Comments on the *Draft Detailed Archaeological Mitigation Strategy* (dDAMS) [Applic Doc. Ref. 8.11 (Rev.2)] (Highways England 2019a)

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1. Executive summary

1.1. This document presents a range of comments on key aspects of the current *Draft Detailed Archaeological Mitigation Strategy* (dDAMS) (Highways England 2019a), focusing on the protection of the OUV attributes of the WHS, stated research agendas and questions informing the mitigation strategy and methodology, and ploughzone sampling and excavation sampling strategies.

1.2. The primary conclusion is that the current dDAMS is a fundamentally flawed document that provides no basis for adequate archaeological mitigation of the proposed scheme. It fails to pay due care and attention to the protection of the OUV attributes of the Stonehenge WHS area, and, if applied, would result in very large-scale permanent destruction of unrecorded archaeological evidence, to the detriment of both the WHS and future research.

1.3. The dDAMS is not founded on adequate consideration of current research frameworks and strategies, and provides a limited and selective assessment of research potential, both in general terms and with respect to period-specific research agendas and priorities.

1.4. The dDAMS demonstrates a lack of engagement with the WHS as an entity (i.e. as a single, seamless site or landscape), and ignores fundamental spatial and visual aspects of the landscape and of the monuments and sites within it. This fails to take account of – and indeed risks compromising – many of the OUV attributes that define the Stonehenge WHS area.

1.5. Methodologically, the dDAMS is flawed both in principle and in terms of proposed 'mitigation' methods, due to: (i) failings in the specification of research questions; (ii) the lack of a coherent process for judging significance and prioritization; (iii) reliance on industry standard rather than research archaeology baselines for assessing research value and appropriate methods; (iv) 'sampling' methods that are founded not on rationales for maximizing research outcomes but on rationales for minimizing effort and justifying the loss of potential evidence.

1.6. The dDAMS demonstrates no engagement with the serious matters raised by a wide range of experts, including the Consortium of 22 Archaeologists that represents most of field research projects conducted in the Stonehenge landscape in the last 20 years.

1.7. It is argued that the current dDAMS is not, therefore, fit for purpose. The best solution for avoiding the negative archaeological and cultural heritage impacts of the scheme is to move the western tunnel portal to a point outside the WHS, as recommended again in the most recent UNESCO report on the WHS (May 2019).

2. Comments on dDAMS Section 4: *Archaeological Research Agenda* (dDAMS, p.33-56)

The dDAMS is an intrinsically flawed document with respect both to the protection (and enhancement) of the OUV of the Stonehenge WHS area and current research agendas in British prehistoric archaeology. It lacks a comprehensive assessment of what the OUV amounts to, and therefore lacks a systematic assessment of the primary issues that the dDAMS should address to protect this. It also lacks a sound assessment of current research agendas in prehistoric archaeology at any scale (Stonehenge WHS landscape, regional or national) and for any period (e.g. Mesolithic, Neolithic, Bronze Age).

These flaws are evident in Section 4 of the dDAMS, which supposedly defines archaeological research criteria for justifying particular 'mitigation' decisions (e.g. in terms of field method). As a consequence, all research-related methodological arguments in the document are partial, selective and/or weakly informed. The flaws are thus pervasive and, should the programme of work proposed be implemented, the outcomes would be highly damaging to the Stonehenge WHS. In this context, three aspects of the strategy deserve specific comment.

2.1. OUV of the Stonehenge WHS: landscape setting and visual and spatial relationships

2.1.1. ***OUV attributes***

At no point does the dDAMS recognize, evaluate or address the three WHS OUV attributes concerned with landscape setting or spatial and visual relationships, despite the fact that these are intrinsic to our understanding and public appreciation of the WHS, and the unique character (at a global scale) of the Neolithic and Bronze Age landscape (Simmonds & Thomas 2015, 32; see sections 2.3.15 to 2.3.19 of this document for detailed accounts of the archaeological and cultural heritage significance of these attributes):

> *Attribute 3: The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to the landscape.*
>
> *Attribute 5: The siting of Neolithic and Bronze Age funerary and ceremonial sites and monuments in relation to each other.*
>
> *Attribute 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.*

These attributes are not a matter of incidental 'setting' but are absolutely fundamental to the entire archaeological and cultural heritage character of the WHS, and for the Neolithic and Early Bronze Age are integral to any understanding and appreciation of both monuments and landscape.

The dDAMS makes no attempt whatsoever to prevent damage to these attributes, as a consequence of construction of a 40-50 m wide cutting across 1.1 km of the WHS, the visual and physical impacts of which will be extremely severe and irreversible (see UNESCO 2019, 24-5). Moreover, there is no attempt to address these issues in relation to the effects that the huge 'Longbarrow Junction' will have on the western part of the WHS, the Winterbourne Stoke

Crossroads round barrow funerary complex, or the landscape setting of monuments more widely in this area.

The dDAMS fails completely to address the issues raised by the Consortium of Archaeologists and other speakers during the A303 Scheme Cultural Heritage hearings (Salisbury, June 5-6, 2019) with respect to visual, spatial and landscape impacts, notably two particular of exceptional national and international significance:

2.1.2. ***Early Neolithic long barrow concentration***

The greatest concentration of Early Neolithic long barrows in Britain, in the western part of the WHS clustered around the head of a dry valley (described by Prof. Parker Pearson: Parker Pearson 2019, cf. Roberts *et al.* 2018), will be bisected by the proposed road cutting. The scheme will therefore impact directly on the landscape setting and on the visual and spatial relationships of this group of monuments. The exceptional character of the Stonehenge landscape, already apparent in the Early Neolithic, will thus be irreversibly damaged if the road cutting takes place.

2.1.3. ***Early Bronze Age sacred and funerary landscape***

The integrated Early Bronze Age sacred and funerary landscape, with large linear barrow cemeteries articulated around Stonehenge and spatially and visually inter-referencing one another, is unique at both national and international scales (described by Paul Garwood; cf. Garwood 2019a, 2019b; cf. Garwood 2007, 42-5; Darvill (ed.) 2005, 61-6, map I; Pollard *et al.* 2017, 290-92). The exceptional preservation of both Stonehenge, and the round barrows of this period, makes this by far the most visually appreciable of all the distinct phases of ceremonial landscape development at Stonehenge. The road cutting would slice through the south-west quadrant of this structured landscape, directly impacting on the immediate setting of the best-preserved Early Bronze Age funerary complex in northwest Europe, Winterbourne Stoke Crossroads barrow group, and on views between this group and the other great barrow cemeteries to the south of Stonehenge (the Normanton Down, Lake and Wilsford groups). The proposed scheme would seriously damage the Early Bronze Age landscape and thus seriously compromise the WHS OUV attributes identified above (cf. UNESCO 2019, 204).

2.2. Research agendas and priorities: general points

The dDAMS Archaeological Research Agenda identifies a number of research questions as the basis for: (a) assessment of what is or is not important about the sites and areas impacted by the road scheme; (b) assessment of the results of evaluation work along the route; (c) prioritization of sites and areas for investigation, and; (d) identification of methods and techniques to apply in advance of and during road scheme works. Even cursory examination of these 'questions', however, reveals how narrow and weakly informed they are. They are based primarily on just one research document: the *Research Framework for the Stonehenge, Avebury and Associated Sites World Heritage Site* (Leivers & Powell 2016). Whilst this is an important addition to the current literature relating to research agendas and priorities in this landscape area, it is inevitably short and selective of wider research issues in British prehistory. Moreover, while this

work emphasises (*ibid.* 8, 10) that both of the previous research strategy/review documents relating to the Stonehenge landscape (Darvill ed. 2005; Darvill 2013) are still active, the research questions identified in these are not addressed anywhere in the dDAMS.

Even the current Framework document is drawn upon only selectively for the purposes of the dDAMS. For example, in the case of Mesolithic research priorities, the dDAMS identifies three target questions while ignoring the other three without explanation (cf. Leivers & Powell 2016, 14-15) (see section 2.3.1 below). In the case of Neolithic research questions, again the dDAMS picks out just four from the framework and ignores the other 19 (cf. Leivers & Powell 2016, 15-19), including C2 concerning the significance of flint scatter and ploughzone evidence (see section 4.1 below). The Framework document is notably thin and extremely limited with respect to current research issues in Beaker and Early Bronze Age studies (*ibid*., 18-19), focusing on just two and avoiding mention, for example, of J3 concerning spatial relationships of monuments and other sites. Indeed, as mentioned above, the dDAMS fails to treat the Stonehenge WHS as a landscape that has coherence and integrity as a whole (as the OUV attributes set out), and thus avoids addressing this intrinsic condition of the evidence in both research agenda and methodological statements.

At a wider research scale, the dDAMS is impoverished. It pays no attention to the most recent national prehistoric archaeology research strategy (Historic England (English Heritage) 2010). This document identifies six 'critical priorities' for current and future research, which include: Critical Priority 1: Integrated approaches to prehistoric landscapes (see sections 2.1.2 - 2.1.3 above); Critical Priority 3: Understanding 'sites without structures' (see sections 2.3.1 – 2.1.4 below). The dDAMS also makes little or no use of period-specific research agenda/review documents either at a national scale, such as those for the Mesolithic (Blinkhorn & Milner 2014) and Bronze Age (Last 2008), or at regional and landscape scales (e.g. Pollard & Healy (ed.) 2007; Pollard *et al.* 2017; cf. Bradley 2014). It is apparent, therefore, that the 'research questions' used as the basis for defining dDAMS research priorities and thus methods are far too limited, narrow and selective to be convincing.

2.3. Period-specific research questions

The dDAMS period-specific research questions are problematic both generally and with respect to the evaluations made, which are at odds with other assessments of the evidence and its significance. An extremely worrying aspect of the Scheme has been the lack of transparency with regard to the process for determining 'significance' and 'impact', which has been undertaken by Highways England with apparently minimal critical attention or oversight from any independent body. A few examples of contentious and unconvincing assessments of significance and potential are discussed below.

2.3.1. ***Mesolithic period research questions*** (dDAMS 4.3.12-16, p.38-39):

Suggestions that the Scheme cannot contribute to an understanding of Mesolithic environments (B4), or cultural change over time (B6), are compromised by inadequate sampling and scientific analysis of 'natural' features in the evaluation fieldwork. Similarly, the argument that the

Scheme has only limited potential for 'better understanding the nature of Mesolithic activity' (B5) is based on a limited appreciation of Mesolithic societies, material culture, and the potential of evidence in ploughzone and natural depositional contexts. The great research significance of Mesolithic material in these kinds of settings is clearly recognised in the most recent national Mesolithic research framework (Blinkhorn & Milner 2014: Strategy 2; Research themes T2.1–T2.3, T2.5, T2.8–10, T3.5, T3.9, T3.10, T3.14, T3.15, T3.17), yet the potential of the Scheme for addressing research themes and question identified in this document are largely dismissed (dDAMS 4.3.13-16).

The rationales for judging the potential research significance of Mesolithic evidence in this way are exceptionally weak. In particular, the dDAMS betrays a minimal understanding of the extensive character of Mesolithic hunter-forager inhabitation and activity, which by its very nature tends to be highly dispersed, low density and temporally episodic. As recent work in the Stonehenge landscape demonstrates (e.g. De Smedt *et al.* 2018, and results of the same project in 2018 led by the co-authors), much of the evidence occurs in 'natural features', either *in situ* or redeposited in 'sediment traps', and in the ploughsoil. At the same time, the Stonehenge Early Mesolithic landscape is exceptional at both British and northwest European scales because of the presence of large dug features, the 'post pits' near Stonehenge and the large pit excavated in 2017 (*ibid*.). In this light, *all* Mesolithic evidence is highly significant in research terms (e.g. in relation to landscape re-inhabitation after the last glaciation, occupation and land use relating to the unique early Mesolithic pit features, the major Blick Mead occupation site, and the Mesolithic-Neolithic transition).

The dDAMS takes no account of these facts, nor the points made with respect to this evidence during the Cultural Heritage hearings. Moreover, the low levels of sampling of topsoil and natural features such as channels, solution hollows and tree throws proposed in the dDAMS (see sections 4.3 and 4.4 below) are completely inadequate for recovering this evidence comprehensively. The only research-coherent investigative strategy that would fully take account of these conditions of the Mesolithic evidence and its research potential is 100% sampling of the ploughzone and all natural features and deposits containing cultural material in the areas that the A303 roadworks would destroy.

2.3.2. ***Neolithic period research questions*** (dDAMS 4.4.25-26; p.42-44):

The dDAMS recognizes some research potential with respect to Neolithic occupation of the landscape, although in 'a limited fashion' (C1) and with limited expectations based on the evaluation work (C2, C3), while making no mention of the significance of the ploughzone evidence highlighted in C2. As with the Mesolithic questions, assessments of potential and significance are based on a mis-appreciation of the nature of Neolithic settlement evidence (often extensive, dispersed, and relating to transient and episodic settlement activities) and thus its potential: exactly the same observations apply as in Section 2.3.1. It is *not* possible to gain an informed understanding of Neolithic landscape inhabitation in space or time without highly intensive, preferably 100%, investigation of the ploughzone and all sub-surface features, both anthropogenic and natural.

As discussed in Section 2.1.2, the exceptional spatial and visual significance of the group of Early Neolithic long barrows in the western part of the WHS is also completely ignored in the dDAMS. The presence of evidence for late Mesolithic and Neolithic activity throughout this area, which would be cut through by the proposed road, in this context becomes even greater.

2.3.3. ***Beaker and Early Bronze Age research questions*** (dDAMS 4.5.17-21; p.46-47):

Although the dDAMS notes the potential for evidence from both subsurface cut features and the ploughzone to contribute to research questions concerning Beaker and Early Bronze Age settlement, it fails to relate this evidence to the identification of the most extensive area of Beaker-related occupation known in Britain and northwest Europe (as described by Prof Parker Pearson at the Cultural Heritage hearings; cf. Pollard *et al.* 2017, 290-92, fig.18.8a). This settlement zone, running roughly north-south on the high ground to the west of - and overlooking - Stonehenge, would be cut through by the road scheme. As Prof. Parker Pearson notes, settlement evidence in this period often only survives in ploughzone contexts, analysis of which suggests minimal lateral movement where the terrain is relatively flat or undulating. There is considerable potential, therefore, for investigating occupation at the level of activity areas such as houses, middens, lithic working floors, etc. This would require 100% sampling in order to be able to contextualize areas of activity (and their interpretative significance) in a systematic and coherent manner.

As discussed above, the dDAMS is altogether deficient in its complete lack of consideration of the character and significance of the Early Bronze Age sacred and funerary landscape (section 2.1.3). The dDAMS is based on evaluations of the impact of the Scheme at a 'heritage asset' (i.e. 'monument' or 'site') level, and so fails completely to conceptualize or evaluate the cultural heritage resource in areal or visual terms. The consequences for understanding prehistoric settlement are seriously damaging, and inconsistent with research priorities in current prehistoric archaeology. The implications for informed and coherent evaluation of the scheme's impact on the cosmographically structured ceremonial landscapes of the Late Neolithic and Early Bronze Age (in which the spatial and visual relationships among monuments were fundamental to their experiential qualities and meanings, and in which 'empty spaces' were as significant as monumentalized locales) are even more profound. The complete failure of both the Heritage Impact Assessment (Highways England 2018) and the dDAMS to address these themes in research terms, or with respect to the WHS OUV attributes, fundamentally undermines the credibility of both documents.

2.3.4. ***Middle and Late Bronze Age research questions*** (dDAMS 4.6.11; p.49-50):

The dDAMS identifies some potential for investigating the changes that took place in the Middle and Late Bronze Age when the Stonehenge landscape (especially in the western half of the WHS) was divided and enclosed for the first time by field systems and linear ditch land boundaries (Pollard *et al.* 2017, 290-92, 292-95, fig.18.8b). However, research expectations seem to be low, in part because of recognized difficulties in dating field systems and recovering environmental data from shallow features and deposits. Yet this is a self-inflicted problem that arises from low levels of sampling: if just 20% of a linear ditch is sampled, for example, it follows that 80% of

potential sources of high quality dating evidence are lost. The dDAMS generally presents a flawed rationale (see section 4) that demands lower levels of sampling where evidence is predicted to be less concentrated or less frequent, whereas the opposite should be the case in order to answer research questions relating to past social and cultural contexts where activity was less intensive or less materially rich.

3. Comments on dDAMS Section 5.2: *Archaeological Mitigation Requirements* (p.60-9)

The dDAMS (sections 5.2.9-16) identifies the need to plan for the removal and disposal of excavated topsoil in a controlled manner. It does not, however, take account of the huge volume of chalk bedrock removed from the road cuttings that will accidentally contain thousands of artefacts from features and deposits (anthropogenic and natural) that are unexcavated at the end of archaeological fieldwork because of the proposed sampling strategy. Highways England admitted at the Cultural Heritage hearings that they intend to use the chalk for temporary compound foundations as well as permanent landscaping purposes, etc, yet there is no plan in place to ensure this material causes no contamination of other areas. Despite being raised at the Hearings, the dDAMS fails to take any account of this issue. This is a careless approach, risking serious impacts on the integrity and authenticity of cultural heritage assets within and without the WHS. At the very least, all sub-surface features and deposits that may contain cultural material should be 100% excavated and sieved to ensure that no 'escaped artefacts' would be redeposited through road scheme activities.

4. Comments on dDAMS Section 6: *Overarching Scheme of Investigation* (p.77-107)

4.1. Ploughzone sampling (dDAMS 6.3.11-18; p.84-5)

The rationales for ploughzone sampling identified in the dDAMS are misguided and unjustifiable, apparently founded on basic industry standard estimations of appropriate levels of sampling intensity concerned with the identification of 'sites', rather than the kinds of research questions fitting for the WHS. Indeed, it is well known that intensive sampling is the *only* means to address such questions in the Stonehenge landscape (e.g. with respect to prehistoric settlement; see section 2.3). Trial trenching methods to 'evaluate' the sub-surface resource are also hugely destructive of the ploughzone and in themselves ineffective for identifying earlier prehistoric sites (cf. Hey & Lacey 2001, 59). It is deeply worrying that the kinds of sampling levels required of research investigations in the Stonehenge landscape – e.g. as specified by the National Trust and WCAS - should be suspended for the purposes of Highways England's fieldwork, or that anything short of the minimum requirements expected of research projects should be accepted.

The ploughzone sampling strategy outlined in the dDAMS is intrinsically flawed in three respects:

(i). The proposed standard 1% to 4% sample level identified in the dDAMS issued by Highways England in June 2019 is insufficient for mapping ploughzone distributions of artefactual material, given that many excavated prehistoric structures and *in situ* activity areas are less than 5m in

diameter, and that most sub-surface prehistoric features from which some ploughzone assemblages may be derived (through plough truncation) are less than 3m in diameter. A 4% sample strategy, therefore, has a high likelihood of *missing* localized concentrations of material. In the current version of the dDAMS (July 2019), mention of 4% has been deleted, and both this document and Highways England's 2018 AESR and OWSI documents (identified in dDAMS 6.3.13) make no commitment to any *specific* sampling level over 1% (see dDAMS p.85).

(ii). The 'scalable test pitting strategy' proposed in the dDAMS takes no account of the fundamental need for intensive ploughzone recovery at *consistent* sampling levels in order to map presence/ absence and different kinds and scales of activity areas comprehensively. The 'reflexive' approach proposed would in fact be both relative and value-laden, with no objective mechanisms for judging why and to what extent the "sample size may be increased locally in response to the results of the systematic sampling" (dDAMS, 84). For example, it is suggested that more intensive sampling may be undertaken where there is some coincidence between artefact concentrations, dateable material, and/or subsurface features revealed in test trenching, etc (*ibid*.; cf. Highways England 2019b, 11). Yet no criteria are specified for deciding what is a 'concentration', the problems of recovering dateable material at low sampling levels are ignored (discussed in the next paragraph), and the assumption that lithic concentrations in the ploughsoil will simply be related to subsurface features is groundless. The only effective method is intensive sampling at a standardized – preferably 100% - level.

(iii). The very low proportion of dateable lithic artefacts in any assemblage, critical for establishing chronological frames of references for interpreting lithic scatters (which make up most ploughzone artefactual material), means that these are far more likely to be missed as sampling level decreases. As Prof. Parker Pearson (2019) has emphasized, by far the most research-effective methodology is a 100% sieved sample using a 1m grid. These observations are supported by recent experience during the SLE Project (De Smedt *et al.* 2017, further elaborated during the 2018 field season), which also trialled wet sieving of 10% of the topsoil sample, producing quantities of lithic microdebitage and smaller artefacts that might otherwise be lost through standard dry sieving techniques.

4.2. Excavation sampling: general points (dDAMS 6.3.19-50, p.85-92; 6.4.1-6.6.3, p.98-101)

The totality of the destruction that will result in the areas affected by the proposed road cuttings should provide the fundamental basis for determining a 'mitigation' strategy in the WHS setting, but the approach taken by Highways England focuses on sample 'recovery' of data rather than what will be lost. Highways England and Heritage advisory bodies make no attempt – and, indeed, have no means - to define 'acceptable' levels of *destruction* of evidence.

Unlike sampling strategies applied in research projects, where it is common to leave at least 50% of the fills of features undisturbed *in situ*, to allow future researchers opportunities to re-examine these, the A303 scheme will result in total erasure of the entirety of the road cutting areas (e.g. from the western tunnel portal to the western boundary of the WHS, c.8-10 hectares). Any 'sampling' regime for the A303 scheme has nothing to do, therefore, with

maximizing research outcomes or conserving future research potential, but only the extent to which fieldwork and post-excavation can be *minimized*. This rationale should have no place in such a research-sensitive and significant setting as the Stonehenge WHS area, where exemplary research-defined fieldwork methodologies only should apply.

The dDAMS defines 'acceptable' sampling scales for some feature categories (e.g. 20% of a linear feature, 40% of an enclosure ditch, etc; dDAMS 6.3.42), but these are groundless: there is no objective basis for judging how much should be *destroyed* unrecorded, and there is no way in which research significance of one part of a feature can be determined as greater or lesser than another in advance. In effect, therefore, the destruction process is arbitrary and not led by any coherent means of judging real (rather than 'potential') research value *a priori*.

More generally, the dDAMS seriously underestimates the research potential of lithic scatter evidence found *in situ* in anthropogenic features and natural features and deposits. The research potential of this material, and methodological approaches to its investigation, are clearly addressed in the current Historic England draft guidance document (Historic England 2018). This observes, with respect to lithic sites, that "standard archaeological methodologies presently employed are often not sufficiently subtle to ensure their effective identification, characterisation and preservation. Archaeological interventions (trench evaluation, strip and record, and area excavation) can actually result in the destruction of the resource" (*ibid*. 15). The minimal, inadequate assessments of research potential in the dDAMS (outlined in section 2.3 above) are a clear measure of the limited methodologies and low expectations of the evaluation fieldwork conducted for the scheme.

A further matter of concern is the intention to use machining as a means of excavation (e.g. see dDAMS sections 6.4.5-7, 6.5.6-9), especially for topsoil (ploughzone) stripping (the first stage of strip, map and sample techniques). This would not normally be allowed within the WHS in a research context (unless serious disturbance of deposits is already known). Instead, in all research-led fieldwork, hand-excavation is required in order to maximise artefact recovery and ensure that archaeological surfaces are less likely to be truncated in the course of excavation. As with ploughzone sampling, there seems no justification for allowing different rules to apply for A303 scheme fieldwork in the WHS, when the highest research standards should apply.

In summary, the target should be 100% excavation as the only reasonable 'mitigation' for 100% destruction of the ploughzone, all subsurface anthropogenic features and all natural features and deposits that contain cultural material. This is true not only in principle but also in terms of research effectiveness and the potential to address research questions in a comprehensive and analytically robust manner. This should be based on total recovery of all detectable and recordable evidence of all aspects of past human activities, and their environmental contexts, within the areas affected.

4.3. Excavation sampling: tree throws and hollows (dDAMS 6.3.48-50; p.91)

The proposed methodology for dealing with tree throws and hollows (dDAMS sections 6.3.42-43) is a good example of the flawed character of the dDAMS with respect to excavation sampling

strategies. The decision-making process that is outlined for determining whether or not to sample-excavate is specious. The argument that a 'representative sample of tree throws' can be identified for investigation based on 'proximity and location' in relation to lithic scatters, monuments, 'landforms', and known archaeological remains (such as tree throws near identified pits) does not have any obvious archaeological basis. There is no rationale that privileges these attributes over others.

Identification of 'cultural settings' as a way of defining specific tree throws as more or less potentially research-valuable, and therefore most suitable for investigation, is not only exceptionally difficult *a priori* (in part, because tree throws/hollows are themselves part of the cultural landscape), it also ignores all other possible research-significant data that may be recovered (including comprehensive spatial and dating evidence for tree fall, clearance episodes, extensive occupation practices, etc). The approach proposed in the dDAMS misses the fundamental importance of gaining a full and comprehensive landscape-scale understanding of these features irrespective of whether they contain cultural material, and whether they are close to locations deemed to be culturally significant or not. As with all sub-surface features that may be destroyed by the road scheme, the primary aim should be 100% excavation.

4.4. Excavation sampling: natural features and deposits (dDAMS 6.7; p.101-2)

As with tree throws, the dDAMS strategy for investigating 'natural' features and deposits in the Stonehenge landscape, such as channel fills, colluvial slope sediments, solution hollows and pipes, etc, is narrow and research-limited. This strategy focuses on geo-archaeological sampling (except when cultural deposits are found accidentally). A significant outcome of the current SLE Project (De Smedt *et al.* 2017, and fieldwork in 2018) is recognition that a high proportion of the supposedly 'natural' features investigated contain cultural material, in some cases probably *in situ* or only locally displaced, while in other cases redeposited in more high energy environments such as channels.

As with tree throws and linear archaeological features such as ditches, any sampling strategy in the context of the road scheme is as much a strategy for *not* investigating and thus deliberate, planned loss of evidence. In this case, in order to gain as comprehensive an understanding as possible of the parts of the Stonehenge landscape that would be totally destroyed should the road scheme be approved, it is axiomatic that all potential sources of information should be 100% excavated. The neglect or avoidance of 'natural features' in many previous field projects, and clear underestimation of research potential in the light of recent work, reinforce this point.

5. Conclusions

The primary conclusion of this assessment is straightforward: the dDAMS is not fit for purpose.

1. The dDAMS fails to recognize, evaluate or address the impacts of the proposed scheme on the WHS OUV attributes concerned with landscape settings and spatial and visual relationships. Consequently, the dDAMS incorporates no attempt whatsoever to prevent damage to these

attributes, despite the fact that these are intrinsic to the definition of the WHS, and the unique character (at a global scale) of the Neolithic and Bronze Age landscape.

2. The dDAMS is based on an exceptionally weak appreciation of research agendas and potential, demonstrating only a limited consideration of current national and regional research frameworks and strategies in British prehistoric archaeology, both in general terms and with respect to period-specific research agendas.

3. The use of research framework agendas and strategies (in the form of 'research questions') in the dDAMS is highly partial and selective. A wide range of research themes of special importance in the Stonehenge landscape are thus considered only cursorily or not addressed at all.

4. The dDAMS (and the HIA document) demonstrate a lack of engagement with the WHS as an entity (i.e. in areal, landscape terms), and ignores fundamental spatial and visual aspects of the landscape, and the monuments and sites within it. In effect, this fails to take account of – and indeed risks compromising – many of the OUV attributes that define the Stonehenge WHS area.

5. Methodologically, the dDAMS is profoundly flawed both in principle and in terms of proposed 'mitigation' methods. There are several reasons for this: (i) failings in the specification of research agendas and questions resulting in major gaps and weak or groundless technical rationales; (ii) the lack of a coherent, transparent process for judging significance and prioritization; (iii) reliance on commercial rather than research archaeology baselines (as imposed on research projects within the WHS by the curatorial bodies that constitute the HMAG) for assessing both research value and appropriate methods; (iv) 'sampling' rationales that are founded on 'cost/benefit' estimations that are out of place in a WHS setting where the proposed works will result in *total* destruction of all features and deposits left uninvestigated (including most of the highly important ploughzone).

6. The dDAMS demonstrates no engagement with any of the serious matters raised by a wide range of experts, including the Consortium of 22 Archaeologists that represents most of field research projects conducted in the Stonehenge landscape in the last 20 years.

In this light, the dDAMS is a fatally compromised document in all respects that ultimately fails to pay due care and attention to what defines the Stonehenge WHS area as a landscape "*without parallel*" (cf. Simmonds & Thomas 2015, 27; ICOMOS 2018). In the view of the present author, the dDAMS should be rewritten completely in order to meet the basic requirements of such a document with respect to the nature of the WHS and its exceptional research significance. It would be far better, of course, not to destroy swathes of the WHS and permanently damage its OUV attributes. The best solution for avoiding the negative archaeological and cultural heritage impacts of the scheme is to move the western tunnel portal to a point outside the WHS, as recommended again in the most recent UNESCO report on the WHS (UNESCO 2019, 203-5).

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