

## **Planning Act 2008 – Infrastructure Planning (Examination Procedure) Rules 2010**

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Written Representation Regarding the A303 Amesbury to Berwick Down

On behalf of M&R Hosier, Westfield & Boreland Farms, Upper Woodford, Salisbury

# Carter Jonas

## 1 Introduction

- 1.1 These are the Written Representations of M&R Hosier to the application for a Development Consent Order by the Secretary of State for Transport identified as the A303 Amesbury to Berwick Down Development Consent Order (“the DCO”).
- 1.2 M&R Hosier are family owner occupiers of Westfield & Boreland Farms which extends to approximately 1,260 acres (510 hectares) within Wiltshire comprising of mixed arable and livestock farming including cattle, sheep and an outdoor pig breeding enterprise.
- 1.3 This is complemented by a strong environmental focus within Natural England Entry Level and Higher Level Stewardship Agreement, being built upon to create Normanton Down Reserve, under a management agreement with RSPB to increase the breeding numbers of Stone Curlew, sustain the autumn roost as well as protecting above and below ground archaeology with rich biodiverse chalk grassland.
- 1.4 This Written Representation concerns the land identified by the Applicant (Highways England) as being required for the A303 Amesbury to Berwick Down road improvements scheme (“the Scheme”). This land is situated directly south of the existing A303 and is within the Stonehenge and Avebury World Heritage Site (“WHS”)
- 1.5 The matters raised in these Representations are matters concerning the acquisition of this land and also the related impacts on the farming business and the use of the land within the vicinity of the proposed scheme.
- 1.6 M&R Hosier is raising many issues which will be common themes in Written Representation submitted by other landowners and farmers. M&R Hosier are also working alongside the National Farmers Union.

## 2 Compulsory Acquisition of Land

- 2.1 The draft DCO identifies the following plots in the ownership of M&R Hosier as being required for the Scheme:

Plot Number	Description	Extent of Ownership
05-33	All interests, save for all interests of Highways England, in land comprising of approximately 6015 square metres of public highway, verge and woodland (A303)	Subsoil
05-35	All interests and rights in land	Owner Occupier

	comprising of approximately 62055 square metres of field and agricultural land (Westfield Farm)	
06-01	All interests, save for all interests of Highways England, in land comprising of approximately 21611 square metres of public highway and verge (A303), drain and public byway (AMES12) (A303)	Subsoil
06-02	All interests and rights in land comprising of approximately 90219 square metres of field and agricultural land (Westfield Farm)	Owner Occupier
06-06	Acquisition of subsoil and rights (including restrictions) over the surface and subsoil of land comprising of approximately 15940 square metres of field and agricultural land and tumulus (Westfield Farm)	Owner Occupier

- 2.2 Overall a total of 16.82 hectares (41.56 acres) of land (not including subsoil) owned by M&R Hosier has been identified for compulsory acquisition by the applicant. The land required forms part of the western tunnel portal together with a cutting running from the tunnel portal to the Longbarrow Roundabout. In addition land is required for the creation of a green bridge for a new bridleway over the new carriageway and various ecological requirements.
- 2.3 All of the plots listed above are identified on the Land Plans as being required for Permanent Acquisition of Land which references in Article 19(1) of the Draft DCO as

giving the undertaker the ability to acquire compulsorily so much of the Order land as is required for the authorised development, or to facilitate, or as is incidental to it.

- 2.4 Save for the land required for the road carriageway and 'hard' infrastructure M&R Hosier are of the view there is no justification for the excessive use of CPO powers to acquire for the purposes of setting out land for ecological mitigation.
- 2.5 It is not considered there is a compelling case to acquire these areas as M&R Hosier is a competent and willing farmer with a track record of managing similar areas of conservation and ecological importance across their farm. M&R Hosier would enter into an agreement with the Applicant to manage these areas on an ongoing basis. However due to the ongoing confusion as to who will be responsible for the management of these areas it is not possible to progress with the agreeing of accommodation works around these areas such as appropriate fencing, gate widths/positions etc.

### **3 Soils and Protection of Soils**

- 3.1 There is a significant risk that soils will be damaged during the construction period. Mitigation needs to be set out clearly by the Highways Agency and agreed with the landowners to show how the valuable and productive soil will be protected during the construction period.
- 3.2 There has not been any formal identification of the differing land grades. This needs to take place to ensure that a minimum of the best and most versatile agricultural land is taken for the scheme, and to guide how these areas can be protected. The land grade plans that appear to be used by the applicant for the purpose of identifying land quality should only be used as a guide and further investigations should be carried out on the ground by a professional.
- 3.3 Bringing soils back to agricultural use after the construction of a major infrastructure project is very difficult. Therefore the way soils are stripped and stored is very important, as is the method of de-compaction of tracked areas. Soils will take many years to recover from this sort of treatment and it can take a very long time before combinable crops are able to be grown to the same yield and quality as before.
- 3.4 Highways England (and their appointed contractor) should be required to
- Fund an aftercare period to ensure full soil restoration, structure and fertility
  - Take soil samples to record the base line of agricultural soils disturbed
  - Survey and Sample soils after construction and reinstatement and continue to do so annually until the soil is back in a condition capable of providing a similar yield to that provided before construction
  - Improve the condition of the soil structure through the application of organic content and muck through mole ploughing and field drainage as appropriate,
- 3.5 There is a broad mention of the control of weed species but no indication of how this will be implemented. Depending on the method used in clearing and stockpiling

topsoil and subsoil this may inadvertently create stone curlew habitats (as happened during ground investigation surveys).

#### **4 Byways and Green Bridge**

- 4.1 M&R Hosier considers the current placement and size of the proposed Green Bridge 4 is completely inappropriate within the landscape and its ability to deliver enhanced connectivity within the WHS, inter-visibility of the monuments and increased beneficial ecological connectivity is questioned;
- 4.2 Under the Supplementary Consultation Booklet July 2018 page 17 under Cultural Heritage there is a comment referring to the increase to the beneficial effects on the setting of monuments within the WHS, due to enhanced connectivity within the WHS created by the wider bridge, in particular between the Winterbourne Stoke and Normanton Down and Diamond Barrow Groups – *“there will be a slight increase to the beneficial effects due to the wider bridge giving improved connectivity and greater visual screening of the new road in this part of the WHS”*.
- 4.3 It is unrealistic to expect enhanced connectivity between the proposed Green Bridge and Normanton Down Barrows as they are over a mile away across arable land and within private ownership with no connecting public rights of way. In addition the entire Normanton Down Reserve is in private ownership and so is not available for exploring.
- 4.4 There is no explanation from the applicant as to why the Green Bridge is some 150 metres in width and how they intend to manage this structure including the landscaping areas around it which are awkward in size and shape.
- 4.5 M&R Hosier agree with the proposed downgrading of Byways 11 and 12 to pedestrian only but do not agree with the proposed link between Byways 11 and 12. The proposed link will add to the footfall and anti-social behaviours in proximity of the RSPB Reserve.
- 4.6 If the Byways are downgraded then there is no need for a link.
- 4.7 M&R Hosier do not agree with the new proposed byway along the downgraded A360 as it brings new pressures and antisocial behaviours associated with byways into an area of the farm which is currently undisturbed.
- 4.8 One of the principle selling points of the scheme is to provide a link between the two sides of the WHS which have previously been severed by the A303. However it is being overlooked that the land on the south side of the A303 is in private ownership (M&R Hosier) and the connectivity of the WHS will lead to a significant increase in footfall, trespass, anti-social behaviour and straying dogs affecting livestock.

#### **5 Impact on the RSPB Normanton Down Reserve**

- 5.1 M&R Hosier are not satisfied that the proposed scheme meets the Habitats Regulations in relation to the SPA population of Stone Curlews that nest in

Normanton Down Reserve. The potential that once the scheme is in operation that the increased pressures from people in the landscape will have the possibility of negative effects from recreational pressures on Normanton Down breeding Stone Curlews.

- 5.2 M&R Hosier has worked with Tracey Williams an experienced and dedicated conservation biologist with over 20 years' experience in nature conservation to jointly prepare a detailed report of the potential detrimental impact to Normanton Down and the population of Stone Curlews. A copy of this report is attached at Appendix 1.

## **6 Impact on the Farming Business**

- 6.1 M&R Hosier have serious concerns regarding the availability and quality of their groundwater supplies during construction and operation of the scheme. They are not satisfied the enough appropriate survey work has taken place to fully assess the impact on the groundwater supplies and the data shown in the Environmental Statement is incorrect and misleading.
- 6.2 The Applicant has not considered how existing water supplies may be compromised during construction such as a pollution incident or a severing of groundwater on a temporary basis. There should be detailed investigations of connecting M&R Hosier (and other farmers) to a water mains which can be used in the event groundwater is compromised. There is no mitigation plan and the applicant seems to be convinced there will not be any issues and/or will be relying on their contractor to come up with such a plan. The detail of any mitigation plan needs to be put forward and considered as part of the examination process.
- 6.3 There has been a lack of monitoring of M&R Hosier's private water supply to ascertain adequate base line data for full assessment of any negative impact that may arise from the scheme.
- 6.4 M&R Hosier has appointed Charles Hedges of Sweetwater Resources Ltd to provide more details of the potential impact on groundwater supplies. A copy of this report is attached at Appendix 2.
- 6.5 Due to the risks of there being a compromised water supply together with the likely increase in pedestrians and dog walkers in proximity of livestock areas it is unlikely the existing pig enterprise can be maintained on the farm.
- 6.6 Pig enterprise was introduced into this 89ha block of farm to improve soil fertility naturally providing benefits to the business in terms of enhanced yield, grain quality

with reduced need for inputs. The 750 sow unit rotate around approx. 29 ha of the block over a 6 year cycle, to provide optimum health status.

- 6.7 The loss of the pig enterprise will lead to a reduction of income and soil productivity and crop yields.
- 6.8 Within Environmental Statement Appendices Appendix 2.2 Outline Environmental Management Plan at Page 24 there are references to Natural England applying for badger sett closure licences and blocking up existing setts to prevent badgers from using them. There is a concern that badgers will be displaced across the wider farm and may interact with cattle causing a risk of TB infection spreading across the herd which is currently TB free.
- 6.9 M&R Hosier currently have direct access from the A303 for servicing the top extent of their farm. This is currently used by visiting vets, livestock husbandry and ecological monitoring for the Normanton Down RSPB Reserve. Current access is both for agricultural vehicles and standard motor vehicles.
- 6.10 It is not clear from the draft DCO how access will be maintained for M&R Hosier from the existing A303 which is understood will become a restricted byway and private means of access. There are plans identifying Kent Gates in various locations along the existing A303 but it is not clear how these will work in practice and how they will be maintained/controlled.

## **7 Communications**

- 7.1 Although there have been several meetings between the Applicant and M&R Hosier the quality of these meetings together with the inability of the Applicant to issue timely and accurate meeting notes is concerning.
- 7.2 In addition M&R Hosier has requested copies of several documents referred to in these consultation meetings but to date these documents have not been provided by the Applicant. The result of this is M&R Hosier are unfairly inhibited in their ability to properly examine and consider the documentation which the Applicant is relying on to support their application for DCO.
- 7.3 It is understood the Applicant is not intending to prepare and submit a Statement of Common Ground with M&R Hosier. We are aware the applicant has prepared a draft Position Statement but this is not being submitted as part of the examination. In addition having reviewed previous drafts it is clear the Position Statement is inaccurate in positions and contains misleading statements.
- 7.4 We are aware the applicant has appointed the District Valuer to engage with landowners in advance of the draft DCO. However the District Valuer has not engaged any meaningful discussions or negotiations with M&R Hosier and their advisors in an attempt to acquire land by agreement. No terms have been issued nor any indication of instructions to proceed with negotiations. Therefore M&R Hosier



believe the Applicant has failed in their duty to negotiate in advance of using CPO powers and is in direct conflict with Government Circular advice 06/04.

- 7.5 All of the consultation documents relating to Normanton Down and the land on the south side of the WHS (south of the existing A303) has been promoted for roaming and exploring, but there is no mention that this will only be via byways. The inference is that the area will be open access as the northern part. There is no mention that the majority of the land on the southern part of the WHI is privately owned and not available for roaming.
- 7.6 M&R Hosier fear these types of misleading statements will put the Normanton Down Reserve under greater pressure from general public believing that the area is open to access with the potential to disturb Stone Curlews.
- 7.7 In the Second consultation booklet dated Feb 2018 at page 25 the Normanton Down Reserve is obscured by the map legend, and there is little mention of Normanton Down Reserve within the booklet except page 56, Biodiversity Construction Stage which states “Temporary adverse effects of construction activities on Stone curlews” and Biodiversity Operational Stage “Local adverse effects on Stone curlew south of the A303 due to the increased public access across the WHS enabled by the proposed scheme”. However there is no proposed solution or mention of possible mitigation works to offset these adverse effects.
- 7.8 M&R Hosier believes there has been poor stakeholder engagement despite being part of the scheme as owners of the land. Statutory stakeholders such as Natural England (NE), National Trust (NT), English Heritage (EH), Wiltshire Council, within this scheme, have dual roles of both consultees and overseeing and feeding into scheme. As such it has become apparent that farm landowners and other non-statutory stakeholders are at a disadvantage. There are no legacy benefits within the scheme for farmers, only for these organisations. As such this scheme has not been impartial.
- 7.9 There has been a lack of engagement farmers and their informed knowledge of environment and years of experience of the area, seeming to take note instead of organisations set to benefit from scheme legacy. For example M&R Hosier’s comments on Green Bridge 4 and area of land between current A303 and the new A303 in cutting has not been considered.

## **8 Surveys**

- 8.1 The timings of intrusive and non-intrusive surveys have not taken into account farming calendar and farming practices despite these being discussed on numerous occasions with the applicant and their consultants. M&R Hosier and their tenants were forced to move pigs early only for the applicant failing to carry out work on the area due to pig dung. In addition there was an inappropriate intention for using byway to provide access for surveys during winter months when the byways were

severely pot-holed and not suitable for vehicular traffic without causing significant damage.

- 8.2 A lack of preparation by consultants for first archaeological surveys in 2016 led to damage to scheduled monument SM10317 due to repeated tracked excavator refuelling, a pig death, animal welfare issues and unreported damage to farm property. The second round of archaeological surveys failed to take into account the Stone curlew breeding season. There was a failure to share details of any management plan should breeding attempt occur (which it did) then inexperience of ecology staff needing to draw in Stone Curlew team when the birds could not be located within the area. This should have all been put in place ahead of surveys.
- 8.3 M&R Hosier experienced various issues with bags of archaeological finds left on site. Poor reinstatement works after surveys with numerous metal pins left on site, some having caused damage to their machinery.
- 8.4 Generally the survey programme has been poorly managed and governed by the Applicant. Problems include:
- Breach of licence agreements;
  - Overdue licence payments;
  - Not adhering to pre-agreed access arrangements;
  - Lack of provision of precondition and post condition reports;
  - Inappropriate use of Section 172 of the Housing & Planning Act 2016 to preserve programme rather than meaningful attempts to negotiation access

# **Appendix 1 – R Hosier & T Williams – Biodiversity and Ecology Report**

# RACHEL HOSIER<sup>a</sup> & TRACÉ WILLIAMS<sup>b</sup>

## Written Representation on Biodiversity, biological environment and ecology

### Summary

The A303 Stonehenge Scheme poses threats to the integrity of the Salisbury Plain SPA and its associated Annex 1 bird species; the Stone Curlew. The Scheme also threatens Annex 1 Great Bustards that have been re-introduced and breed within the locality. The ecology of Stone Curlew appears to not have been fully understood with important aspects of the species behavior omitted completely. Mitigation proposed appears to be unsatisfactory in respect of Stone Curlews. In-combination effects of increased footfall into the area from the various local plans and strategies with increased recreational use of byways bounding the Normanton Down nature reserve will have untold negative impacts upon Stone Curlew. Significant data on the current levels of recreational use of byways has not been gathered, which renders the impact of the promotion of wider access into the southern half of the WHS immeasurable. The Scheme lacks expertise and knowledge regarding the establishment of chalk grassland, with dubious method statements published and information important to assess the viability of the Scheme omitted. The consultation documents are flawed in their information, containing any errors and misleading the public.

### Introduction

<sup>a</sup>Rachel Hosier is the third-generation landowner Boreland Farm, a typical Wiltshire mixed farm of 510 hectares consisting of arable, grassland and woodland with sheep, cattle and an outdoor pig breeding enterprise. Rachel is proud to be the guardian of this area of the WHS helping to deliver a number of the WHS management plan objectives, I.e. to protect above and below ground archaeology, improving the setting of the monuments within the WHS and also bringing many biodiversity benefits to the area by managing the chalk grassland to provide habitat for many important breeding species. Rachel always knew this area was very special, and through Normanton Down and the help of RSPB has gained a deeper appreciation of the area, constantly learning and adding new opportunities to protect this unique area. As such she has a strong desire to protect Normanton Down and all that dwell in the area for future generations.

<sup>b</sup>Tracé Williams is an experienced and dedicated conservation biologist with over 20 years' experience in nature conservation, having been central to several avian projects in the UK and overseas, with avicultural, research and project management experience. Having worked for the RSPB in Wiltshire for 14 years, Tracé has expert knowledge of chalk grassland flora and fauna, had major input into the Stonehenge & Avebury World Heritage Site Management Plan and has considerable knowledge associated with Normanton Down nature reserve and previous A303 proposals. FarmView was established in 2012, an agri-conservation consultancy offering professional advice on species and habitats management, restoration and creation; agricultural grants and regulations; conservation and enhancement of biodiversity in the farmed environment.

## 1. Normanton Down nature reserve

1.1. Normanton Down nature reserve lies on the northern side of Westfield farm and within the Stonehenge World Heritage Site (WHS). It is 89 hectares established to create and enhance chalk grassland habitat, and to provide safe breeding habitat for Stone Curlew *Burhinus oedicnemus*,

protected under Annex 1 of the Birds Directive [1], of which there have been at least two breeding pairs for the last six years, along with 14 pairs of Northern Lapwing *Vanellus vanellus*, this species being on the IUCN Red List of Threatened Species [2].

1.2. The Red Listed Eurasian Curlew *Numenius arquata* [3] has been recorded since 2014 with breeding recorded at the reserve in 2014 and 2015 and visitations in following years. The significance of Eurasian Curlew is the decline in England of 32% between 1995 and 2013 with this decline being the most rapid across the species range [4].

1.3. In addition, the re-introduced Great Bustard *Otis tarda* is a frequent visitor to the reserve, utilizing the open grassland and cultivated stone curlew breeding plots. Listed as AE\* on the British Bird List [5] and Annex 1 [1], the Great Bustard is now considered well established as a breeding bird. Breeding has occurred at Boreland farm during the last 10 years and Normanton Down reserve frequently hosts non-breeding groups of Great Bustard.

1.4. The reserve is under a Land Management Agreement with the Royal Society for the Protection of Birds (RSPB), with no public access but occasional tours escorted by the RSPB. The reserve is now important for the largest pre-migration autumn roost of Stone Curlew in the south of England, with 105 individuals gathering at the Reserve in 2017 [6].

1.5. The reserve also hosts a major part of the Normanton Down Neolithic and Bronze Age barrow cemetery. The burials date from between 2600 and 1600 BC and consist of a Neolithic long barrow and some 40 or more Bronze Age round barrows, sited along the crest of a low ridge. The barrows are important seed banks of rare chalk grassland flora, which has contributed to the restoration of this habitat within the reserve, and also provide habitat for rare invertebrates including one Red Data Book, five Nationally Scarce and one BAP Priority species recorded in 2016 [7].

1.6. This Written Representation discusses the effects upon the farms key environmental focus area, the impacts upon Annex 1 protected breeding Stone Curlew and effects upon the integrity of the Salisbury Plain SPA population, Annex 1 Great Bustard, chalk grassland habitat creation and management methods.

## **2. Degradation of farm environmental focus**

2.1. Boreland farm entered environmental schemes in 2002; firstly in the Countryside Stewardship scheme and followed by the Higher Level Environmental Stewardship scheme (HLS) in 2013. These schemes have allowed the establishment of 85 hectares of chalk grassland and the annual creation of four Stone Curlew breeding plots. Within the HLS scheme there is a Floral Field Margin running along the length of the A303 and scheduled monument linear earthwork feature; being within the footprint of the Stonehenge tunnel scheme, this environmental margin will be removed from our scheme once the land is taken for construction. Therefore, seven years of environmental benefit gained will be lost.

2.2. The largest feature of Boreland Farm environmental focus is Normanton Down Reserve, being owned by M & R Hosier and created via a Land Management Agreement with RSPB for monitoring and access purposes. The reserve has been financed over the years with RDP revenue from DEFRA's environmental schemes administered by Natural England, and topped up with farm

finances and a nominal annual payment from RSPB. The farm has history of Stone Curlew breeding in short grassland since the 1960's and was a well-established contributor to the Salisbury Plain SPA population. In 2004 the RSPB approached the landowner for the opportunity of a joint venture to increase the Stone Curlew population, through provision of ideal habitat, and through monitoring of birds gathering in the autumn roost.

2.3. Normanton Down reserve is not within the proposed route of the road scheme, or directly within the Salisbury Plain SPA. However, it is recognised that the SPA is supported by a 5 km buffer zone of farmland around Salisbury Plain, as such this area, and any Stone Curlew nesting generally within this area, is protected under Article 4.1 of the Habitats Directive (79/409/EEC) on the Conservation of Wild Birds [8] by supporting populations of European importance during the breeding season, and therefore considered to be functionally attached to the SPA and essential to preservation of its integrity.

2.4. It is stated within the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora . “The Habitats Directive 92/43/EEC” that:

*“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives.” [9]*

2.5. In addition, under national law, the Conservation of Habitats and Species Regulations (the “Habitats Regulations 2017”) is stated:

*“A competent authority, before deciding to ... give any consent ... for, a plan or project which – (a) is likely to have a significant effect on a European site ... must make an appropriate assessment of the implications for the plan or project in view of that site’s conservation objectives...In light of the conclusions of the assessment, and subject to regulation 64 [IROPI where negative assessment], the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site”[9]*

2.6. It is our view that the HRA Appropriate Assessment is inadequate in its assessment of the impacts that the A303 Stonehenge scheme will have upon Stone Curlew at Normanton Down reserve. The species has both European and national protection to ensure any such schemes are comprehensively assessed to ensure no negative impact. We feel that the ecology of the species has not fully been considered; there is no mention of impacts upon its crepuscular activity of feeding at night, no mention of potential effects upon pre-migration roost gathering activity, there have been no surveys undertaken to assess current levels of byway usage and there has been no assessment of suitability elsewhere on the farm for new breeding plot location as a protection measure should the Stone Curlew pairs be deterred from nesting in their usual plots.

### **3. Annex 1 protected Stone Curlew *Burhinus oedicnemus***

#### **Increased use of Byways**

3.1. The Stone Curlew is protected by the following legislation; Annex 1 of the Directive on the Conservation of Wild Birds 79/409/EEC [Birds Directive]; Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) [10]; Section 41 Priority species under the Natural Environment and Rural Communities (NERC) Act 2006; Council Directive 92/43/EEC of 21 May 1992 [Habitats Directive], which requires that assessment of likely significant effect on Stone Curlew must be carried out on the current Stone Curlew population and distribution, and in combination with other plans and/or projects.

3.2. Stone Curlew is established within the Stonehenge WHS and within the surrounding farmland where, through its Wessex Stone Curlew Project, the RSPB has worked with landowners to locate specially created breeding plots within the landscape. Within the Stonehenge WHS there are seven breeding plots, six with breeding pairs of Stone Curlew. Having been situated in 2013 the seventh plot has yet to be used by Stone Curlew; this may be due to pressures from byways and close proximity to the A303. The Stone Curlew is also one of the designated features of the Salisbury Plain Special Protection Area (SPA) and is a qualifying species of the Salisbury Plain Special Area of Conservation (SAC). The RSPB states that the Stone Curlew population in the vicinity of the A303 Stonehenge scheme is associated with the Stone Curlew meta-population of the Salisbury Plain SPA [11].

3.3. In the HRA: Statement to Inform Appropriate Assessment [12] it is noted that the operational phase of the A303 Stonehenge Scheme will have the potential to negatively impact on the Normanton Down Stone Curlew population due to increased recreational pressures within the byways that abound the reserve to east and west. There is potential for increase in the number of walkers, dog walking and possible breach of the fence-line and disturbance to breeding Stone Curlew. Frequently there has been incidence of trespass and picnicking, as well as those seeking a spiritual experience of the Normanton Down barrows, and using the reserve as a route to collect timber from the adjacent woodland. We have grave concerns that this type of incidence would increase, especially as further exploration of the southern WHS is to be encouraged as part of the scheme outcomes.

3.4. Within the Appropriate Assessment [13], Highways England have stated :

*“ . . . since it is not possible to accurately predict the scale of increased use of those PRow or the frequency of resulting disturbance events a precautionary assumption has been made that any increase in use of those PRow could result in an increased incidence of disturbance which would be significant and thus result on an adverse effect on the integrity of the SPA ”.*

3.5. Furthermore, both Highways England and RSPB have commented that any net loss of Stone Curlew plots in the Salisbury Plain area, even if outside the SPA boundary, could result in an adverse effect on the integrity of the SPA by reducing nesting opportunities for stone curlew [14].

*“However, this could operate in combination with an increase in the local population due to increased housing growth (such as that set out in the Wiltshire Core Strategy) and with increased tourism to increase the risk of disturbance of some stone curlew plots in the area. There is uncertainty as to whether such recreational disturbance events would actually*

*arise but if they did this may result in greater long-term disturbance on breeding stone curlew and an indirect adverse permanent effect on nesting success locally.”*

3.6. Both Highways England and RSPB have commented on the possibility of increased recreational use of the byways that form the eastern and western boundaries of Normanton Down reserve. In our opinion, the current low levels of recreational use of the byways needs to be fully understood, as the type of activity and user may change dramatically with the barrier of the A303 road removed. We are unaware of any baseline surveys having been undertaken of the current level of recreational use specific to this area. RSPB research concluded that people on foot and especially with dogs, within 500m of a Stone Curlew nest will cause the adult birds to vacate the nest [15]. Without supporting baseline data any ‘increase’ cannot be monitored or compared.

### **Mitigation Assumptions**

3.7. The conclusion within Highways England 6.3 Environmental Statement Appendices is that adverse effects to the integrity of the Stone Curlew population have been found and that without suitable mitigation measures the scheme cannot take place. Under mitigation it is noted that:

*“more bespoke mitigation measures are required with regard to recreational disturbance of stone curlew at Normanton Down” [16]*

3.8. Mitigation consists of Wiltshire Council downgrading the byways adjacent to the Reserve to pedestrian only status. However, there is no certainty that this will happen.

*“In 2018 Wiltshire Council carried out a test on the two PRow adjacent to the reserve by closing those routes to motorised traffic, making them restricted byways, only open to pedestrians, cyclists and horse riders. This is a measure proposed as part of the management of the World Heritage Site, to protect the Outstanding Universal Value of the WHS. This is because parking of vehicles on the PRow is considered to have an adverse effect on the setting of Stonehenge and other monuments within the WHS. If the measure that has been introduced by Wiltshire Council is applied permanently, the likelihood of trespass associated with camping and hare-coursing disturbing stone curlew nesting is likely to decrease” [17]*

3.9. As proposed mitigation for Normanton Down for the potential recreational disturbance following the removal of the A303 into a tunnel, there is the possibility that Wiltshire Council will downgrade byway to pedestrian. However, downgrading of the byways will not necessarily help reduce recreational pressures on Stone Curlews as the most disturbance is from people on foot with dogs which will be exacerbated on downgraded byways.

3.10. It is highly unlikely that closure of the byways will be ‘applied permanently’ as the test closure carried out by Wiltshire Council came under intense criticism from many organisations such as the Countryside Access Forum [18], Trail Riders Fellowship [19] and Druids [20]. This last closure was to address damage to the Outstanding Universal Value (OUV) of the WHS, and as such the focus of its outcomes was not in respect of Stone Curlew.

3.11. Use of the southern WHS area will increase as Highways England have promoted this already putting Normanton Down reserve under threat. People with binoculars and/or cameras/telescopes on the byways for extended periods of time searching for Stone Curlews and other wildlife has  
*R Hosier & T Williams, Written Representation on Biodiversity: A303 Stonehenge Scheme. May 2019*



great potential to disturb nesting birds away from their nests or chicks. To date this potential to attract unwanted attention to Schedule 1 breeding birds has been avoided by RSPB not promoting the site nationally, maintaining the Reserve as a tranquil site and not developing the number of visitors to the site more than a few escorted group visits each year in the autumn.

3.12. Due to promotion of the foreseen Scheme benefits; open access into the southern half of the WHS, uninterrupted extension of chalk downland, further exploration of archaeological features in the southern half of the WHS, we have every reason to believe that new fencing will not prevent an increase in trespass. The existing fencing of the Reserve is not a deterrent as people already breach the perimeter fences and enter the Reserve. Fencing, whether electric or barbed wire can easily be cut, upkeep is an ongoing expense and it does not keep people out as already proven.

3.13. We feel there are lost opportunities for biodiversity enhancement, which is an objective of the Scheme. Our suggestion for hedging located in suitable sections of Normanton Down reserve away from Stone Curlew breeding areas, was rejected for heritage reasons, however, this would create a more robust barrier to trespass than fencing, and would also provide additional habitat for wildlife.

3.14. Highways England states that the RSPB has agreed to ‘mitigation’ in the form of an ‘extension’ of its Winterbourne Downs reserve, approximately 11km due east of Normanton Down. RSPB consider that an improvement in the nesting opportunities available there would ensure no adverse effect on the integrity (structure and function) of the SPA, even if there was some disturbance post-construction at Normanton Down [21].

3.15. The proposed provision of an alternative Stone Curlew breeding plot at the RSPBs Winterbourne Downs nature reserve goes against the recognised mitigation criteria which has been applied to the loss of breeding plot at Winterbourne Stoke. I.e. providing the displaced breeding birds with a replacement plot on suitable soils in a suitable location close to the existing plot and with a commitment to manage the plot appropriately [21].

3.16. There has been no consistency of approach to possible adverse effects upon breeding Stone Curlews at the two sites; with Normanton Down being treated with a somewhat ‘wait-and-see’ approach. It is entirely possible that the measures already being taken to address recreational use of the PRoW at Normanton Down RSPB reserve will not remove the risk of an effect, moreover a precautionary approach is being taken to mitigation for this scheme, “in order to increase confidence that recreational disturbance in combination would not result in a net loss of nesting opportunities for Stone Curlew associated with the SPA [21]. Although not reported within the Highways England HRA, we understand that mitigation for the loss of the Stone Curlew breeding plot at Winterbourne Stoke is, in fact, proposed as a net gain in the form of a ‘scheme legacy’ (RSPB, pers. comm.) and therefore, not mitigation at all.

3.17. We have no confidence that Stone Curlews displaced from Normanton Down during the breeding season would relocate to Winterbourne Downs. The birds’ ecology is such that male Stone Curlew may return to within 9 miles of their hatch site, however, monogamous pairs are site-specific, returning annually to the same place to breed. We consider it more likely therefore,

that a displaced or disturbed breeding pair would attempt to breed in a less than suitable spring crop in the vicinity of its usual breeding site, putting the nest in peril.

3.18. Nesting plots are prepared in early spring by farmers and are managed specifically to allow Stone Curlew to complete the breeding cycle fully, without danger from farming operations. In comparison, nests made in arable crops, selected by the birds due to the bare ground available, will often result in failure due to accidental destruction or abandonment once crops have quickly grown too tall. The success of the RSPBs Stone Curlew project has been largely due to farmers providing safe nesting plots and managing them in the correct way.

3.19. As the landowner of Normanton Down, we feel it completely inappropriate that Highways England has chosen to discuss the provision of a replacement breeding plot for the potentially displaced Normanton Down breeding pairs with our Tenants (RSPB) rather than ourselves as impacted landowners of the Reserve. In comparison to the Winterbourne Stoke breeding plot mitigation plan, our holding offers the nearest proximity to any Normanton Down displaced birds and we already have considerable experience of plot management, yet Highways England or their consultants have failed to engage with ourselves regarding appropriate mitigation for the Normanton Down breeding plots. There is no certainty that byways will be downgraded, illegal vehicles have already demonstrated that they can access the area during the Temporary Road Closure and fences are easily cut or climbed over as we have already noted. No other provisions for the breeding pairs of Stone curlews have been offered.

3.20. In conclusion, considering there is no determination offered or proposal to ascertain the current level of recreational use, nor is there any proposal for investigation into the likely increase in recreational use of the byways, the level of disturbance imposed upon the Schedule 1 species is unknown. We find the lack of will from Highways England to communicate with M & R Hosier as the landowner, to discuss possible mitigation proposals incredulous.

### **In-Combination Effects**

3.21. The in-combination effects of the A303 Scheme are vast and, with unknown levels of increased recreation surrounding Normanton Down reserve, will pose a negative impact as outlined within the HRA Statement to inform Appropriate Assessment:

*“Other than the breeding plot at Winterbourne Stoke, which will be lost under the bypass, there are records of Stone Curlew nesting at fourteen other locations within 2km of the A303 between Yarnbury Castle and Countess Junction since 2006. All but four of these historic records are more than 1km distant from the road. All four records within 1km of the A303 are in locations where the A303 will either become more distant due to the bypass, or (in the vicinity of Normanton Down) will be removed entirely by the A303 being placed in tunnel. Normanton Down is a focus of stone curlew nesting activity outside the SPA. The scheme would be beneficial to the stone curlew population of the SPA by removing the influence of the A303 from these locations. However, it would not represent a net positive impact when the in-combination effects of recreational disturbance are considered” [22].*

3.23. Wiltshire Core Strategy was adopted in Jan 2015 being a strategic document setting out a framework for planning development across Wiltshire through to 2026 provision of 42,000 new dwellings, representing a 20% increase in numbers of houses [23].

3.24. The Environmental Statement HRA - Likely Significant Effects Report [24] asks for description of elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.

3.25. We have severe concerns regarding a combination of impacts of unknown magnitude. The HRA states the only “in-combination” effect identified is recreational disturbance of the plots at Normanton Down, where it is suggested that removal of the old A303 coupled with plans to increase tourism, Wiltshire local plan, other local plans and the Army Basing Programme [25].

3.26. Since 2012, the MoD’s Army Basing Programme (ABP) has been planned and is currently being delivered in and around Salisbury Plain; this programme includes significant improvements to the military training infrastructure, improvements to the main garrisons, and 917 Service Family Accommodation (SFA) units [26]. A masterplan covering the main elements of the ABP was subject to an HRA. One of the main issues considered by the HRA was the additional recreational pressure from the 917 proposed SFA units in close proximity to the SPA. Due to this perceived increase in recreational pressure, the HRA of the final ABP scheme (produced 18 December 2015), committed the MoD to providing the following mitigation to reduce any residual impacts:

- (i) Revision of the Stone Curlew Management Plan to improve the management and number of breeding plots on the plains.
- (ii) Preparation of a Recreation Access Action Plan to review existing Public Rights of Way and accessible open spaces and identify opportunities for additional routes for running and dog walking which would reduce potential conflict with Stone Curlew plots.
- (iii) Provision of information on responsible access for service personnel and families.

This would include information on existing access arrangements and suggested local walking/running routes based on the results of the above, as well as information about the environmental sensitivity of the Salisbury Plain Training Area and the importance of keeping to existing tracks.

3.27. This is in line with the UK Government Tourism Policy [27] and the Visit Britain Growth Strategy. The Government seeks to encourage tourism in a sustainable way to enhance the UK’s reputation around the world and because of the economic benefits it brings to the country. Culture and heritage are recognized to be key attractors for inbound tourists. The strategy identifies an ambitious objective to attract an additional 9 million visitors a year by 2020, increase spending by £8.7 billion and support an additional 200,000 jobs a year [28].

3.28. For the highly protected Stone Curlew this in-combination effect could be disastrous for the SPA population that is still in ‘recovery’ [29] and includes the projection of nearly 4,000 military service personnel being based on Salisbury Plain by the end of 2019. On its own, one third of the British Army living and working within the SPA and surrounding environs, along with provision of new housing as planned within the Wiltshire Core Strategy could see an increase in type and frequency of use of the byway network, by people on foot and with dogs, to have a negative effect

on breeding success. It is not unreasonable to suggest that any increased activity adjacent to the breeding Stone Curlew plots at Normanton Down – which are both within 180m of the eastern byway - would almost certainly lead to desertion from nests.

3.29. The selected route option will cause impacts through habitat loss of functionally-linked land, and potential disturbance and fragmentation to qualifying species of Salisbury Plain SPA using that functionally-linked land. Specifically, this will occur through the loss of a known successful stone curlew breeding plot in the vicinity of Parsonage Down and the potential for increased recreational disturbance to stone curlew plots at Normanton Down. Moreover, disturbance of nesting stone curlews outside the SPA in proximity to the Scheme at Normanton Down RSPB reserve and at other locations known to historically support breeding stone curlew could occur during construction as a result of increased vehicular movements and human disturbance. [30]

3.30. Wiltshire Council signed up to the Community Infrastructure Levy (CIL) to monitor the SPA population of Stone Curlews to assess the impact of housing development within the area and its impact on the SPA population. This feeds into the Wiltshire Core Strategy. We believe there are CIL reports for 2015-2018. However, the 2016 CIL report has been removed from online and 2017 has not yet been made available to the public. Therefore, any information has been by verbal communication with the RSPB.

3.31. The Stone Curlew project is the best example in this country of how farming and conservation can work hand-in-hand to reverse the declines of farmland birds. The success over the last 30 years is a direct consequence of the commitment of farmers to providing suitable nesting habitat for this bird across Wessex. Even in the extreme weather conditions experienced in 2018, 72 chicks fledged successfully from 101 breeding pairs; productivity level of 0.71.

3.32. As a productivity level of 0.61 is required for a stable SPA population, it would only take a few years of poor performance for the productivity levels to drop below sustainable levels, indicating the fragility of the population. Normanton Down and surrounding farmland once again proved to be an important site for Stone Curlew in 2018 [31]. Any in-combination effects of the A303 Stonehenge scheme would therefore impact upon the resilience of the SPA population.

3.33. The provision of suitable habitat for Stone Curlews is central to the success witnessed in Wessex, however; due to farmers able to access grants having more flexibility to manage breeding plots and to undertake some predator control. Whereas the military training area would have less flexible management practices combined with no predator control making it potentially less productive than farming plots. Historically grassland on Salisbury Plain was maintained by rabbit grazing which attracted Stone Curlew, and used to be much shorter than it is now due to a decline in the rabbit population. This along with no predator control has the potential to see Stone Curlew breeding on SPTA be less successful in future and annually prepared breeding plots such as those on and in farmland around Normanton Down become even more important. Protection of these areas in terms of sustaining the SPA population cannot be understated.

3.34. In addition, housing being built within the area will bring with it an increased risk of disturbance from recreational people within the open access of SPTA. Disturbance created by dog walkers or other, is being recorded by RSPB staff when monitoring the birds on both farmland and on SPTA. Research into causes of disturbance have already shown that a person with a dog will

cause Stone Curlew to leave the nest from 500m or greater in some cases. However, the same reaction is lessened for approaching vehicles, especially if using a regularly used route [15].

3.35. Research was commissioned in 2015 by Wiltshire Council to develop a mitigation strategy for any potential impacts of future development upon the SPA Stone Curlew population. This found that 74% of those interviewed indicated dog walking as the main reason for their visit, and it was found that visitors were coming from as far as 6.4km away. Importantly only 31% were aware of any conservation designations or environmental protection that applied to Salisbury Plain. Some 39 % of interviewees visited daily with 17% visiting on most days and 87% visiting equally all year round; the proximity of home (39%) and the scenery (54%) being important factors [32].

3.36. We feel that encouragement of wider exploration into the southern WHS, due to the amount of privately owned land, will necessarily channel recreation through the area via the byways; with two byways and a National Trust permissive footpath bounding three sides of Normanton Down reserve, the current relatively undisturbed tranquility which has attracted the wide variety of downland wildlife into the area is likely to be negatively affected.

3.37. We are not aware of any surveys being done by HE consultants or Footprint Ecology to assess the current levels of recreational use within the area. Other documents referred to for recreational pressures have not used byways 11 and 12 for data collection. We have already noticed an increase in use of byways either side of the Reserve, but with no baseline data it is not possible to fully assess any impact upon the area.

3.38. In conclusion, it is our opinion that Highways England have promoted the southern part of the WHS for roaming yet have omitted the information that this will only be via the byways. The drive to increase tourism within the area, opening up the area for legacy opportunities to local recreational organisations who will probably not be aware of the SPA status of Stone Curlew within the area, increase in MoD housing numbers and growing local housing policy have put an enormous amount of potential disturbance pressure on the pairs of birds that breed at Normanton Down. In addition, pressure from people believing the monuments are open access land is going to grow and as landowners we have already seen this increase since the Scheme was proposed.

### **Construction impacts**

3.39. Of major concern is the admission by Highways England that:

*“Stone curlews breed outside the SPA in proximity to the scheme at Normanton Down RSPB reserve and at other locations known to historically support breeding stone curlew. These populations of stone curlew would have the potential to be disturbed by increased vehicular movements and human disturbance during construction. Disturbance impacts would have the potential to cause stress, which may result in a reduction in their resilience and breeding success. In extreme cases disturbance impacts may result in the abandonment of breeding plot [33].*

3.40. It cannot therefore be assumed that there will be no impact of construction works upon breeding success of Stone Curlew. With the absence of scientific data regarding possible effects of noise and lights, and considering that road and tunnel construction work will take five years to

*R Hosier & T Williams, Written Representation on Biodiversity: A303 Stonehenge Scheme. May 2019*

complete day and night, a precautionary approach would suggest that a large foraging area required by the birds will be impacted upon. I.e. there will be an impact upon Stone Curlew chick rearing, as night-time foraging activity of birds on the outdoor pig rearing unit is next to the area of construction and it is highly likely that the birds will be deterred from areas needed for feeding, especially as tunnel construction will be c.0.5km away at the nearest point.

3.41. We feel that not all of the ecology and behavior of Stone Curlews has been understood by Highways England consultants when assessing the impacts of construction of the A303 tunnel scheme. Stone Curlew are mainly active at night and research has found that the birds will travel up to 3km from the nest to forage. It has been found that individuals will use a home range of around 30ha comprising of short semi-natural grass, short improved pasture and spring sown crops in search of food [34].

3.42. Highways England have already stated in the Outline Environmental Management Plan that it is very likely that the construction works area will attract Stone Curlews:

*“Following the preliminary works (vegetation clearance), the working area may provide suitable nesting habitat for stone curlews (open expanses of land lacking vegetation). Due to the sensitivity of stone curlews to human disturbance (they can be disturbed by human activities within 450m of a nest site), it may be necessary (where practical) to deter stone curlew from nesting within, or in proximity of the Scheme, prior to the commencement of works.”*

3.43. We are not convinced that the measures outlined by Highways England in regard of Schedule 1 protected Stone Curlew will be effective in ensuring no disturbance. Furthermore, it is an offence to knowingly disturb any breeding activity; this would extend to pre-nesting site selection, nesting, egg laying and chick rearing. It is our opinion that licensing should not be granted unless the actions proposed are tried and tested methods expected to be successful. Highways England propose:

*“If works are carried out at a time or location that has the potential to disturb Schedule 1 breeding birds, works should only commence within these areas on receipt of suitable licenses. . . . Specialist supervision may be required.*

*“ . . any Schedule 1 species or its dependent young must not be disturbed while at or building a nest. A suitable exclusion zone and the inclusion of suitable protective measures (such as visual or noise screens) may be used. Suitable requirements will be determined on a case by case basis.”*

*“Deterrent measures include (but are not limited to) the following:*

- a) the use of visual screening to block line of sight and, to avoid disturbance to stone curlew outside of the Scheme boundaries; and*
- b) planting areas of temporary bare ground with a quick growing crop or quick growing wild flower or game cover seed mix.”*

*“These measures should be employed prior to the breeding season (March to August) to deter prospecting pairs.”*

*“Even with the use of these deterrent measures, there may still be a risk of stone curlews nesting within the construction works area (or within 450m).”*

*“An appropriate specialist shall undertake monitoring of stone curlews at the retained breeding plots within 450m of the Scheme and at the newly created compensation nesting plots, associated with the mitigation defined in the ES (Chapter 8).”*

*“In the event that nesting stone curlews are found located within the construction works area or within 450m, then liaison with the Natural England and RSPB will be undertaken. This will aim to identify and agree the specific and appropriate measures and monitoring activities to be undertaken in order to avoid disturbance of the nesting pair. It may be necessary to install an exclusion area of up to 450m from the nest, depending on nesting location. This will be confirmed following confirmation from the ECoW “ [Ecological Clerk of Works] [35].*

3.44. We have no confidence in the proposals within the OEMP regarding deterring Stone Curlews from breeding on bare ground within the construction area. It is surprising that the suggestion is to create bare ground only to then plant it with a quick growing crop at some point before the breeding season begins in March. In our opinion, it would be more practicable, cost effective and favourable to works progress, if bare ground areas were created in the autumn (after breeding has ended) and seeded immediately with local brush harvested chalk grassland seed mix. Not only would this avoid Stone Curlew breeding season but wildflower seed is also more viable when autumn sown.

3.45. However, the newly seeded areas will have scant growth on them by the following spring when the Stone Curlews return, and depending on proximity to construction works, may well appear ideal nesting habitat to the birds. It would seem almost certain that works will be halted. We are concerned that this might lead to licenses being issued by Natural England for the culling of Stone Curlew.

3.46. The authors repeat reference to a distance of: ...”within 450m” .

This is surprising, as RSPB research has clearly shown breeding birds to:

*“...run and/or fly away from a potential disturbance agent” and “Stone-curlews had an elevated probability of showing an active response to a potential disturbance agent, even at large distances (in excess of 500 m for a person with a dog). It therefore appears that Stone-curlews may be more sensitive to disturbance than some other wader species”. [15].*

3.47. Stone Curlews are extremely well camouflaged and difficult to see when on the ground difficult to see when on the ground. The nest is a simple scrape where two eggs are laid and incubated for 26 days. The chicks leave the nest after two days and the parents bring food back to the chicks that tend to stay hidden for a few days. The parents stay with the chicks until they can feed themselves and fly, at around 40 days. To avoid disturbing a breeding pair, therefore, an exclusion zone of at least 500m radius of any nest site would need to be established.

3.48. Even then, breeding success is not guaranteed as evidenced by the Stone Curlew breeding attempt in 2018 within the scheme corridor zone south of the A303, where archaeological evaluation work took place. Our concerns are supported, as even with an exclusion zone established, this breeding attempt failed with the loss of two chicks.

*R Hosier & T Williams, Written Representation on Biodiversity: A303 Stonehenge Scheme. May 2019*

3.49. The significance of the two breeding pairs of Stone Curlew at Normanton Down reserve should not be overlooked; breeding for at least six years and significantly contributing to the Salisbury Plain population, they successfully surpass the annual target of 0.61 chicks per pair needed to sustain the population [as set by the RSPB] by producing 1.5 chicks per pair on average [6]. With the Stone Curlew population still in ‘recovery’ the survival of every chick is critical.

3.50. The Highways England consultation documents make no mention of the pre-migration autumn Stone Curlew roost. Integral to the breeding cycle of Stone Curlew is the post-breeding gathering of adults and fledged young from that year. The importance of this gathering to the species is unknown, but is highly likely to play a significant role in the survival of fledged young. Annual roosts provide the only opportunity to assess annual breeding success of the SPA population. Normanton Down reserve in 2017 held the highest maximum count of birds in an autumn roost in Southern England recorded to date, of 105 individuals.

3.51. Stone Curlew start to form small gatherings toward the end of the breeding season, gradually building in intensity of number as the autumn progresses, and then in October birds start leaving the country to spend the winter in southern Spain and northern Africa. The proposed scheme may cause construction traffic to be operational day and night for 5 years, with noise and lights possibly through the night.

3.52. Research has shown that proximity to major roads does affect Stone Curlew breeding but the effects of noise and lights is still largely unknown (Liley & Hoskin, 2017). It is not therefore unreasonable to suggest that nighttime construction traffic may have a significant adverse effect upon the formation of Stone Curlew autumn roost at Normanton Down; birds flying in from the surrounding area and Salisbury Plain SPA may well be deterred from gathering, having unknown effects upon the post-migratory ecology of the young birds.

3.53. The omission of reference to potential impacts upon the autumn roost by Highways England and their consultants again, highlights a disregard for a key part of the Stone Curlew behavior and ecology, adding to our view of no confidence in the assessment.

#### **4. Great Bustard *Otis tarda***

4.1. The Great Bustard is listed as Vulnerable in the IUCN Red List of Globally Threatened Species, with an estimated global population of just 35,000 individuals. The last Great Bustards existed around 180 years ago; they were hunted for their meat and, along with changes in agriculture, eventually became extinct in the UK.

4.2. The UK is obliged under EU legislation (Habitats Directive 1992) to reintroduce species where it is considered feasible. Based on a feasibility study, in 2003, the Department for the Environment, Food and Rural Affairs (DEFRA) issued a 10-year trial-license to release Great Bustards in the UK and releases have taken place annually since 2004.

4.3. The RSPB brought major input and finances to the reintroduction, initiating an EU LIFE+ funded project that ran from 2010 - 2014. Primary successes during this time were improvements



in rear and release techniques, pre-release condition of birds and survival rates, more suitable donor populations and more suitable release sites [36]. Since then the population has continued to expand and it is estimated that there are now some 70 individuals living and breeding within the Salisbury Plain SPA. The Great Bustard is now generally recognized as naturalized and is listed as AE\* on the British Bird List [5].

4.5. Great Bustards have been attracted to Normanton Down since 2006 seeming to like the open chalk grassland and the cultivated Stone Curlew plots. Since that time, they have become regular visitors to the farm, and options have been included within our Entry Level and Higher Level environmental scheme to provide attractive habitat for their breeding.

4.2. Great Bustards are mentioned within the ‘baseline valuation’ of the DCO 6.3 Environmental Statement, where it is given ‘High Importance’ yet within the OEMP there are no further references to the species under the specific heading denoting the birds importance along with other notable species I.e. Great Crested newts or badgers. We can only assume that Great Bustard has been listed under the ‘Breeding Birds’ section of the same document [37].

4.3. We have asked to have copies of the breeding bird surveys to ensure that the Great Bustard has been taken into consideration within the Scheme, but despite this information relating directly to our farm, and in spite of the fact we work closely with both the Great Bustard Group (GBG) and RSPB we have not been provided with the data, so are not able to comment as to whether the species has been fully taken into breeding.

4.4. However, Highways England do admit:

*“A total of 20 records of great bustard were identified within the 2km study area. Great bustard has been recorded throughout the Salisbury Plain area from Yarnbury Castle to west Amesbury. Nesting sites of this species have been observed as being largely limited to the south of the existing A303....”[37].*

4.5. Working closely with the GBG we are aware that the archaeological surveys taking place in summer 2018, within the location of Long Barrow roundabout, were in areas previously used by Great Bustard for nesting and will undoubtedly have had a negative impact on the breeding success for 2018.

4.6. The Great Bustard is a high-profile species in Wiltshire, with the reintroduction having had much publicity in the media. Also, this introduction has had Natural England support for over 10 years. Therefore, it is quite astonishing that Highways England and the A303 Stonehenge Scheme - which is credited for its biodiversity benefits- has failed to consider provision of protection measures to disturbance of Great Bustards within its Appropriate Assessment. The proposed large junctions for Long Barrow junction and a number of new byways within the western half of the Scheme are all within the breeding habitat of the Great Bustard. Both the Great Bustard and Stone Curlew are Annex 1 species and should be afforded equal protection; having the same requirements there would be no clash in management.

## **5. Misrepresentation and misleading consultation**

5.1. It is our opinion that the Highways England consultation documents are misleading on several points;

- i) At all consultations the southern part of the WHS has been promoted for roaming and exploring, although there is no mention that this will only be via the byways; the inference is that the area will be open access as the northern part.
- ii) There is no mention that three quarters of the southern part of the WHS is privately owned land and so will not in fact be available for roaming.
- iii) In the first consultation booklet there are three references to roam or explore the landscape and monuments [38] Using words ‘roaming’ and ‘exploring’ is misleading the general public to believe that access to the southern part of the WHS will be unhindered - as it is in the northern part of the open access land. The consultation booklet does not mention that the roaming and exploring of monuments will be along byways only.

5.2. Indeed, the consultation booklet goes as far as to say:

*“the A303 is a difficult road to cross on foot. Surveys show that many visitors do not venture into the southern half of the WHS at the moment. Removing the road would make it much easier for people to explore more of the WHS and discover other important monuments being able to roam freely and safely between different parts of this unique landscape” [38].*

5.3. The second consultation booklet uses wording “reaching and exploring”. Again, there is no mention that the reaching and exploring will only be via byways, and again, no mention of privately-owned land in the southern part of the WHS.

- iv) In the central map section of the WHS, Normanton Down Reserve is obscured by the map legend such that those who do not know of the Reserve would not realise there is one there. This is the only map in the booklet where the legend is in this position [39].
- v) There is little mention of Normanton Down Reserve within the booklet except within the *Biodiversity Construction Stage* “*Temporary adverse effects of construction activities on Stone curlews*” and *Biodiversity Operational Stage* “*Local adverse effects on Stone curlew south of the A303 due to the increased public access across the WHS enabled by the proposed scheme*”. This misinformation can seriously impact upon the Reserve and Schedule 1 species.
- vi) Errors within the OEMP report states the incorrect wording of signage around Normanton Down Reserve; suggesting that there are times of the year when the Reserve is open to general public access.

- vii) Normanton Down – lack of appropriate treatment and misleading general public at all consultations; the concentration has been on Winterbourne Stock Stone Curlew.

The promotion to the southern areas of WHS leaves Normanton Down Reserve under greater pressure from the general public believing that the area is open to access with the potential to disturb Stone curlews. The public is being encouraging to roam freely within the ‘joined-up’ landscape of the WHS to explore the archaeology; this can only mean more trespass onto the Reserve by people thinking they have the right to explore onto the barrows.

## **6. Chalk grassland & Other Biodiversity**

6.1. Within the consultation booklet (2018) is stated that “The tunnel will allow connectivity between the north and south side of the WHS, encouraging wildlife movements, as well as restoring an area of attractive rural landscape of gentle rolling chalk downland” [40].

6.2. We would like to see the developers strategy to ensure that visitation to the wider WHS will not impact upon a variety of declining farmland species, including Birds of Conservation Concern on the Red List such as Skylark and Lapwing, and BAP species Brown Hare, all of which breed on the ground/hide young in short grass, are extremely difficult to see, and can easily be trodden on/disturbed/or in case of eggs destroyed. Skylarks need to 2-3 broods of young each year in order to maintain populations [41] and should be considered if the Scheme is to deliver for wildlife in the area. The intended increase in number of visitors to the wider WHS landscape has a high possibility of deterring much of the wildlife away from the area; we would like to see information on the developer’s intentions for protection of species and management of sensitive areas and habitats.

6.3. *To enhance biodiversity, the scheme will create an extensive new area of chalk grassland adjacent to the Parsonage Down National Nature Reserve. This will allow the expansion of the nature reserve* [42]. It is disappointing that whilst effort is to be made to enhance Parsonage Down National Nature Reserve (owned and managed by Natural England), there is nothing within the Scheme to protect the already incredibly diverse Normanton Down (privately owned). The considerable biodiversity achievements gained at Normanton should not be overlooked, but seen as a valuable asset to the dwindling extent of chalk grassland habitat in the UK.

6.4. The Scheme outlines potential compulsory purchase of the land between the western portal and deep cutting and the existing A303; this is currently owned by M & R Hosier, owners and managers of Boreland Farm and Normanton Down reserve. The Scheme documents mention potential for Highways England to retain ownership and lease out the management of the area to a third party [43].

6.5. As the landowners, we have been practicing chalk grassland creation/arable reversion and management for 17 years and have gained considerable knowledge and understanding in that time. We therefore find it disrespectful that we have not been approached by Highways England to discuss future plans for that area of land. The whole of Boreland Farm is now in the third

generation of this farming family, and as such we have a deep rooted and vested interest in stewardship of the area for the next generation and to continue to ensure protection and enhancement of the archaeology and wildlife of the farm. In addition, over the years we have made many valuable contacts and built a vast network of chalk grassland practitioners with relevant expertise to provide to this Scheme. We are keen that our combined expertise and knowledge are shared with Highways England.

6.6. Chalk grassland creation is the major part of this Scheme, but the Scheme documentation lacks information for a full assessment. We would like to see more detail included regarding the methodology to be used, such as proposed machinery and assessment of soils; the current statements regarding weed wiping and non-grazing [44] do not indicate practical understanding.

6.7. From the information available, we have no confidence that chalk grassland creation and management will be successful; there have been no discussions with local farmers having already created chalk grassland within the area, there are no references to discussions with chalk grassland creation specialists with experience establishing environmental grassland within Salisbury Plain and no mention of discussions with independent brush harvesting specialists as to the practical abilities of using Salisbury Plain brush harvested seed, which can be stored.

6.8. Highways England refer to the intention of a '*low maintenance strategy*' for the Scheme [44], yet they are proposing a very costly method of grassland management. The best low maintenance strategy would be grazing – this might not fit with open access areas but, with good planning, temporary fencing and rotational access, this could be achieved.

6.9. We are concerned at the management proposed to depend heavily upon mowing to manage the grassland to a short sward [45]. Mowing is *the* most destructive management method in terms of harm to insects and invertebrates. Repeat surveys have found many rare and endangered invertebrate species on Normanton Down reserve; if suitable grassland is established, these species have the potential to spread out into the landscape. However, if mowing is to be the preferred management method, all insect life will be destroyed.

6.10. Many insects need dead stems of grasses and flora to complete their life cycle, as well as the pollen and nectar sources. Late summer extensive grazing allows for more of this to happen. A continued mowing regime will ensure depletion of pollinating species across the area. We are concerned that there is no mention of consultation with invertebrate experts, such as Butterfly Conservation.

6.11. There does not appear to be a comprehensive monitoring programme outlined within the developers reports; there are a wealth of local experts which could feed into this and we would wish to see that relevant experts are to be employed who have knowledge and expertise of the sensitive nature of the Schedule 1 breeding birds for example.

6.12. We have no confidence in the methods for grassland establishment as outlined in 6.3 Environmental Statement Appendices Appendix 8.26 Outline Landscape and Ecology Management Plan. It would appear that seeding is to be undertaken in the spring – not only will this attract breeding Schedule 1 species into construction areas but higher germination rates are

always achieved with autumn sowing. Again, information is inadequate and does not describe the mechanical methods.

6.13. The OLEMP states that a Land scape Steering group will be set up [46]. We have no confidence that the correct balance of organisations and landowners will be involved. This is based upon experience so far that throughout this Scheme process, there has been minimal engagement by Highways England with affected farmers and landowners. Consultations have instead been with National Trust, Natural England, RSPB and Wiltshire Council. The extensive site-specific practical experience in chalk grassland creation and management of local farmers has been overlooked.

6.14. The OLEMP states the following:

*“an exemplar highways landscape scheme, successfully integrated into its context, via a suite of chalk downland habitats, which will enhance the sense of place for visitors and tourists to the WHS, recreational users and local residents, as well as increasing biodiversity and wildlife opportunities.”[47]*

There is no list of target species that the Scheme wishes to enhance within the WHS, or plans submitted for the management of such. Brown Hare and Hedgehog have both been ignored within the ecological reports; Brown Hare especially is typical of the Wiltshire mix of arable and downland landscape and Hedgehog is one of England’s fastest declining mammals. There are opportunities for both of these species within the wider WHS.

6.15. We find the statements in the OLEMP regarding the seed mix and source of seed mix surprising [48]. The methods appear to overlook the opportunity to use local brush harvested seed from the Salisbury Plain Training Area. Wherever possible local seed should be used to retain localness, to ensure provenance and appropriate species. Not all UK seed suppliers maintaining to sell UK provenance seed actually do, some seed mixes that may be correct for the soil type may contain a range of species both suitable to damp or dry conditions, therefore can be bulked up with species that may not grow that well in the locality. SPTA is large enough to sustain a programme of harvesting if planned properly and in consultation with Natural England in terms of ensuring acceptable amounts collected from different areas annually.

6.16. Brush harvested seed can be stored over a period of time (chalk grassland specialist such as Heritage Seeds offer this facility). The OLEMP notes that seeding will take place of areas within the scheme as they become available for planting, so this will also spread the volume of seed needed over the course of the development. In addition, should volume be an issue, Parsonage Down could be seeded with brush harvested seed from an area already within that reserve.

6.17. The OLEMP states the intention to remove a suit of species that are entirely characteristic of the local Salisbury Plan area; *“Due to their tall stout growth form the following plants should be removed from any wildflower seed mix: Centaurea nigra, Centaurea scabiosa, Leucanthemum vulgare and Knautia arvensis.”* The inference here is that these species would grow too tall, yet this inference is not consistent with the document, as wildflower species that are of similar stature i.e. Wild Marjoram and Wild Carrot are included in the suggested seed mix. These statements also infer lack of expertise, as the height of vegetation will ultimately depend on the fertility of the ground and the grazing management of the area.

6.18. The OLEMP fails to mention that using plant plugs is costly, time consuming and has no guarantee that these sensitive wildflower species will survive. Depend on time of planting and weather conditions, there is the distinct possibility that over half of the plant plugs will fail and in a bad year there may be total failure. Soil mycorrhizal fungi levels will also have a major part to play, this is something that cannot be regulated, as levels build up over decades and the Scheme will be using recently disturbed and mixed soils and chalk.

6.19. This Scheme is a huge opportunity to provide large-scale habitat creation for many rare and fast declining species of insect and invertebrate, such as any of the Bumblebee species. A harsh regime of management by mowing for the life of the Scheme will be devastating for those species and could be classed as a sink; attracting in species only for them to be destroyed at some point in their breeding season. Large-scale habitat creation projects like this have an obligation to ensure biodiversity is enhanced and protected. Whilst this Scheme advertises that is the intent, the methods for grassland establishment and management do not support those statements.

6.20. Grazing is the ideal management for grasslands. We note that this might not fit with the access plans but can be managed well to work and is done so in other areas in the country. Where the size of area allows, grazing would promote tillering of grass, keep grass height down, help consolidate ground and thus improving root structure. Grazing is the best way to establish grassland areas, it is also less maintenance than mowing, removing cuttings and proposed monthly assessments of sward height.

6.21. The OLEMP outlines plans composting and dumping grass cuttings within nearby woodland areas. This scheme is promoted for reduced maintenance and this management represents a high input and therefore cost. In addition, continual dumping of grass cuttings in scrub and woodland will kill the scrub and have an adverse effect on woodland flora and fauna.

6.22. There has been repeated lack of communication within the Scheme consultation and inaccurate information has been published. The Environmental Statement Appendices Appendix [49] states:

*“The boundaries of the RSPB reserve are currently fenced, with signs to discourage people from entering the reserve in periods when there is potential to disturb nesting birds. It is understood that the majority of existing users remain on the PRow and do not climb fences or gates to enter the reserve. Nonetheless RSPB and the local landowner have reported cases of unauthorised camping on the PRow from motor vehicles and some of those individuals entering the fields beyond the PRow. The owner has also reported incidents of illegal hare coursing activity, with repeated damage to fencing and gates”.*

6. 23. There are four ‘No Entry’ signs which should be understandable to all, this cannot be interpreted as only during the bird breeding season. Also, trespass is relatively common place and fences are breached regularly, with people climbing over fences to visit the Normanton Barrow cemetery.

6.24. The Scheme plans to clear ground and grow a quick growing crop to dissuade Stone Curlew. We are concerned at the lack of expertise and planning. Once the ground is cleared, which should be in autumn for higher germination success, the Stone Curlews will have ceased breeding, and

the ground should be seeded immediately. Fast growing game cover seed mix would not be planted until April when the ground conditions allow and would still take weeks to establish ground cover sufficiently dense to deter Stone Curlew. Note that Stone Curlew will also breed in sparse bare areas within spring arable crops.

6.25. We are extremely concerned at the chalk grassland establishment methods proposed within this Scheme. All of the foreseen issues surrounding unwanted attraction of Schedule 1 species into the work areas – leading to various possibly unsound suggestions for deterrents - could be avoided if the vegetation is topped and sprayed at the end of the summer, and only in places to be seeded immediately. At this time Stone Curlews will be gathering into pre-migration flocks, not breeding.

## **7. Conclusion**

### **Key points of concern**

7.1. Proposed mitigation for disturbance of Stone Curlews at Normanton Down in the form of an extended reserve some 11 km away is in doubt, since it appears that this proposal is not, in fact, one of mitigation but of net gain as a scheme legacy benefit.

7.2. There is no assurance that Stone Curlews using Normanton Down would relocate to Winterbourne Down. Nor is it known whether their population would not suffer adverse impacts arising from the A303 Stonehenge scheme in the meantime.

7.3. Long-term impacts reducing the ecological focus of the farm.

7.4. No discussion with Normanton Down landowner regarding suitability of land elsewhere on far for provision of breeding plots should it occur that Stone Curlew are deterred from usual breeding areas by construction activity and/or recreational activity.

7.5. Lack of alternative solutions to negate any displacement of Normanton Down Stone Curlew with possible results that birds are pushed into unsuitable and at-risk breeding locations, lowering breeding success.

7.6. Lack of consistency when assessing negatively impacted Stone Curlew breeding plots in two different areas; Winterbourne Stoke and Normanton Down reserve.

7.7. Unknown magnitude and negative impact of in-combination effects of the A303 scheme with the extensive new housing planned in the area, local strategies to increase tourism in the area, increased use of byways and Army Basing Programme upon Schedule 1 Stone Curlew.

7.8. Unknown increase in visitors being encouraged to ‘roam and explore’ the southern half of the WHS, negatively impacting upon breeding Stone Curlew

7.9. Lack of consideration of the impacts upon Stone Curlew ecology; night-time foraging behavior up to 3km from nest.

7.10. Unknown impacts of 24hr lights and noise for 5 years upon Stone Curlew pre-migration autumn roost gathering and its value to chick survival and effects upon ‘recovering’ SPA population.

7.11. Unknown magnitude of increased recreational use of Byways 11 and 12.

7.12. Lack of baseline surveys/data on current levels and type of recreational use of byways.

7.13. No confidence in proposals to deal with Stone Curlews should they be attracted to bare ground created by construction works.

7.14. Lack of regard for Schedule 1 breeding Great Bustard in the construction area.

7.15. Lack of consideration for alternatives to fencing, such as hedging, at suitable parts of Normanton Down boundary to dissuade trespass and to create habitat corridor for wildlife.

7.16. Misrepresentation of facts regarding the Scheme in two Highways England public consultation booklets; causing negative impacts upon Schedule 1 breeding birds from increased visitors to the southern WHS trespassing onto Reserve to view archaeological barrows.

7.17. Lack of evidence provided by developer to ‘dispel all reasonable scientific doubt concerning the effects of the work envisaged on the site concerned’

## **8. Interpretation of Habitats and Birds Directives**

8.1. Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as an ‘appropriate assessment’ must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.

- Stone Curlew behavioural ecology overlooked; pre-migration autumn roost gatherings of young birds, night-time foraging activity extended foraging and feeding area.
- Omission of Great Bustard from species lists and Schedule 1 provisions.

8.2. Article 6(3) of Directive 92/43 must be interpreted as meaning that the competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase, such as the location of the construction compound and haul routes, only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the site.

- Land laid bare if unworked for some time may attract breeding Schedule 1 birds.
- Methods to create chalk grassland will provide perfect nesting habitat for Schedule 1 birds; concerns over methods to dissuade Stone Curlew from nesting.



- Concerns over ecological omissions by HE contractor creates no confidence for correct consideration or mitigation within Scheme.

8.3. Article 6(3) of Directive 92/43 must be interpreted as meaning that, where the competent authority rejects the findings in a scientific expert opinion recommending that additional information be obtained, the ‘appropriate assessment’ must include an explicit and detailed statement of reasons capable of dispelling all reasonable scientific doubt concerning the effects of the work envisaged on the site concerned.

- Lack of information gathered by HE consultants; no review of alternative suitable plot location on farm ahead of works and in preparation for any negative impacts upon the breeding pairs.
- Comprehensive investigation of any effects upon the ecology of breeding birds and where construction works may render large areas currently used at night-time for foraging of adults and chick rearing unsuitable.
- Comprehensive investigation of current viewshed of byways from all breeding plots to determine angles of incidence regarding points of potential disturbance.
- Comprehensive study following methodology adopted by Footprint Ecology into current recreational use of Byways as baseline data to be repeated and compared after completion of the Scheme and should Stone Curlew breeding success appear to decline.
- Commission research into effects of 24hr noise and light upon pre-migration roost.

8.4. Article 5(1) and (3) of, and Annex IV to, Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, must be interpreted as meaning that the developer is obliged to supply information that expressly addresses the significant effects of its project on all species identified in the statement that is supplied pursuant to those provisions.

- We do not feel that significant effects to Schedule 1 Stone Curlew and Great Bustard as identified throughout this Representation are currently addressed by the developer within the current proposal documents.

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## **Appendix 2 – Groundwater Concerns – Sweetwater Resources Ltd**

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## **M and R Hosier Report: Adverse Impact of Proposed Tunnel on Westfield Farm Water Supplies**

1. This report assesses the potential impact of the proposed Stonehenge Tunnel on the water supply of Westfield Farm. Westfield Farm is supplied by two boreholes, A and B, which have a combined daily abstraction of 64m<sup>3</sup>/d and a yearly licence of 10,000 m<sup>3</sup>. The water supplies a farmhouse, cottages, a working farm which includes a pig rearing unit. There is no mains supply. Westfield Farm complies with the Water Supplies Regulations 2016 with regard to supplying potable water. Borehole A in the north and closest to the engineering works has no filter or water treatment system. Borehole B, in the south has an Ultra Violet water treatment system.
2. There is a risk that the proposed Stonehenge tunnel will reduce the supply and or cause contamination of the water. The proposal in 2000 was for the tunnel to be located above the water table but this has changed to several kilometres of the tunnel being situated below it. Consequently the risk of adversely impacting on the water supplies of Westfield Farm has increased.
3. The public has not been given time to assess the vast number of reports dating back to 2001-2002. Landowners and those who live nearby should have been given hard paper copies of all reports. It is very slow and time consuming to examine reports, especially plans printed at A3, A2 or A1 size, on a computer. People should not have to print out copies and most do not have printers which can produce in colour at A3, A2 or A1 size. Knowledge is power and the public cannot hold government to account if they cannot or do not have time to examine all the documents. People have jobs and can only study reports in the free time. Politicians, civil servants and consultants spend their working time on the project; not their free time!
4. Reports HE551506 Stage 4-Groundwater Monitoring, Stonehenge Area Pumping Test 2018 and Stage 4- Implications were only released in April 2019 and the last one is only a working draft. None of the reports have been approved by Highways England. Stonehenge Area Pumping Test 2018 was issued without Appendices A to G. This is treating the public with contempt. The public need time to obtain professionals who can assess Highways England (HE) reports.
5. The aspects of the “Works “ and geology which contribute to the risk are as follows:-
  - Stonehenge Tunnel is up gradient of the boreholes.
  - Stonehenge Tunnel is constructed beneath the water table.

- The Chalk dips toward the east.
- The groundwater flows SSE in summer and SE in winter.
- Fissures in the Chalk enable rapid downward movement of contaminated water from the ground surface to the water table.
- Flow is via fissures, some several millimetres in width.
- The Chalk aquifer is highly sensitive to pollution, as there is no clay seal or slow movement of water which occurs in a sand matrix aquifer.
- There are high flow fault zones comprising vertical faults running N/S approximately 10m wide at Chainage 880m and 920m in Stonehenge Bottom.
- Protection of boreholes from sewage is based upon 50m distance based upon travel time of 1m per day. Pathogen such as E.Coli die by the 50 day travel time. Where water flows fissures at rates of metres, tens of metres or even hundreds of metres per day, the 50m distance cannot be relied upon. Instead tracers tests must be undertaken to determine connectivity between points and travel times such that they exceed 50 days.
- There are many high permeability sub-horizontal fissures (dipping to the south) Mortimore et al Proc. Geol Assoc 2017 Figure 26.
- When groundwater is protected from pollution by an impermeable layer of clay, one 5m thick it is less protected from surface pollution. When the water table is tens of metres below the surface and the aquifer exhibits matrix flow, the groundwater is afforded a degree of protection from surface pollution. However, the excavation of the cutting exposes the water table to the ground surface when it is high and the construction of the tunnel produces hazard of contamination of the groundwater. The presence of fissures several millimetres wide and a water table less than 5m below the ground surface makes the groundwater prone to pollution. The cutting will expose the groundwater to the surface at when the water table is at high elevations. There are numerous animals in the area which can be killed on roads- deer, badgers, foxes, pheasants and rabbits to name but a few. There is the risk that rotting carcasses next to the road could pollute the groundwater. Also it is likely that badgers, foxes or rabbits could live within the embankments of the cuttings and pollute groundwater due to faeces, urine and rotting carcasses.

## 6. Outlining of Hazards to Water Supply of Westfield Farm

Quantitative Risk Assessment is based upon probability multiplied by hazard. HE say there is no risk, therefore the probability of Westfield Farm losing its borehole supplies A and B is zero. We disagree. There are two basic hazards; reduced yield and contamination making it unfit from consumption leading to a lack of water and loss of business profitability.

Groundwater contamination is assessed using the Source – Pathway – Receptor. By excavating the cutting, at high water table the pathway disappears and the receptor, the groundwater becomes exposed. Animals such as badgers, rabbits and foxes will be able to live in the slopes of the cutting and therefore acts as sources of contamination.

1. The Tunnel has the ability to block fissures in the Chalk aquifer such that the boreholes at Westfield Farm have reduced yields such that it reduces profitability of the business. Water moves through the Chalk via a fissure system whose extent and connectivity can never been known. Section 6.2.8 of the April 2019 Report HE551506 Stonehenge Area Pumping Test states that the sudden drop in water

level towards the end of the Constant Rate Test in pumped well 610 could be due to different parts of the fissure system being drained. HE admit they do not know the way water flows through fissures! Constant Rate Tests by WJ at Stonehenge Down and Bottom in winter 2002 produce higher Transmissivity than in summer 2004, which show how lowering of the water table greatly reduces flow as fissures are de-watered.

2. HE Report HE 551506 Stonehenge Area Pumping Test reports that the Constant Rate Tests undertaken in in summer 2018 produced lower Transmissivities than WJ in their summer 2004 Tests. This is probably because the Contractor in the 2018 tests used a rotary open hole method which produces a mud cake slurry 2-3mm thick which infills the water bearing fissures in the borehole and reduces yield. Though an eductor was used to develop the borehole to remove the mud cake, the high turbidities initially recorded see Section 7 Groundwater Quality suggested that is method was not adequate. WJ used a Cable Percussion Drilling Rig which produces far thinner mud cake, if any at all and therefore does not reduce yield of the boreholes. The late Dr R Monkhouse of the British Geological Survey recommended the use of acidisation to remove mud cake. It is likely that WJ's figures for summer transmissivities are more accurate which means the actual groundwater flow southwards through Stonehenge Bottom will be greater than that used in the computer model.
3. The three Reports HE 551506 have not been signed off by Highways England; there are no signatures from an employee approving the report and so what is their worth?
4. The use of lower transmissivities in any model will reduce the flow rate of groundwater southwards, especially along Stonehenge Bottom. Therefore any blockage of groundwater flow by the Tunnel will not be so significant.
5. It is questionable that a computer model used by the EA for the Wessex Basin Model is accurate enough to assess the impact of the Works on the water flow to a few fissures which supply the majority of the majority of the yield of a borehole. The Model covers an area of 125km east to west and 102 km north to south, an area of 12,750 sq km yet the area of concern is approximately 30 sq km. The grid comprises cells 250mx250m yet the width of high flow fault zones are approximately 10m. Appendix 11.4 Annex 1 Numerical Report Section 2.2.12 of the appendix 11.4 Annex 1 Numerical report says "Despite implementing VKD, the model still calculates one overall transmissivity for the cell for each stress period based on the VKD properties across the full saturated thickness, rather than discrete permeability zones based on the location of hard grounds and the known flow horizons. Therefore while attempting to be a more accurate representation of aquifer properties it is still a general approximation.
6. Section 2.3.2 It is recognised that it is difficult to obtain a good groundwater level calibration everywhere due to the local heterogeneity of the aquifer that is not known and cannot be simulated, whereas if flows are calibrated well then most of the water in a catchment is being simulated correctly most of the time, while the local groundwater level may be variably too high or too low at different locations across a catchment.
7. Section 2.3.3 As a result the calibration was considered acceptable if stream flow, flow duration and accretion were accurate and if groundwater level patterns were accurate (seasonal trends) even if absolute groundwater level was several metres too high or too low.



8. Section 2.3.5 Overall the model calibrates well to average conditions, typical summer lows and winter highs, as well as drought periods. The model simulates extreme highs above the normal range but absolute groundwater levels may be 10m or so too low. This is because the stress period setup tends to average out intense rainfall events preventing the model from producing extreme peaks, and also because extreme high groundwater levels are rare events. Pumping tests have not been completed at these times to estimate aquifer properties for the highest groundwater elevations of the aquifer.
9. Section 2.3.6 .Data on locations of groundwater flooding was sought from the EA and Wiltshire Council (WC) in order to assess the calibration against areas of known flooding. One location was confirmed as groundwater flooding with detailed elevation information in the study area (Tilshead Pub). The groundwater model also predicted groundwater levels above ground in this location with the modelled elevation simulated to be 1.4m higher than observed. This was considered a good calibration for predictive purposes. What is of particular risk to Westfield Farm are low summer groundwater levels. If the model predicts water levels 1.4m higher than they are in reality, the result in a dry summer could be loss of water in the boreholes A and B on Westfield Farm.
10. The below figure 3.1 for VKD does not match the 10m wide high permeability fracture zones at chainages 880m and 920m near Stonehenge Bottom and the geology as shown in Figures 26 and 27 by Mortimore et al Stonehenge- PROC. Geol. Assoc 2017.

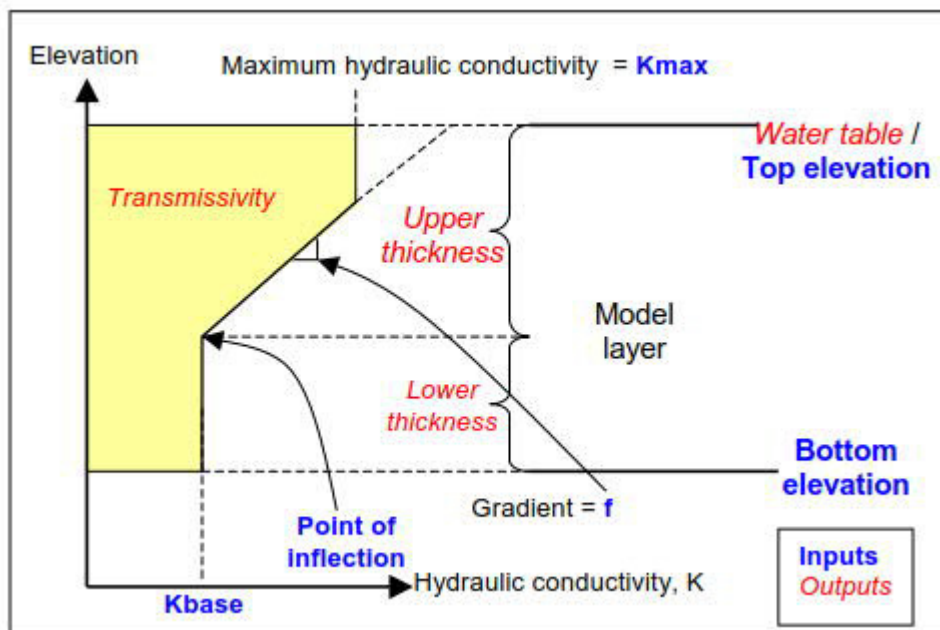


Figure 3.1

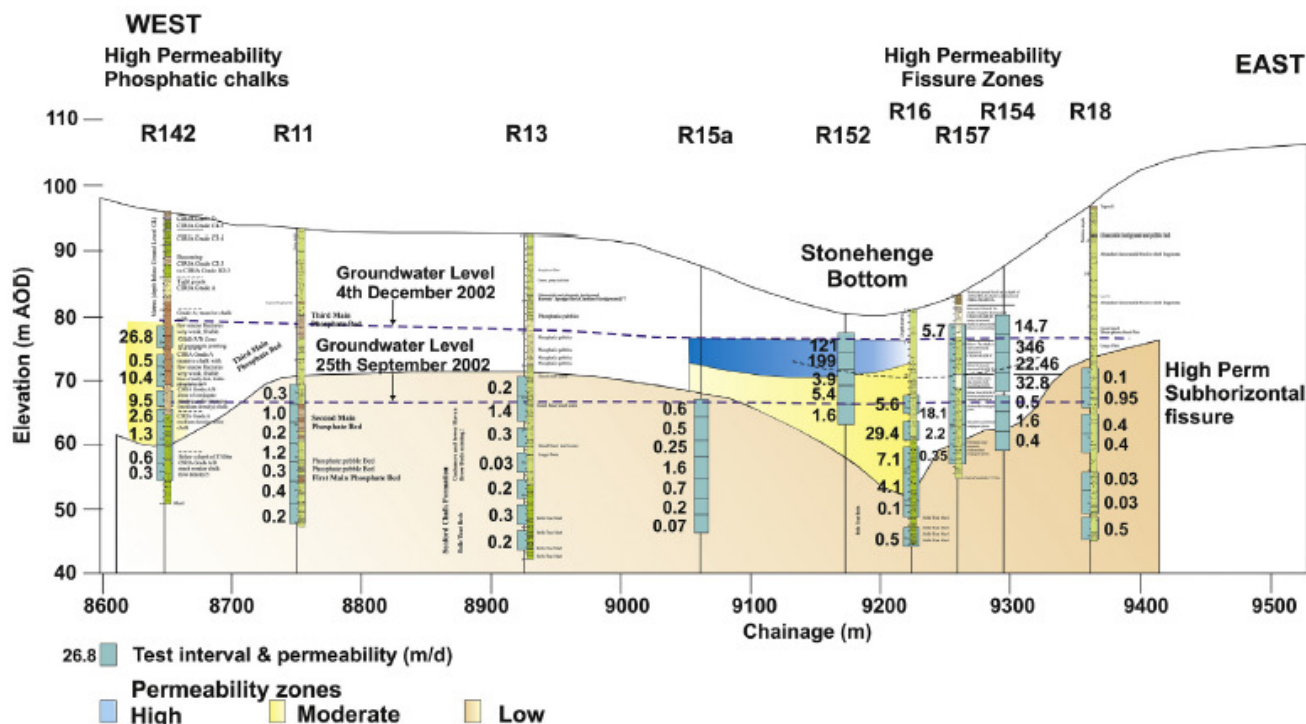


Fig. 26. A303 Stonehenge Tunnel section Packer Test permeability profile showing increased permeability (metres per day) in the thicker phosphatic-chalks (Borehole R142) and in fracture zones associated with the dry valley, Stonehenge Bottom. In the tighter rock towards the interfluvium on the east side of Stonehenge Bottom groundwater permeability is focussed along a subhorizontal fissure (Borehole R18). Note the rapid rise in groundwater (watertable) between September and December 2002.

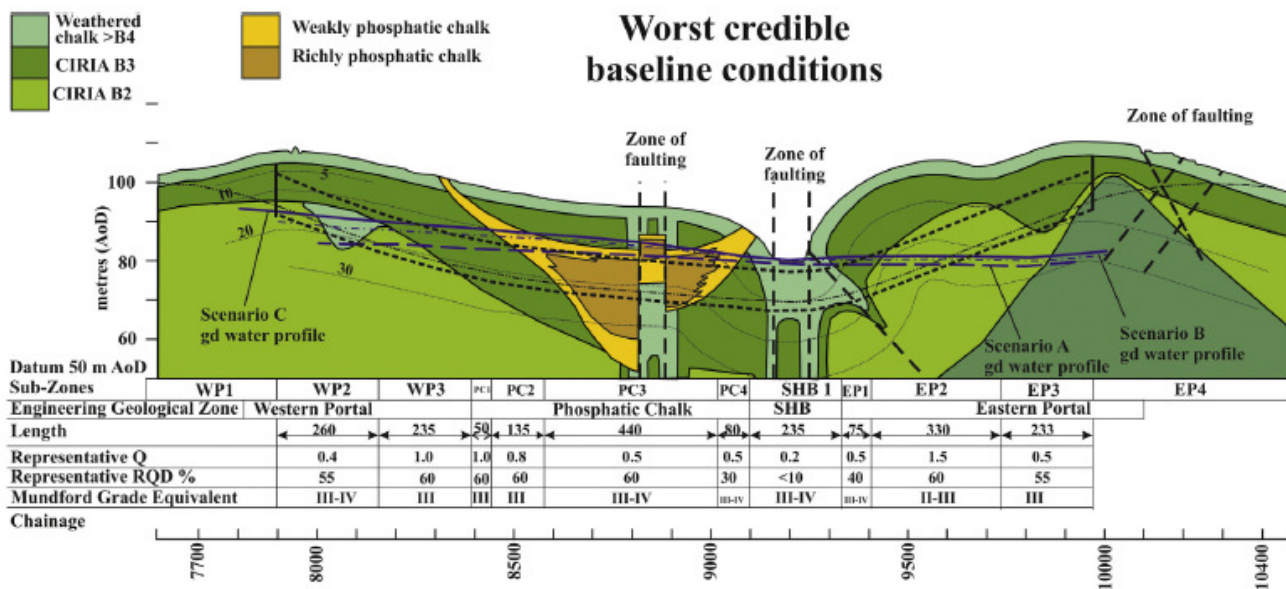


Fig. 27. (Continued)

11. The model does not predict water levels to an accuracy which guarantees that there will not be a reduction of yield from boreholes during periods of low groundwater in summer or there will be no contamination. Therefore HE is wrong to say there is zero risk to the water supply of Westfield Farm.

12. The various reports do not allow for the construction of the Tunnel using a Tunnel Boring Machine (TBM) with a slurry shield using grout to keep out groundwater. It is likely that due to the high

permeability of the Chalk, that a Slurry Shield TBM will be used. It is not possible at this stage to state the volume of grout which will enter the ground or the distance it will travel from the TBM. Consequently fissures could be blocked, especially down the groundwater gradient and below the TBM or allow contamination to flow into boreholes.

13. Contamination from the “Works” has an adverse impact on water such that it creates a human and animal welfare issues. The contamination is of three types:
- Pathogens derived from animal manure and rotting carcasses comprising E.Coli, Enterococci, Clostridium Perfringens, Tuberculous and Cryptosporidium
  - Physical contamination from sediment or grout. Where sediment comprises large silt/fine sand sized particles of cement, lime or bentonite which have not fully reacted with water, they could block fissures in the Chalk reducing yield, block submersible pumps causing reduced yield and/or malfunction of pumps.
  - Chemical- increased iron, dissolved organic carbon, petroleum hydrocarbons, pesticides, phosphate. The area is within Nitrate Vulnerable zone so any increase in phosphate in the groundwater especially if there is an increase in dissolved organic carbon and iron could lead to an increase in bacterial growth and hence produce bio-films which could clog fissures in the Chalk and water distribution systems.

A combination of all types of contamination could lead to blockage of fissures and pumps producing reduced yields.

14. Westfield Farm supplies water to two cottages so has to meet the Public Water Supplies Regulation 2016. HE have not considered the risk of their operations to potable water supplies.
15. HE did not voluntarily design boreholes with a 50 mm wide grout sanitary seal. This is prescribed by the UK Well Drillers Association. This is important as it prevent surface water entering the groundwater and is important at the locations because they are in fields where animals have grazed and hence left manure containing pathogenic bacteria. E-mails were sent from M & R Hosier explaining the correct procedures but we are not sure they were complied with. HE did not advise M & R Hosier not to muck spread within 50m of boreholes, especially as they were left open at night.
16. Boreholes were left open during construction which shows HE were indifferent to protecting the Chalk Aquifer and M & R Hosier’s water supplies from pathogenic bacteria. Animals could have defecated into the open boreholes or fallen in and died.



17. No proof was given that drilling rigs were cleaned and sterilised using steam water containing 50mg/l chlorine though it was asked for. HE and the Contractors appeared ignorant of the precautions of drilling boreholes into an aquifer which is easily contaminated and provides potable water.

18. HE have not sampled the water in order to analyses for determinants according to the Private Water Supplies Regulation Regulations and have not chosen a Drinking Water Inspectorate approved Laboratory – they could have used Wessex Water which is DWI approved. HE have not tested for the below :-

**Bacteria**

E. Coli, Enterococci , Colony counts at 22 Centigrade, Colony Counts at 37 C ,Pseudomonas aeruginosa

**Chemistry**

Acrylamide, Aluminium, Epichlorohydrin, Aldrin, Dieldrin, Heptachlor, Heptachlor epoxide, Other Pesticides

Pesticides Total

Tetrachloroethene and Trichloroethene

Trihalomethanes - total bromodichloromethane, bromoform, chloroform, dibrochloromethane

Vinyl chloride, 1, 2 dichloroethane

Epichlorohydrin

Heptachloro epoxide

Colour, Odour, Taste

Tetrachloromethane

Turbidity

The samples should tested filtered and unfiltered. It is important to know the chemistry of the water reaching the treatment system.

The land has been farmed and contained livestock, consequently the following should be tested for.

Cyptosporidium

Clostridia perfringens.

HE are testing for organophosphate pesticides NOT organo chlorine pesticides

19. HE have not undertaken tracer tests to prove there are no connections from the location of the proposed tunnel to the boreholes A and B.

## **7.0 What is known about Water Supply of Westfield Farm**

1. Westfield Farm is fed by two boreholes A and B. Borehole A is at a surface elevation of 102m AOD but the depth is unknown. Based upon existing data Appendix 11.4, Figure 4.8 , it is expected that the groundwater level at Borehole is A is approximately 70m AOD , which is approximately 30 m below ground level and affords a measure of protection from surface pollution. Borehole B is at ground surface elevation 81m AOD and is 45.6m deep-35.4m AOD. During drilling water was struck at 58 and 38m AOD and the rest water level was at 56.3m AOD.
2. Exposing the water table to the ground surface in the cutting, north of Borehole A could make it highly susceptible to contamination. Animals such as badgers, rabbits and foxes will be able to live in the slopes of the cutting and with faeces, urine and rotting carcasses being sources of contamination.
3. The base of the Tunnel is at approximately 48m AOD, 8m below the rest water level in Borehole B. As water largely moves along horizontal fissures, there is the risk the tunnel could reduce yield from Boreholes A and B. The reduction could be sufficient to make the borehole supply unviable.

## **8.0 Consequence of Loss of Water Supplies**

1. There is unlikely to be any warning of a loss of water supply either through reduced yield and/or contamination. Water loss during a hot summer's day would mean animals becoming stressed within hours. Consequently, the quickest of obtaining an emergency water supply would be by tanker.
2. The access for any tanker would be from the south of the farm and the farm reservoir is hundreds of metres distance and it is not accessible by such a vehicle.
3. Water would have to be pumped form the tanker hundreds of meters across fields to the reservoir. Special pumps and hoses would have to be bought.
4. The cost of water would be £1600 plus VAT for 30 m<sup>3</sup> as an emergency, which would a cost of £3200 plus VAT per day. If the farm lost water supplies from Friday evening to Monday morning it may not be possible to obtain water. In hot dry summer, pigs would become stressed within 6 hours without water and within 24 hours would have to be moved to a water supply or slaughtered.
5. A long term contract to tanker water would cost £800 plus VAT per 30 m<sup>3</sup>. The length of tankering operations would depend upon how quickly other water supplies could be created.
6. The only location suitable for another borehole is close to Borehole B. Further south, the groundwater may contaminated by run off from farm buildings.

7. To obtain permission for another borehole from the EA could take 6-12 months. To obtain a good water well driller would take 4.5 month. Tankering water for 6 months would cost; \_
  - A. £288,000 PLUS VAT for water 2 tanker loads per day minimum.
  - b. Constructing new pad for tankers, pumps, electrical supply and hoses to transmit water from parking area to reservoir £10- £20K.
  - c. Drill new borehole £35K. Buy new pump and install and upgrade electrical wiring £10k.
  - d. Obtain EA abstraction licence £10K.
  - e. The EA may insist on a reservoir so winter abstraction is used. A suitable location has been decided upon. Due to the presence of sharp flints a non-puncture textile will have to be laid upon the ground and the plastic liner placed upon top. Due to the areas heritage, an archaeological investigation may be needed prior to construction of the reservoir. Planning permission from Wiltshire Council would be required. A Minimum cost would be £50K to construct the reservoir.
  - e. Approximate cost is £403,000 but this does not cost loss of pigs or other livestock, loss of rents. Tankered water may not be available in quantity needed in drought. If suddenly there are public health issues (interrupted supply, drought drying up a public supply borehole) then this will take priority over any delivery to farms. So in extremis, one cannot be guaranteed that a tanker can supply water.
8. If mains water was required it could be a problem. A water company does not have to agree to supply mains water; they can refuse if there is shortage or cost is too high. There is a massive increase in demand for water due to the following.
  1. The MOD Base at Larkhill is to receive 4000 soldiers and their families.
  2. English Heritage plans to increase numbers through the visitors centre.
  3. There are 1250 houses planned for the area.
  4. The Tunnel is likely to need a water supply.
  5. Other farms in the area may need to go onto the mains.
9. There is the risk that Wessex Water could not supply Westfield Farm at the flow rate of pressure required. Animals do not drink throughout the day so demand produces peaks which are likely to be not more than 16 cubic metres per hour.
10. Based upon experiences of other farms, Wessex Water could take 8 months to produce a quotation for constructing a new mains for the farm but at present there is no knowledge of the flow rate and pressure they could provide.
11. Rough estimates for cost are £100k per kilometre of new mains. Wessex water charges £2.2 per cubic metre, so mains supply would cost £22,000 per year, every year.
12. A new water distribution system for the farm including a new reservoir, would be required. However, the most of the farm is within the World Heritage Site which was instigated in the mid 1980s and the water distribution system was constructed before this time. Consequently, discussions with English Heritage would have to take place prior to commencement of works which may have to be altered to protect archaeological remains.
13. HE appear to believe there is a Magic Tap should Westfield Farm lose its boreholes. Even if alternative boreholes can be sunk, it is unlikely that with all the permissions needed and waiting times for a good well contractor which 4.5 months it would take at least 6 months if not 12 months to obtain a supply. If a borehole supply is not possible a mains supply would take 12 months to be produced and require extensive construction of a water distribution system which is in the World Heritage Site. Wessex

Water does not have to supply Westfield Farm at the flow rate it needs. There is the risk that the farm could not obtain adequate water supplies from Wessex water and construction of new boreholes consequently, if the existing boreholes are lost it could take up to 3 years to obtain a new supply and distribution system for Westfield Farm with costs likely to exceed £500,000.

## **9. Conclusion**

1. HE have failed to design alternative water supply systems for Westfield Farm should the existing boreholes be damaged by construction and therefore jeopardize a business. HE are either ignorant of the risks or are callously indifferent of damaging the water supplies and hence the profitability of Westfield Farm as a business. The Tunnel was first proposed in about 2000, so HE have had 18 years to assess the risk to farm water supplies and design and install measures to produce adequate volumes of potable water should the existing boreholes be adversely impacted, either by reduced yield and/or contamination.