impacts

The assessment of the impact of physical damage to archaeological sites caused by new construction work first identified all archaeological sites and monuments which are attributes of the OUV of the World Heritage property which are located either within the footprint, or immediately adjacent to the footprint, of each road option D061 and D062. In line with the Statement of Outstanding Universal Value this has been taken to mean all Neolithic and Bronze Age funerary and ceremonial monuments and associated sites dating to between 3700 and 1600 BC (i.e. Neolithic or Early Bronze Age in date). For the purposes of this study all ring ditches (including undated examples) the existence of which has been certainly established have been assumed to be the relict remains of Early Bronze Age round barrows and therefore to be attributes of OUV of the World Heritage property.

Sites and monuments were identified using the Wiltshire Historic Environment Record (HER) supplemented by information from recent fieldwork, including geophysical surveys and archaeological trenching evaluation conducted by both Historic England and Wessex Archaeology (Historic England 2015 a– d, 2016; Wessex Archaeology 2016 a – g). Potential physical impact on those sites and monuments was then assessed according to the ICOMOS methodology.

Because of the nature of this assessment no distinction has been drawn between scheduled and unscheduled monuments. Only the physical impacts on archaeological sites and monuments that are attributes of the OUV of the World Heritage property have been assessed. Where these are also Scheduled Monuments the Scheduled Monument number has been provided in addition to the

Wiltshire HER reference. Where a Wiltshire HER reference has not yet been assigned the Wessex Archaeology ID has been given. Scatters of surface material and spot finds have been excluded from the assessment as lithic scatters in particular, though varying greatly in density, appear to be ubiquitous across much of the Stonehenge World Heritage property.

Chapter 4 Impact of proposed new scheme for the A303 on the Outstanding Universal Value of the Stonehenge component of the World Heritage property

Assumptions on which assessment is based

Highways England have provided information on their route options for the new A303 through the World Heritage property. The basic assumptions provided by Highways England for the road are that:

1. There will be a tunnel at least 2.9kms long. It will be constructed with two independent tunnel bores between 7m and c.45m deep;
2. The east portal is located east of the Stonehenge Avenue and the west portal to the south of Normanton Down (see Fig. 3);
3. From the western portal there are two alternative routes, D061 running north and D062 south of Winterbourne Stoke village. The road lines diverge north-east of the Diamond and cross the A360 at different points;
4. Outside the tunnel, the road will be a dual carriageway running at grade;
5. The crossings of the A345 and the A360 will be by means of overbridges which will need to be at least 8m above the level of the roads underneath;
6. There will be a grade separated junction on the line of the A360;
7. The road, portal approaches and junctions will be unlit.

This information provides the basis for updating our previous assessment of visual impact of possible tunnel and road routes through the World Heritage property. However, in order to make a meaningful assessment, it is necessary for the authors of this report to make further assumptions about the nature and character of the road and the extent to which it has positive or adverse impacts on the OUV of the World Heritage property. Even if these assumptions are not entirely correct, it should be possible to adjust the assessment of impacts once further more detailed route information becomes available.

Our assumptions to provide further detail for assessment of impact are:

8. The position of the portal face is located by the cross hairs of the symbol used on the maps provided by Arup Atkins Joint Venture on behalf of Highways England (Fig**3**);
9. At the portal face, the total width of the roads etc. will be 45m; a 30m cut and cover section back from the face of the portal is likely to be required for construction reasons before the required depth of cover is attained above the bores;
10. The depth of the road surface at the tunnel portals will be at least c.10m below the current ground level in those locations. This should allow sufficient height above the carriageway within the tunnel and for sufficient cover above the tunnel below present ground levels;
11. From the tunnel portal at each end there will be a partial cutting until the surrounding ground levels have dropped to grade for the road. The length of this section of cutting/ partial cutting will depend on the local contours;
12. Outwith these short sections of cutting, the road will run **at grade** except where it has to be embanked on the approach to an overbridge.

The two alternative routes D061 and D062 are identified in Tables 2 and 3 below and in the text as D061 (1) and D062 (1).

A road from the western tunnel portal to the western boundary of the World Heritage property constructed according to these two sets of assumptions will have a major adverse impact on attributes of OUV in the western part of the World Heritage property and a minor or even moderate adverse impact on some attributes as far east as King Barrow Ridge. As part of the identification of potential mitigation measures, we have therefore postulated a number of options for the treatment of D061 and D062. These are identified below as D061 (2) to (6) and D062 (2) to (6).

For all these options, it is assumed:

13. The position of the portal face is located by the cross hairs of the symbol used on the maps provided by Arup Atkins Joint Venture on behalf of Highways England (Fig 3);
14. At the portal face, the total width of the roads etc. will be 45m; a 30m cut and cover section back from the face of the portal is likely to be required for construction reasons before the required depth of cover is attained above the bores ;
15. The depth of the road surface at the tunnel portals will be at least c.10m below the current ground level in those locations. This should allow sufficient height above the carriageway within the tunnel and for sufficient cover above the tunnel below present ground levels.
16. From the tunnel portal at the east end there will be a partial cutting until the surrounding ground levels have dropped to grade for the road.
17. From the tunnel portal at the west end, the road runs in cutting sufficiently deep to hide high Heavy Goods Vehicles and double-decker buses and coaches;
18. The A303 passes under the A360;
19. Any junction with the A360 is west of the boundary of the World Heritage property and does not have slip roads etc. within the property.
20. Removal of existing embankment east of the eastern portal, causeway at Stonehenge Bottom and causeway approaching long barrow crossroads on existing alignment of A303.

Options D061 (3) and D062 (3) assume in addition an apron of 100m from the western portal, Options D061 (4) and D062 (4) one of 200m, and Options D061 (5) and D062 (5) one of 300m. Such aprons in effect provide a landbridge or canopy reflecting the existing landform to the point at which the traffic emerges into the open. A landbridge could be a more affordable option than moving the tunnel portal. With the tunnel portal so close to the Normanton Down Barrows we wished to consider the extent to which such a landbridge over the road could mitigate adverse impacts.

For Options D061 (6) and D062 (6) we have assessed the impact if the western portal is located in the lowest point of the dry valley between Normanton Gorse and the Diamond (or possibly the same effect could be achieved by a longer landbridge to this low point in the valley). This can be considered as equivalent to the position of Portal A1 which was assessed in the 2014 report (Snashall and Young 2014, 30, 75, Figs 3, 7, Table 3, 15, 16) and which was stated to be a significant improvement on any of the other options.

Visual Impact

The methodology for this Heritage Impact Assessment is described in Chapter 3. The scale of assessment used in the 2014 assessment (Snashall and Young 2014, 39) has been used for this report also to ensure as far as possible consistency of approach:

- Impact has been assessed as major of very large significance when the A303 severs a visual connection or is very prominent in a view of one (e.g. the view from Stonehenge to Old and New King Barrows).
- Impact has been assessed as moderate of large/ very large significance where the A303 is visible but does not sever the viewline and is not central in the view.
- Impact is assessed as minor of moderate/ large significance when the A303 is barely visible or a distant backdrop in a view (e.g. the view from Durrington Walls to Woodhenge).
- Where there is no impact, the value has been given as none.

This is a somewhat unusual impact assessment in that we are assessing the impact of the replacement of a road which already has a major adverse impact on the World Heritage property. As in 2014, where an adverse impact is removed or reduced it is scored as a positive impact of the same scale. In Tables 2 and 3 below impacts of the various options have been set out. As a base line, the tables also include the results of the assessment made of the existing A303 in 2014. More detail of this can be found in the 2014 report (Snashall, Young 2014 Chapter 5 *passim*)

Essentially the impact of the new route options for the A303 can be considered in three parts:

1. The section from Countess Roundabout to the east tunnel portal (c.1.3kms);
2. The section in tunnel from the eastern to western portals (c.2.9kms);
3. From the west portal to the western boundary of the World Heritage property for which two alternatives are proposed with potentially differing impacts (D061 c.1.3kms, D062 c.1.9kms).

For each section, impact has been assessed according to the methodology described earlier (see Chapter 3), focusing mainly on the impact of the road on individual key attributes and the relationships between them. Visual links between the key attributes groups are identified in Table 1 (p.19). Since we now have more information on the possible construction of bridges and junctions, these are discussed in the general narrative below. Their impact has been taken into account in the assessment of impacts on individual attributes and in Tables 2 and 3 (pp. 20 – 41) which summarise the impacts of routes D061 and D062 respectively. Direct physical impacts are described and discussed in Chapter 5 below. This assessment only considers impacts on attributes of OUV and on the overall OUV of the World Heritage property. It does not consider impacts on heritage assets of national or local significance that are not relevant to OUV. The following paragraphs summarise the observations set out in the tables. Discussion of the overall impacts on the OUV of the World Heritage property are in the final chapter of this report.

From Countess Roundabout to the east tunnel portal

The new road will cross Countess Road (A345) on a flyover with grade separated junction. The road deck of the bridge will be at 7m to 8m above the highest point of the roundabout below. From there the road follows the existing route through the cutting past Vespasian's Camp and then runs to the new portal position to the north of the existing road and c.100m east of the line of the Avenue as it runs across the flank of King Barrow Ridge towards the River Avon in West Amesbury. This is c.200m east of the eastern portal position assessed in the 2014 report, and around 400m east of the portal position for the 2.1km tunnel scheme considered in 2004. This also means that the road threshold at the new east portal position should be around 10m lower than in the options assessed in 2014. This

has considerable implications for the visibility of the surface stretch of road between the tunnel portal and the existing cutting past Vespasian's Camp, since lowering the level of the road will reduce the visibility of traffic from many viewpoints.

East of that cutting, the principal impact will be that of the flyover and the grade separated junction of which it will be part. While this will be very intrusive in the local landscape, the surrounding topography means that it will be screened from direct view from the identified key groups of attributes of OUV. Its impact on the OUV of the World Heritage property and its attributes will therefore be minimal.

Our calculations suggest that the road level exiting the east portal of the tunnel should be c.85m Above Ordnance Datum (AOD) though this will need reviewing when more detailed development of a scheme is available from Highways England. The road is likely to be partially in cutting for c.250m before running out across the dry valley west of Vespasian's Camp on an embankment which could be lower than the existing one, depending on the treatment of the farm access road which passes under the A303 at this point.

Overall, the impact on attributes of OUV which now have views of the A303 descending from King Barrow Ridge towards Countess Road (A345) will be positive. Around 600m of the most visible part of the road where it climbs up the eastern approach to King Barrow Ridge will now be in tunnel. The line of the Avenue will no longer be severed by a major road and it would be possible to present its route at this point in some way. Even on the surface stretch of the road, traffic should be less obvious because the level of the road should be lower. Tables 2 and 3 therefore show the impact on attributes of OUV along and to the east of King Barrow Ridge and Coneybury Hill to be positive. This stretch of road is not visible from west of that ridge.

From the east portal to the west portal

This stretch of road would be entirely in tunnel from the east side of King Barrow Ridge to south of Normanton Gorse. This would effectively remove all current impacts of the A303 from the central section of the World Heritage property around Stonehenge itself. This would be a major beneficial impact of very large significance on a large number of key attributes of OUV including the Stonehenge monument. Depending on the design of the road from the western portal to the western boundary of the World Heritage property, there could be adverse impacts through distant views of that surface section from Coneybury Hill, and possibly from King Barrow Ridge. For further discussion of the impacts of this surface section of the road, please see below.

From the west portal to the western boundary of the World Heritage property on the A360

Highways England have presented two alternative options here. The tunnel portal for both of these is located c.100m south of Normanton Gorse and about 300m from Bush Barrow, the best known barrow in the Normanton Down Group. The two routes diverge about 500m from the portal. D061 then runs through the northern part of the Diamond copse and then up a gentle slope to cross the A360 about 700m south of the Longbarrow Crossroads junction (and the Winterbourne Stoke Barrow Group). D062 runs through the southern part of the Diamond copse and then goes south-west transversely across a shallow dry valley to cross the A360 where the latter drops down into a

small valley 1.1 kms south of Long Barrow Crossroads. As currently presented by Highways England, both routes would be at grade and the crossing over the A360 would be by an overbridge combined with a grade separated junction. Unlike the Countess Road junction on the eastern edge of the World Heritage property, the A360 is high and prominent and can be seen from many parts of the site. For D061 (1) and D062 (2) this would be equally true whether the A303 passes above the A360 or *vice versa.*

The principal advantage of a new route to the south of the present line of the A303 is that it takes the road away from the very sensitive Winterbourne Stoke Barrow Group. This was a major reason why the previous 2014 assessment of the impact of road lines found an offline option in roughly this location to be the most positive alternative. However, the portal for that option was located further from Normanton Down at a lower height AOD and the whole route outside of the tunnel was assumed to have been in cutting to the western boundary of the World Heritage property. It would have gone under the A360 rather than over it, the A360 remaining at grade.

Despite the advantages of moving the line of the road away from Winterbourne Stoke Barrow Group, construction of the new A303 at grade with a grade-separated junction to include an overbridge across the A360 (or *vice versa*) will have a major adverse impact of very large significance on a number of key attribute groups. The D061 (1) route will actually split the newly identified Diamond Group and both routes would be very visually intrusive if constructed as presented. The overbridges (certainly for D061 (1)) could be visible from Coneybury Hill and possibly from the King Barrows. That for D62 (1) may be less obtrusive because it is sited lower in the landscape. Having grade-separated junctions on the line of the A360 would add greatly to the adverse impact because of the increased visual intrusion of slip roads and so forth. The portal is also very close to the Normanton Down Barrows with an adverse visual impact. Having the road at grade would also greatly increase noise in this part of the World Heritage property which is currently relatively peaceful. It is likely that the impact on nearby key attributes would be so severe as to be unacceptable despite benefits elsewhere in the World Heritage property.

Part of the ICOMOS HIA methodology is to consider mitigation measures to lessen adverse impacts. We have considered a number of possible approaches which are assessed in Tables 2 and 3 (D061 (2-6) and D062 (2-6)).

An important basic element to all five alternatives is that the road should run in a cutting deep enough to conceal high vehicles throughout. Ideally the upper parts of the banks should be sloping to minimize the impact of the cuttings within the landscape. Having the road in cutting would reduce its impact in views across it, for example from the Winterbourne Stoke Barrow Group to the Lake Barrow Group. The reduction in impact would not be so great when looking along the line of the cuttings but there would probably be some reduction. From a direct physical impact perspective, considered in Chapter 5 of this report (following non-physical impact tables), this would cause no further impact than would be expected at grade, based on current knowledge ahead of further assessment work.

The second approach is to add a canopy/ land bridge over the road as it exits from the western portal. Options 3, 4, and 5 for both D061 and D062 consider adding canopy/land bridges of 100m,

200m and 300m respectively. This would push the apparent end of the tunnel out from Normanton Gorse and further away from the Normanton Down Barrow Group, and particularly from Bush Barrow on Byway 12. This would reduce noise and visibility of the road in the vicinity of Normanton Down. It would also ameliorate the adverse visual impact on some of the views between key attributes across the line of the road.

We also assessed the impact of placing the tunnel portal or extending a canopy/ landbridge to an equivalent position to that modelled in the 2014 report (Options D061 (6) and D062 (6)). This would place the portal in the lowest part of the dry valley south-west of Normanton Gorse about 350m from the portal location proposed by Highways England. This would reduce adverse impacts more than the shorter canopy/land bridge options and also align the road better vertically for placing it in cutting. It is possible that a similar outcome might be achieved by extending a canopy or landbridge to this point.

Overall, it is considered that the adverse impact of constructing the new A303 road at grade and with an overbridge across the A360 (or *vice versa*) is severe and likely to be unacceptable. Using an underpass and placing the new A303 road all in cutting sufficiently deep to conceal high vehicles could lessen impact to an acceptable level, given benefits elsewhere in the World Heritage property. We consider that all variants of D062 would have a lesser impact than those of D061. There are two reasons for this. Generally, D061 runs along higher ground and crosses the A360 at a higher and more visible point than D062. More specifically, D061 splits the Diamond Group. This would be a severe negative impact to the group. Despite this, the impact of a surface route and overbridge for D062 (1) as currently presented by Highways England would still be too severe to be acceptable.

A further option, which we have not assessed in the tables, would be to place the tunnel portal in the lowest point of the dry valley south-west of Normanton Gorse (as discussed above) and to run the road in a curve around the southern corner of the Diamond wood to an underpass below the A360 at the same point as for D062. Curving the route would reduce impact on views along the line of the route of the new road, as well as taking it further away from the Diamond Group of key attributes which might be expected to reduce impacts further if assessed similarly.

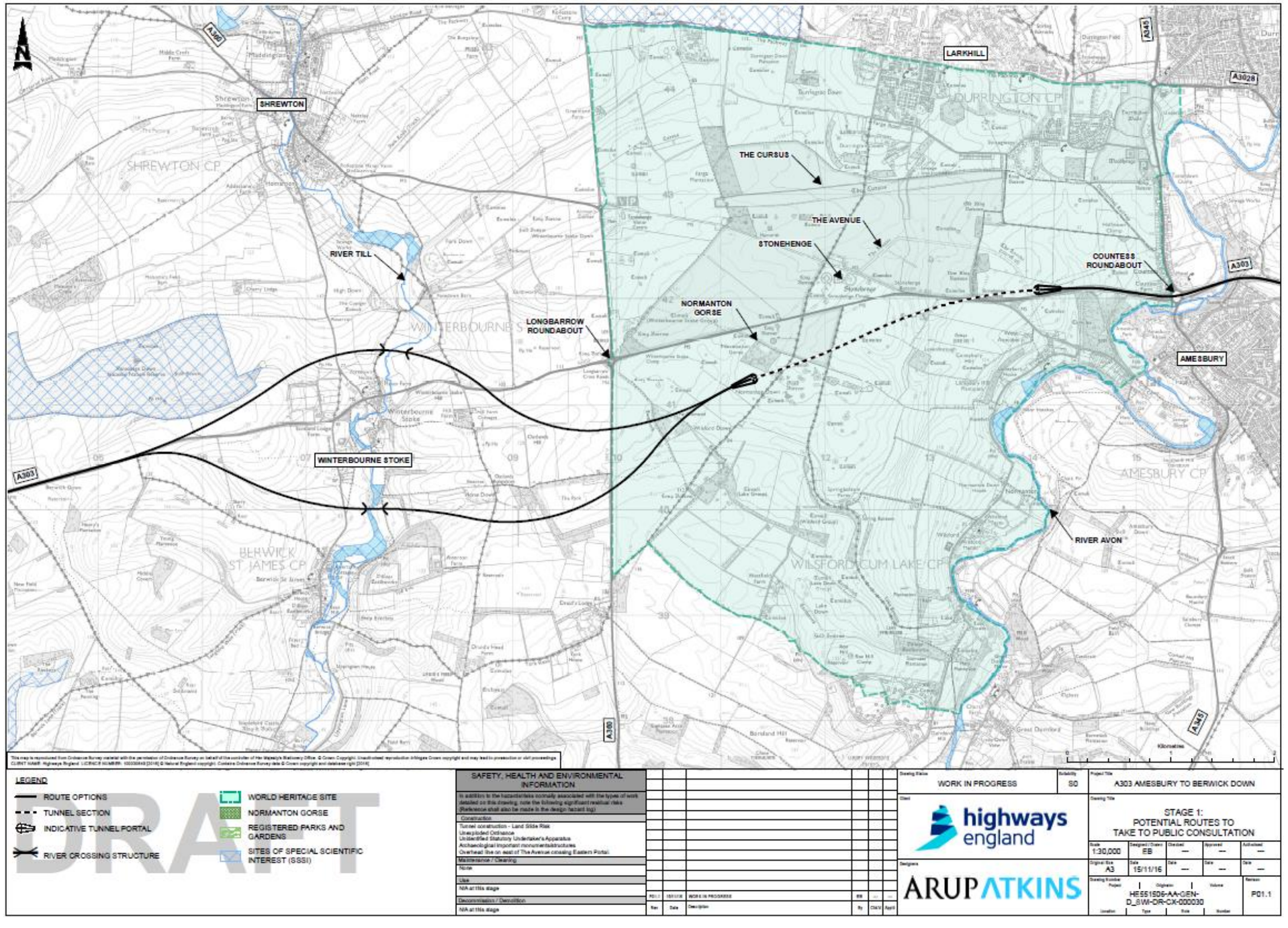

Fig.3 Potential routes to take to consultation in January 2017 (reproduced by permission of Highways England and Arup Atkins joint venture)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18
Table 1: Visual links between key attributes **Y = link exists** **N = no link**		Durrington Walls	Woodhenge	Avenue E of King Barrow	Barrow group	King Barrows (Old & New)	Coneybury Henge	Coneybury Barrow	Cursus E end	Cursus centre	Cursus W end	Cursus Barrows	Stonehenge	Stonehenge Down	Normanton Down	Lake Barrows	Winterbourne Stoke	The Diamond
1	Durrington Walls		Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N
2	Woodhenge	Y		Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
3	Avenue E of King Barrow Ridge	Y	Y		Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
4	Barrow group near Avenue	Y	Y	Y		Y	Y	Y	N	N	N	N	N	N	N	N	N	N
5	King Barrows (Old & New)	N	Y	Y	Y		Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
6	Coneybury Henge	Y	Y	Y	Y	Y		Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
7	Coneybury Barrow	Y	Y	Y	Y	Y	Y		Y	Y	N	Y	Y	Y	Y	Y	Y	Y
8	Cursus E end	N	N	N	N	N	Y	Y		N	Y	Y	Y	Y	Y	Y	Y	Y
9	Cursus centre	N	N	N	N	N	Y	Y	N		N	N	Y	N	N	N	N	N
10	Cursus W end	N	N	N	N	Y	N	N	Y	N		Y	N	N	N	N	N	N
11	Cursus Barrows	N	N	N	N	Y	Y	Y	Y	N	Y		Y	Y	N	N	Y	N
12	Stonehenge	N	N	N	N	Y	Y	Y	Y	Y	N	Y		Y	Y	Y	N	N
13	Stonehenge Down Barrows	N	N	N	N	Y	Y	Y	Y	N	N	N	Y		Y	N	N	N
14/15	Normanton Down Barrows	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	Y		Y	Y	Y
16	Lake Barrows	N	N	N	N	Y	Y	Y	Y	N	N	N	Y	N	N		Y	Y
17	Winterbourne Stoke Barrows	N	N	N	N	Y	Y	Y	Y	N	N	Y	N	N	Y	Y		Y
18	The Diamond	N	N	N	N	Y	Y	Y	Y	N	N	N	N	N	Y	Y	Y	

Table 2 Visual impact of existing A303 road and route D061 in the Stonehenge World Heritage Property

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
Durrington Walls								
1. Durrington Walls	Woodhenge	Minor Adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
2. Durrington Walls	Avenue E of King Barrow Ridge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
3. Durrington Walls	Barrows nr Avenue	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
4. Durrington Walls	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
5. Durrington Walls	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Woodhenge								
6. Woodhenge	Durrington Walls	None	None	None	None	None	None	None
7. Woodhenge	Avenue E of King Barrow Ridge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
8. Woodhenge	Barrows nr Avenue	Moderate adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
9. Woodhenge	King Barrows (Old & New)	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
10. Woodhenge	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
11. Woodhenge	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Avenue E of King Barrow Ridge								

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
12. Avenue E of King Barrow Ridge	Durrington Walls	None	None	None	None	None	None	None
13. Avenue E of King Barrow Ridge	Woodhenge	None	None	None	None	None	None	None
14. Avenue E of King Barrow Ridge	Barrows nr Avenue	None	None	None	None	None	None	None
15. Avenue E of King Barrow Ridge	King Barrows (Old & New)	None	None	None	None	None	None	None
16. Avenue E of King Barrow Ridge	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
17. Avenue E of King Barrow Ridge	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Barrows near Avenue east of King Barrow Ridge								
Barrows nr Avenue	Durrington Walls	None	None	None	None	None	None	None
19. Barrows nr Avenue	Woodhenge	None	None	None	None	None	None	None
20. Barrows nr Avenue	Avenue E of King Barrow Ridge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
21. Barrows nr Avenue	King Barrows (Old & New)	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
22. Barrows nr Avenue	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
23. Barrows nr Avenue	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
King Barrows (Old and New)								

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
24. King Barrows (Old and New)	Woodhenge	None	None	None	None	None	None	None
25. King Barrows (Old and New)	Avenue E of King Barrow Ridge	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
26. King Barrows (Old and New)	Barrows nr Avenue	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
27. King Barrows (Old and New)	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
28. King Barrows (Old and New)	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
29. King Barrows (Old and New)	Cursus E end	None	None	None	None	None	None	None
30. King Barrows (Old and New)	Cursus W end	None	None	None	None	None	None	None
31. King Barrows (Old and New)	Cursus Barrows	None	None	None	None	None	None	None
32. King Barrows (Old and New)	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
33. King Barrows (Old and New)	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
34. King Barrows (Old and New)	Normanton Down Barrows	Major adverse	Moderate beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
35. King Barrows (Old and New)	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
36. King Barrows (Old and New)	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
37. King Barrows (Old and New)	The Diamond	Major adverse	Moderate adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Major beneficial
Coneybury Henge								
38. Coneybury Henge	Durrington Walls	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
39. Coneybury Henge	Woodhenge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
40. Coneybury Henge	Avenue E of King Barrow Ridge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
41. Coneybury Henge	Barrows nr Avenue	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
42. Coneybury Henge	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
43. Coneybury Henge	Coneybury Barrow	None	None	None	None	None	None	None
44. Coneybury Henge	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
45. Coneybury Henge	Cursus Centre	Major adverse	Major Beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
46. Coneybury Henge	Cursus Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
47. Coneybury Henge	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
48. Coneybury Henge	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
49. Coneybury Henge	Normanton Down Barrows	Moderate adverse	Major beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
50. Coneybury Henge	Lake Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
51. Coneybury Henge	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
52. Coneybury Henge	The Diamond	Major adverse	Minor adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Major beneficial
Coneybury Barrow								
53. Coneybury Barrow	Durrington Walls	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
54. Coneybury Barrow	Woodhenge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
55. Coneybury Barrow	Avenue E of King Barrow Ridge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
56. Coneybury Barrow	Barrows nr Avenue	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
57. Coneybury Barrow	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
58. Coneybury Barrow	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
59. Coneybury Barrow	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
60. Coneybury Barrow	Cursus Centre	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
61. Coneybury Barrow	Cursus Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
62. Coneybury Barrow	Stonehenge	Major	Major	Major	Major	Major	Major	Major

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial
63. Coneybury Barrow	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
64. Coneybury Barrow	Normanton Down Barrows	Moderate adverse	Minor adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
65. Coneybury Barrow	Lake Barrows	Minor adverse	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
66. Coneybury Barrow	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Moderate adverse	Moderate adverse	Major beneficial	Major beneficial
67. Coneybury Barrow	The Diamond	Major adverse	Minor adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Cursus East End								
68. Cursus E end	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
69. Cursus E end	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
70. Cursus E end	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
71. Cursus E end	Cursus W end	None	None	None	None	None	None	None
72. Cursus E end	Cursus Barrows	None	None	None	None	None	None	None
73. Cursus E end	Stonehenge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
74. Cursus E end	Stonehenge Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
75. Cursus E end	Normanton Down	Major	Major	Major	Major	Major	Major	Major

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
	Barrows	adverse	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial
76. Cursus E end	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
77. Cursus E end	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
78. Cursus E end	The Diamond	Major adverse	Minor adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Cursus Centre								
79. Cursus Centre	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
80. Cursus Centre	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
81. Cursus Centre	Stonehenge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Cursus West End								
82. Cursus W end	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
83. Cursus W end	Cursus E end	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
84. Cursus W end	Cursus Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
Cursus Barrows								
85. Cursus Barrows	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
86. Cursus Barrows	Coneybury Henge	Major	Major	Major	Major	Major	Major	Major

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial
87. Cursus Barrows	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
88. Cursus Barrows	Cursus E end	None	None	None	None	None	None	None
89. Cursus Barrows	Cursus W end	None	None	None	None	None	None	None
90. Cursus Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
91. Cursus Barrows	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
92. Cursus Barrows	Winterbourne Stoke Barrows	None	None	None	None	None	None	None
Stonehenge								
93. Stonehenge	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
94. Stonehenge	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
95. Stonehenge	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
96. Stonehenge	Cursus E end	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
97. Stonehenge	Cursus Centre	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
98. Stonehenge	Cursus Barrows	None	None	None	None	None	None	None
99. Stonehenge	Stonehenge Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
100. Stonehenge	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
101. Stonehenge	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Stonehenge Down Barrows								
102. Stonehenge Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
103. Stonehenge Down Barrows	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
104. Stonehenge Down	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
105. Stonehenge Down Barrows	Cursus E end	Moderate adverse	Major beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
106. Stonehenge Down Barrows	Cursus Barrows	None	None	None	None	None	None	None
107. Stonehenge Down Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
108. Stonehenge Down Barrows	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Normanton Down Barrows								
109. Normanton Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
110. Normanton Down Barrows	Coneybury Henge	Moderate adverse	Major beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
111. Normanton Down Barrows	Coneybury Barrow	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
l12. Normanton Down Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
l13. Normanton Down Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
l14. Normanton Down Barrows	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
l15. Normanton Down Barrows	Lake Barrows	None	None	None	None	None	None	None
l16. Normanton Down Barrows	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Moderate adverse	Moderate adverse	Moderate adverse	Major beneficial
l17. Normanton Down Barrows	The Diamond	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse
Lake Barrows								
118. Lake Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
119. Lake Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
120. Lake Barrows	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
121. Lake Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
122. Lake Barrows	Stonehenge	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
123. Lake Barrows	Normanton Down Barrows	Moderate adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse
124. Lake Barrows	Winterbourne Stoke Barrows	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
125. Lake Barrows	The Diamond	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
Winterbourne Stoke Barrows								
126. Winterbourne Stoke Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
127. Winterbourne Stoke Barrows	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
128. Winterbourne Stoke Barrows	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
129. Winterbourne Stoke Barrows	Cursus E end	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
130. Winterbourne Stoke Barrows	Cursus Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
131. Winterbourne Stoke Barrows	Normanton Down Barrows	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
132. Winterbourne Stoke Barrows	Lake Barrows	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
133. Winterbourne Stoke Barrows	The Diamond	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
The Diamond Group								
134. The Diamond Group	King Barrows (Old and New)	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
135. The Diamond Group	Coneybury Henge	Moderate adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
136. The Diamond Group	Coneybury Barrow	Moderate adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the route D061 as proposed and of options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D061 (1)	D061 (2)	D061 (3)	D061 (4)	D061 (5)	D061 (6)
137. The Diamond Group	Cursus E end	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Moderate adverse
138. The Diamond Group	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
139. The Diamond Group	Lake Barrows	None	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
140. The Diamond Group	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse

Table 3 Visual impact of existing A303 road and route D062 in the Stonehenge World Heritage Property

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
Durrington Walls								
1. Durrington Walls	Woodhenge	Minor Adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
2. Durrington Walls	Avenue E of King Barrow Ridge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
3. Durrington Walls	Barrows nr Avenue	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
4. Durrington Walls	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
5. Durrington Walls	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Woodhenge								
6. Woodhenge	Durrington Walls	None	None	None	None	None	None	None
7. Woodhenge	Avenue E of King Barrow Ridge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
8. Woodhenge	Barrows nr Avenue	Moderate adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
9. Woodhenge	King Barrows (Old & New)	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
10. Woodhenge	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
11. Woodhenge	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Avenue E of King Barrow Ridge								

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
12. Avenue E of King Barrow Ridge	Durrington Walls	None	None	None	None	None	None	None
13. Avenue E of King Barrow Ridge	Woodhenge	None	None	None	None	None	None	None
14. Avenue E of King Barrow Ridge	Barrows nr Avenue	None	None	None	None	None	None	None
15. Avenue E of King Barrow Ridge	King Barrows (Old & New)	None	None	None	None	None	None	None
16. Avenue E of King Barrow Ridge	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
17. Avenue E of King Barrow Ridge	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Barrows near Avenue east of King Barrow Ridge								
18. Barrows nr Avenue	Durrington Walls	None	None	None	None	None	None	None
19. Barrows nr Avenue	Woodhenge	None	None	None	None	None	None	None
20. Barrows nr Avenue	Avenue E of King Barrow Ridge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
21. Barrows nr Avenue	King Barrows (Old & New)	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
22. Barrows nr Avenue	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
23. Barrows nr Avenue	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
King Barrows (Old and New)								

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
24. King Barrows (Old and New)	Woodhenge	None	None	None	None	None	None	None
25. King Barrows (Old and New)	Avenue E of King Barrow Ridge	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
26. King Barrows (Old and New)	Barrows nr Avenue	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
27. King Barrows (Old and New)	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
28. King Barrows (Old and New)	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
29. King Barrows (Old and New)	Cursus E end	None	None	None	None	None	None	None
30. King Barrows (Old and New)	Cursus W end	None	None	None	None	None	None	None
31. King Barrows (Old and New)	Cursus Barrows	None	None	None	None	None	None	None
32. King Barrows (Old and New)	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
33. King Barrows (Old and New)	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
34. King Barrows (Old and New)	Normanton Down Barrows	Major adverse	Moderate beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
35. King Barrows (Old and New)	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
36. King Barrows (Old and New)	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
37. King Barrows (Old and New)	The Diamond	Major adverse	Moderate adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Major beneficial
Coneybury Henge								
38. Coneybury Henge	Durrington Walls	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
39. Coneybury Henge	Woodhenge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
40. Coneybury Henge	Avenue E of King Barrow Ridge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
41. Coneybury Henge	Barrows nr Avenue	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
42. Coneybury Henge	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
43. Coneybury Henge	Coneybury Barrow	None	None	None	None	None	None	None
44. Coneybury Henge	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
45. Coneybury Henge	Cursus Centre	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
46. Coneybury Henge	Cursus Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
47. Coneybury Henge	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
48. Coneybury Henge	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
49. Coneybury Henge	Normanton Down Barrows	Moderate adverse	Major beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
50. Coneybury Henge	Lake Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
51. Coneybury Henge	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
52. Coneybury Henge	The Diamond	Major adverse	Minor adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Major beneficial
Coneybury Barrow								
53. Coneybury Barrow	Durrington Walls	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
54. Coneybury Barrow	Woodhenge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
55. Coneybury Barrow	Avenue E of King Barrow Ridge	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
56. Coneybury Barrow	Barrows nr Avenue	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
57. Coneybury Barrow	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
58. Coneybury Barrow	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
59. Coneybury Barrow	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
60. Coneybury Barrow	Cursus Centre	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
61. Coneybury Barrow	Cursus Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
62. Coneybury Barrow	Stonehenge	Major	Major	Major	Major	Major	Major	Major

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial
63. Coneybury Barrow	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
64. Coneybury Barrow	Normanton Down Barrows	Moderate adverse	Minor adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
65. Coneybury Barrow	Lake Barrows	Minor adverse	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
66. Coneybury Barrow	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Moderate adverse	Moderate adverse	Major beneficial	Major beneficial
67. Coneybury Barrow	The Diamond	Major adverse	Minor adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Cursus East End								
68. Cursus E end	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
69. Cursus E end	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
70. Cursus E end	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
71. Cursus E end	Cursus W end	None	None	None	None	None	None	None
72. Cursus E end	Cursus Barrows	None	None	None	None	None	None	None
73. Cursus E end	Stonehenge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
74. Cursus E end	Stonehenge Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
75. Cursus E end	Normanton Down	Major	Major	Major	Major	Major	Major	Major

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
	Barrows	adverse	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial
76. Cursus E end	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
77. Cursus E end	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
78. Cursus E end	The Diamond	Major adverse	Minor adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Cursus Centre								
79. Cursus Centre	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
80. Cursus Centre	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
81. Cursus Centre	Stonehenge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
Cursus West End								
82. Cursus W end	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
83. Cursus W end	Cursus E end	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
84. Cursus W end	Cursus Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
Cursus Barrows								
85. Cursus Barrows	King Barrows (Old & New)	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
86. Cursus Barrows	Coneybury Henge	Major	Major	Major	Major	Major	Major	Major

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
		adverse	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial
87. Cursus Barrows	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
88. Cursus Barrows	Cursus E end	None	None	None	None	None	None	None
89. Cursus Barrows	Cursus W end	None	None	None	None	None	None	None
90. Cursus Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
91. Cursus Barrows	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
92. Cursus Barrows	Winterbourne Stoke Barrows	None	None	None	None	None	None	None
Stonehenge								
93. Stonehenge	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
94. Stonehenge	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
95. Stonehenge	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
96. Stonehenge	Cursus E end	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
97. Stonehenge	Cursus Centre	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
98. Stonehenge	Cursus Barrows	None	None	None	None	None	None	None
99. Stonehenge	Stonehenge Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
100. Stonehenge	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
101. Stonehenge	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Stonehenge Down Barrows								
102. Stonehenge Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
103. Stonehenge Down Barrows	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
104. Stonehenge Down	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
105. Stonehenge Down Barrows	Cursus E end	Moderate adverse	Major beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
106. Stonehenge Down Barrows	Cursus Barrows	None	None	None	None	None	None	None
107. Stonehenge Down Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
108. Stonehenge Down Barrows	Normanton Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
Normanton Down Barrows								
109. Normanton Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
110. Normanton Down Barrows	Coneybury Henge	Moderate adverse	Major beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
111. Normanton Down Barrows	Coneybury Barrow	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
112. Normanton Down Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
113. Normanton Down Barrows	Stonehenge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
114. Normanton Down Barrows	Stonehenge Down Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
115. Normanton Down Barrows	Lake Barrows	None	None	None	None	None	None	None
116. Normanton Down Barrows	Winterbourne Stoke Barrows	Major adverse	Major beneficial	Major beneficial	Moderate adverse	Moderate adverse	Moderate adverse	Major beneficial
117. Normanton Down Barrows	The Diamond	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse
Lake Barrows								
118. Lake Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
119. Lake Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
120. Lake Barrows	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
121. Lake Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
122. Lake Barrows	Stonehenge	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
123. Lake Barrows	Normanton Down Barrows	Moderate adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse
124. Lake Barrows	Winterbourne Stoke	Major	Major	Moderate	Moderate	Moderate	Moderate	Moderate

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
	Barrows	adverse	adverse	adverse	adverse	adverse	adverse	adverse
125. Lake Barrows	The Diamond	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
Winterbourne Stoke Barrows								
126. Winterbourne Stoke Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
127. Winterbourne Stoke Barrows	Coneybury Henge	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
128. Winterbourne Stoke Barrows	Coneybury Barrow	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
129. Winterbourne Stoke Barrows	Cursus E end	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
130. Winterbourne Stoke Barrows	Cursus Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
131. Winterbourne Stoke Barrows	Normanton Down Barrows	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
132. Winterbourne Stoke Barrows	Lake Barrows	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
133. Winterbourne Stoke Barrows	The Diamond	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
The Diamond Group								
134. The Diamond Group	King Barrows (Old and New)	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
135. The Diamond Group	Coneybury Henge	Moderate adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse

This table measures the scale of the visual impact of the present A303 and of the likely impacts of D062 as proposed and of the options for mitigation. The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	D062 (1)	D062 (2)	D062 (3)	D062 (4)	D062 (5)	D062 (6)
136. The Diamond Group	Coneybury Barrow	Moderate adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
137. The Diamond Group	Cursus E end	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Moderate adverse
138. The Diamond Group	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
139. The Diamond Group	Lake Barrows	None	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
140. The Diamond Group	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse

Table 4 Physical impacts on archaeological sites and monuments that are attributes of OUV: eastern to western property boundaries (D061)

Wilts. HER Pref. Ref. Scheduled Monument No. ***Wessex ID***	**Site name / description**	**Impact**	**Comments**
WA ID 4512	Ring Ditch. Very weakly positive curvilinear anomaly detected by gradiometer survey.	Minor adverse	This may be the last vestiges of a Bronze Age round barrow. – if so it would appear to be severely truncated / plough damaged.
SU14 SW796	Feature previously identified as a ring ditch on the basis of a single aerial photograph.	No change	No further trace has ever been found. Now interpreted as an error in plotting the NGR. Not believed to exist in this location. (Included here for the sake of completeness).
SU14 SW11A	Neolithic pit	No change	Found by Faith Vatcher in 1967 during a watching brief undertaken prior to changes to the current A303. Believed to have been wholly destroyed
WA ID 4315	Penannular ring ditch / hengiform with Beaker associations (cutting a pit containing Middle Neolithic cremation deposits).	No change	No direct physical impact to archaeological asset. Though outside of the proposed construction corridor the close proximity of the monument to the construction corridor would require measures to be put in place to avoid any slight risk of unintended direct physical impacts.

Table 5 Physical impacts on archaeological sites and monuments that are attributes of OUV: eastern to western property boundaries (D062)

Wilts. HER Pref. Ref. Scheduled Monument No. ***Wessex ID***	**Site name / description**	**Impact**	**Comments**
WA ID 4512	Ring Ditch. Very weakly positive curvilinear anomaly detected by gradiometer survey.	Minor adverse	This may be the last vestiges of a Bronze Age round barrow. – if so it would appear to be severely truncated / plough damaged.
SU14 SW796	Feature previously identified as a ring ditch on the basis of a single aerial photograph.	No change	No further trace has ever been found. Now interpreted as an error in plotting the NGR. Not believed to exist in this location. (Included here for the sake of completeness).
SU14 SW11A	Neolithic pit	No change	Found by Faith Vatcher in 1967 during a watching brief undertaken prior to changes to the current A303. Believed to have been wholly destroyed.

Table 6 Physical impacts on archaeological sites and monuments that are attributes of OUV: eastern portal to eastern property boundary

Wilts. HER Pref. Ref. Scheduled Monument No. ***Wessex Archaeology ID***	**Site name / description**	**Impact**	**Comments**
WA ID 4512	Ring Ditch. Very weakly positive curvilinear anomaly detected by gradiometer survey.	Minor adverse	This may be the last vestiges of a Bronze Age round barrow. – if so it would appear to be severely truncated / plough damaged.
SU14 SW796	Feature previously identified as a ring ditch on the basis of a single aerial photograph.	No change	No further trace has ever been found. Now interpreted as an error in plotting the NGR. Not believed to exist in this location. (Included here for the sake of completeness).
SU14 SW11A	Neolithic Pit	No change	Found by Faith Vatcher in 1967 during a watching brief undertaken prior to changes to the current A303. Believed to have been wholly destroyed.

Table 7 Physical impacts on archaeological sites and monuments that are attributes of OUV: western portal to western property boundary (D061)

Wilts. HER Pref. Ref. Scheduled Monument No. ***Wessex ID***	**Site name / description**	**Impact**	**Comments**
WA ID 4315	Penannular ring ditch / hengiform with Beaker associations (cutting a pit containing Middle Neolithic cremation deposits).	No change	No direct physical impact to archaeological asset. Though outside of the proposed construction corridor the close proximity of the monument to the construction corridor would require measures to be put in place to avoid any slight risk of unintended direct physical impacts.

Table 8 Physical impacts on archaeological sites and monuments that are attributes of OUV: western portal to western property boundary (D062)

Wilts. HER Pref. Ref. Scheduled Monument No. ***Wessex ID***	**Site name / description**	**Impact**	**Comments**
None identified	N/A	No change	

Chapter 5 Physical impacts of new road construction on archaeological features of Outstanding Universal Value

The methodology used to assess the physical impacts on archaeological sites and monuments that would occur as a result of the construction of bored tunnel D061 (1-6) and D062 (1-6) together with their associated above ground dual carriageway and related infrastructure is set out in Chapter 3 Methodology (above). The results of that assessment are set out on a location by location basis in Tables 6 to 8. These results have then been aggregated (Tables 4 and 5) to show the permanent impacts of the construction of the various options. All of the impacts assessed are adverse as destruction of physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites that are themselves an attribute of OUV can only be a negative impact. The assessment of whether the impact is negligible, minor, moderate or major is necessarily a matter of subjective professional judgement. Factors taken into consideration when making that assessment included:

- The proportion of the site or monument affected;
- The degree to which the part of the site or monument would be affected; this could range between minor surface disturbance and wholesale destruction;
- The condition of the site or monument at present.

In accordance with the 2011 ICOMOS HIA Guidance, as all of the archaeological features identified as subject to physical impacts are attributes of OUV and therefore of high importance negligible impacts will be of slight significance; impacts of minor scale will be of moderate / large significance; impacts of moderate scale will be of large / very large significance and major impacts will be of very large significance.

In summary the number of archaeological attributes of OUV that are impacted is low for all options, though it should be noted that the routes of neither D061 or D062 have yet been subject to archaeological evaluation west of their point of divergence. The highest level of adverse physical impacts would result from the road outwith the eastern portal location. Based on current information, no direct physical impacts would result from the putative positioning of alignments D061 or D062 on the western side. The two western portal and road alignment options could therefore be assessed as having an impact of no change of neutral significance to the World Heritage Property. The proposed eastern portal location and associated road alignment could be assessed as having a negligible adverse impact of slight significance to the World Property.

As alignment D061 effectively splits the two recently identified long barrows and the northern boundary of its alignment may run within 30 to 40 metres of the middle Neolithic hengiform there is some risk of unintended direct physical impacts from construction. Though measures could be put in place to avoid, reduce or mitigate these during construction, the more effective conservation measure (based on the options assessed in this report) with regard to direct physical impacts would be the selection of alignment D062 which would wholly avoid the risk of any construction impacts on all of these monuments.

Chapter 6 Conclusions

The 2015 ICOMOS/ UNESCO Advisory Mission said:

…with good design and construction controls, and respecting essential archaeological and heritage management measures, the tunnelled length of the road would be expected to have a beneficial impact on the attributes of Outstanding Universal Value (OUV). However, the siting and design of the tunnel portals, approach cuttings/embankments, entry/exit ramps, mitigation measures and the temporary construction works have the potential to adversely impact OUV. These latter aspects of the scheme, in particular, will require rigorous investigation, evaluation, iterative design and assessment if they are to protect the attributes of OUV within the World Heritage site and the surrounding Archaeological Priority Area (APA). (ICOMOS/ UNESCO 2016, 24*)*

This report should be seen as one strand of that iterative approach to assessment suggested by ICOMOS and UNESCO – in this case to inform the National Trust and Historic England. It has not just assessed the options presented by Highways England but has tested a number of variants as potential mitigation of the adverse impacts of some aspects of those options. The results and discussions on which they are based are set out in Chapter 4, covering visual and other non-physical impacts, and Chapter 5 which dealt with direct physical impacts.

This chapter develops the results of those assessments and presents conclusions on overall impacts on OUV. It first summarises the overall impacts of Highways England's proposed options (D061 (1) and D062 (1)) and the additional options identified in this report on the seven attributes of OUV and on the integrity and authenticity of the World Heritage property. We then attempt to develop an overall assessment of the impact of these options on the OUV of the World Heritage property.

The seven identified attributes of OUV are:

1. Stonehenge itself as a globally famous and iconic monument.
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.
3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.
5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.
6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.
7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

The following assessment for each attribute summarises first the impact of the present A303 and then assesses the potential impact of the 12 options identified above (the Highways England proposals for D061 (1) and D062 (1) plus five further mitigation proposals for each, identified by us).

Table 9 summarises this discussion. It sets out our assessment of the overall impact of the present A303, and of the D061 (1) and D062 (1) routes presented by Highways England on the seven attributes of OUV, integrity and authenticity, together with our suggested options for mitigation. The last two rows of the table give an overall assessment of the impact on the OUV of the World Heritage property of the existing A303 and for the new options.

Within the ICOMOS HIA methodology, it is difficult to differentiate the impact of the possible mitigation options. It is possible to obtain some further understanding of the impacts on visual relationships between key attribute groups and of direct physical impacts by examining the detailed impacts on individual attributes as set out in numerical form in Tables 9 & 10. While Table 10 may appear somewhat mechanistic, it does provide a further means of analysing the differences between options when read in conjunction with Table 9.

1 Stonehenge itself as a globally famous and iconic monument

The image of Stonehenge in its downland landscape is world-renowned. It is an important and enduring symbol of humanity's prehistoric past and an internationally recognised symbol of Britain. This iconic view has long been adversely impacted by the roads close to it. Heavy traffic in particular mars the view and distracts visitors from it. Since 2013, the closure of the A344 next to the monument has lessened the visual and aural impact of traffic. The adverse impacts of heavy traffic on the A303 remain, particularly in views to the east up King Barrow Ridge. This affects both views of the monument itself, and also views from the monument of its place in the landscape, as well as causing an adverse aural impact.

This is a major adverse impact on the monument of very high significance. All options assessed here would remove this impact and would constitute a major beneficial impact on the monument. However, the Highways England options' (D061 (1) and D062 (1)) assumption for roads at grade and overbridges at the junction with the A360 could interfere with long views across Stonehenge towards the west and the southwest.

2. **The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.**

The A303 is close to many of the physical attributes of OUV but, as far as is known, has had direct physical impacts on comparatively few of them. During the construction work during the previous widening of the A303, a Later Neolithic pit containing a decorated chalk plaque and almost certainly of ceremonial significance was discovered by Faith Vatcher close to King Barrow Ridge. It is possible that the A303 may have destroyed other attributes of OUV when it was first constructed or during subsequent modifications. Nonetheless the A303 is a prominent feature in the setting of many surviving physical attributes of OUV, and so has adverse visual impacts on them. Visual impacts in the context of the relationship of the sites and monuments to the landscape, and their relationship to each other (attributes 3, 5 and 6) are dealt with below. General setting impacts are dealt with in this section.

The major existing physical impacts on the physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites from east to west are:

- The Avenue east of King Barrow Ridge has been severed by the existing A303. It is probable that nothing survives beneath the footprint of the existing A303 but removal of the road would allow the line of the Avenue to be better appreciated.
- On the west slope of King Barrow Ridge a round barrow has been partially removed by the remodelling of the single carriageway part of the road in the late 1960's.
- The road also passes between a long barrow to its south and two round barrows to its north in the small unnamed barrow group which is a northern extension of the Normanton Down Barrow Group (attribute 14/ 15). Evaluation by Wessex Archaeology for the 2004 Published Scheme showed that the long barrow had been badly disturbed, though not by construction of the A303 (Leivers, Moore 2008, 19-21). Similarly, their work showed that the road had not disturbed the round barrow on the north side of the A303 (Leivers, Moore 2008, 30-31).

At present there is a major adverse visual impact of very large significance on the setting of these monuments. More generally, the current A303 has a major adverse impact of very large significance on the setting of all monuments from which it is visible.

The work carried out by Wessex Archaeology to inform development of previous attempts at road improvements involved intensive field survey and trial trenching along the line of the A303. While a variety of new archaeological features were discovered, few of them were identifiable as attributes of OUV (Leivers, Moore 2008).

The results of recent work have led to the confirmation/ discovery of two new long barrows and a hengiform monument in the area close to the Diamond (Historic England 2015 a-d, 2016; Wessex Archaeology 2016 a – g). This has led to the recognition of this group of monuments as a new key attribute group which has to be taken into account in this assessment. This is particularly apposite to all D061 options which divide the group but also affects assessment of all D062 options which pass close to its southern limits.

The present impact of the road on the Avenue east of King Barrow Ridge and on the truncated barrow on the western slope of the ridge must be recognised as major adverse impacts on attributes of OUV, and of very large adverse significance for those particular attributes. The impact on the long Normanton Gorse Longbarrow and round barrows within the Normanton Down Barrow Group is an adverse one since the road divides what was once a coherent barrow group. This is a major adverse impact of very large significance for those attributes, as is that on the setting of other sites in view of the A303, giving a major adverse impact of very large significance for the property as a whole.

The removal of the road in all D061 and D062 proposals (1-6) would free the barrow on the west slope of King Barrow Ridge and allow better treatment of it in the future. The siting of the east portal east of the Avenue would remove a major adverse impact of very large significance on that attribute. Removal of the existing road would allow the elements of the Normanton Down Barrow Group next to the current road line to be linked visually with the rest of its Group. Moving the western tunnel exit south of Long Barrow Cross Roads would greatly improve the immediate setting of the Winterbourne Stoke Barrow Group. This would be a major beneficial impact for that attribute. It would however be adversely offset by construction of the new road at grade in full view of the

group and by the construction of an overbridge above the A360. The impact of the D061 options on the Diamond Group has already been mentioned above.

Any overall assessment of the impact on this attribute of the OUV of the World Heritage property has to balance the very positive gains to many sites against the continued adverse impacts on others and potentially the creation of new adverse impacts in the area south of the Winterbourne Stoke Barrow Group. For D061 (1) and D062 (1) (i.e. at grade options) the overall impact on the physical archaeological evidence of the OUV of the World Heritage property can probably be calculated as only a minor beneficial change of moderate/ large significance. All D061 options must be judged as having an adverse impact on this attribute because it divides the Diamond Group. The more the road can be removed from sight by a canopy/land bridge, cuttings and passing under the A360, the greater the beneficial impact would become. For options D062 (2 – 5), the benefit of the change would be moderate of large/ very large significance, and for option D062 (6), which would place the whole road even lower, it would be a major beneficial change of very large significance.

3. **The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.**

This attribute is discussed further below with attributes 5 and 6.

4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.

A number of sites within the World Heritage property are aligned on the midsummer sunrise and midwinter sunset axis. Of these, the only one affected by the A303 is the midsummer sunrise/ midwinter sunset solstitial axis at Stonehenge itself. This midwinter sunset occurs south-west of the monument behind an apparent horizon outside the World Heritage property to the west. The axis crosses the line of the current A303 slightly to the east of the junction of the road with Byway 12 and then passes through the Sun Barrow north of Normanton Gorse. The lights of traffic along the present road adversely affect the ability to observe the midwinter sunset so that there is currently an adverse impact, probably to be assessed as minor, with a moderate adverse significance according to the ICOMOS HIA scale. Direct impact on the line of the axis will cease with either D061 or D062 options, and Highways England have indicated that the new road will not be lit which is a definite plus in this context. The closer the tunnel portal/ traffic exit point from any landbridge/ canopy is to Normanton Down Barrow Group, the more likely it is that light pollution from traffic itself will be problematic in observing the midwinter sunset, particularly if the road up to the A360 is at grade and then rising to a bridge over the A360. The at grade options for D061 and D062 (D061 (1) and D062 (1)) can therefore be assessed as minor beneficial change of moderate/ large significance, but the options with a canopy/land bridge and cuttings postulated in this report can be assessed as moderate beneficial change of large/ very large significance.

3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.

5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.

6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.

All these attributes are essentially about the visual relationships of physical attributes within the World Heritage property. The siting and visibility of the A303 can affect the ability to understand and appreciate the relationship of monuments to the surrounding landscape (Attribute 3). The road can also affect the ability to appreciate the way in which these monuments form a landscape without parallel (Attribute 6). Lastly and most directly, the road interferes visually with relationships between monuments which are themselves attributes of OUV (Attribute 5).

Study of visual relationships has focused primarily on this last aspect but, in doing so, also demonstrates the extent to which the road affects the ability to appreciate and understand the other two relationship-based attributes. To some extent therefore, assessment of Attribute 5 has been used as a proxy for assessing Attributes 3 and 6. Any of the variants of D061 or D062 would create major beneficial change of very large significance in the central areas of the World Heritage property from King Barrow Ridge and Coneybury Hill around Stonehenge itself as far west as Normanton Gorse. East of King Barrow Ridge visibility of the road will be greatly reduced and can probably be assessed also as major beneficial change of very large significance in this area.

At the western end the beneficial change introduced by either route D061 (1) or D062 (1) would be greatly reduced by their visibility and by an overbridge at the junction with the A360. A number of new major adverse impacts of very large significance are introduced between the barrow groups of Winterbourne Stoke, Normanton Down, Lake and the newly recognised Diamond barrow group. All variants of D061 split the Diamond Group resulting in what could be an unacceptable adverse impact. These impacts could be avoided for D061 and mitigated for D062 by developing and adopting one of the proposals for D062 Options 2 – 6 with the least negative impacts accruing from Option 6. With appropriate design this would probably be assessed only as a minor adverse change of moderate/large significance

Balancing out these beneficial and negative impacts across the whole World Heritage property, the overall impact using surface routes for either D061 or D062 can be assessed as moderate beneficial change of large/ very large significance. For D062 the more the western stretch of road can be concealed, the greater the benefit will become. However because of the severance of the Diamond Group by all variants of D061 the level of adverse impacts in this area could be considered unacceptable.

7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

Stonehenge in particular has been the subject of numerous artists, including J M W Turner, and figures in many books, both fiction such as *Tess of the D'Urbervilles* and academic works. It has also inspired many architects from Inigo Jones onwards and has been the subject of antiquarian and archaeological study and speculation for more than three hundred years. The present A303 is highly visible in many views in the landscape and must be a deterrent to artistic appreciation. On the other hand, the view of Stonehenge from vehicles descending from King Barrow Ridge to Stonehenge Bottom is highly appreciated by many, though it would still be possible to appreciate it on foot. Overall, the existing A303 should probably be judged to have a minor adverse impact of moderate/ large significance on this attribute. All variants of D061 and D062 would remove the A303 from the key views which have inspired artists and others over the years. This can be judged as a minor beneficial change of moderate/ large significance.

Integrity

Integrity is part of one of the three pillars of OUV. According to the *Operational Guidelines*

Integrity 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 2015 paras 87-88)

For cultural properties, *the physical fabric of the property and/or its significant features should be in good condition, and the impact of deterioration processes controlled. A significant proportion of the elements necessary to convey the totality of the value conveyed by the property should be included. Relationships and dynamic functions present in cultural landscapes, historic towns or other living properties essential to their distinctive character should also be maintained* (UNESCO 2015 para 89).

The agreed Statement of Outstanding Universal Value says that *the presence of busy main roads through the World Heritage property impacts adversely on its integrity*. It also says that *the A303 continues to have a negative impact on the setting of Stonehenge, the integrity of the property and visitor access to some parts of the wider landscape*. The integrity of the property was further evaluated in the 2009 Management Plan (English Heritage 2009, 33-4), which noted the major adverse impact of the A303 and A344, and also noted that more intensive use of the roads had had an impact on the visual integrity of the property since it was inscribed in 1986. The A344 has now been partially removed but the concerns with the impacts of the existing A303 are reflected in the current Management Plan ((Simmonds & Thomas, 2015)

The A303 has visual, aural and access impacts on the World Heritage property:

Visual: this is the most apparent impact on integrity since, as noted above, the existing A303 cuts across the landscape and disrupts many visual links and the ability to appreciate the landscape as a whole. At times when the traffic is heavy or even stationary it can have a very high impact on visual aspects of this part of the property.

Aural: traffic noise can be considerable at Stonehenge itself and elsewhere along the line of the A303. The extent of the impact can vary according to weather conditions and the amount of traffic but is often oppressive and can sometimes be heard at some distance from the A303. The reduction of traffic noise resulting from the closure of the A344 is notable away from the A303.

Access: in many ways the greatest adverse impact of the A303 on the integrity of the property is its role as a barrier between the whole north and south of the World Heritage property. There are no controlled crossing points of the A303 within the World Heritage property. While the A303 is crossed by Byway 12, actually crossing the road is very dangerous in most traffic conditions. Access to the World Heritage property for most visitors is *de facto* confined to its northern part. Most visitors, indeed, are probably unaware that around two thirds of the Stonehenge portion of the World Heritage property is south of the A303

Overall the impact of the existing A303 on the integrity of the World Heritage property is major adverse of very large significance. Either of the alternatives now under consideration would improve

the integrity of the property. All would greatly improve the ability to access all parts of the World Heritage property by removing significant lengths of the existing A303. They would also reduce aural and visual impact where the road would be in a tunnel.

The present proposals would reunite the World Heritage property for much of the length of the road, allowing access across the former line of the present A303 between the Avenue in the east and Normanton Gorse in the west. This would be a very substantial improvement. Noise levels would be greatly reduced where the A303 is placed in a tunnel, though aural impact could be greater than at present where new dual carriageway is created even if in a cutting. Visual impact of the A303 would be removed where the A303 is placed in a tunnel. These would be major beneficial change.

However, where the road was not in a tunnel, there would be stretches of new dual carriageway. These would have an adverse impact on the OUV of the World Heritage property, particularly if built on the surface. So overall, there would probably be moderate to major beneficial change of large or very large significance.

Authenticity

Authenticity is about the truthfulness of the evidence for OUV and the ability to appreciate that evidence. The *Operational Guidelines* (UNESCO 2015, para 79 - 86) list a number of tests for authenticity including form and design, materials and substance, location and setting, and spirit and feeling. Authenticity was first assessed in the 2009 Management Plan (English Heritage 2009, 32-33) and this assessment was expanded to cover Avebury in the 2015 Management Plan for the whole World Heritage property (Simmonds, Thomas, 2015, 35-7). The impact of the road on materials and substance and form and design is comparatively limited (see discussion of Attribute 2 above). The road has a greater impact on location and setting and spirit and feeling. It is a dominant feature in many views of the World Heritage property with an adverse impact on the setting of the property and both its visual and aural impact is disruptive to the spirit and feeling of the property.

Overall, the existing A303 has a major adverse impact, of very large significance, on the authenticity of the property. The current options can be assessed as moderate beneficial change of large/ very large significance for the options D061 (1) & D062 (1) presented by Highways England, moving towards a major beneficial change the more the road can be concealed by a canopy/land bridge, cutting and underpasses under the A360.

Overall impact of the existing A303 and the proposed D061 and D062 schemes

On the basis of the information currently to hand it is clear that any of the variants of D061 and D062 would achieve a reduction of adverse impacts to the OUV of the World Heritage property **as a whole over the existing A303**. The reduction would be least for D061 (1) & D062 (1) because of their impact at the western end on relationships between the Winterbourne Stoke, Normanton Down, Lake and Diamond Barrow Groups. The fact that all variants of D061 would divide the Diamond Group is an additional adverse impact. On the basis of current knowledge, the risk of physical impact on attributes of OUV appears to be negligible; however further archaeological assessment and evaluation is required to confirm this.

At the east end, the gains for any of the options are very considerable, as they are for the central section of the World Heritage property. The overbridge and grade separated junction at Countess Road would have adverse impacts locally but these would not affect attributes of OUV. East of King

Barrow Ridge, the re-uniting of the Avenue would be a very positive benefit and the visual impacts of the road would be greatly reduced by placing parts of it in tunnel and by lowering the level of the road AOD between the tunnel portal and Vespasian's Camp. The adverse impacts of the existing A303 would be entirely removed in the central parts of the property, apart from some distant views across to the western boundary.

However, when we consider the western end and the area of the World Heritage property bounded by the A360, the Winterbourne Stoke Barrow Group, the Normanton Down Barrows and the Lake Barrow Group, and containing the Diamond Group we see there are issues here. The location of the western portal, the construction of the new road from the western portal to the A360 at grade, with an overbridge over the A360 (or vice versa) and grade-separated junction would cause a major adverse impact of very large significance. These negative impacts would clearly lower the beneficial impact of the new A303 to the World Heritage property overall.

All variants of D062 (even D062 (1)) are less intrusive than any version of D061 since the latter divide the Diamond Group and cross the A360 at a higher point. Our analysis above shows that the adverse impacts on the group of attributes in the western part of the World Heritage property could be reduced by measures to move the western portal/ exit point for traffic further away from the Normanton Down Barrow Group, perhaps by the use of a canopy/land bridge, and by placing the road in cutting sufficiently deep to hide high vehicles. It would be essential that the new road passed under the A360 and that any junction with the A360 should be to the west of the present line of that road.

The adverse impacts at the western end could be most effectively reduced by moving the portal position or extending a canopy/ landbridge to the lowest part of the dry valley between Normanton Gorse and the Diamond, considered equivalent to the position proposed for the offline western portal in 2014 (Snashall, Young 2014 30, Figs 3 and 7).Additional mitigation might be achieved by rerouting the road around the southern tip of the Diamond. This has not been assessed as an option, but would keep the route as much as possible in lower ground, while building the road on a curve would minimise the adverse effects of views along the line of the cutting itself.

The 2015 ICOMOS/ UNESCO mission, quoted at the beginning of this chapter, specifically drew attention to the potential for the surface parts of any scheme to have an adverse impact on OUV. This may give some guidance on how the World Heritage Committee itself might respond to such adverse impacts and how they should be considered here. The mitigation measures outlined above, depending on which were adopted would reduce the adverse impact on these western attributes to somewhere between a moderate adverse impact of large significance (D061 (1) and D062 (1)) and a minor adverse impact of moderate significance (D062 (6)). The adverse impact of D061 (1) and D062 (1) on the Winterbourne Stoke, Normanton Down, Lake and Diamond Groups is considerable. Such an impact on between a fifth and a quarter of the key attribute groups used for this assessment is unacceptable despite benefits elsewhere in the World Heritage property.

All variants of D061 have the additional adverse impact that they split the Diamond Group, thus severing internal relationships between attributes of OUV within the group which we believe could be an unacceptable adverse impact.

Mitigation of D062 (1) is likely to be essential if the western parts of its route are to be acceptable in terms of impact on attributes of OUV. Impact on the four western barrow groups could be mitigated by greater concealment of the road by placing it in cutting, crossing the A360 by means of an underpass and by placing any junction with the A360 to the west of the existing line of the A360 (D062 (2)). Further mitigation would be achieved by moving the apparent western exit from the tunnel by use of landbridges/ canopy which reflected the existing landform (D062 (3) – (6)). This would have the effects of moving the apparent exit away from the Normanton Down Barrow Group, and particularly from Bush Barrow, and also of shortening the amount of road visible in the western part of the World Heritage property. The most effective mitigation would be achieved by D062 (6).

This is an outline assessment as it has not been possible in this report to carry out a full Heritage Impact Assessment of the new proposed route for the A303, since the available information is only in outline. It is the responsibility of Highways England as the scheme promoter to produce a full Heritage Impact Assessment as an integral part of an iterative design process (as called for by the ICOMOS and UNESCO Advisory Mission) allowing schemes to respond to and accommodate further developments in archaeological understanding, and a final scheme which ensures the protection of the OUV of the World Heritage property progressed.

Table 9 Overall Assessment of impacts on Outstanding Universal Value of the World Heritage property

This table measures the scale of impact of the present A303 and of proposed changes to the A303. The significance of these impacts is a function of their scale and the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.													
		D061						**D062**					
	A303 now	**D061 (1)**	**D061 (2)**	**D061 (3)**	**D061 (4)**	**D061 (5)**	**D061 (6)**	**D062 (1)**	**D062 (2)**	**D062 (3)**	**D062 (4)**	**D062 (5)**	**D062 (6)**
Attribute of Outstanding Universal Value													
1 Stonehenge itself as a globally famous and iconic monument	Major adverse	Moderate beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Moderate beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.	Major adverse	Minor beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Major beneficial	Minor beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Major beneficial
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.	Minor adverse	Minor beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Minor beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
3. The siting of Neolithic and Bronze Age sites in relation to the landscape. 5. The siting of Neolithic and Bronze Age sites in relation to each other. 6. The disposition, physical remains and settings of the key Neolithic and Bronze Age sites of the period, forming a landscape without parallel.	Major adverse	Minor beneficial	Moderate/Major beneficial	Moderate/Major beneficial	Moderate/Major beneficial	Moderate/Major beneficial	Major beneficial	Minor beneficial	Moderate/Major beneficial	Moderate/Major beneficial	Moderate/Major beneficial	Moderate/Major beneficial	Major beneficial
7. The influence of the attributes of OUV and their landscape settings on architects, artists, historians, archaeologists and others.	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
Integrity	Major adverse	Minor beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Major beneficial
Authenticity	Major adverse	Minor beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Moderate/ Major beneficial	Major beneficial
Overall assessment of impact on the Outstanding Universal Value of the Stonehenge component of the World Heritage property	**Major adverse**	**Minor beneficial**	**Moderate/Major beneficial**	**Moderate/ Major beneficial**	**Moderate/ Major beneficial**	**Moderate/ Major beneficial**	**Moderate/ Major beneficial**	**Moderate beneficial**	**Moderate/ Major beneficial**	**Moderate/ Major beneficial**	**Moderate/ Major beneficial**	**Moderate/ Major beneficial**	**Major beneficial**
Overall assessment of the significance of the impact on the Outstanding Universal Value of the Stonehenge component of the World Heritage property	**Very large negative**	**Moderate positive**	**Large positive**	**Large positive**	**Large positive**	**Large positive**	**Very large positive**	**Moderate positive**	**Large positive**	**Large positive**	**Large positive**	**Large positive**	**Very large positive**

Table 10: Numerical outcomes of impact assessment on Outstanding Universal Value of the World Heritage property

	Current A303	D061 (1)		D061 (2)		D061 (3)		D061 (4)		D061 (5)		D061 (6)		D062 (1)		D062 (2)		D062 (3)		D062 (4)		D062 (5)		D062 (6)	
1 Durrington Walls	-14	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11	-2	+11
2 Woodhenge	-14	0	+13	0	+13	0	+13	0	+13	0	+13	0	+13	0	+13	0	+13	0	+13	0	+13	0	+13	0	+13
3 Avenue East of King Barrow Ridge	-8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8
4 Barrows near Avenue East of KBR	-14	0	+14	0	+14	0	+14	0	+14	0	+14	0	+14	0	+14	0	+14	0	+14	0	+14	0	+14	0	+14
5 King Barrows (Old & New)	-37	-7	+27	-4	+30	-4	+30	-4	+30	-4	+30	-4	+32	-7	+27	-4	+30	-4	+30	-4	+30	-4	+30	-4	+30
6 Coneybury Henge	-53	-2	+47	0	+49	0	+49	0	+49	0	+49	0	+49	-2	+47	0	+49	0	+49	0	+49	+0	+49	0	+50
7 Coneybury Barrow	-56	-6	+44	0	+53	-3	+49	-3	+49	0	+53	0	+53	-6	+44	0	+53	-3	+49	-3	+49	-3	+53	0	+53
8 Cursus East end	-33	-2	+29	0	+33	0	+33	0	+33	0	+33	0	+33	-2	+29	0	+33	0	+33	0	+33	0	+33	0	+33
9 Cursus Centre	-11	0	+11	0	+11	0	+11	0	+11	0	+11	0	+11	0	+11	0	+11	0	+11	0	+11	0	+11	0	+11
10 Cursus West end	-8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8	0	+8
11 Cursus Barrows	-19	0	+19	0	+19	0	+19	0	+19	0	+19	0	+19	0	+19	0	+19	0	+19	0	+19	0	+19	0	+19
12 Stonehenge	-27	0	+27	0	+27	0	+27	0	+27	0	+27	0	+27	0	+27	0	+27	0	+27	0	+27	0	+27	0	+27
13 Stonehenge Down Barrows	-23	0	+24	0	+23	0	+23	0	+23	0	+23	0	+23	0	+23	0	+23	0	+23	0	+23	0	+23	0	+23
14/15 Normanton Down Barrows	-29	-4	+26	-4	+25	-7	+21	-7	+21	-7	+21	-2	+25	-4	+26	-4	+25	-7	+21	-7	+21	-7	+21	-2	+25
16 Lake Barrows	-27	-12	+16	-10	+16	-9	+16	-9	+16	-9	+16	-8	+16	-12	+16	-10	+16	-9	+16	-9	+16	-9	+16	-8	+16
17 Winterbourne Stoke Barrows	-30	-12	+18	-9	+18	-9	+18	-9	+18	-8	+18	-8	+18	-12	+18	-9	+18	-9	+18	-9	+18	-8	+18	-8	+18
18 The Diamond	-22	-26	0	-24	0	-24	0	-24	0	-24	0	-23	0	-26	0	-24	0	-24	0	-24	0	-24	0	-23	0
Sub-total adverse / beneficial	-425	-73	+342	-53	+358	-58	+350	-58	+350	-54	+354	-47	+360	-73	+341	-53	+358	-58	+350	-58	+350	-57	+350	-47	+359
Sub-total aggregate	-425	+269		+305		+292		+292		+300		+313		+268		+305		+299		+292		+293		+308	
Direct archaeological impacts	Not assessed	-2		-2		-2		-2		-2		-2		**-2**		-2		-2		-2		-2		-2	
Total adverse / beneficial	-425	-75 / +342		-53 / +358		-58 / +350		-58 / +350		-54 / +354		-47 / +360		-73 / +341		-53 / +358		-58 / +350		-58 / +350		-57 / +350		-47 / +359	
Total Aggregate	**-425**	**+269**		**+303**		**+290**		**+290**		**+298**		**+311**		**+266**		**+303**		**+291**		**+290**		**+299**		**+310**	

Numeric values have been ascribed on the following basis:		
Major adverse	**-4**	This table attempts a numeric representation of the outcomes of the assessment of impacts on visual links between key attribute groups (discussed in Chapter 4) and direct physical impacts (discussed in Chapter 5). **It should be read in conjunction with Table 9 and Chapter 6: Conclusions.**
Moderate adverse	**-3**	
Minor adverse	**-2**	
Negligible adverse	**-1**	
No change	**0**	
Negligible beneficial	**+1**	
Minor beneficial	**+2**	
Moderate beneficial	**+3**	
Major beneficial	**+4**	

Appendix 1 Brief for outline assessment of the impacts on the Outstanding Universal Value of the Stonehenge, Avebury and Associated Sites World Heritage property of a bored tunnel option of at least 2.9km in length and associated surface infrastructure

1. BACKGROUND

Over the course of 2014, EH (as was) and the National Trust engaged with the Department for Transport (DfT) on a feasibility study for the improvement of the A303 within the Stonehenge World Heritage Site (WHS). A long-running traffic bottleneck with increasingly severe congestion, this section of the A303 has been the subject of numerous, failed attempts to secure a road improvement, including a 2.1km tunnel scheme that was approved at Public Inquiry in 2004 but never implemented.

A preliminary, outline assessment of the impacts on the Outstanding Universal Value (OUV) of the WHS was jointly commissioned by EH & NT to inform our respective positions on the feasibility study[1] .This work identified that a fully bored tunnel of between 2.5 and 2.9km had the potential to resolve the traffic issues while not only protecting the OUV of the WHS but also offering significant potential benefits to it. DfT were advised accordingly in a joint EH/NT letter signed by our respective CEOs in August 2014, which led to the December 2014 announcement that the Govt. would invest in a bored tunnel of at least 2.9km – the most beneficial of the tunnel scenarios assessed by EH & NT.

Since then, we (as Historic England), EH and NT have continued to work together to provide the scheme promoters Highways England with ongoing constructive advice, including the hosting of an initial Advisory Mission by UNESCO & ICOMOS to familiarise them with the WHS landscape and the nascent proposals in October 2015. The subsequent mission report was constructive and cautiously positive. Importantly, it saw the potential for the tunnel scheme to be a global exemplar in the development of infrastructure within a WHS.

The recommendations of the mission report have had a significant influence on Highways England's thinking with the emerging proposals. We have advised them on the best way to implement the mission recommendations and thus devise a scheme fit for the WHS. In parallel with this, extensive archaeological assessment, survey and evaluation of much of the potential tunnel scheme route has been undertaken, which has advanced our understanding of the possible impacts on archaeology and the OUV of the WHS.

Highways England is now moving towards their first phase of public consultation on the developing scheme, which will run early in 2017. In parallel with this, DCMS has invited a second UNESCO & ICOMOS Advisory Mission to run concurrently in January. It is appropriate at this juncture to review the preliminary, outline assessment of impacts on the OUV on the WHS in light of the growth in our understanding of the nature of the emerging scheme and of its potential impacts upon archaeology and the WHS. This is so that we can both offer formal advice to

[1] *Preliminary Outline Assessment of the impact of A303 Improvements on the Outstanding Universal Value of the Stonehenge Avebury and Associated Sites World Heritage property*, English Heritage & National Trust, July 2014

Highways England during the public consultation and offer informed advice to UNESCO & ICOMOS on our view of the proposals as they currently stand.

Since the time of the 2014 Preliminary Outline Assessment there have been further advances in our archaeological understanding of the WHS which gives us a greater insight into the significance of the WH property and its landscape. Relevant work includes:

- Multi-disciplinary archaeological survey and investigation by Historic England as phase 1 of the Stonehenge WHS Southern Landscape Survey. Elements include:
    - Desk-based assessment
    - Aerial Investigation and Mapping
    - Geophysical Surveys
    - Small-scale archaeological investigation
- Archaeological assessment and evaluation undertaken by Wessex Archaeology for Highways England along the potential footprint of aspects of the "working assumption" route for a twin-bored tunnel scheme. Elements include:
    - Extensive geophysical surveys, including both east and west portal locations
    - Archaeological evaluation of the potential western portal location and much of the potential route of the new surface dual carriageway leading from the western portal to the western border of the WHS

A further development since 2014 has been the invitation by UK Govt. to the World Heritage Centre (WHC) and their heritage advisors ICOMOS International to engage with the emerging road improvement scheme and provide ongoing advice. An initial Advisory Mission to familiarise with the WHS and the broad thrust of proposals was hosted in October 2015. The subsequent mission report of April 2016 was constructive and cautiously positive about the scope for an appropriate tunnel scheme within the WHS.

The report can be accessed via http://whc.unesco.org/en/list/373/documents/ and the consultant should have regard to the conclusions and recommendations set out in that document when undertaking the assessment.

2. SCOPE OF THIS OUTLINE ASSESSMENT

The outline assessment will consider the impact upon the OUV of the WHS of the tunnel option of at least 2.9km, its surface infrastructure and its anticipated construction impacts insofar as relevant information is available at this stage. The assessment should take as its starting point the 2014 Outline Assessment and identify any changes in assessment of impacts since then in the light of improved understanding of the archaeology and the development of the concept (s) for removing the A303 as far as possible from the surface of the World Heritage property.

The outline assessment should also consider the impacts on the OUV of the WHS of dual carriageway construction within the WHS outwith both the eastern and western portal locations of this option. The work will have the benefit of the results of preliminary engineering data, draft visualisations and archaeological assessment and evaluation.

As with the 2014 Outline Assessment, an integrated assessment is required but will be prepared through two commissions working closely together. The work will incorporate two separate studies. **Part 1** is a review of the *direct and indirect* impacts resulting in physical loss of the whole or part of archaeological sites and monuments which are attributes of the OUV of the WHS. This will be undertaken by Dr. Nick Snashall, NT Archaeologist for Stonehenge & Avebury WHS. This work is being directly undertaken by NT and does **not** from part of the work to be commissioned under this Brief.

The work to be commissioned via this Brief (Part 2) will consider the relative *direct and indirect* impacts, but not including physical impacts on archaeological features (covered in Part 1 of the review), of each option upon the OUV of the WHS in light of current policy, guidance and understanding of significance. In particular it will comply with the 2011 ICOMOS guidance on Heritage Impact Assessments in Cultural World Heritage Properties.

However both studies are of equal importance in arriving at outline conclusions in terms of OUV impacts. Both aspects of the work will be integrated into one report by the author of the assessment and Dr Snashall. As part of this commission, the author of the assessment commissioned via this Brief will work in conjunction with Dr Snashall to produce a draft integrated report, reflecting the full range of factors affecting the tunnel option, and integrating the results of the two studies outlined above.

The work will consider the information presently available for the tunnel option with regard to the Statement of Outstanding Universal Value, including its assessments of integrity, authenticity and its definition of needs for future management and protection, taking into account the articulation in the 2015 WHS Management Plan of Attributes identified in the SOUV. It will also have regard to impacts on setting (aural and visual, including lighting) and access insofar as relevant information is available within the constrained timescale necessary to complete the work.

The results of relevant archaeological, evaluation and investigation will be made available to the consultant, along with all available, relevant information on the engineering and design aspects of the “working assumption” route, including printed large-scale maps & plans as available. Some of this information will derive from Historic England and the National Trust, but the chief source will be the scheme promoters Highways England and their consultants in the Arup-Atkins Joint Venture (AAJV).

Where such information is not available, the assessment will caveat its conclusions accordingly.

The assessment report should summarise the context in which it has been commissioned and the methodology adopted. For the commissioned work the consultant will be supplied with a map/plan (and as much supporting information as possible) showing the proposed location of the tunnel portals and new surface road from the western portal to the edge of the WHS. The results of archaeological assessment and evaluation will also be provided so that the consultant is aware of the extent of survey and nature of relevant archaeology that may relate to the OUV of the WHS encountered during the fieldwork.

3. TIMESCALE

This rapid outline assessment will take place in a compressed timescale made necessary by a number of drivers. Historic England is seeking corporate approval for the position recommended by staff in relation to the forthcoming public consultation exercise by Highways England. A meeting of the Historic England Commission is scheduled for mid-December – the results of the revised outline OUV impact assessment will feed into the briefing for HE Commission. Simultaneously, the UK Govt. has invited a second Advisory Mission by UNESCO & ICOMOS, which will take place in January 2017. The deadline for supplying the briefing pack to the international bodies in advance of the Mission is 16th December 2016. In order to assimilate the results of the preliminary OUV assessment within this briefing pack and to inform the HE corporate position **it is essential that we have the results of the study in hand by Friday 9th December 2016**.

The outline assessment report will be provided in digital format to Historic England and the National Trust, plus two hard bound copies supplied to Historic England.

Cost details removed

4 MONITORING

The Historic England Inspector of Ancient Monuments, Phil McMahon, and the National Trust A303 Project Manager, Cassandra Genn, will monitor the work. Due to the very short timescale involved, it is not envisaged that formal monitoring meetings will take place during the course of the work, beyond a meeting (date to be arranged) to discuss the preliminary findings before report is completed for delivery on 9th December.

Day-to-day monitoring will take place via an email circle. All correspondence and draft reports etc. should be circulated to each member of the project steering group, which will comprise Cassandra Genn, Dr Nick Snashall (National Trust) and Phil McMahon (Historic England). In the event of an urgent matter arising, the Consultant should contact one or more of the members. Contact details for relevant personnel are:

Contact details removed

5 CONFIDENTIALITY

All information disclosed by one party to the other either before or after the date of this Agreement in connection with any Services or business dealings between the parties that is clearly identified at or after the point of disclosure as confidential or should reasonably be regarded as obviously of a confidential nature ('Confidential Information') shall be regarded as confidential and each party shall procure that its personnel and third parties to which Confidential Information is disclosed treat such information as confidential.

The above shall not apply to:

- any information that is in the public domain other than by a breach of this Agreement;
- any disclosure of Confidential Information to a third party to the extent that such disclosure is legally required by a court or relevant regulatory body

Appendix 2 Statement of Outstanding Universal Value for Stonehenge, Avebury and Associated Sites World Heritage property

Property	Stonehenge, Avebury and Associated Sites
State Party	United Kingdom of Great Britain and Northern Ireland
Id. N°	373bis
Date of inscription	1986 – 2008

Brief synthesis

The World Heritage property Stonehenge, Avebury and Associated Sites is internationally important for its complexes of outstanding prehistoric monuments. Stonehenge is the most architecturally sophisticated prehistoric stone circle in the world, while Avebury is the largest. Together with inter-related monuments, and their associated landscapes, they demonstrate Neolithic and Bronze Age ceremonial and mortuary practices resulting from around 2000 years of continuous use and monument building between *circa* 3700 and 1600 BC. As such they represent a unique embodiment of our collective heritage.

The World Heritage property comprises two areas of Chalkland in southern Britain within which complexes of Neolithic and Bronze Age ceremonial and funerary monuments and associated sites were built. Each area contains a focal stone circle and henge and many other major monuments. At Stonehenge these include the Avenue, the Cursuses, Durrington Walls, Woodhenge, and the densest concentration of burial mounds in Britain. At Avebury they include Windmill Hill, the West Kennet Long Barrow, the Sanctuary, Silbury Hill, the West Kennet and Beckhampton Avenues, the West Kennet Palisaded Enclosures, and important barrows.

Stonehenge is one of the most impressive prehistoric megalithic monuments in the world on account of the sheer size of its megaliths,the sophistication of its concentric plan and architectural design, the shaping of the stones - uniquely using both Wiltshire Sarsen sandstone and Pembroke Bluestone - and the precision with which it was built.

At Avebury, the massive Henge, containing the largest prehistoric stone circle in the world, and Silbury Hill, the largest prehistoric mound in Europe, demonstrate the outstanding engineering skills which were used to create masterpieces of earthen and megalithic architecture.

There is an exceptional survival of prehistoric monuments and sites within the World Heritage property including settlements, burial grounds, and large constructions of earth and stone. Today, together with their settings, they form landscapes without parallel. These complexes would have been of major significance to those who created them, as is apparent by the huge investment of time and effort they represent. They provide an insight into the mortuary and ceremonial practices of the period, and are evidence of prehistoric technology, architecture and astronomy. The careful siting of monuments in relation to the landscape helps us to further understand the Neolithic and Bronze Age.

Criterion (i): The monuments of the Stonehenge, Avebury and Associated Sites demonstrate outstanding creative and technological achievements in prehistoric times.

Stonehenge is the most architecturally sophisticated prehistoric stone circle in the world. It is unrivalled in its design and unique engineering, featuring huge horizontal stone lintels capping the outer circle and the trilithons, locked together by carefully shaped joints. It is distinguished by the unique use of two different kinds of stones (Bluestones and Sarsens), their size (the largest

weighing over 40 t) and the distance they were transported (up to 240 km). The sheer scale of some of the surrounding monuments is also remarkable: the Stonehenge Cursus and the Avenue are both about 3 km long, while Durrington Walls is the largest known henge in Britain, around 500 m in diameter, demonstrating the ability of prehistoric peoples to conceive, design and construct features of great size and complexity.

Avebury prehistoric stone circle is the largest in the world. The encircling henge consists of a huge bank and ditch 1.3 km in circumference, within which 180 local, unshaped standing stones formed the large outer and two smaller inner circles. Leading from two of its four entrances, the West Kennet and Beckhampton Avenues of parallel standing stones still connect it with other monuments in the landscape. Another outstanding monument, Silbury Hill, is the largest prehistoric mound in Europe. Built around 2400 BC, it stands 39.5 m high and comprises half a million tonnes of chalk. The purpose of this imposing, skillfully engineered monument remains obscure.

Criterion (ii): The World Heritage property provides an outstanding illustration of the evolution of monument construction and of the continual use and shaping of the landscape over more than 2000 years, from the early Neolithic to the Bronze Age. The monuments and landscape have had an unwavering influence on architects, artists, historians and archaeologists, and still retain a huge potential for future research.

The megalithic and earthen monuments of the World Heritage property demonstrate the shaping of the landscape through monument building for around 2000 years from *circa* 3700 BC, reflecting the importance and wide influence of both areas.

Since the 12th century when Stonehenge was considered one of the wonders of the world by the chroniclers Henry de Huntington and Geoffrey de Monmouth, the Stonehenge and Avebury Sites have excited curiosity and been the subject of study and speculation. Since early investigations by John Aubrey (1626-1697), Inigo Jones (1573-1652), and William Stukeley (1687-1765), they have had an unwavering influence on architects, archaeologists, artists and historians. The two parts of the World Heritage property provide an excellent opportunity for further research.

Today, the property has spiritual associations for some.

Criterion (iii): The complexes of monuments at Stonehenge and Avebury provide an exceptional insight into the funerary and ceremonial practices in Britain in the Neolithic and Bronze Age. Together with their settings and associated sites, they form landscapes without parallel.

The design, position and interrelationship of the monuments and sites are evidence of a wealthy and highly organised prehistoric society able to impose its concepts on the environment. An outstanding example is the alignment of the Stonehenge Avenue (probably a processional route) and Stonehenge stone circle on the axis of the midsummer sunrise and midwinter sunset, indicating their ceremonial and astronomical character. At Avebury the length and size of some of the features such as the West Kennet Avenue, which connects the Henge to the Sanctuary over 2 km away, are further evidence of this.

A profound insight into the changing mortuary culture of the periods is provided by the use of Stonehenge as a cremation cemetery, by the West Kennet Long Barrow, the largest known Neolithic stone-chambered collective tomb in southern England, and by the hundreds of other burial sites illustrating evolving funerary rites.

Integrity

The boundaries of the property capture the attributes that together convey Outstanding Universal Value at Stonehenge and Avebury. They contain the major Neolithic and Bronze Age

monuments that exemplify the creative genius and technological skills for which the property is inscribed. The Avebury and Stonehenge landscapes are extensive, both being around 25 square kilometres, and capture the relationship between the monuments as well as their landscape setting.

At Avebury the boundary was extended in 2008 to include East Kennet Long Barrow and Fyfield Down with its extensive Bronze Age field system and naturally occurring Sarsen Stones. At Stonehenge the boundary will be reviewed to consider the possible inclusion of related, significant monuments nearby such as Robin Hood's Ball, a Neolithic causewayed enclosure.

The setting of some key monuments extends beyond the boundary. Provision of buffer zones or planning guidance based on a comprehensive setting study should be considered to protect the setting of both individual monuments and the overall setting of the property.

The survival of the Neolithic and Bronze Age monuments at both Stonehenge and Avebury is exceptional and remarkable given their age – they were built and used between around 3700 and 1600 BC. Stone and earth monuments retain their original design and materials. The timber structures have disappeared but postholes indicate their location. Monuments have been regularly maintained and repaired as necessary.

The presence of busy main roads going through the World Heritage property impacts adversely on its integrity.The roads sever the relationship between Stonehenge and its surrounding monuments, notably the A344 which separates the Stone Circle from the Avenue.At Avebury, roads cut through some key monuments including the Henge and the West Kennet Avenue. The A4 separates the Sanctuary from its barrow group at Overton Hill.

Roads and vehicles also cause damage to the fabric of some monuments while traffic noise and visual intrusion have a negative impact on their settings. The incremental impact of highway-related clutter needs to be carefully managed.

Development pressures are present and require careful management. Impacts from existing intrusive development should be mitigated where possible.

Authenticity

Interventions have been limited mainly to excavations and the re-erection of some fallen or buried stones to their known positions in the early and mid-twentieth century in order to improve understanding. Ploughing, burrowing animals and early excavation have resulted in some losses but what remains is remarkable in its completeness and concentration. The materials and substance of the archaeology supported by the archaeological archives continue to provide an authentic testimony to prehistoric technological and creative achievement.

This survival and the huge potential of buried archaeology make the property an extremely important resource for archaeological research, which continues to uncover new evidence and expand our understanding of prehistory.Present day research has enormously improved our understanding of the property.

The known principal monuments largely remain *in situ* and many are still dominant features in the rural landscape. Their form and design are well-preserved and visitors are easily able to appreciate their location, setting and interrelationships which in combination represent landscapes without parallel.

At Stonehenge several monuments have retained their alignment on the Solstice sunrise and sunset, including the Stone Circle, the Avenue,Woodhenge, and the Durrington Walls Southern Circle and its Avenue.

Although the original ceremonial use of the monuments is not known, they retain spiritual

significance for some people, and many still gather at both stone circles to celebrate the Solstice and other observations. Stonehenge is known and valued by many more as the most famous prehistoric monument in the world.

There is a need to strengthen understanding of the overall relationship between remains, both buried and standing, at Stonehenge and at Avebury.

Protection and management requirements

The UK Government protects World Heritage properties in England in two ways: firstly, individual buildings, monuments and landscapes are designated under the Planning (Listed Buildings and Conservation Areas) Act 1990 and the 1979 Ancient Monuments and Archaeological Areas Act, and secondly through the UK Spatial Planning system under the provisions of the Town and Country Planning Acts. The individual sites within the property are protected through the Government's designation of individual buildings, monuments, gardens and landscapes.

Government guidance on protecting the Historic Environment and World Heritage is set out in National Planning Policy Framework and Circular 07/09. Policies to protect, promote, conserve and enhance World Heritage properties, their settings and buffer zones are also found in statutory planning documents. The protection of the property and its setting from inappropriate development could be further strengthened through the adoption of a specific Supplementary Planning Document.

At a local level, the property is protected by the legal designation of all its principal monuments. There is a specific policy in the Local Development Framework to protect the Outstanding Universal Value of the property from inappropriate development, along with adequate references in relevant strategies and plans at all levels. The Wiltshire Core Strategy includes a specific World Heritage Property policy. This policy states that additional planning guidance will be produced to ensure its effective implementation and thereby the protection of the World Heritage property from inappropriate development. The policy also recognises the need to produce a setting study to enable this. Once the review of the Stonehenge boundary is completed, work on the setting study shall begin. The Local Planning Authority is responsible for continued protection through policy development and its effective implementation in deciding planning applications with the management plans for Stonehenge and Avebury as a key material consideration. These plans also take into account the range of other values relevant to the site in addition to Outstanding Universal Value. Avebury lies within the North Wessex Downs Area of Outstanding Natural Beauty, a national statutory designation to ensure the conservation and enhancement of the natural beauty of the landscape.

About a third of the property at both Stonehenge and Avebury is owned and managed by conservation bodies: English Heritage, a non-departmental government body, and the National Trust and the Royal Society for the Protection of Birds which are both charities. Agri-environment schemes, an example of partnership working between private landowners and Natural England (a non-departmental government body), are very important for protecting and enhancing the setting of prehistoric monuments through measures such as grass restoration and scrub control. Much of the property can be accessed through public rights of way as well as permissive paths and open access provided by some agri-environment schemes. Managed open access is provided at Solstice. There are a significant number of private households within the property and local residents therefore have an important role in its stewardship

The property has effective management plans, coordinators and steering groups at both Stonehenge and Avebury. There is a need for an overall integrated management system for the property which will be addressed by the establishment of a coordinating Stonehenge and Avebury

Partnership Panel whilst retaining the Stonehenge and Avebury steering groups to enable specific local issues to be addressed and to maintain the meaningful engagement of the community. A single property management plan will replace the two separate management plans.

An overall visitor management and interpretation strategy, together with a landscape strategy needs to be put in place to optimise access to and understanding of the property. This should include improved interpretation for visitors and the local community both on site and in local museums, holding collections excavated from the property as well as through publications and the web. These objectives are being addressed at Stonehenge through the development of a visitor centre and the Interpretation, Learning and Participation Strategy. The updated Management Plan will include a similar strategy for Avebury. Visitor management and sustainable tourism challenges and opportunities are addressed by specific objectives in both the Stonehenge and Avebury Management Plans.

An understanding of the overall relationship between buried and standing remains continues to be developed through research projects such as the "Between the Monuments" project and extensive geophysical surveys. Research Frameworks have been published for the Site and are regularly reviewed. These encourage further relevant research. The Woodland Strategy, an example of a landscape level management project, once complete, can be built on to include other elements of landscape scale planning.

It is important to maintain and enhance the improvements to monuments achieved through grass restoration and to avoid erosion of earthen monuments and buried archaeology through visitor pressure and burrowing animals.

At the time of inscription the State Party agreed to remove the A344 road to reunite Stonehenge and its Avenue and improve the setting of the Stone Circle. Work to deliver the closure of the A344 will be complete in 2013. The project also includes a new Stonehenge visitor centre. This will provide world class visitor facilities including interpretation of the wider World Heritage property landscape and the removal of modern clutter from the setting of the Stone Circle. Although substantial progress is being made, the impact of roads and traffic remains a major challenge in both parts of the World Heritage property. The A303 continues to have a negative impact on the setting of Stonehenge, the integrity of the property and visitor access to some parts of the wider landscape. A long-term solution remains to be found. At Avebury, a World Heritage Site Traffic Strategy will be developed to establish guidance and identify a holistic set of actions to address the negative impacts that the dominance of roads, traffic and related clutter has on integrity, the condition and setting of monuments and the ease and confidence with which visitors and the local community are able to explore the wider property.

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Stonehenge A303 improvement: Addendum to outline assessment of the impacts on the Outstanding Universal Value of the World Heritage property of potential route options presented by Highways England for January 2017 Assessment of route option D081C

Nicola Snashall BA MA PhD MCIfA
National Trust

Christopher Young BA MA DPhil FSA
Christopher Young Heritage Consultancy

March 2017

Historic England

National Trust

Executive Summary

Following a public consultation exercise in early 2017, Highways England have developed a further route option, D081C, for the A303 from the western tunnel portal to the western boundary of the Stonehenge World Heritage property. This report has been commissioned by Historic England and the National Trust to inform their response to this proposal. It describes and analyses only the impacts of option D081C and must be read in conjunction with our earlier report (Snashall and Young 2017), which contains our assessment of the remainder of the route and our overall evaluation of its impact on the Outstanding Universal Value of the World Heritage property as a whole.

Route D081C as proposed by Highways England - D081C (2) - postulates a western tunnel exit just to the south of the current A303 close to the Normanton Down barrow group. The below-ground section of the road is extended by a 300m long canopy (Fig. 3). From that exit, the new dual carriageway, utilising a shallow fold in the landscape, diverges slightly from the present line of the A303 and crosses the World Heritage boundary to the south of the present A303/ A360 junction. This part of the route is partly on the surface and partly in cutting. The A360 is diverted to the west, thus giving more space to the Winterbourne Stoke and Diamond barrow groups. The A303 passes under the new route of the A360 with a grade separated junction some 400m west of the World Heritage boundary. The visual impacts of the new route are assessed in Table 1. The direct physical impacts are assessed in Table 2.

The new route is close to three barrow groups, all of which are key attribute groups (Fig. 1). The tunnel passes under the northern part of the Normanton Down cemetery, comes to the surface close to its western edge and then passes between the Winterbourne Stoke and Diamond groups which are about 200m apart. Unlike D061 and D062, as proposed for the public consultation, this alignment is well clear of the solstitial midsummer sunrise/ midwinter sunset axis through Stonehenge. The new route does have visual impacts on relationships between key attribute groups. It will impact on the three barrow groups closest to it and also in distant views from attribute groups along the King Barrows/ Coneybury ridge and also from the Lake group. These distant impacts are likely to be acceptable.

This is not the case for the impacts on the three groups close to the new surface route. As presently proposed, the road would be highly visible in some views from Normanton Down to the Winterbourne Stoke and Diamond groups, and vice versa, since these view lines are generally aligned with the axis of the road. Traffic on the surface sections of the road will also be visible in views between the north-east part of the Winterbourne Stoke group and Normanton Down. Where the route passes between the Diamond and Winterbourne Stoke groups it will be highly obtrusive visually and aurally, even in cutting, because observers will be close to its line. Overall the direct physical impacts of the proposals on attributes of OUV are low; there is likely to be some physical damage to any surviving elements of a single previously excavated round barrow.

As presently proposed, this route option will have a severe adverse impact of very large significance on the Winterbourne Stoke, Normanton Down and Diamond groups. Despite the overall general benefits to the rest of the World Heritage property, the harm caused to these three barrow groups is unacceptable. In a 2016 public planning inquiry, the inspector said that a *WHS is made up of all its attributes and that*

none should be given greater priority than another; it is an integral whole (Planning Inspectorate 2016, para 18).

As part of the heritage impact assessment methodology recommended by ICOMOS (2011), we considered options for mitigating this adverse impact. Table 1 shows the effect of extending the bored tunnel in 100m increments for up to 500m with a 300m long canopy in each case. This would have two results. Firstly it would to varying degrees, dependent upon the location of the portal / canopy entrance for each option, reduce the length of visible road in the western part of the World Heritage Site The local topography also means that the surface route will be deeper below surrounding ground levels, thus concealing traffic. Options D081C (5-7) would also reduce the risk of physical damage to archaeological sites which are attributes of Outstanding Universal Value.

These options do mitigate impacts to some extent but do not remove the adverse impact where the route passes close to, and between the Winterbourne Stoke and Diamond groups. This would remain unacceptably large. There would also still be adverse impact on the views along the road alignment from Normanton Down to the Winterbourne Stoke and Diamond groups, and vice versa. However we consider that this impact could be mitigated by placing a canopy over the road where it passes through this gap. To be effective, this canopy would need to be some 400m long.

By thus lowering the road and placing more of it under cover, we consider that it may be possible to mitigate its adverse impact to an extent which would sufficient to protect the Outstanding Universal Value of these attributes, and of the World Heritage property as a whole. It is strongly recommended that this mitigation strategy should be explored and further proposals for this stretch of road developed to minimise adverse impact on attributes of Outstanding Universal Value. Because of the proximity of all three barrow groups to the proposed road, if an acceptable mitigation strategy can be identified, exceptional care will need to be taken during construction to avoid physical damage to them and to other attributes of Outstanding Universal Value.

Contents

1 Introduction

Following initial analysis of responses to the public consultation on the A303 Amesbury to Berwick Down road improvement proposals, Highways England have proposed a further alternative location next to the present A303 for the western portal of the road tunnel, a canopy extending the section of the road below ground, a new route to the western boundary of the World Heritage property, and a new location for the junction with the A360.The bored tunnel would be 2.7kms long and the canopy extension 300m in length. A stretch of the A360 north and south of the present A303/ A360 junction would be diverted away from the World Heritage property. This new option is called D081C.

This addendum to our previous report (Snashall and Young 2017) has been requested by Historic England and the National Trust to inform their response to the new proposal in so far as it differs to the previous options proposed by Highways England in January 2017. It therefore considers only the impacts of the new route from the western tunnel portal. It does not discuss the impact of the scheme from the western portal eastwards. This addendum must be read in conjunction with that previous report.

Historic England and the National Trust requested that this review should also consider the impact of a portal position on the D081C alignment but equivalent to the 2.9km on-line scheme considered in our initial outline impact assessment of 2014 (Snashall and Young 2014). The latter of course started in a different position in the east to the options on which Highways England consulted in early 2017. The end of the bored tunnel section proposed in D081C is approximately 120 metres west of the 2.1km option (the previous 'Published Scheme' assessed in 2014) and approximately 80 metres east of the 2.5km option assessed in the 2014 report. Historic England and the National Trust have asked us to consider possible means of mitigating adverse impacts of this proposed route, in particular by lengthening the combined tunnel and canopy. This report has therefore assessed the following variants of the option:

1. 2.7 kms bored tunnel
2. 2.7 kms bored tunnel plus 300m canopy, as shown on Fig.3, giving a total below –ground length of 3kms (the scheme as proposed by Highways England in D081C)
3. 2.8 kms bored tunnel plus 300m canopy, giving a total below-ground length of 3.1kms
4. 2.9 kms bored tunnel plus 300m canopy, giving a total below-ground length of 3.2kms
5. 3.0 kms bored tunnel plus 300m canopy, giving a total below-ground length of 3.3kms
6. 3.1 kms bored tunnel plus 300m canopy, giving a total below-ground length of 3.4kms
7. 3.2 kms bored tunnel plus 300m canopy, giving a total below-ground length of 3.5kms

Together with the 2014 proposal for a 2.9kms online tunnel, this gives eight different options which are assessed below in Table 1 in Chapter 2. Table 1 also shows the impact of the current A303. There is a narrative description of the changing impacts of the differing positions of tunnel / canopy.

We have separately examined the case for further mitigation by placing a canopy from the current A303/ 360 junction eastwards. This is in order to mitigate the adverse impacts of the road where it passes through the gap between the Winterbourne Stoke and Diamond barrow groups. At its narrowest, this gap (north –south) between the barrow groups is approximately 200m wide.

Changes in context (Fig.1)

Since our first assessment in 2014, considerable archaeological work has been carried out in this part of the World Heritage property (Historic England 2015 a, b, c, 2016, Wessex Archaeology 2016 a, b). The discovery of one previously unknown long barrow and the confirmation of the existence of a previously dismissed long barrow (the existence of which had been questioned on the basis of the interpretation of aerial photographs but which has now been confirmed by excavation) together with the discovery of a previously unknown hengiform monument near to The Diamond wood has led us to identify this dispersed group of monuments as the Diamond group. It has been numbered as 18 on Fig.1, in the list below, and has been included in Table 1.

Re-assessment of the Normanton Down group has suggested that its boundaries were drawn too tightly in our 2014 report (in part a product of the dominance of the existing A303 in current thinking). Its boundaries have been extended to the south to include outliers on the side of the valley south of the main group of barrows on Normanton Down. Its boundaries have also been extended to the north and west to include Normanton Gorse which contains at least one large barrow, as well as the Sun Barrow north of the wood and the so-called unnamed group by the A303 (formerly listed as Group 15). To avoid changes to numbering of remaining groups, this extended Normanton Down group has been numbered as 14/15 in the list below and in the assessment tables (Snashall and Young 2017, 8-9).

These reassessments add significant new relationships to be assessed for this new route D081C compared to our previous analysis of online tunnel options in 2014. This applies particularly to those between the Diamond group, the Winterbourne Stoke cemetery, and the Normanton Down group but also affects some more distant visual links. The proposed new route option passes closely between the Diamond group and Winterbourne Stoke groups, while its tunnel portal is very close to the Normanton Down group. Some of the key visual links are more-or-less aligned with the road itself.

Listed roughly from north-east to south-west, the 17 key groups of attributes are now (See Fig. 2):

1. Durrington Wall
2. Woodhenge
3. The Avenue east of King Barrow Ridge
4. Unnamed barrow group either side of this stretch of the Avenue
5. King Barrows (Old and New)
6. Coneybury Henge
7. Coneybury Barrow (King Barrow) south of Coneybury Henge
8. The Cursus E end
9. The Cursus centre
10. The Cursus W end
11. Cursus Barrows
12. Stonehenge
13. Stonehenge Down Barrows

14/15 Normanton Down Barrows, including the unnamed group either side of the A303

16. Lake Barrows
17. Winterbourne Stoke Barrows
18. The Diamond group

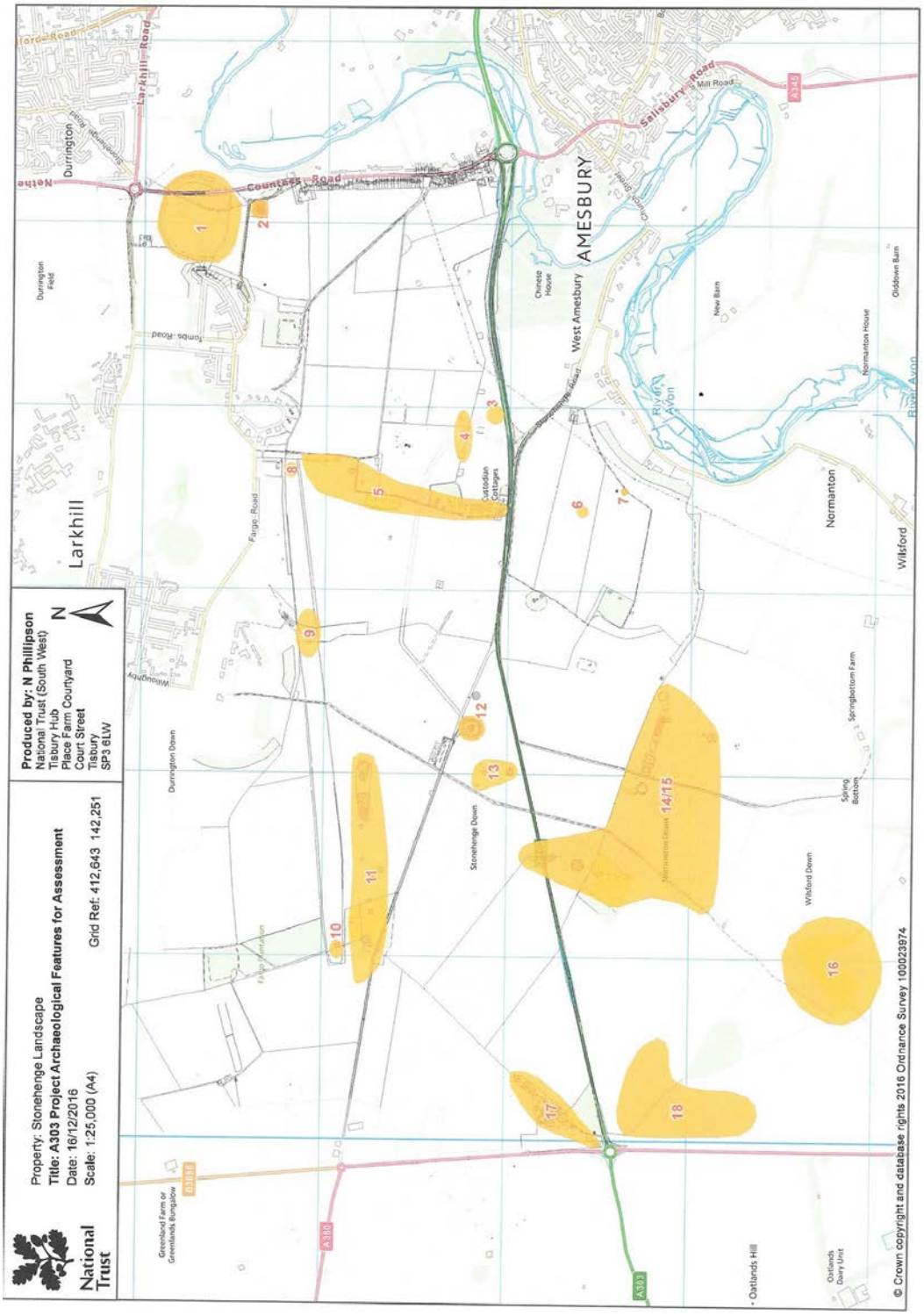

Fig. 1 Key groups of attributes of OUV in the Stonehenge World Heritage property

Methodology

The methodology used is that used in our two previous reports (Snashall and Young 2014, 2017). Visual impacts are assessed in Chapter 2 and direct impacts on archaeological features in Chapter 3. Our overall assessment is set out in Chapter 4. As previously, it is important to note that this is not a full Heritage Impact Assessment of the proposed works. It is a preliminary outline assessment based on available information and carried out within the time limits set for us. A full Heritage Impact Assessment will still need to be carried out by Highways England.

This methodology was developed by ICOMOS (ICOMOS 2011). The scale of impact of proposed changes has been ranked as:

- No change
- Negligible change
- Minor change
- Moderate change
- Major change

Change can be adverse or beneficial. This gives a nine-point scale with 'neutral' as its central point. The significance of the impact of the change is scored as a function of the importance of the attribute and the scale of change. For any feature of international significance (i.e. World Heritage properties and their attributes of OUV) the result of this scoring is as follows:

VALUE OF HERITAGE ASSET	**SCALE & SEVERITY OF CHANGE/IMPACT**				
	No change **N**	**Negligible change**	**Minor change**	**Moderate change**	**Major change**
For WH properties Very High **– attributes which convey OUV**	**SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OR BENEFICIAL)**				
	Neutral	Slight	Moderate/ Large	Large/very Large	Very Large

Fig 2: significance of impacts on World Heritage properties and their attributes (ICOMOS 2011, 9)

According to the ICOMOS HIA Guidance, therefore, any moderate or major impact on an attribute of OUV is of large/ very large significance.

The scale of assessment used for visual impacts in the 2014 assessment (Snashall and Young 2014, 39) has been used for this report also to ensure as far as possible consistency of approach:

- Impact has been assessed as major of very large significance when the A303 severs a visual connection or is very prominent in a view of one (e.g. the view from Stonehenge to Old and New King Barrows).

- Impact has been assessed as moderate of large/ very large significance where the A303 is visible but does not sever the viewline and is not central in the view.
- Impact is assessed as minor of moderate/ large significance when the A303 is barely visible or a distant backdrop in a view (e.g. the view from Durrington Walls to Woodhenge).
- Where there is no impact, the value has been given as none.

This ICOMOS methodology is robust and now widely recognised. However, we have identified some systemic issues in using it. It is difficult to use it to recognise that an impact can have both negative and positive effects. The scoring system assesses the significance of impacts according to the importance of the asset affected. Since all the attributes of Outstanding Universal Value affected by the proposals are of the highest significance by definition, the significance of any impacts of moderate or major change is therefore rated as large/ very large (ICOMOS 2011, para 5.8). This tends to bunch together a range of differing impacts under that one score. This can make it difficult to differentiate the varying impacts using just the scoring system. We have attempted to deal with this within the narrative in subsequent chapters (pp 12-13, 20).

2 The impact of Route Option D081C

Highways England has proposed a new route option, D081C for the west end of the road improvement across the Stonehenge component of the World Heritage property. This is close to the line of the A303 from the western mouth of the tunnel to the property boundary. This evaluation covers only the impacts of this part of the route. Impacts along the rest of the route to the east were considered in our previous report (Snashall and Young 2017), and the two reports must be read in conjunction.

The new option proposes a bored tunnel 2.7kms long with the option of a 300m canopy (Fig.3). This brings the point where the road emerges to just south of the present A303. From that point, the road runs part in shallow cutting, part on the surface through a shallow natural east-west depression. The length of this open-air stretch is c.1km within the World Heritage property. The route very gradually diverges from that of the present A303, crossing the boundary of the property c.100m south of the centreline of the present road through its junction with the A360. It then passes under the realigned A360 with a grade separated junction some 400m west of the World Heritage property.

The route makes good use of the existing topography and is moved away from the Winterbourne Stoke barrow group. This of course moves it closer to the less visible Diamond group. The gap between the two groups is in any case quite narrow. The eastern end of this surface stretch is close to the northern part of the Normanton Down group. The close proximity of these three barrow cemeteries makes the route a very sensitive one.

Table 1 shows the results of an assessment of its visual impact on the same terms as those of other route options in 2014 and 2017. The table also shows the impacts of the present A303 and the assessment made of the 2.9kms online routes in 2014. The 2014 assessments of the impact of the A303 and of the 2.9kms online route have been adjusted to take account of the changes, outlined above, in our understanding of the archaeology of this part of the World Heritage property (Snashall and Young, 2014, 2017).

It shows only those linkages where there is some impact from this western part of the proposed route. Analysis and a field visit (on 24th March) showed that in addition to the Winterbourne Stoke, Normanton and Diamond groups this section of road is likely to be visible from a small number of comparatively distant attributes (the east end of the Cursus, the King Barrows, Coneybury Henge and Coneybury Barrow) along the north-south ridge which divides the eastern part of the World Heritage property from the rest. These are over 2km from the new road, which is screened from Stonehenge and other attributes close to it by intervening high ground. It is also visible from the Lake barrow group to the south which is 1.3kms distant.

The new route is however very close to the three barrow groups of Normanton Down, the Diamond and Winterbourne Stoke. It therefore has the potential to disrupt sensitive visual links between these three groups.

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the 2.9kms on-line bored tunnel assessed in 2014, and of route D081C as proposed by Highways England and of options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms Online	D081C (1) no canopy	D081C (2) + 300m canopy	D081C (3) + 100m tunnel + 300m canopy	D081C (4) + 200m tunnel + 300m canopy	D081C (5) + 300m tunnel + 300m canopy	D081C (6) + 400m tunnel + 300m canopy	D081C (7) + 500m tunnel + 300m canopy
King Barrows (Old and New)										
1. King Barrows (Old and New)	Normanton Down Barrows	Major adverse	Moderate beneficial	Minor adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Major beneficial	Major beneficial	Major beneficial
2. King Barrows (Old and New)	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
3. King Barrows (Old and New)	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
4. King Barrows (Old and New)	The Diamond	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Coneybury Henge										
5. Coneybury Henge	Normanton Down Barrows	Moderate adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
6. Coneybury Henge	Lake Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
7. Coneybury Henge	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
8. Coneybury Henge	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Coneybury Barrow										
9. Coneybury Barrow	Normanton Down Barrows	Moderate adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
10. Coneybury Barrow	Lake Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
11. Coneybury Barrow	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
12. Coneybury	The Diamond	Major	Minor	Moderate	Minor	Minor	Minor	Minor	Minor	Minor

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the 2.9kms on-line bored tunnel assessed in 2014, and of route D081C as proposed by Highways England and of options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms Online	D081C (1) no canopy	D081C (2) + 300m canopy	D081C (3) + 100m tunnel + 300m canopy	D081C (4) + 200m tunnel + 300m canopy	D081C (5) + 300m tunnel + 300m canopy	D081C (6) + 400m tunnel + 300m canopy	D081C (7) + 500m tunnel + 300m canopy
Barrow		adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse
Cursus East End										
13. Cursus E end	Normanton Down Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
14. Cursus E end	Lake Barrows	Major adverse	None	None	None	None	None	None	None	None
15. Cursus E end	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
16. Cursus E end	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Normanton Down Barrows										
17. Normanton Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
18. Normanton Down Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
19. Normanton Down Barrows	Coneybury Barrow	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
20. Normanton Down Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
21. Normanton Down Barrows	Lake Barrows	Major adverse	Major beneficial	Moderate adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
22. Normanton Down Barrows	Winterbourne Stoke Barrows	Major adverse	Moderate adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
23. Normanton Down Barrows	The Diamond	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
Lake Barrows										

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the 2.9kms on-line bored tunnel assessed in 2014, and of route D081C as proposed by Highways England and of options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms Online	D081C (1) no canopy	D081C (2) + 300m canopy	D081C (3) + 100m tunnel + 300m canopy	D081C (4) + 200m tunnel + 300m canopy	D081C (5) + 300m tunnel + 300m canopy	D081C (6) + 400m tunnel + 300m canopy	D081C (7) + 500m tunnel + 300m canopy
24. Lake Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
25. Lake Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
26. Lake Barrows	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
27. Lake Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
28. Lake Barrows	Normanton Down Barrows	Moderate adverse	Moderate beneficial	Minor adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
29. Lake Barrows	Winterbourne Stoke Barrows	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
30. Lake Barrows	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Winterbourne Stoke Barrows										
31. Winterbourne Stoke Barrows	King Barrows (Old & New)	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
32. Winterbourne Stoke Barrows	Coneybury Henge	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
33. Winterbourne Stoke Barrows	Coneybury Barrow	Major adverse	Minor adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
34. Winterbourne Stoke Barrows	Cursus E end	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
35. Winterbourne Stoke Barrows	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse	Minor adverse	Minor adverse
36. Winterbourne	Lake Barrows	Major	Major	Major	Major	Major	Major	Major	Major	Major

This table measures the scale of the visual impact of the present A303 and of the likely impacts of the 2.9kms on-line bored tunnel assessed in 2014, and of route D081C as proposed by Highways England and of options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms Online	D081C (1) no canopy	D081C (2) + 300m canopy	D081C (3) + 100m tunnel + 300m canopy	D081C (4) + 200m tunnel + 300m canopy	D081C (5) + 300m tunnel + 300m canopy	D081C (6) + 400m tunnel + 300m canopy	D081C (7) + 500m tunnel + 300m canopy
Stoke Barrows		adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse
37. Winterbourne Stoke Barrows	The Diamond	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
The Diamond Group										
38. The Diamond Group	King Barrows (Old and New)	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
39. The Diamond Group	Coneybury Henge	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
40. The Diamond Group	Coneybury Barrow	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse
41. The Diamond Group	Cursus E end	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
42. The Diamond Group	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse
43. The Diamond Group	Lake Barrows	None	None	None	None	None	None	None	None	None
44. The Diamond Group	Winterbourne Stoke Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse

Table 1: Visual relationships with key attribute groups

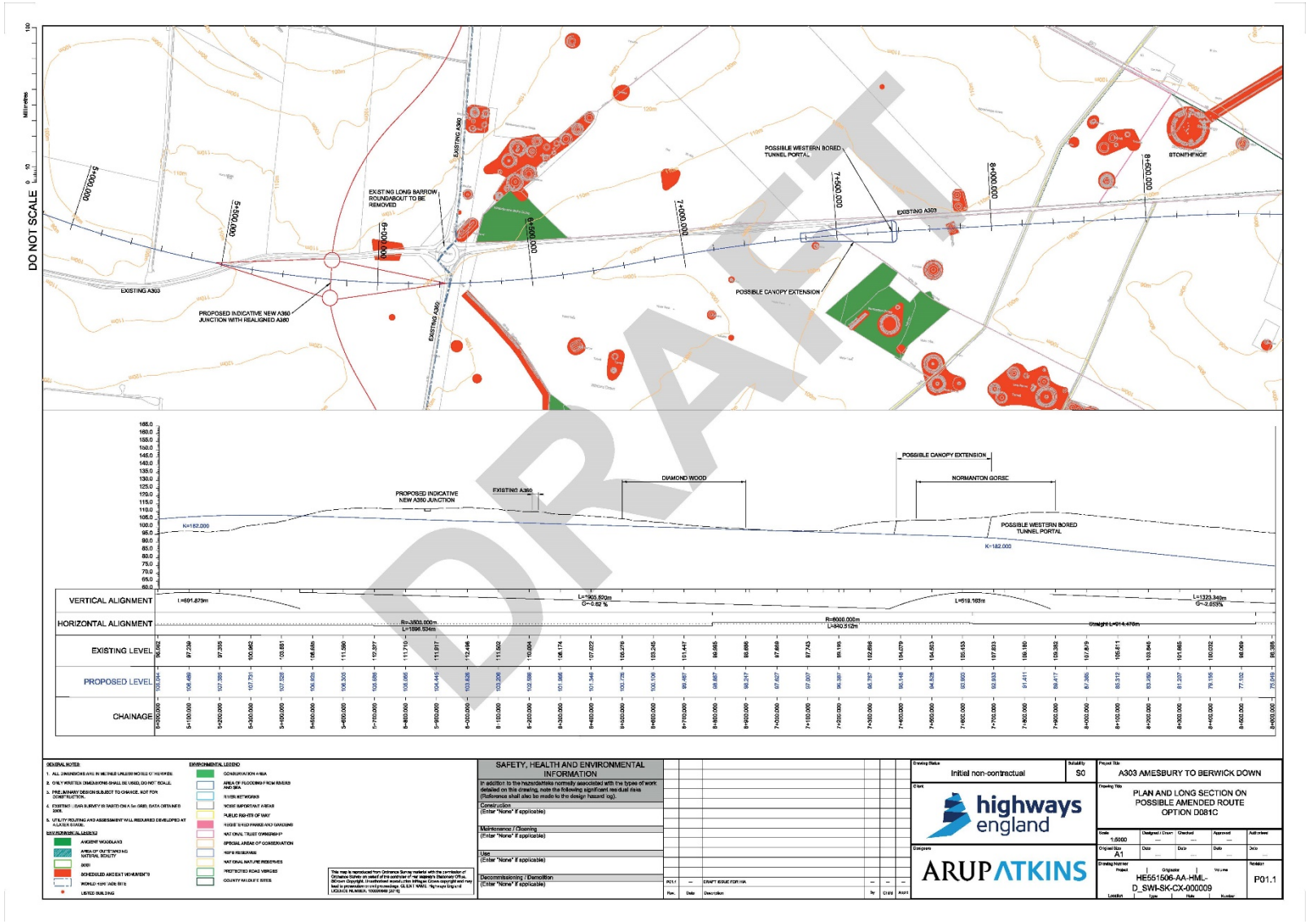

Fig 3: Highways England plan of option D081C

The sensitivity of this route is clear from the Table and from Fig.3. There are undoubtedly improvements in some of the distant views, but not all. In some cases, for example from the King Barrow/ Coneybury Ridge, the introduction of even a short stretch of dual carriageway into this landscape will have an adverse impact, particularly as the road line is on much the same alignment as the view, which will accentuate its impact.

The impact is much more severe for the barrow groups which are close to the new road proposal. As proposed, the route D081C, even with a 300m canopy, has a moderate/ major adverse impact of large/ very large significance on the Normanton Down, Winterbourne Stoke and Diamond barrow groups. Despite the gains elsewhere in the World Heritage property, the harm to these groups would have a substantial adverse impact on these attributes of Outstanding Universal Value.

We were therefore requested by Historic England and the National Trust to consider whether extending the length of the tunnel and/ or the canopy would mitigate the adverse impact. Table 1 assesses the impact of increasing the total length of underground highway along the proposed alignment in 100m iterations out to a maximum of 3.5kms (a 3.2km bored tunnel plus 300m canopy). This would have two results. Firstly it would to varying degrees, dependent upon the location of the portal / canopy entrance point for each option, reduce the length of visible road on this western side of the World Heritage property. Secondly it would lower the level of the road where it was in the open. This is because of falling ground levels west of the proposed exit and the need to maintain sufficient ground cover over both the bored tunnel and the canopy. With the exception of Option 1 which has no canopy we have assessed varying lengths of bored tunnel with a canopy of 300 metres for each. However the visual impacts on OUV would be similar if the additional length of bored tunnel were instead to be an additional length of canopy.

Placing the road sufficiently deep in cutting would effectively conceal traffic from views between attributes across the line of the road, provided the attributes are sufficiently far apart. Placing the road in cutting would be less effective in hiding the traffic when the view was more or less along the line of the road. This is the case for the views from the south-west end of Winterbourne Stoke Cemetery and from the Diamond group towards the northern part of the Normanton Down group and vice versa. Placing the road in cutting would also be less effective where either the two attributes were close together (as is the case for the south-west end of Winterbourne Stoke and the Diamond groups) or where the viewer is situated close to the cutting. In those circumstances the road is likely to obtrude both visually and aurally.

The options examined in Table 1 therefore mitigate the impact of the new route to some extent. For the options we have assessed this would be greatest if it was possible to extend the combined bored tunnel and canopy out to the 3.5kms length postulated in option D081C (7). The length of new open dual carriageway on the west side of the World Heritage property would be almost halved and the road bed would be sufficiently deep for traffic not to be visible when viewed at a distance from the side. However Options 5, 6 and 7 would have a substantively less adverse impact on the visual relationships between the three key attribute groups discussed above. The adverse impact overall would be lessened.

This approach alone also does not deal with the impact of the road on the south-west end of the Winterbourne Stoke group and the Diamond group. The open cutting here would clearly impact adversely on the setting of both monuments as well as on the linkage between them. The road

would still impact strongly on views between these two groups because some viewpoints would be very close to the edge of the road cutting. A further mitigation measure would be required. This could be achieved by placing a canopy over the road cutting eastwards from the present line of the A360 (the western boundary of the WHS). To be effective, this would need to be at least 400m long. A combination of both approaches to mitigation would probably be sufficient to mitigate the adverse impacts of the proposal. The actual length of the covered sections would of course need to reflect what is technically possible.

3 Direct physical impacts of new road construction on archaeological features of Outstanding Universal Value

The assessment of the impact of physical damage to archaeological sites caused by new construction work was carried out according to the methodology set out in our earlier reports (Snashall and Young 2014, 2017). As this assessment considers only those direct physical impacts related to the elements of the present proposals forming part of D081C at the western end of the World Heritage property it should be read in conjunction with both the methodology and the assessment set out in our 2017 report.

The results of the current assessment are set out on an option by option basis in Table 2. All of the impacts assessed are adverse as destruction of physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites that are themselves an attribute of Outstanding Universal Value can only be a negative impact. The assessment of whether the impact is negligible, minor, moderate or major is necessarily a matter of subjective professional judgement. Factors taken into consideration when making that assessment included:

- The proportion of the site or monument affected
- The degree to which the part of the site or monument would be affected; this could range between minor surface disturbance and wholesale destruction.
- The condition of the site or monument at present

In accordance with the ICOMOS impact assessment Guidelines (ICOMOS 2011), as all of the archaeological features identified as subject to physical impacts are attributes of Outstanding Universal Value and therefore of high importance, negligible impacts will be of slight significance; impacts of minor scale will be of moderate / large significance; impacts of moderate scale will be of large / very large significance and major impacts will be of very large significance.

In summary the number of archaeological attributes of Outstanding Universal Value that are impacted by Options 1 – 7 of the D081C proposals at the western end is low for all options, with only two monuments that are attributes of OUV (both relating to a single, extremely rare Beaker cemetery) either on the line of the proposed options or in such close proximity to them that it is considered that direct physical impacts from construction could not be avoided however careful the mitigation put in place.

In relation to the round barrow (and its associated Beaker cemetery) **SU14SW839 (also a Scheduled Monument HA list no.** 101083)2:

- Options 1 & 2 would result in a moderate adverse impact of large to very large significance
- Options 3 & 4 would result in a major adverse impact of very large significance
- Option 5 would result in a minor adverse impact of moderate to large significance

In contrast Options 6 & 7 would have no direct physical impacts and would result in an impact of no change to the Outstanding Universal Value of the World Heritage Property.

It should also be noted that for Options 1 to 5 the bored tunnel face and/or the proposed canopy and associated cutting / infrastructure is in very close proximity to the component parts of the

Normanton Down Barrow Group. Given the extreme archaeological sensitivity of this area any proposed construction work would have to have special measures put in place to ensure that no damage is done to any of the sites and monuments in this area. Likewise any future requirements to access this area for maintenance needs (for instance to the canopy or the infrastructure beneath it) would have to be assessed and the impacts fully understood and mitigated. In contrast the adoption of the mitigation proposed in Options 6 & 7 would result in a significantly lower risk of unintended adverse direct physical impacts on sites and monuments that are attributes of OUV of the World Heritage Property and in particular the Normanton Down group.

As set out above there is a high likelihood of direct physical impacts from construction with Options 1 - 4. Though measures could be put in place during construction to avoid / reduce or mitigate these, for some of the options the most effective conservation measure with regard to direct physical impacts would be the selection of an alternative option which would wholly avoid the risk of any construction impacts on all of these monuments – Options 6 and 7 would both provide effective options for avoiding the risk of adverse direct physical impacts to attributes of OUV. Option 5 would allow that risk to be reduced and potentially with appropriate mitigation to be effectively managed.

In addition, it should be noted that although evaluation has been undertaken across some areas covered by these current proposals in a previous iteration of the road proposals (Leivers and Moore 2008) evaluation and assessment techniques have advanced considerably in the intervening period. And new and thorough evaluation, assessment and archaeological excavation - appropriate to an archaeological World Heritage property - will be required prior to any construction work.

Table 2 Direct **Physical Impacts of D081C Options 1 -7 on archaeological sites and monuments that are attributes of OUV**

Wilts. HER Pref. Ref. Heritage Asset No.	**Site name / description**	**Summary Comments**	**D081C (1) no canopy Impact / Comments**	**D081C (2) + 300m canopy Impact / Comments**	**D081C (3) + 100m tunnel + 300m canopy Impact / Comments**	**D081C (4) + 200m tunnel + 300m canopy Impact / Comments**	**D081C (5) + 300m tunnel + 300m canopy Impact / Comments**	**D081C (6) + 400m tunnel + 300m canopy Impact / Comments**	**D081C (7) + 500m tunnel + 300m canopy Impact / Comments**
SU14SW184	Two excavated Bronze Age burials	No longer extant, fully excavated but forming part of a wider, nationally rare Beaker cemetery which also includes **SU14SW839** below (Leivers & Moore 2008)	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**
SU14SW839 1010832	Round barrow	Forms part of a wider, nationally rare Beaker cemetery which also includes **SU14SW184** above (Leivers & Moore 2008)	**Moderate Adverse** Asset in very close proximity to footprint of road / canopy. some direct physical impact to archaeological asset during construction therefore assessed as unavoidable	**Moderate Adverse** Asset in very close proximity to footprint of road / canopy. some direct physical impact to archaeological asset during construction therefore assessed as unavoidable	**Major Adverse** Construction of canopy and related infrastructure would wholly destroy this asset	**Major Adverse** Construction of canopy and related infrastructure would wholly destroy this asset	**Minor Adverse** Asset in very close proximity to bored tunnel exit some direct physical impact to archaeological asset during construction therefore assessed as highly likely	**No change**	**No change**

4 Discussion and Conclusion

This chapter sums up the impact of this particular option on the attributes of Outstanding Universal Value of the Stonehenge, Avebury and Associated Sites World Heritage property. It deals only with the impact of the D081C option (western bored tunnel portal, canopy and its associated road alignment) since the overall assessment of the impact of the road proposals is contained in our previous report to which this is an addendum (Snashall and Young 2017).

The World Heritage property has seven identified attributes. It is also necessary to consider any potential impacts on integrity and authenticity. The attributes are:

1. Stonehenge itself as a globally famous and iconic monument.
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.
3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.
5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.
6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.
7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

This assessment of the impact of the existing A303, the 2014 2.9kms on-line option, Highways England option D081C, and the various proposals for mitigation proposal, focuses primarily on the three key attributes of the Normanton Down, Diamond and Winterbourne Stoke barrow groups, and the contribution they make to the Outstanding Universal value of the property as a whole. We have also taken into account the impacts on the barrow groups themselves. These impacts are considered below in relation to the seven attributes identified in the World Heritage Site Management Plan (Simmonds and Thomas 2015, 32). Impacts have been summarised in Table 3.

Table 3: Overall assessment of the impacts of the current A303, the 2014 2.9kms on line option, and D081C, and mitigation options, on the contribution of the Normanton Down, Diamond, and Winterbourne Stoke barrow groups to the OUV of the World Heritage Site

The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of negligible scale is of slight significance, a minor one is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

Attributes of Outstanding Universal Value	A303 now	2014 2.9km on line	D081C (1)	D081C (2)	D081C (3)	D081C (4)	D081C (5)	D081C (6)	D081C (7)	+WS/ D canopy
1 Stonehenge itself as a globally famous and iconic monument	Major adverse	None	None	None	None	None	None	None	None	None
2 The physical remains of Neolithic and Bronze Age funerary and ceremonial monuments and associated sites	Major adverse	None	Negligible adverse	Negligible adverse	Minor adverse	Minor adverse	Negligible adverse	None	None	None
4 The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy	Major adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Moderate beneficial
3 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape 5 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other 6 The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other sites of the period, forming a landscape without parallel	Major adverse	Moderate adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Moderate beneficial
7 The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects,…. and others	Major adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
Integrity	Major adverse	Moderate adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Moderate beneficial
Authenticity	Major adverse	Moderate adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Moderate beneficial
Overall assessment of the impact on the OUV of Stonehenge component of the WHS	Major adverse	Moderate adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Moderate beneficial
Overall assessment of the significance of the impact on the OUV of the Stonehenge component of the WHS	Very large negative	Large negative	Very large negative	Very large negative	Large negative	Large negative	Moderate negative	Moderate negative	Moderate negative	Large positive

1 Stonehenge itself as a globally famous and iconic monument.

This part of the road scheme is, on its own, unlikely to have any direct impact on the international renown of Stonehenge. The road scheme as a whole, if it removes the A303 as a visible feature from the World Heritage property without damage to its Outstanding Universal Value, will enhance this attribute.

2 The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.

On the basis of research to the present date, the proposed option D081C should have limited impact on the physical remains of Neolithic and Bronze Age funerary and ceremonial and associated sites. As far as we can tell, the footprint of the road as currently proposed by Highways England avoids known archaeology but thorough archaeological assessment, evaluation and excavation of the affected areas will be essential before any works are undertaken.

Physically two attributes of Outstanding Universal Value may be affected by construction of this route. One of these has been fully excavated while the other has extant below-ground remains. Both are part of a rare Beaker cemetery. The degree of adverse impact will depend on which option is selected. Options D081C (6) and (7) have the least risk of damage; while the risk attached to Option D081C (6) could be effectively removed or reduced if appropriately mitigated. Given the high sensitivity of the area as a whole it is essential that any proposed construction work is rigorously managed to minimise the risk of damage to archaeological assets, and that full archaeological evaluation and excavation is carried out before construction begins. This is especially true close to the Normanton Downs barrows close to the present A303.The risk of this type of damage would lessen as the bored tunnel section of the road gets longer.

The road will inevitably have an adverse impact on the setting of the three barrow groups closest to it at this side of the World Heritage property if it is visible. The impact of the current Highways England proposal, D081C (2), would be adverse because the road will obtrude on views of and from these cemeteries. There is likely also to be considerable aural impact for visitors to the northern part of Normanton Down and the south-west end of the Winterbourne Stoke groups, there will also be aural impacts to the Diamond group. This could be mitigated by placing the road underground as much as possible. Overall the range of impact for the various options ranges from major adverse through to no impact.

3 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.

This attribute is discussed below with attributes 5 and 6.

4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.

Stonehenge is one of the best known prehistoric sites with astronomical associations. It is now generally recognised that it was aligned on the midwinter sunset – midsummer sunrise solstitial axis. This axis crosses the A303 just to the east of its junction with Byway 12 and then passes through the Sun Barrow, north of Normanton Gorse and part of the Normanton Down Barrow group. Unlike the most recently proposed offline options for the western end of the A303 scheme (D061 and D062), option D081C lies to the north of the axis and should not interfere with it. At its closest point, if the current Highways England proposal with its canopy was built, the open road would be c.400m north of the axis and thereafter diverging from it. It would however be necessary to minimise any light

from the road, for example from vehicles, and this could be done by ensuring that the road is in deep cutting and/ or covered over as much as possible.

Overall the impact is beneficial because of the removal of light pollution. The greatest benefit will result from the maximum placing of the road underground.

3 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.

5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.

6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.

D081C (Option 2), as currently proposed by Highways England, would have a severe adverse impact of large/very large significance on these attributes in relation to the three barrow groups of Normanton Down, Winterbourne Stoke, and the Diamond. A new visible dual carriageway road would be imposed on the landscape, partly on the surface and partly in cutting, between the latter two groups at a point where they are within a few hundred metres of each other.

Views from parts of the Winterbourne Stoke group and from the Diamond group to the northern end of Normanton Down, and vice versa, would be very much along the line of the road. Views from the south-west end of the Winterbourne Stoke group towards the Diamond would be across the line of the road. Even if in cutting at this point, viewpoints would be so close to the road that it would be highly obtrusive both visually and aurally.

The option, as currently designed, would severely disrupt the ability to appreciate the relationship of the three barrow groups with the landscape (Attribute 3) and with each other (Attributes 4 and 5). The cumulative impact would be so severe as to cause a major adverse impact of very large significance to these three attribute groups despite positive benefits to the World Heritage property as a whole from the overall road scheme. This is not withstanding the undoubted positive benefits to the Winterbourne Stoke cemetery of moving the line of the A303 away from it, and to the same group and to the Diamond group of moving the A360 up to 400m away. However, positive and negative impacts to an attribute from the same development proposal cannot cancel each other out.

The scheme could however be mitigated by a combination of extending the bored section of tunnel and the use of cut and cover canopies to extend the length of the road below ground, and also to conceal the road at the points where the Winterbourne Stoke group and Diamond barrow groups are closest to each other. It would be necessary to carry out a Heritage Impact Assessment of a more worked-up scheme along these lines to assess the efficacy of such mitigation, but it is possible that a scheme could be developed that is acceptable in terms of its impact on these three attribute groups.

7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

The proposed works in this part of the World Heritage property are unlikely to have much impact on the influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others. Such impact as there may be will be a minor beneficial change.

Integrity

The character of the integrity of the World Heritage property is discussed in our main report (Snashall and Young 2017, 56-7). That discussion notes that new surface roads in the World Heritage property can have an adverse impact, although for the property as a whole the overall impact on integrity was evaluated as moderate to major beneficial change of large or very large significance. However, the impact on the specific attributes groups mainly affected by option D081C (2) would be a major adverse change of very high significance. This could be mitigated by measures discussed above to put more of the road out of sight. This would mitigate not just visual impacts, but also adverse aural impacts. It would also increase potential for improving access within the World Heritage property across the line of the A303.

Authenticity

Authenticity is about the truthfulness of the evidence for Outstanding Universal Value, and the ability to appreciate that evidence. The UNESCO Operational Guidelines (UNESCO 2015) list a series of tests for authenticity including form and design, materials and substance, location and setting and spirit of place (see UNESCO 2015 para 82 and also Young, Chadburn and Bedu 2009, 32-33). As for the A303 as a whole as it affects the World Heritage property, the impact of the proposed Option D081C is greatest on the location and setting, and the spirit and feeling of the three main attribute groups affected by the proposal. As proposed, the overall impact on authenticity would be negative. The mitigation strategies outlined above would minimise the negative impact.

Overall impact of Option D081C on the Outstanding Universal Value of the World Heritage property and on the Neolithic and Bronze Age funerary and ceremonial monuments directly affected.

Overall, the impact of the proposed scheme for improvement of the A303 through Stonehenge is broadly positive. However, this particular option for the western surface stretch of the A303 from the tunnel mouth to the property boundary does have adverse impacts on three important barrow cemeteries (Normanton Down, Winterbourne Stoke and the Diamond). On the basis of the Highways England design as proposed (D081C) (Options 1 and 2), these can be rated as major adverse changes of very large significance. Impacts on more distant attributes which are affected are much less and probably acceptable.

All impacts on attributes of Outstanding Universal Value need to be treated seriously. This is the view taken by the UK planning inspector in the Chacewater enquiry in the Cornwall and West Devon Mining Industry World Heritage property (Planning Inspectorate 2016, para 18). It is not acceptable to say that some attributes of Outstanding Universal Value are less important than others. However, within a large World Heritage property, assessment of a development proposal which affects many of its attributes has to come to an overall evaluation of the impact on the Outstanding Universal Value of the World Heritage property as a whole (ICOMOS 2011, Appendix 4, para 7). This in practice will lead to some balancing out of negative and positive impacts across the whole property to reach an overall judgement, unless the impact on negatively affected attributes is so great as to render a proposed development totally unacceptable.

The degree of change caused by the option as presented by Highways England, D081C (2), is damaging to three key groups of attributes of Outstanding Universal Value. Despite the benefits to the World Heritage property as a whole, the harm caused to these three groups is unacceptable (a major adverse impact of very high significance).

This report identifies possible mitigation that could reduce adverse impacts. Primarily this would involve lowering the road and placing more of it under cover. This could be done by extension of the bored tunnel and by use of canopies, both to extend the line of the tunnel (in particular D081C (5-7) would substantively mitigate the adverse impacts in this respect) and to bridge the road where it passes through the narrow gap between the Winterbourne Stoke and Diamond barrow groups. It is strongly recommended that this mitigation strategy should be explored and further proposals for this stretch of road developed to minimise adverse impacts on attributes of Outstanding Universal Value. Because of the proximity of all three barrow groups to the proposed road, if an acceptable mitigation strategy can be identified, exceptional care will need to be taken during construction to avoid physical damage to them.

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Stonehenge A303 improvement:

Assessment of aspects of the Preferred Route as at 4th December 2017

Nicola Snashall BA MA PhD MCIfA
National Trust

Christopher Young BA MA DPhil FSA
Christopher Young Heritage Consultancy

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Historic England

National Trust

Executive Summary

This is the latest of series of outline Heritage Impact Assessments on successive iterations of the proposals by Highways England for the improvement of the A303 which have been prepared to inform the comments of Historic England and the National Trust. On this occasion the report specifically assesses the western end of revised proposals (the **Preferred Route as of 4th December** 2017) – looking at the proposed section of new road from the western portal of the bored tunnel beneath the Stonehenge component of the World Heritage property to the western boundary of that property. The report also assesses proposals for creating a new Byway Open to All Traffic (BOAT) to link the existing Byways 12 and 11 once the existing A303 is no longer a highway.

We have examined seven options for the design approach to the road in the western part of the World Heritage property with different variations for the construction of the cutting and for mitigation measures. As a result, we have also proposed further mitigation measures to reduce unacceptable adverse impacts on the Outstanding Universal Value of the World Heritage property.

As in our previous reports ((Snashall, Young 2014, 2017a, 2017b), we have used the methodology for Heritage Impact Assessment recommended by ICOMOS (ICOMOS 2011). Also, as previously, we have assessed visual impacts of the road line separately (in Chapter 2) from direct physical impacts of road construction on archaeological features (Chapter 3). For the visual impacts, we have used the eighteen key groups of monuments that convey attributes of Outstanding Universal Value as a measure of the overall impact. Direct physical impacts have been assessed for all archaeological sites which might be impacted. The impact of the proposed new BOAT has been assessed separately (Chapter 4). Chapter 5 discusses potential overall impacts on the Outstanding Universal Value of the World Heritage property with brief conclusions in Chapter 6. We have not been able to consider the impacts of noise and light pollution as the necessary data was not available.

Based on the current information available the direct physical impact of the new proposed route appears to be negligible though the normal precautions will be needed for carrying out development in such a sensitive archaeological area. In addition to this, as a result of the new location of the Western Portal, significant visual impacts are confined to the three key monument groups closest to the road line. These are the Normanton Down, Winterbourne Stoke and the Diamond barrow cemeteries. This is clearly a key group of monuments that conveys attributes of OUV. Without mitigation, the proposed scheme would cause unacceptable damage to the links between Normanton Down (just to the east of the tunnel portal) more or less along the line of the new road to the Winterbourne Stoke and Diamond Groups close to the western boundary of the World Heritage property, and also to the links between the two latter groups which will be directly severed by the new road cutting.

Highways England have proposed mitigation measures (adding an additional 200m of cover to the cutting immediately west of the tunnel portal) which is likely to reduce satisfactorily the adverse impacts to the relationships between Normanton Down and the other two barrow groups. Highways England have demonstrated that it may be possible to mitigate the impact on the link between the Winterbourne Stoke and the Diamond groups but have not yet included sufficient mitigation proposals in their road proposals. Without adequate mitigation, the impact on these two key monument groups will be so severe as to outweigh the general benefits to the Outstanding Universal Value of the property as a whole.

The proposals for a new BOAT have a moderate adverse impact of large significance because it would introduce a new vehicle route in the middle of the World Heritage property which would

impact adversely, for example on the links between Stonehenge and the Normanton Down Barrow Group. There is also a possibility that the linking of the existing Byways 11 and 12 will increase vehicular use of the two tracks with further adverse impacts on the Outstanding Universal Value of the World Heritage property. These would be unacceptable adverse impacts on the Outstanding Universal Value of the World Heritage property.

Overall, the impact of the proposed scheme for improvement of the A303 through Stonehenge is broadly positive. However, this particular option for the western surface stretch of the A303 from the tunnel mouth to the property boundary does have adverse impacts on three important barrow cemeteries (Normanton Down, Winterbourne Stoke and the Diamond). On the basis of the Highways England design as proposed, the adverse impacts on Normanton Down will be mitigated by 200m of additional cover west of the western tunnel portal. The adverse impacts on the link between the Winterbourne Stoke and Diamond groups will without mitigation be rated as major adverse changes of very large significance. Impacts on more distant attributes which are affected are minor and probably acceptable.

Contents

1 Introduction

This report examines two specific proposed changes to the scheme for the improvement of the A303 Stonehenge, Amesbury to Berwick Down. These are:

1 Revised proposals for the route from the western tunnel portal (itself in a new location) to the western boundary of the World Heritage property;

2 Proposals to link Byways 11 and 12 by a new byway, also open to all traffic, either along the route of the existing A303, or along a new line taking advantage of lower ground immediately north of the Normanton Down Barrow Group.

This is the latest of four reports on the potential impacts of the proposed improvements to the A303 through the Stonehenge component of the Stonehenge, Avebury, and Associated Sites World Heritage property. As with its predecessors, this report focuses on the impact of the proposed scheme on the Outstanding Universal Value of the World Heritage property.

World Heritage status is the most significant international heritage designation and World Heritage properties are recognised in English planning guidance as being designations of the highest significance. By ratifying the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), and by nominating properties to the World Heritage List, the UK government has accepted the terms of the World Heritage Convention. According to Article 4 of the Convention:

> *Each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage referred to in Articles 1 and 2 and situated on its territory, belongs primarily to that State. It will do all it can to this end, to the utmost of its own resources and, where appropriate, with any international assistance and co-operation, in particular, financial, artistic, scientific and technical, which it may be able to obtain.* (UNESCO 1972, Article 4)

1 Revised proposals for the route from the western tunnel portal (itself in a new location) to the western boundary of the World Heritage property (see Fig. 3)

The previous reports (Snashall, Young 2014, 2017a, 2017b) have assessed successive iterations of the proposed route A303 and should be referred to for discussion of aspects of the proposals outside the scope of this report. In particular, this report should be read in conjunction with Snashall and Young 2017b which assessed an earlier variant of this particular route. It also re-assessed the 2.9kms hypothetical route assessed in Snashall and Young 2014, the western portal of which was located in almost the same position as is now proposed.

Historic England and the National Trust have asked us to assess seven options for this route. The visual impacts of the route are assessed in Chapter 2 of this report, and the potential for direct physical impacts on archaeological features is covered in Chapter 3. The impacts of light pollution and noise are also discussed briefly in Chapter 2, but the necessary data for evaluation was not available to us.

These seven options are:

Option 1 Sloped sides + bored tunnel;

Option 2 Sloped sides + bored tunnel + 200m canopy;

Option 3 Sloped sides + bored tunnel + 200m cut & cover extension;

Option 4 Abutment (vertical sides to cutting with top 2.5 m sloped) + bored tunnel;

Option 5 Abutment + bored tunnel + 200m canopy;

Option 6 Abutment + bored tunnel + 200m cut & cover extension;

Option 7 Abutment + bored tunnel + 200m cut & cover extension + landbridge between Winterbourne Stoke and Diamond Barrow Groups;

Additionally in our tables we have included for reference purposes the assessment of the impact of the present A303 and of the hypothetical 2.9kms tunnel from our 2014 report (the latter adjusted to take account of the changes in our understanding of the archaeology of this part of the World Heritage property since 2014) . The removal of embankments of the present A303 may also have potential impacts on the visibility or otherwise of the road in cutting west of the western tunnel portal. We have dealt with these possibilities in our narrative.

2 Proposals to link Byways 11 and 12 by a new byway, open to all traffic, either along the route of the existing A303, or along a new line taking advantage of lower ground immediately north of the Normanton Down Barrow Group. (see Fig. 4)

This is a new proposal, the impact of which we have not previously evaluated. It is proposed that both Byways 11 and 12 should remain open to all traffic as is currently the case. Byway 11 runs south from the A303 opposite Stonehenge itself to join a public highway in Lake village in the south-east corner of the World Heritage property. Byway 12 runs from Larkhill, passes by Stonehenge to the west, crosses the A303 and exits the World Heritage property at its south-west corner to join the A360 opposite Druid's Lodge.

Two possible routes for linking the Byways have been proposed. The first would be a new route leaving Byway 12 at the low point just north of the National Trust land boundary running along the Normanton Down Group. It would then run roughly north-east through the dry valley to join Byway 11 midway between the present A303 and the National Trust southern boundary, gaining the maximum cover possible from this depression. The second route would link the two Byways along the present line of the A303.

Changes in the context of our assessments

During our work on the impact of proposed changes to the A303 on the Outstanding Universal Value of the World Heritage property, the context in which we are working has changed in several respects. Considerable work has been carried out to improve understanding of the archaeology of the World Heritage property in order to inform the design process for the road scheme (see Snashall, Young 2017a, 3-4, and b, 2-3). The key finding is that of a previously undefined barrow group (now known as the Diamond Group) north of The Diamond wood and south of the Winterbourne Stoke barrow group. This is clearly a key group of monuments that conveys attributes of Outstanding Universal Value of the World Heritage property and was added to the key groups which had to be assessed (see Fig.1). We also recognised that the Normanton Down Barrow Group had been drawn too tightly and included barrows to the north of the A303 as well as more barrows to the south of the main group. (see pp 6-7 below for further discussion of attributes of Outstanding Universal Value).

The effect of this work has been to increase our understanding of the sensitivity of the area through which the new A303 will pass after it leaves the western tunnel portal. This was recognised in our assessments in Snashall and Young (2017a, 2017b. While our methodology selected key monument

groups conveying attributes of Outstanding Universal Value as proxies for assessing the overall impact on the Outstanding Universal Value of the World Heritage property, it is also necessary to take a broader view of the overall impact. This we have attempted to do in previous reports by assessing the impact of the proposals on each of the seven overall attributes of Outstanding Universal Value identified since 2009 in the successive Management Plans for the World Heritage property (Simmonds, Thomas, 2015, 32). It should also be noted that three of the key monument groups affected by these latest proposals for the western part of the World Heritage property are very large so that views from/ to them will vary greatly as the viewer moves through the landscape.

Within the wider planning context it has been recognised that all attributes of the Outstanding Universal Value of a World Heritage property must be regarded as equally significant when carrying out an impact assessment. This point was stressed by the Planning Inspector for the inquiry into development proposals at Chacewater in the Cornwall and West Devon Mining Industry World Heritage property (Planning Inspectorate 2016, para 18). It is not acceptable, therefore, for spatial planning purposes in England, to say that some attributes of Outstanding Universal Value are less important than others.

This ties in with international guidance on the protection of Outstanding Universal Value since the attributes are derived from the Statement of Outstanding Universal Value for each property, which is agreed by the UNESCO World Heritage Committee and which is the basis for the future protection and management of the property:

> **49.** *Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole. The Committee defines the criteria for the inscription of properties on the World Heritage List.*
>
> **96.** *Protection and management of World Heritage properties should ensure that their Outstanding Universal Value, including the conditions of integrity and/or authenticity at the time of inscription, are sustained or enhanced over time.*
>
> **154.** *When deciding to inscribe a property on the World Heritage List, the Committee, guided by the Advisory Bodies, adopts a Statement of Outstanding Universal Value for the property.*
>
> **155.** *The Statement of Outstanding Universal Value should include a summary of the Committee's determination that the property has Outstanding Universal Value, identifying the criteria under which the property was inscribed, including the assessments of the conditions of integrity, and, for cultural and mixed properties, authenticity It should also include a statement on the protection and management in force and the requirements for protection and management for the future. The Statement of Outstanding Universal Value shall be the basis for the future protection and management of the property.* (Operational Guidelines for the Implementation of the World Heritage Convention, UNESCO 2017)

However, within a large World Heritage property, the ICOMOS guidance on Heritage Impact Assessment makes clear that assessment of a development proposal affecting many attributes has to come to an overall evaluation of the impact on the Outstanding Universal Value of the World Heritage property as a whole:

> *7 Assessment and evaluation of overall impact of the proposed changes*
>
> *This part should set out an assessment of specific changes and impacts on the attributes of OUV and other heritage assets. It should include a description and assessment of the direct or indirect impacts, including physical impacts, visual, or noise, on individual heritage attributes, assets or elements and associations, and on the whole. Impact on OUV should be evaluated through assessment of impact on the attributes which convey the OUV of the site. It should consider all impacts on all attributes; professional judgement is required in presenting the information in an appropriate form to assist decision-making.*
>
> *It should also include an evaluation of the overall significance of effect – overall impact -of the proposals for development or change on individual attributes and the whole WH property. This may also need to include an assessment of how the changes may impact on the perception of the site locally, nationally and internationally.* (ICOMOS 2011, Appendix 4, para 7).

The process of reaching an evaluation of the overall impact on the whole World Heritage property may lead to some balancing out of negative and positive impacts across the whole property to reach an overall judgement, unless the impact on any negatively affected attribute is so great as to render a proposed development totally unacceptable.

Methodology

The methodology used is that recommended by ICOMOS (ICOMOS 2011) used in our previous reports (Snashall and Young 2014, 2017a and b). Visual impacts of the new proposed route from the western tunnel portal to the western boundary of the World Heritage property are assessed in Chapter 2 and direct impacts on archaeological features in Chapter 3. Assessment of the impact of the proposals for Byways 11 and 12 is set out in Chapter 4. Our overall assessment is set out in Chapter 5. As previously, it is important to note that this is not a full Heritage Impact Assessment of the proposed works. It is a preliminary outline assessment based on available information and carried out within the very tight time limits set for us. A full Heritage Impact Assessment will still need to be carried out by Highways England.

This methodology was developed by ICOMOS (ICOMOS 2011). The scale of impact of proposed changes has been ranked as:

- No change
- Negligible change
- Minor change
- Moderate change
- Major change

Change can be adverse or beneficial. This gives a nine-point scale with 'neutral' as its central point. The significance of the impact of the change is scored as a function of the importance of the attribute and the scale of change. For any feature of international significance (i.e. World Heritage properties and their attributes of Outstanding Universal Value) the result of this scoring is as follows:

VALUE OF HERITAGE ASSET	SCALE & SEVERITY OF CHANGE/IMPACT				
	No change G	Negligible change	Minor change	Moderate change	Major change
For WH properties Very High – attributes which convey OUV	SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OR BENEFICIAL)				
	Neutral	Slight	Moderate/ Large	Large/very Large	Very Large

Fig 1: significance of impacts on World Heritage properties and their attributes (ICOMOS 2011, 9)

According to the ICOMOS HIA Guidance, therefore, any moderate or major impact on an attribute of OUV is of large/ very large significance.

The scale of assessment used for visual impacts in the 2014 assessment (Snashall and Young 2014, 39) has been used for this report also to ensure as far as possible consistency of approach:

- Impact has been assessed as major of very large significance when the A303 severs a visual connection or is very prominent in a view of one (e.g. the view from Stonehenge to Old and New King Barrows).
- Impact has been assessed as moderate of large/ very large significance where the A303 is visible but does not sever the viewline and is not central in the view.
- Impact is assessed as minor of moderate/ large significance when the A303 is barely visible or a distant backdrop in a view (e.g. the view from Durrington Walls to Woodhenge).
- Where there is no impact, the value has been given as none.

This ICOMOS methodology is robust and now widely recognised. However, we have identified some systemic issues in using it. It is difficult to use it to recognise that an impact can have both negative and positive effects. The scoring system assesses the significance of impacts according to the importance of the asset affected. Since all the attributes of Outstanding Universal Value affected by the proposals are of the highest significance by definition, the significance of any impacts of moderate or major change is therefore rated as large/ very large (ICOMOS 2011, para 5.8). This tends to bunch together a range of differing impacts under that one score. This can make it difficult to differentiate the varying impacts using just the scoring system. We have attempted to deal with this within the narrative in subsequent chapters.

The methodology has been applied primarily to the relationships between selected key monument groups. Attributes of Outstanding Universal Value are an increasingly important aspect of World Heritage management. Attributes are the features or relationships which express the Outstanding Universal Value of a particular property. Attributes are derived from the Statement of Outstanding Universal Value agreed by the World Heritage Committee. For Stonehenge and Avebury, seven overall attributes have been set out in the 2009 and 2015 World Heritage property management plans (Young, Chadburn, Bedu, 2009; Simmonds, Thompson 2015). These are:

1. Stonehenge itself as a globally famous and iconic monument.

2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.

3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.

4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.

5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.

6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.

7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

The overall impact of the proposed road line on these seven attributes is evaluated in Chapter 5 of this report.

However, a number of these attributes are represented in the property by a large number of different archaeological features and the relationships between them and the landscape. There are many hundreds of known archaeological sites and find-spots within the Stonehenge component of the World Heritage property. The 180 Scheduled Ancient Monuments within this part of the property in 2009 included 415 individual archaeological items or features (Young, Chadburn, Bedu 2009, 22), most of which are the physical remains of the Neolithic and Bronze Age funerary monuments included within Attribute 2 above. All of these express the Outstanding Universal Value of the property.

Chapter 3, examining the potential physical impact of the proposed road on archaeological features, considers all known sites which might be affected. The same level of evaluation has not been possible in these reports for the visual impacts of the route in what is intended only as an initial outline assessment to inform the National Trust and Historic England response to the Highways England proposals. As noted above, it is for Highways England, as the proponent of the road scheme, to commission a full Heritage Impact Assessment. For our reports, 18 key monument groups conveying attributes of Outstanding Universal Value were selected for assessment in 2014 and slightly modified in 2017 (see Fig 2). Each of these groups is either a major extant archaeological site (eg Stonehenge itself, Durrington Walls, Woodhenge, the Cursus) or a large barrow cemetery. The impact of proposed road schemes on these monument groups has been used as a measure for assessing the overall impact of the proposals. This approach appears to have been generally acceptable to the ICOMOS/ UNESCO reactive monitoring missions to the property.

Chapter 2 assesses the visual impact of the proposed **Preferred Route of 4th December** 2017. No details are yet available on the aural impacts of the route or of potential light pollution from it.

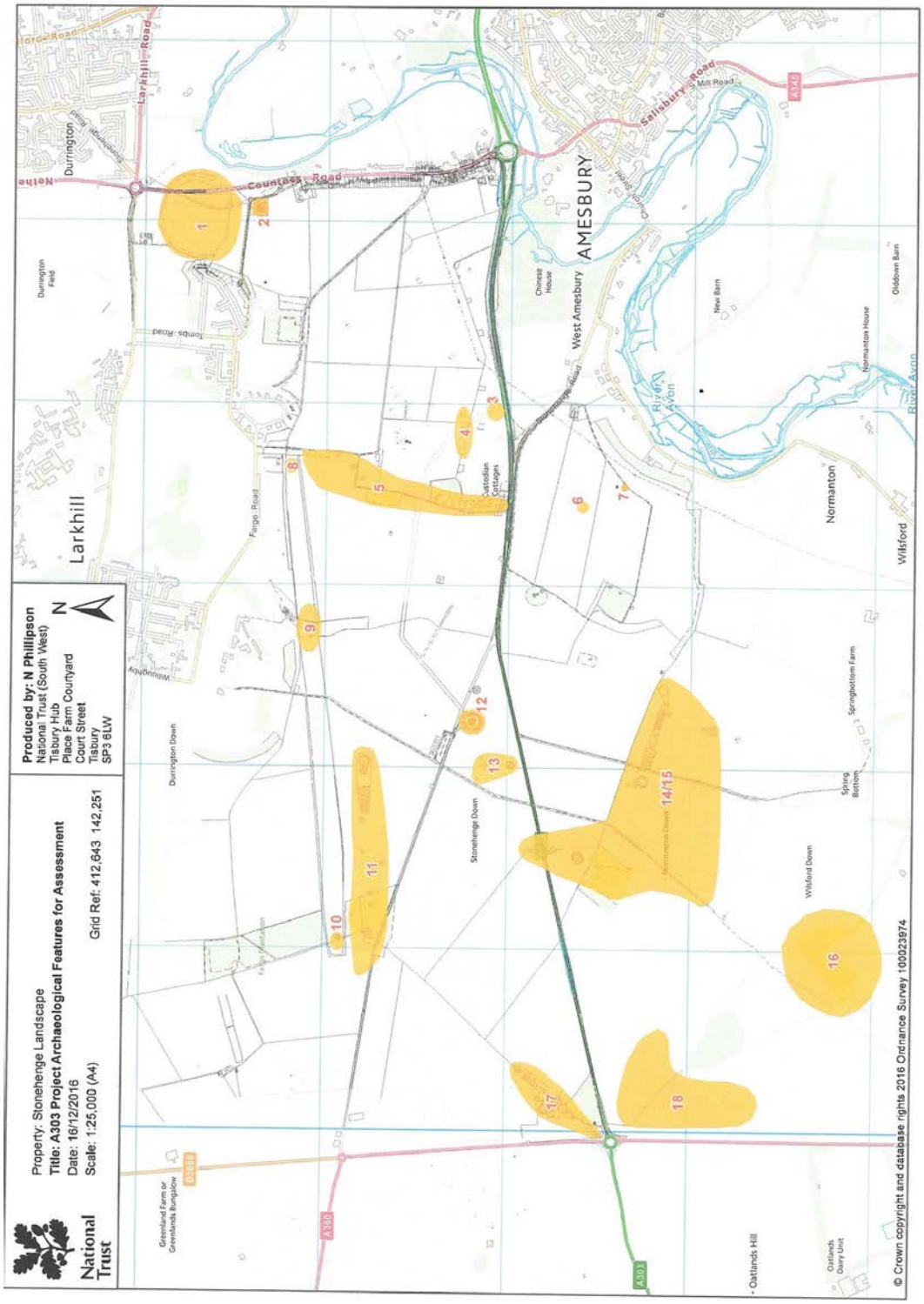

Fig. 2 Key groups of monuments that convey attributes of Outstanding Universal Value in the Stonehenge Word Heritage property

2 Visual impacts of the Preferred Route as at 4th December 2017 from the western tunnel portal to the western boundary of the World Heritage property

Highways England has proposed a new route from the western portal of the bored tunnel to the western boundary of the World Heritage property. This is a development of route option D081C, which was assessed in our previous report (2017b). One significant change is that the portal has been moved c.300m further west so that it is further from the Normanton Down Group. The route then follows much the same line just to the south of the present A303, passes under the existing A360 c.100m south of the present Longbarrow junction to a new junction with the realigned A360 c.400m west of the boundary of the World Heritage property (Fig.3).

The second significant change is that the new road now runs entirely in cutting in the western part of the World Heritage property, with a minimum depth of 7.3m. Given that double-decker buses do not normally exceed 4.5m in height and that advice is that the maximum height of Heavy Goods Vehicles should be 4.95m (House of Commons 2009), it is very unlikely that high vehicles will be visible above the cutting sides in most views, though there would obviously be some light pollution at night from vehicle lights.

Without any mitigation, the length of cutting between the western tunnel portal and the western boundary of the World Heritage property would be 1,150m. Highways England are considering two different approaches to the cutting (open and abutment) that would contain the new road. The cutting would be at its widest at the tunnel portal because of the need to separate the two bores of the tunnel.

An open cutting is one with naturally sloping sides. The maximum width at the top of the cut would be 131m. The minimum width for the open cut would be around 65m. The alternative is an abutment. With this version, the top 2.5m of the cutting would be a grassed slope to minimise the impact of a hard edge in the landscape, and beneath that depth the cutting would have vertical retaining walls. The minimum width, for about 800m of the cutting, would be 41m. For the last 350m, leading to the tunnel portal, the cutting would gradually taper out to a maximum width of 63m at the tunnel mouth. The land-take for the abutment version is therefore considerably less than for the open cutting. The vertical sides are likely also to make traffic and the road itself less visible at least from views from the sides of the highway, particularly at a little distance. In views along the highway, for example from the south-west end of the Winterbourne Stoke or the northern end of Normanton Down barrow groups, the road will be highly obtrusive.

Highways England have considered mitigating these impacts by providing either a 200m canopy or a 200m length of cut and cover tunnel at the tunnel portal to extend its visual effect. A small landbridge, c.45m wide, has been proposed for the former line of the A360 on the western boundary of the World Heritage property. Highways England also proposes to retain the existing embankment of the A303 in the dry valley in front of the tunnel entrance.

Annex 1 shows the results of an assessment of its visual impact on all the key monument groups (see Fig 2) using the same criteria for assessing impact as were used for other route options in 2014 and 2017. In addition to the seven options set out by this current proposal, the table also shows the impacts of the present A303 and the assessment made of the 2.9kms online routes in 2014. The 2014 assessments of the impact of the A303 and of the 2.9kms online route have been adjusted to take account of the changes, outlined above, in our understanding of the archaeology of this part of the World Heritage property [Snashall and Young, 2014, 2017a and b]).

The Annex includes only those key monument groups affected by this western part of the proposed route. In addition to the Winterbourne Stoke, Normanton, and Diamond groups, to which the new line is very close, and the Lake group (some 1.3km distant), this section of road is likely to be visible from a small number of comparatively distant attributes (the east end of the Cursus, the King Barrows, Coneybury Henge and Coneybury Barrow) along the north-south ridge which divides the eastern part of the World Heritage property from the rest. These are over 2km from the new road, which is screened from Stonehenge and other attributes close to it by intervening high ground.

The relationships most affected are those between the Winterbourne Stoke, Normanton Down and Diamond barrow groups and these are shown separately also on Table 1. It has become clear over the last three years that it is difficult to establish a route from the western tunnel portal to the western boundary of the World Heritage property which has minimal adverse impact on its Outstanding Universal Value. The existence of the four barrow groups of Winterbourne Stoke, the Diamond, Normanton Down and Lake make it very difficult to design a satisfactory route in conservation terms. Our last report (Snashall, Young, 2017b) recommended some ways in which the previous proposal (Route D081C) could be improved through mitigation measures. We suggested that lengthening the tunnel and lowering the road out of the tunnel might mitigate some of the adverse impacts.

Some of the changes made by Highways England since our last impact assessment have reduced the adverse impact of the proposed route considerably. The western portal of the tunnel has been moved a further 300m to the west. This has moved it further from the Normanton Down barrow group. It also emerges at a lower elevation above sea level which has made it possible for Highways England to place the road in a deep cutting while it is in the World Heritage property. The effects of this are positive in that the road will be less visible from a distance, particularly from views to north or south of the A303.

This is more the case for a vertical abutment than for an open cut with sloping sides. The latter will be more visible and it will be more possible to see traffic from within the World Heritage property. It will also take around half as much land again as the abutment solution, so has a much bigger physical impact on the World Heritage property with the possibility of impacting on unknown archaeology. We recommend therefore that the vertical abutments with sloping tops should be the preferred option. The advantage of the sloping tops in our view is that the cuttings will have a less hard edge in the landscape.

It appears that the impact of the **Preferred Route of 4th December 2017** on distant monument groups , including Lake, will be minor, and certainly will be positive in contrast to the current situation. Probably, now, the adverse impact on Lake barrow group will only be minor of moderate/ large significance, since the road will be sunk entirely in cutting in the views between Lake and the barrow groups of Normanton Down, the Diamond and Winterbourne Stoke. Sinking the road will also greatly improve the experience of those walking or otherwise moving around the World Heritage property, since traffic will largely be invisible from much of the property.

There are however remaining serious issues over the relationships between the three barrow groups in close proximity to this part of the road route, as set out in Table 1. The Winterbourne Stoke and Diamond groups are close together and will be very visibly divided by the road. According to the information provided by Highways England, the top of the cut and of the vertical abutment will be visible from the south-west end of the Winterbourne Stoke group (from the viewpoint chosen at the southern tip of the Long Barrow) and must have a severe adverse impact on the ability to appreciate the linkage between the two barrow groups. Our assessment is that it could be more visible than this.

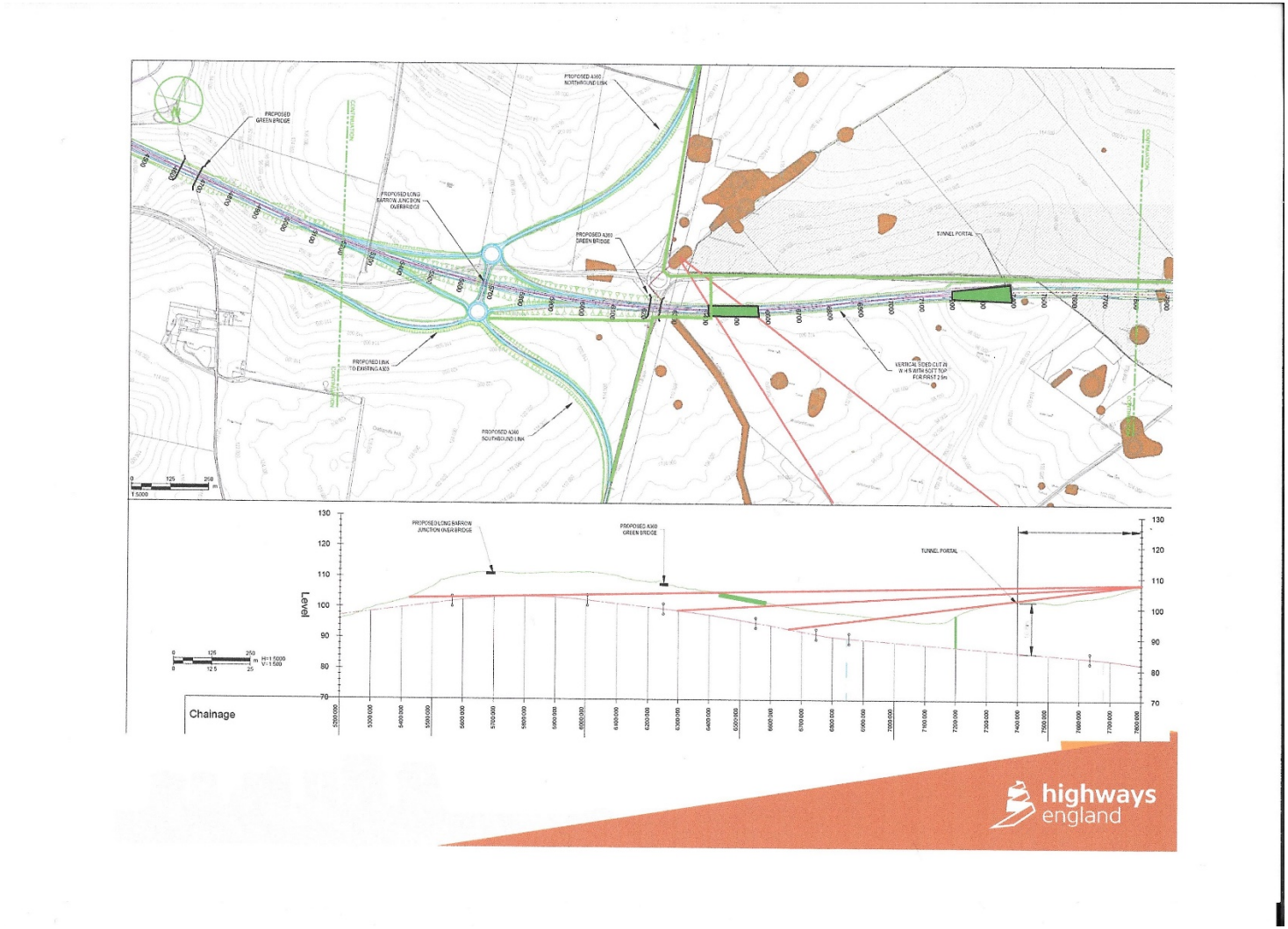

Figure 3: Preferred Route as of 4th December 2017 between the western boundary of the World Heritage property and the western tunnel portal, including proposed mitigation to provide extra cover west of tunnel portal, and possible landbridge between Winterbourne Stoke and Diamond long barrows.

Table 1: Visual relationships of the Preferred Route as at 4th December, 2017, with the key monument groups of Normanton Down, Winterbourne Stoke and the Diamond Barrow Groups

This table measures the scale of the visual impact of the present A303 and of the 2014 2.9kms on-line bored tunnel, and of the Preferred Route as of 4th December 2017, and of selected options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms online tunnel	Option 1 Preferred route, open cut, bored tunnel	Option 2 As Option 1 + 200m canopy	Option 3 As Option 1 + 200m cut-and-cover extension	Option 4 Preferred route, abutment, bored tunnel	Option 5 As Option 4, + 200m canopy	Option 6 As Option 4, + 200m cut-and-cover extension	Option 7 As Option 6 + land bridge of appropriate length western end
Normanton Down Barrows										
1. Normanton Down Barrows	Winterbourne Stoke Barrows	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
2. Normanton Down Barrows	The Diamond	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
Winterbourne Stoke Barrows										
35. Winterbourne Stoke Barrows	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
37. Winterbourne Stoke Barrows	The Diamond	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse
The Diamond Group										
42. The Diamond Group	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse	Minor adverse
44. The Diamond Group	Winterbourne Stoke Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse

Similarly, near the Sun Barrow in the northern part of the Normanton Down group, the viewer will be looking straight down the line of the new road towards the Diamond and Winterbourne Stoke groups with a consequent severe adverse impact. Even the visualisation, taken from the north of the present A303 at the northern limit of the Normanton Barrows group and therefore not in the most sensitive point, which is immediately south of the A303, shows that the cutting will be visible from that part of Normanton Down. From immediately east of the portal, the impact will be much more severe.

We consider therefore that further mitigation is essential to reduce the level of adverse impact and to produce a result that might be acceptable in terms of impact on Outstanding Universal Value. Highways England has proposed installing a further 200m of cover beyond the western tunnel portal. This could be either a 200m canopy or a 200m cut-and-cover tunnel extension or a combination of the two. A 200m extension has the potential to mitigate the impact of the road on the views between the Winterbourne Stoke, Diamond and Normanton Down barrow groups to a minor adverse impact by removing the road from the immediate foreground of the views from Normanton Down.

The canopy proposal would require ventilation openings which Highways England have suggested can be camouflaged to some extent. It would be better if these openings were not located immediately west of the northern end of the Normanton Down group behind the tunnel portal, as they will be very visible from there. In contrast the cut-and-cover extension does not require such ventilation but may require tunnel service buildings to be located outside the tunnel mouth and partially in the open. With a canopy solution, the buildings could be under the canopy.

The hybrid option would be part cut-and-cover tunnel and part canopy (to the west). This would remove ventilation slots from the immediate vicinity of Normanton Down, but would still enable the tunnel service buildings to be under cover. Highways England have suggested that the canopy can also be accommodated to surrounding landforms while the cut and cover option could not. If this is the case it would appear that the hybrid option would most effectively mitigate the adverse impact of the road on the relationship between the three barrow groups[1]. It is understood that Highways England are still considering these options.

There remains the impact of the road on the linkage between the south-western end of the Winterbourne Stoke barrow group and the Diamond group. The close proximity of the road line with the two barrow groups which it separates is now unique within this road scheme. Without mitigation, this will be a major adverse impact of very large significance because the A303 severs a visual and physical connection in close proximity to the two barrow groups. This impact exists primarily at the south-western end of the Winterbourne Stoke Group since the linear alignment of the group is to the north-east along the ridge and rapidly diverges from the Diamond group and the line of the A303.

A 45m wide landbridge on the line of the former A360 is included in the scheme physically linking the northern and southern parts of the World Heritage property at its western end. It does nothing to alleviate the impact of the road on the linkage between the two barrow groups since it is outside the main line of view between them. This adverse impact could only be mitigated to some extent by a landbridge of appropriate length between Winterbourne Stoke and the Diamond. In our previous

[1] This proposal was made after the main body of the assessment was completed and has not been included in Table 1

report, we suggested that such a cover might need to be as long as 400m, but this would need to be modelled as part of the design process and could perhaps be less.

Highways England has produced a map showing a possible design of a 150m landbridge between the Winterbourne Stoke Longbarrow and the visible long barrow in the Diamond group. These are two of the original burial mounds around which the rest of these groups developed over the next two millennia. Such a landbridge, modelled in line with existing contours might give an effective continuous landscape between the south-west end of the Winterbourne Stoke barrow group and part of the Diamond group and might be an acceptable mitigation, if sensitively designed and sited. However, it is likely that 150m would be the absolute minimum acceptable. Further modelling of possible designs will be needed before this could be resolved.

Highways England has also said that a landbridge with the same eastern boundary but extending to the western boundary of the World Heritage property would be technically feasible. This would give a continuous link between the south-west end of the Winterborne Stoke group and the whole of the Diamond Group. This would clearly be a more effective mitigation than the shorter 150m landbridge. Visually it would be a minor (or perhaps even a negligible) adverse impact on the visual relationship between the two groups.

However, creation of landbridges has technical consequences which need to be taken into consideration. There might need to be lighting under the landbridge, even for one of 150m length. There would also be a need to change the vertical alignment of the road to provide necessary clearance either side of the landbridge, and possible impact on the new Longbarrow interchange alignment though these probably would not affect the impacts of the scheme on the Outstanding Universal Value of the World Heritage property. The necessary construction works would require a landtake some 30-40m wider than planned for the abutment cutting over a length of some 200m for the 150m landbridge and proportionately greater for any longer alternative. While there is no known archaeology relating to the Outstanding Universal Value of the World Heritage property within this additional area, this runs counter to the intention to mimimise the landtake within the World Heritage property as much as possible.

Anything longer than 150m would be reclassified as a road tunnel with a consequent need for the provision of ventilation, lighting and emergency facilities, with the specific requirements being dependent upon the length. The impact of this infrastructure would need to be assessed and any negative effect weighed against the positive benefits of a longer landbridge. Nonetheless, it is clear that some form of an appropriately positioned landbridge of at least 150m could mitigate the adverse impact on the relationship between the Winterbourne Stoke and Diamond groups, subject to the necessary assessment of the impact of any additional infrastructure.

With the inclusion of a correctly positioned landbridge of at least 150m as a component of the mitigation in the Highways England scheme, there would still inevitably be some, minor, adverse impact on the link between the Normanton Down group and the Diamond and Winterbourne Stoke groups. Without mitigation, there would be a major adverse impact on the visual linkages between the two latter groups.

Any adverse impact on the Outstanding Universal Value of any World Heritage property is regrettable. However, within a large World Heritage property, assessment of a development

proposal which affects many of its attributes has to come to an overall evaluation of the impact on the Outstanding Universal Value of the World Heritage property as a whole (ICOMOS 2011, Appendix 4, para 7). Provided that the impact on individual attributes is not severe, it is possible that overall beneficial impact could outweigh minor adverse impacts. If the impact on an individual attribute of Outstanding Universal Value is major or moderate adverse, then the scheme as a whole has to be judged to be unacceptable.

Because of the proximity of the new road to the Winterbourne Stoke and Diamond groups and because it cuts a key visual link between them, the impact of the scheme on these two attributes of Outstanding Universal Value, as currently proposed and without mitigation, is unacceptable. The adverse impact could of course be further mitigated by covering more of the length of the route that is in cutting in the vicinity of the Winterbourne Stoke and Diamond groups.

Because the necessary information is not yet to hand it is not possible to assess the impacts of noise and light pollution of the new route. Highways England has undertaken that there will be no road lighting within the World Heritage property outside the road tunnel. *Prima facie* it is likely that the impact of the proposed **Preferred Route of 4th December** 2017 in both respects will be less severe than the present situation but this needs to be properly assessed once the necessary data is available.

Finally, we have been asked to assess the impact of removing the existing embankment of the A303 in the dry valley next to the tunnel portal. It has been suggested that the existing embankments of the A303 should be removed in order to reduce the adverse impacts of the infrastructure associated with the current A303 within the World Heritage property. A field visit, and also the graphics (from the viewpoint at the northern end of the main portion of the Winterbourne Stoke barrow group) produced for this latest preferred route, suggest that the embankment will to some extent shield the view of the tunnel portal from the north-eastern part of the Winterbourne Stoke barrows. However this would not be required if, as recommended above for other reasons, the impact of the bored tunnel exit is mitigated by use of a 200m cut and cover and /or canopy extension (Options 5, 6 and 7), as the removal of the intrusive embankment upon which the current road is constructed would not result in any negative visual impacts with this additional extension in place at the western portal.

3 Direct physical impacts of new road construction on archaeological features of Outstanding Universal Value affected by the Preferred Route as at 4th December 2017 from the western tunnel portal to the western boundary of the World Heritage property

The assessment of the impact of physical damage to archaeological sites caused by new construction work was carried out according to the methodology set out in our earlier reports (Snashall and Young 2014, 2017a, 2017b). As this assessment considers only those direct physical impacts related to the elements of the present proposals forming part of the **Preferred Route as at 4th December 2017** at the western end of the World Heritage property it should be read in conjunction with both the methodology and the assessment set out in our January 2017 and March 2017 reports.

The results of the current assessment are set out on an option by option basis in Table 2. All of the impacts assessed are adverse as destruction of physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites that are themselves an attribute of Outstanding Universal Value can only be a negative impact. The assessment of whether the impact is negligible, minor, moderate or major is necessarily a matter of subjective professional judgement. Factors taken into consideration when making that assessment included:

- The proportion of the site or monument affected
- The degree to which the part of the site or monument would be affected; this could range between minor surface disturbance and wholesale destruction.
- The state of survival of the site or monument at present

In accordance with the ICOMOS Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (2011), as all of the archaeological features identified as subject to physical impacts are attributes of Outstanding Universal Value, and therefore of high importance, negligible impacts will be of slight significance; impacts of minor scale will be of moderate / large significance; impacts of moderate scale will be of large / very large significance and major impacts will be of very large significance.

In summary the number of archaeological attributes of Outstanding Universal Value that are impacted by Options 1-7 of the proposals at the western end is low for all options, with only two monuments that are attributes of OUV (both relating to an extremely rare Beaker cemetery) in such close proximity to them that it is considered that direct physical impacts from construction would be possible. One of these is known to have been wholly excavated, while archival evidence for fieldwork on the second strongly suggests that it has been wholly excavated.

In relation to the round barrow (and its associated Beaker cemetery) **SU14SW839** (Scheduled Monument HA list no. 1010832) all options would result in a negligible impact of slight significance.

It should be noted that for all options the bored tunnel face and/or the proposed canopy / cut and cover structure and associated cutting / infrastructure would be in close proximity to the component parts of the Normanton Down Barrow Group. Given the archaeological sensitivity of this area any proposed construction work would have to have special measures put in place to avoid any damage to any of the sites and monuments. Likewise any future requirements to access this area for

maintenance needs (for instance to any canopy or cut and cover or the infrastructure beneath it) would have to be assessed and the impacts fully understood and mitigated.

As set out above with any of these options there is some risk of direct physical impacts from construction. On advice received from Highways England and their consultants the assumption made in this assessment is that all construction work will take place from within the footprint of the cut of the new road. This approach if combined with rigorous and proactive monitoring during construction could mitigate and effectively negate this risk.

In addition it should be noted that although evaluation has been undertaken across some areas covered by these current proposals during a previous iteration of the road proposals (Leivers, Moore 2008) evaluation and assessment techniques have advanced considerably in the intervening period. And new and thorough evaluation, assessment and archaeological excavation - appropriate to an archaeological World Heritage property - will be required prior to any construction work.

Table 2 Physical Impacts of Preferred Route as at 4th December 2017 Options 1 -7 on archaeological sites and monuments that are attributes of OUV

Wilts. HER Pref. Ref. Heritage Asset No.	**Site name / description**	**Summary Comments**	**Option 1** Sloped sides + bored tunnel	**Option 2** Sloped sides + bored tunnel + 200m canopy	**Option 3** Sloped sides + bored tunnel + 200m cut & cover	**Option 4** Abutment + bored tunnel	**Option 5** Abutment + bored tunnel + 200m canopy	**Option 6** Abutment + bored tunnel + 200m cut & cover	**Option 7** + W. Stoke / Diamond Landbridge
SU14SW184	Two excavated Bronze Age burials	No longer extant, fully excavated but forms part of a wider, nationally rare, Beaker cemetery which also includes **SU14SW839** below (Leivers & Moore 2008)	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**
SU14SW839 1010832	Round barrow	No surface expression of this monument survives. Gradiometer survey undertaken as part of this scheme shows that the two concentric ring-ditches	**Negligible** Asset is within 25 metres of the bored tunnel exit. Some direct physical impact to any surviving elements of the	**Negligible** Asset is within 25 metres of the bored tunnel exit. Some direct physical impact to any surviving elements of the	**Negligible** Asset is within 25 metres of the bored tunnel exit. Some direct physical impact to any surviving elements of the	**Negligible** Asset is within 25 metres of the bored tunnel exit. Some direct physical impact to any surviving elements of the	**Negligible** Asset is within 25 metres of the bored tunnel exit. Some direct physical impact to any surviving elements of the	**Negligible** Asset is within 25 metres of the bored tunnel exit. Some direct physical impact to any surviving elements of the	**Negligible** Asset is within 25 metres of the bored tunnel exit. Some direct physical impact to any surviving elements of the

		surrounding a central pit are still extant below ground. But archival evidence suggests this monument has been fully excavated. Forms part of a wider, nationally rare, Beaker cemetery which also includes **SU14SW184** above (Leivers & Moore 2008)	archaeological asset during construction is therefore assessed as possible unless appropriate mitigation is put in place.	archaeological asset during construction is therefore assessed as possible unless appropriate mitigation is put in place.	archaeological asset during construction is therefore assessed as possible unless appropriate mitigation is put in place.	archaeological asset during construction is therefore assessed as possible unless appropriate mitigation is put in place.	archaeological asset during construction is therefore assessed as possible unless appropriate mitigation is put in place.	archaeological asset during construction is therefore assessed as possible unless appropriate mitigation is put in place.	archaeological asset during construction is therefore assessed as possible unless appropriate mitigation is put in place.

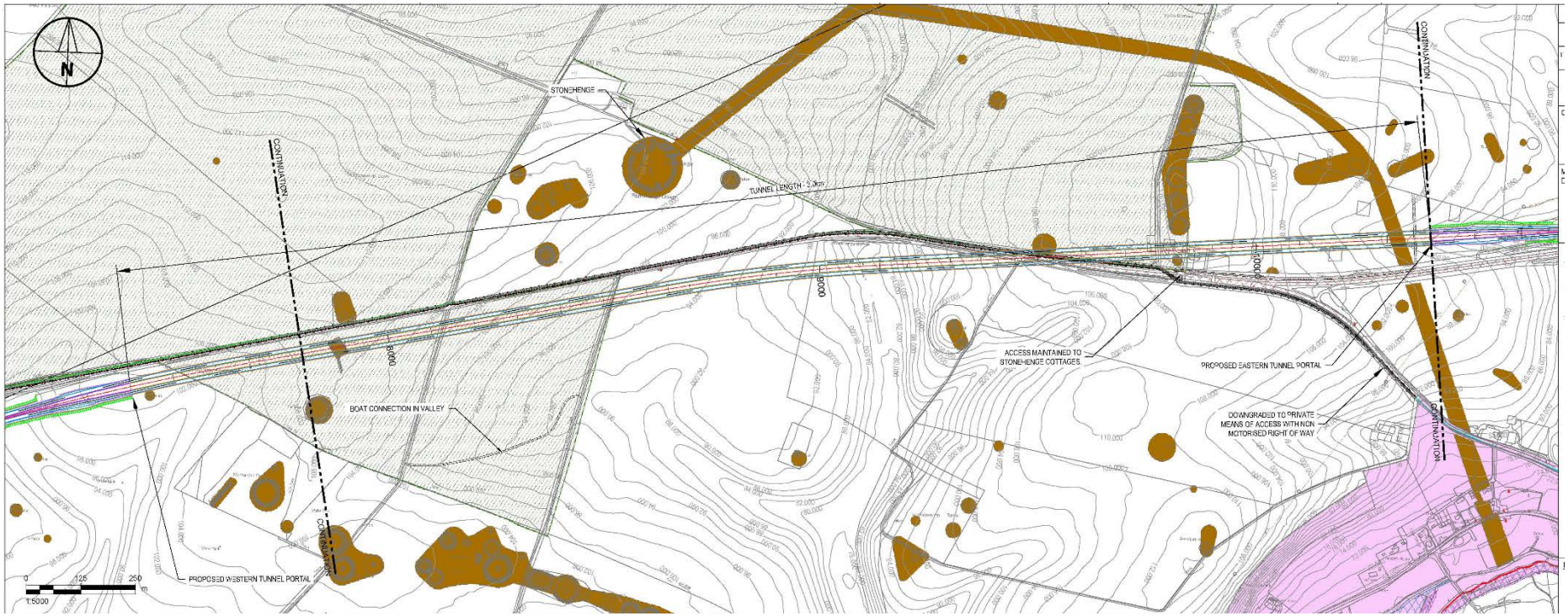

Figure 4: Preferred Route as of 4th December 2017showing the location of potential new route to link Byways 11 and 12.

(from Highways England Drawing No. HE551506-AMW-HGN-SW_ML_M00_Z-SK-CH-5004-P05 with permission; brown areas are scheduled ancient monuments)

4 Impacts of proposed changes to the Byways Open to All Traffic (BOAT) in the World Heritage property

There is a large number of public rights of way in the Stonehenge component of the World Heritage property. Two of these, Byways 11 and 12, are Byways Open to All Traffic (BOAT). As noted above (p.2), Byway 11 runs south from the A303 opposite Stonehenge itself to join a public highway in Lake village in the south-east corner of the World Heritage property. Byway 12 runs from Larkhill, passes by Stonehenge to the west, crosses the A303 and exits the World Heritage property at its south-west corner to join the A360 opposite Druid's Lodge. Byway 12 in particular is used by a fair number of vehicles, some of which park on it for considerable lengths of time. Byway 11 though less well-used, probably because it is not actually a through-way across the World Heritage property and does not pass Stonehenge itself, does still see significant use at its northern end.

Use of the Byways by vehicles has led to damage to archaeological sites which abut them and can disturb the atmosphere and calm of parts of the World Heritage property. The presence of vehicles here also adversely impacts on visual relationships between monument groups, in particular between Stonehenge and the Normanton Down Barrow group. Since the publication of the first Stonehenge World Heritage Management Plan in 2000 (English Heritage 2000, para 3.3.34, para 4.6.4), it has been a policy to reduce or remove vehicular access from the two Byways apart from necessary access, for example for agricultural purposes. Implementation of this has been seen as needing to be part of a wider re-assessment of rights of way in the area. This policy has been repeated in the two subsequent World Heritage Management Plans (Young, Chadburn, Bedu 2009, 84, 111-2; Simmonds, Thomas 2015, 172-3).

As part of the A303 scheme, consideration is being given to creating a vehicular link between the two byways. As noted above, two possible routes are being considered. The first would leave Byway 12 at the low point just north of the National Trust land boundary running along the Normanton Down Group. It would then run roughly north-east through the dry valley to join Byway 11 midway between the present A303 and the National Trust southern boundary, gaining the maximum cover possible from this depression. This would be a totally new route through National Trust land. The second route would link the two Byways along the present line of the A303.

In terms of direct physical impact, it is unlikely that construction of a new byway open to all traffic along the line of the A303 would impact on known archaeology which is probably all well buried beneath make-up layers of the road. There are no known archaeological sites of Neolithic or Bronze Age date along the proposed new route but any area within the World Heritage property has the potential for new discoveries. Any works on either route would need to be preceded by appropriate archaeological survey and investigation.

A rapid assessment has shown that both routes would be visible from Stonehenge and from Normanton Down and also from along King Barrow Ridge, and possibly from elsewhere in that part of the World Heritage property. Traffic passing along the new route would impact on views between Stonehenge and Normanton Down barrow group and also between Normanton Down and King Barrow ridge (and possibly other attributes of Outstanding Universal Value. Since this would sever various visual connections between attributes of Outstanding Universal Value, this would constitute at least a moderate adverse impact of large significance. Use of the former A303 would also be a moderate adverse impact of large significance since all traffic would have been removed from it, only to be replaced by moving and parked vehicles in key view lines within the central part of the World Heritage property landscape.

A further risk of linking the two Byways open to all traffic is the promotion of a general increase of motorised traffic using the existing Byways, particularly Byway 11. This is less well-used at present because it is not a through route across the World Heritage property. Connecting it to Byway 12 which does cross the World Heritage property could encourage greater use of Byway 11 by motorised vehicles. Generally, the two byways will be the only means of public vehicular access into this area of the World Heritage property, which may also

lead to increased use. This would lead to a greater risk of damage to archaeological sites adjacent to (and in some instances located on) the byways throughout the World Heritage property and to adverse visual impacts on a considerable number of attributes of Outstanding Universal Value. Such a general increase would be exacerbated by linking the two Byways together.

Overall, therefore, our assessment is that linking the two BOATs would have direct and indirect moderate adverse impacts of large significance. We recommend that this work should not be carried out.

5 Discussion

This chapter sums up the impact of this particular option on the attributes of Outstanding Universal Value of the Stonehenge, Avebury and Associated Sites World Heritage property. It deals only with the impact of the **Preferred Route as at 4th December**, as described above.

The World Heritage property has seven identified general attributes, in addition to archaeological features. It is also necessary to consider any potential impacts on integrity and authenticity. The attributes are:

1. Stonehenge itself as a globally famous and iconic monument.
2. The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.
3. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.
4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.
5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.
6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.
7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

This assessment focuses primarily on the three key monument groups of the Normanton Down, Diamond and Winterbourne Stoke barrow groups, and the contribution they make to the Outstanding Universal Value of the property as a whole. We have also taken into account the impacts on the barrow groups themselves. These impacts are considered below in relation to the seven attributes identified in the World Heritage Site Management Plan (Simmonds, Thomas 2015, 32). Impacts have been summarised in Table 3. In the discussion of the impacts below, we have also commented as appropriate on the proposal to create a new Byway Open to All Traffic between Byways 11 and 12, summarised in the last column of Table 3.

The assessment is focused on the impact of the western end of the **Preferred Route as at 4th December** on the Outstanding Universal Value of the World Heritage properties and not on other heritage values, be they cultural or natural, or on general landscape value. The parameters of the evaluation are set by the Statement of Outstanding Universal Value and by the attributes of Outstanding Universal Value derived from that statement. While these do include references to landscape values, these are very specific. Further information on this can be found in the 2015 Management Plan (Simmonds, Thomas 2015).

Attribute 3 refers to the siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape. This references the extent to which these structures were sited in relation to the landscape in order to be more, or less, visible from particular directions or viewpoints. It is important that those relationships should be maintained as far as possible.

Similarly, Attribute 5 refers to the relationship of these sites and monuments to each other. This refers primarily to visual linkages and site lines between them. It is important that these links should be maintained as far as possible and, if possible, restored where they no longer exist.

Table 3: Overall assessment of the impacts of the current A303, the 2014 2.9kms online option, and the Preferred Route as at 4th December Options 1 - 7

The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of negligible scale is of slight significance, a minor one is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.										
Attributes of Outstanding Universal Value	A303 now	2014 2.9km on line	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	BOAT extension
1 Stonehenge itself as a globally famous and iconic monument	Major adverse	None	None	None	None	None	None	None	None	Moderate adverse
2 The physical remains of Neolithic and Bronze Age funerary and ceremonial monuments and associated sites	Major adverse	None	None	None	None	None	None	None	None	None
4 The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy	Major adverse	Minor beneficial	Minor beneficial	Moderate beneficial	Moderate beneficial	Minor beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	None
3 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape 5 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other 6 The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other sites of the period, forming a landscape without parallel	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Moderate adverse
7 The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects,…. and others	Major adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	None
Integrity	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Authenticity	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Overall assessment of the impact on the OUV of Stonehenge component of the WHS	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Overall assessment of the significance of the impact on the OUV of the Stonehenge component of the WHS	Very large negative	Large negative	Large negative	Large negative	Large negative	Large negative	Moderate negative	Moderate negative	Moderate negative	Moderate negative

Attribute 6 deals with the disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel. This has to do with the identification of the linkages, visual and otherwise, between particular sites and monuments and the need to maintain such linkages and the overall disposition of the sites and monuments with each other and with significant landscape features.

1 Stonehenge itself as a globally famous and iconic monument.

This part of the road scheme is, on its own, unlikely to have any direct impact on the international renown of Stonehenge. The road scheme as a whole, if it removes the A303 as a visible feature from most of the World Heritage property without damage to its Outstanding Universal Value, will enhance this attribute. This could be adversely affected by the creation of a new byway open to all traffic linking Byways 11 and 12, with the potential for consequent adverse visual impacts at Stonehenge itself.

2 The physical remains of the Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.

On the basis of research to the present date, the proposed **Preferred Route as at 4th December** should have no or limited impact on the physical remains of Neolithic and Bronze Age funerary and ceremonial and associated sites. As far as we can tell, the footprint of the road as currently proposed by Highways England avoids known archaeology. There is also no known potential direct impact from the proposals for the Byways on the physical remains of Neolithic and Bronze Age funerary and ceremonial monuments and associated sites.

Given the high sensitivity of the area as a whole it is essential that any proposed construction work is rigorously managed to minimise the risk of damage to archaeological assets, and that full archaeological evaluation and excavation is carried out before construction begins. This is especially true close to the Normanton Downs barrows close to the present A303.

3 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.

This attribute is discussed below with attributes 5 and 6.

4. The design of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the skies and astronomy.

Stonehenge is one of the best known prehistoric sites with astronomical associations. It is now generally recognised that it was aligned on the midwinter sunset – midsummer sunrise solstitial axis. This axis crosses the A303 just to the east of its junction with Byway 12 and then passes through the Sun Barrow, north of Normanton Gorse and part of the Normanton Down Barrow group. Unlike the previously proposed offline options for the western end of the A303 scheme (D061 and D062), the open part of the **Preferred Route as at 4th December 2017** lies to the north of the axis and should not interfere with it. At its closest point, the open road would be c.400m north of the axis and thereafter diverging from it. Placing the road in a deep cutting as is now proposed should minimise any light from vehicles. Extending cover over the cutting for 200m westwards from the tunnel portal as is now proposed, would further reduce any potential light pollution. Highways England has undertaken that the open parts of the road within the World Heritage property will not be lit. However, as noted above, no information is yet available on noise levels or on light pollution.

Overall the impact is beneficial because of the removal of light pollution, subject to the necessary evaluation once the necessary data is to hand. The greatest benefit will result from the maximum placing of the road underground.

3 The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.

5. The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.

6. The disposition, physical remains and settings of the key Neolithic and Bronze Age funerary, ceremonial and other monuments and sites of the period, which together form a landscape without parallel.

The **Preferred Route as at 4th December 2017** will have less impact on these attributes than was the case for route D081C from which it has been developed. With a portal further to the west and the 'surface' section being wholly placed within a deep cutting, its adverse impact is considerably less. There are seven different options to be considered and these have different levels of impact. All seven options generally have a minor/ moderate beneficial impact, or only a minor adverse impact on the relationships of the three barrow groups (Winterbourne Stoke, Normanton Down, and the Diamond) with other key monument groups further away. In all cases there are substantial improvements over the present position. It will be easier to appreciate their siting in relation to the landscape and to each other, and the overall disposition of the key Neolithic and Bronze Age funerary, ceremonial and other monuments which together form a landscape without parallel.

Issues remain over the relationship of the three barrow groups closest to this new route. Without further mitigation, the road will obtrude into the key views along its length between Normanton Down and the Diamond and Winterbourne Stoke groups. It will also disrupt the relationship between the Diamond and Winterbourne Stoke groups. Options 1 and 4, and also Options 2 and 3, because of the width of the open cutting, would severely disrupt the ability to appreciate the relationship of the three barrow groups with the landscape (Attribute 3) and with each other (Attributes 4 and 5). The cumulative impact would be so severe as to cause a moderate adverse impact of large/ very large significance to these three monument groups despite positive benefits to the World Heritage property as a whole from the overall road scheme. This is not withstanding the undoubted positive benefits to the Winterbourne Stoke cemetery of moving the line of the A303 away from it, and to the same group and to the Diamond group of moving the A360 up to 400m away.

Provided that the road is built with vertical side walls to the cutting (the abutment options) to minimise landtake and visibility, the adverse impact on the relationship between the Normanton Down group and the Winterbourne Stoke and Diamond groups could be mitigated by adding 200m of additional cover, preferably a combination of cut-and-cover tunnel and canopy, if Highways England's assumptions about landforms are correct, west of the new portal location. Highways England have shown that the adverse impact on the relationship between the Diamond and Winterbourne Stoke could be mitigated by an appropriately located landbridge of sufficient width across the A303 to allow uninterrupted views between the most severely impacted parts of the two groups, but at present have indicated that it is unlikely to be included in their schemes.

Undertaking both sets of mitigation measures would mean that the overall impact on the siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape, siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other, and their disposition, physical remains and settings, which together form a landscape without parallel would be a minor adverse impact of moderate significance. If the landbridge is not provided between the Winterbourne Stoke and Diamond groups, the scheme has a major adverse impact of very large significance on these two monument groups of Outstanding Universal Value because of the proximity of the new road to the Winterbourne Stoke and Diamond groups and because it cuts a key visual and physical link between them.

For the reasons described in Chapter 4, the BOAT proposals could have a moderate adverse impact on these overall attributes.

7. The influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others.

The proposed works in this part of the World Heritage property are unlikely to have much impact on the influence of the remains of Neolithic and Bronze Age funerary and ceremonial monuments and their landscape settings on architects, artists, historians, archaeologists and others. Such impact as there may be will be a minor beneficial change.

Integrity

The character of the integrity of the World Heritage property is discussed in our main report (Snashall, Young 2017a, 56-7). That discussion notes that new surface roads in the World Heritage property can have an adverse impact, although for the property as a whole the overall impact on integrity was evaluated as moderate to major beneficial change of large or very large significance. However, the impact on the specific monument groups mainly affected by the **Preferred Route as at 4th December 2017** could be a moderate adverse change of large/ very large significance if the basic proposal to extend the bored tunnel and to place the whole road in deep cutting is not mitigated. This could be mitigated by measures discussed above to put more of the road out of sight. This would mitigate not just visual impacts, but also adverse aural impacts and any remaining light pollution. It would also increase potential for improving access within the World Heritage property across the line of the A303.

The impact of the BOAT proposals could be minor adverse on the overall integrity of the World Heritage property.

Authenticity

Authenticity is about the truthfulness of the evidence for Outstanding Universal Value, and the ability to appreciate that evidence. The UNESCO Operational Guidelines (UNESCO 2015) list a series of tests for authenticity including form and design, materials and substance, location and setting and spirit of place (see UNESCO 2015 para 82 and also Young, Chadburn and Bedu 2009, 32-33). As for the A303 as a whole as it affects the World Heritage property, the impact of the **Preferred Route as at 4th December 2017** is greatest on the location and setting, and the spirit and feeling of the three main monument groups affected by the proposal. As proposed, the overall impact on authenticity would be negative. The mitigation strategies outlined above would minimise the negative impact.

6 Conclusion

The **Preferred Route as at 4th December**, 2017, is an improvement on the previous proposals. Highways England have done a great deal to mitigate the adverse impact of the previous D081 by lengthening the tunnel, and by adjusting the alignment of the road further north and placing the road in deep cutting through the west end of the World Heritage property. Moving the junction of the A303 with the A360 up to 400m west of the World Heritage property is also a significant improvement.

Issues do remain over the impact of the scheme as now proposed on the three key monument groups – the Normanton Down, Winterbourne Stoke and Diamond barrow cemeteries. The proposed route is close to all three of them and mitigation will be necessary to reduce adverse impacts to an acceptable level in the context of the overall scheme. Extending cover over the cutting a further 200m west of the western tunnel portal should effectively mitigate impacts on the Normanton Down Barrow Group. However the major adverse impacts on the Winterbourne Stoke and Diamond groups remain unless Highways England mitigate this aspect of the scheme by providing an appropriately located landbridge to protect the visual and physical link between the two groups. Without this mitigation this scheme would have an unacceptable impact on the OUV of the World Heritage property.

Proposals to create a new Byway Open to All Traffic (BOAT) linking Byway 12 to Byway 11, whether along the line of the existing A303, or in lower ground further south, would have a moderate adverse impact of large/ very large significance on the World Heritage property. Views between key monument groups such as Stonehenge and the Normanton Down barrow group would be adversely affected and the presence of traffic in the centre of the World Heritage property would also have an unacceptable adverse impact on the Outstanding Universal Value of the World Heritage property.

Overall, the impact of the proposed scheme for improvement of the A303 through Stonehenge is broadly positive. However, this particular option for the western surface stretch of the A303 from the tunnel mouth to the property boundary does have adverse impacts on three important barrow cemeteries (Normanton Down, Winterbourne Stoke and the Diamond). On the basis of the Highways England design as proposed, the adverse impacts on Normanton Down will be mitigated by 200m of additional cover west of the western tunnel portal. The adverse impacts on the link between the Winterbourne Stoke and Diamond groups will without mitigation be rated as major adverse changes of very large significance. Impacts on more distant attributes which are affected are minor and probably acceptable.

All impacts on attributes of Outstanding Universal Value need to be treated seriously. This is the view taken by the UK planning inspector in the Chacewater enquiry in the Cornwall and West Devon Mining Industry World Heritage property (Planning Inspectorate 2016, para 18). It is not acceptable to say that some attributes of Outstanding Universal Value are less important than others. However, within a large World Heritage property, assessment of a development proposal which affects many of its attributes has to come to an overall evaluation of the impact on the Outstanding Universal Value of the World Heritage property as a whole (ICOMOS 2011, Appendix 4, para 7). This in practice will lead to some balancing out of negative and positive impacts across the whole property to reach an overall judgement, unless the impact on negatively affected attributes is so great as to render a proposed development totally unacceptable.

The degree of change caused by the basic (Option 1) **Preferred Route as at 4th December 2017** without the proposed mitigation of potential impacts on the Normanton Down Group (Options 5 and 6), would be damaging to three key groups of attributes of Outstanding Universal Value. Despite the benefits to the World Heritage property as a whole, the harm caused to these three groups would be unacceptable. Options 5 and 6, or a hybrid version of them, would effectively mitigate the adverse impacts on the Normanton Down Group, but the adverse impact on the Winterbourne Stoke and Diamond Groups would still be unacceptable without further mitigation measures such as a landbridge of appropriate length, design and location.

Annex 1 Visual relationships of Preferred Route as at 4th December with key groups of monuments that convey attributes of the Outstanding Universal Value of the Stonehenge World Heritage property

This table measures the scale of the visual impact of the present A303 and of the 2014 2.9kms on-line bored tunnel, and of the Preferred Route as of 4th December 2017, and of selected options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms online tunnel	Option 1 Preferred route, open cut,	Option 2 As Option 1 + 200m canopy	Option 3 As Option 1 + 200m cut-and-	Option 4 Preferred route, abutment,	Option 5 As Option 4, + 200m canopy	Option 6 As Option 4, + 200m	Option 7 As Option 6 + land bridge
King Barrows (Old and New)										
3. King Barrows (Old and New)	Normanton Down Barrows	Major adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Major beneficial
4. King Barrows (Old and New)	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
5. King Barrows (Old and New)	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
6. King Barrows (Old and New)	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Coneybury Henge										
7. Coneybury Henge	Normanton Down Barrows	Moderate adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
8. Coneybury Henge	Lake Barrows	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
9. Coneybury Henge	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
10. Coneybury Henge	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Coneybury Barrow										
11. Coneybury Barrow	Normanton Down Barrows	Moderate adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
12. Coneybury	Lake Barrows	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor

This table measures the scale of the visual impact of the present A303 and of the 2014 2.9kms on-line bored tunnel, and of the Preferred Route as of 4th December 2017, and of selected options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms online tunnel	Option 1 Preferred route, open cut,	Option 2 As Option 1 + 200m canopy	Option 3 As Option 1 + 200m cut-and-	Option 4 Preferred route, abutment,	Option 5 As Option 4, + 200m canopy	Option 6 As Option 4, + 200m	Option 7 As Option 6 + land bridge
Barrow		adverse	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial	beneficial
13. Coneybury Barrow	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
14. Coneybury Barrow	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Cursus East End										
15. Cursus E end	Normanton Down Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
16. Cursus E end	Lake Barrows	Major adverse	None	None	None	None	None	None	None	None
17. Cursus E end	Winterbourne Stoke Barrows	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
18. Cursus E end	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Normanton Down Barrows										
19. Normanton Down Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
20. Normanton Down Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
21. Normanton Down Barrows	Coneybury Barrow	Minor adverse	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial	Minor beneficial
22. Normanton Down Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
23. Normanton Down Barrows	Lake Barrows	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
24. Normanton Down	Winterbourne	Major	Moderate	Moderate	Moderate	Moderate	Moderate	Minor	Minor	Minor

This table measures the scale of the visual impact of the present A303 and of the 2014 2.9kms on-line bored tunnel, and of the Preferred Route as of 4th December 2017, and of selected options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms online tunnel	Option 1 Preferred route, open cut,	Option 2 As Option 1 + 200m canopy	Option 3 As Option 1 + 200m cut-and-	Option 4 Preferred route, abutment,	Option 5 As Option 4, + 200m canopy	Option 6 As Option 4, + 200m	Option 7 As Option 6 + land bridge
Barrows	Stoke Barrows	adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse
25. Normanton Down Barrows	The Diamond	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
Lake Barrows										
26. Lake Barrows	King Barrows (Old & New)	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
27. Lake Barrows	Coneybury Henge	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
28. Lake Barrows	Coneybury Barrow	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
29. Lake Barrows	Cursus E end	Major adverse	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial	Major beneficial
30. Lake Barrows	Normanton Down Barrows	Moderate adverse	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial	Moderate beneficial
31. Lake Barrows	Winterbourne Stoke Barrows	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse	Minor adverse
32. Lake Barrows	The Diamond	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
Winterbourne Stoke Barrows										
33. Winterbourne Stoke Barrows	King Barrows (Old & New)	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
34. Winterbourne Stoke Barrows	Coneybury Henge	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
35. Winterbourne Stoke Barrows	Coneybury Barrow	Major adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse	Minor adverse
36. Winterbourne	Cursus E end	Moderate	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Minor

This table measures the scale of the visual impact of the present A303 and of the 2014 2.9kms on-line bored tunnel, and of the Preferred Route as of 4th December 2017, and of selected options for mitigation.
The significance of these impacts is a function of their scale and of the importance of the asset affected. As attributes of Outstanding Universal Value, all the features and relationships here are of very high importance. This means that a current impact or future change of minor scale shown below is of moderate/ large significance, a moderate one is of large/ very large significance, and a major impact is of very large significance.

View from	To	Current A303	2014 2.9kms online tunnel	Option 1 Preferred route, open cut,	Option 2 As Option 1 + 200m canopy	Option 3 As Option 1 + 200m cut-and-	Option 4 Preferred route, abutment,	Option 5 As Option 4, + 200m canopy	Option 6 As Option 4, + 200m	Option 7 As Option 6 + land bridge
Stoke Barrows		adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse	adverse
37. Winterbourne Stoke Barrows	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
38. Winterbourne Stoke Barrows	Lake Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
39. Winterbourne Stoke Barrows	The Diamond	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse
The Diamond Group										
40. The Diamond Group	King Barrows (Old and New)	Major adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
41. The Diamond Group	Coneybury Henge	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
42. The Diamond Group	Coneybury Barrow	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
43. The Diamond Group	Cursus E end	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Moderate adverse	Moderate adverse	Minor adverse	Minor adverse
44. The Diamond Group	Normanton Down Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse	Minor adverse
45. The Diamond Group	Lake Barrows	None	None	None	None	None	None	None	None	None
46. The Diamond Group	Winterbourne Stoke Barrows	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Major adverse	Minor adverse

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