

STONEHENGE VISITOR CENTRE PLANNING APPLICATION - RESPONSE TO NATURAL ENGLAND LETTER OF 24TH NOVEMBER 2009

ECOLOGY MATTERS

PAGE	PARAGRAPH HEADINGS	POINTS RAISED BY NATURAL ENGLAND	RESPONSE
2	RIVER AVON SAC	<i>Page 6 of the Water and Waste Water Strategy states that the aquifer needs further investigation to determine whether it can support the abstraction rate from the aquifer.</i>	It is understood that Natural England are consulting the Environment Agency to investigate the availability of information regarding the EA's ongoing Review of Abstraction Consents in relation to the aquifer.
2		<i>Further detail is required on the predicted water usage and the impact of the additional demand for water on the River Avon SAC and River System and Till SSSIs, expressed in terms of the impact on the flow (Conservation Objectives site specific standards) both alone and in-combination. It cannot be assumed that because the proposed abstraction quantity is smaller than that which requires an Environment Agency licence that the impact on flow will be negligible.</i>	See above with regards to water usage. For clarification, as stated in the planning application there would be no additional demand for water as a result of the proposals. Sections 4.1 and 4.2 of the Water and Waste Water Strategy (Appendix A10.1 of the Environmental Statement) states that the current visitors centre uses in the region of 85,000 litres on a peak day. (200,000 including irrigation at the Stones and the over flow car park) The Strategy states that the proposed development is expected to use 26,000 litres on a peak day. (84,000 litres including irrigation at the Stones). Comparing the proposed with the existing usage, there will be a saving of 69% on the water consumption (this rises to 81%, taking into account that the non potable requirements are to be met by water recycling and rainwater harvesting). Therefore the proposals would result in a net overall reduction in abstracted volume of water of approximately 116,000 litres on a peak day.
2		<i>The planning application does not clearly set out the difference between the current water consumption and that expected in the new visitor centre and hub. We would also query the amount of water needed for irrigation at the Hub. Is this amount of water needed – How was it calculated? Could other methods/ solutions be designed to reduce this level of use without impact on the archaeological conservation of the site (e.g. use of alternative seed mixes?)</i>	See above regarding water demand. For clarification, the provision of a water supply for ongoing irrigation of the intensively used grassed path around the Stones represents a "no net change" from the current arrangements (see the Water and Waste Water Strategy in Appendix 10.1 of the Environmental Statement for details).
3		<i>Further detail on the design and operational arrangements for mitigation measures proposed for the construction and operational stages and for management post construction are required in order for Natural England to be satisfied. The detail will need to be agreed with the Environment Agency and Natural England.</i>	It is considered that these details can be addressed as part of construction and operational plans secured through appropriate Planning Conditions. See below.
3		<i>Ground water heat pump - are there any potential impacts re temperature changes of water circulated back into the aquifer?</i>	<p>For clarification, this issue was scoped out of the EIA process as it was considered that the risk of 'heat pollution' from the proposed Ground Source Heating/Cooling (GSHC) system impacting upon either the River Avon SAC is extremely low, if indeed there is any risk at all.</p> <p>Current Environment Agency (EA) guidance sets an absolute limit on the temperature of warmed re-injected groundwater of 10°C above the ambient temperature of the aquifer, which is typically in the range 10°C to 12°C. "Coolth pollution" (cooled groundwater) is treated in a slightly different way in that it is dependent on an absolute requirement that the re-injection borehole and the fractures in the immediate aquifer do not freeze. Typically, in this case a limit of 6°C below the ambient temperature of the aquifer would be adopted for the re-injected cooled water. The proposed peak cooling requirement for the building (a peak cooling load of 100kW) could be achieved by a range of groundwater abstraction/re-injection rates and temperature differences, for example: (i) If the temperature of the re-injected ground water is limited to 5°C warmer than the ambient temperature of the groundwater in the aquifer, an abstraction/re-injection rate of approximately 1.3 l/s would be required; and (ii) If the temperature difference of the re-injected ground water is allowed to approach the limit of 10°C, an abstraction/re-injection rate of approximately 0.67 l/s would be required. The proposed peak heating requirement for the building (a peak heating load of 300kW) would be achieved by a groundwater abstraction/re-injection rate of 12.0 l/s which is consistent with a temperature difference of 6°C. An abstraction rate (or groundwater "yield") of 12.0 l/s is relatively low compared to the yields currently licensed for the same aquifer. The risk of this yield not being achieved is therefore considered to be low in terms of both the technical issues (in developing the required boreholes) and the regulatory issues (as the abstraction and re-injection rates would be the same). As such, the proposed GSHC system is anticipated to operate at peak abstraction/re-injection rates as follows: (i) During summer, the peak rate would be 1.3 l/s and the temperature of the re-injected groundwater would be limited to 5°C above the ambient groundwater temperature; and (ii) During winter, the peak rate would be 12.0 l/s and the temperature of the re-injected groundwater would be limited to 6°C below the ambient groundwater temperature. It should be noted also that the peak summer cooling load would be required for only a few hours in the day, typically from late morning to early evenings, and then only on particularly warm and busy days. Similarly, the peak winter heating load would be required only during the early morning and late evening on particularly cold days, when few visitors are in the building. Generally therefore, the GSHC system would operate with significantly lower abstraction/re-injection rates and/or groundwater temperature differences.</p>

ECOLOGY MATTERS

PAGE	PARAGRAPH HEADINGS	POINTS RAISED BY NATURAL ENGLAND	RESPONSE
			In order to operate sustainably an open loop doublet GSHC system which interacts with a fractured chalk aquifer, it is typical that the abstraction and re-injection boreholes would be separated by a plan distance of some 100m to 150m. Over this distance, the heat/coolth re-injected into an aquifer would mix with the colder/warmer aquifer water and dissipate into the rock mass, to the extent that the abstracted groundwater would be at the ambient temperature of the aquifer. The abstraction borehole would therefore not be within the heat/coolth plume generated by the re-injected groundwater. The River Till is at its nearest point approximately 1.8km to the west of the site and is therefore considered to be safely clear of any credible extent of the anticipated heat/coolth plume generated by the proposed GSHC system. In conclusion, the heat/coolth plume generated by the heated/cooled groundwater re-injected back into the aquifer from the proposed GSHC system would be limited in size to the distance between the abstraction and re-injection boreholes, a distance which is anticipated to be in the range 100m to 150m. Therefore, the potential impact of the temperature changes of the water circulated back into the aquifer on the River Till, which lies some 1.8km from the site, is considered to be negligible.
3	<b>Construction Method Statement and Construction and Environmental Management Plan</b>	<i>Natural England support the production of a Construction Method Statement (CMS) and Construction and Environmental Management Plan (CEMP). These documents should be agreed in advance of any planning decision. If planning approval is given the implementation of the agreed plans should be required as legally enforceable planning conditions.</i>	For clarification, an Outline Construction Environmental Management Plan (CEMP) has been submitted as Appendix A2.1 of the Environmental Statement. The CEMP incorporates an outline Ecological Construction Monitoring and Management Plan (ECMMP). It is considered that agreement of the detailed CEMP/ECMMP can be secured through an appropriate Planning Condition.
3		<i>The draft CMS has identified the main key issues and suggested suitable mitigation/ method statements. However further information is required e.g.full final details of SUDS, ECMMP etc before the impacts on the River Avon and River Till SSSI / SAC can be fully assessed. This additional information will be needed before a planning decision is made and as part of the Appropriate Assessment.</i>	See above regarding the ECMMP. It is considered that provision of details regarding the design of the SUDS can be addressed through an appropriate Planning Condition.
3	<b>Waste water/ surface water drainage</b>	<i>We welcome proposal to use a SUDs and other measures outlined to minimise water consumption and potential pollution. However more data is required to inform the Appropriate Assessment. The final waste water and surface water drainage strategy documents will need to be agreed in consultation with EA/NE prior to planning decision to ensure they will achieve the mitigation required. A suitable legally enforceable condition should be used to ensure the implementation should planning approval be granted.</i>	See above regarding SUDS. It is considered that provision of details regarding the waste water and surface water drainage strategy can be addressed through an appropriate Planning Condition.
3		<i>With regard to the River Till, Natural England also has concerns that sewage treatment work discharge and small point source discharges, when combined with other sources of phosphate (P) (e.g. agricultural sources), are still contributing a significant threat to site integrity. If there is hydrological continuity between the proposed discharge and the river then it will be necessary to consider the impact of the discharge as a percentage of the appropriate P target (as set out in Natural England's Conservation Objectives), alone, and 'in combination' with other discharges. The SAC presently exceeds the Conservation Objective target of a P level of 0.06mg/l (this is 0.04 for the River Till), although the levels are improving following AMP4 improvements (phosphate stripping plant) to STWs on the river. In order to address this the Environment Agency, Natural England and Wiltshire Council are in the process of developing a River Avon Catchment Phosphates and Flows Action Plan; the implementation of which, it is hoped, will ensure that there is a trend of reduced P concentration supported through developer contributions, and that this would satisfy the requirement of Article 6.1 of the EU Habitats Directive.</i>	For clarification, the Environmental Statement confirms that there is hydrological continuity between the proposed discharge and the River Till. However, there would be no phosphate component to the treated effluent discharged from the proposed on-site treatment plant. As discussed in the Water and Waste Water Strategy, the quality of the treated effluent will be regularly monitored for a suite of determinants, including for the unlikely presence of phosphate. In addition, only phosphate-free detergents would be used on site.

STONEHENGE VISITOR CENTRE PLANNING APPLICATION - RESPONSE TO NATURAL ENGLAND LETTER OF 24TH NOVEMBER 2009

ECOLOGY MATTERS

PAGE	PARAGRAPH HEADINGS	POINTS RAISED BY NATURAL ENGLAND	RESPONSE
4	<b>SALISBURY PLAIN SAC AND SPA</b>	<i>Based on the evidence presented in the ES, it is not envisaged that the development itself would have any direct effects on the designated features. Changes in visitor usage could however impact on potential future stone curlew nest sites. Precise details of the required mitigation should be agreed as part of an integrated Access Visitor Management Strategy. This should be produced prior to a planning decision being and made in order to confirm the assessment. Planning permission should be subject to the production and implementation of the strategy.</i>	As stated in the Environmental Statement, the applicant is committed to preparation of an integrated Access Visitor Management Strategy and implementation plan. It is considered that the provision of this Strategy can be secured through an appropriate Planning Condition.
4	<b>NATURE CONSERVATION CHAPTER</b>	<i>We would endorse the avoidance / minimisation measures set out in section 7.4.2. With regard to the statement regarding the Dew pond the proposed use as a soak away should not adversely impact on the potential of this pond as a habitat.</i>	Comment noted.
4	<b>Ecological Monitoring and Management Plan (EMMP)</b>	<i>Again we support the production of this document and integration of land management with visitor access and circulation. As will other proposed plans and proposed mitigation, if planning approval is given there should be subject to implementation of these plans as a legally enforceable planning condition. The key details should be agreed prior to a planning decision being made.</i>	As stated in the Environmental Statement, the applicant is committed to preparation of an Ecological Monitoring and Management Plan (EMMP) as part of the integrated Access Visitor Management Strategy and implementation plan. It is considered that the provision of this Plan can be secured through an appropriate Planning Condition.
4	<b>OPERATIONAL IMPACTS Visitor Access and impact on birds other wildlife.</b>	<i>Natural England agrees with the key bullets highlighted in section 7.4.7, particularly the need to carefully manage the access to protect nature conservation features. The intention to interpret the wildlife and wider landscape is particularly welcome.</i>	Comment noted.
4		<i>The proposed visitor Management strategy should look in more detail at the potential access/ disturbance impacts on the key bird and other species. We would support its production and implementation, which should be assured through suitable legally enforceable conditions.</i>	Comment noted.
4	<b>Lighting</b>	<i>Natural England agrees that measures should be taken with regard to lighting design and timing of operation to minimise impact on stone curlew, foraging and commuting bats and other birds (section 7.4.17). This element should be included in final lighting design and strategy to be agreed in advance and implemented as a legally enforceable condition.</i>	It is considered that agreement of the detailed lighting design can be secured through an appropriate Planning Condition.
4	<b>Habitat Creation</b>	<i>We endorse the proposed calcareous habitat creation and use of native trees and shrubs as set out in section 7.4.19, 7.6.15 and Design Access Statement. The ES does not however state how much grassland is to be created versus the area lost and area of improved grassland to "enhanced". There is currently no detailed specification of what enhancement will entail and specific details will need to be agreed. The details should be included in the CEMP, EEMP and Landscape Management Strategy.</i>	It is considered that the provision of these details can be included in the CEMP, EMMP and Landscape Management Plan secured through an appropriate Planning Condition.
5	<b>PROTECTED SPECIES</b>	<i>The ES has identified the key species and habitats which could be adversely impacted by the proposed development. The proposed mitigation and amelioration proposed as set out in sections 7.4.2 to 7.4.4, 7.4.18 and the draft Construction and Environmental Management Plan (CEMP) should prevent impact on the protected species recorded. The final CEMP should be agreed in advance and implementation secured by appropriate legally enforceable means or planning conditions.</i>	It is considered that agreement of the detailed CEMP can be secured through an appropriate Planning Condition.

STONEHENGE VISITOR CENTRE PLANNING APPLICATION - RESPONSE TO NATURAL ENGLAND LETTER OF 24TH NOVEMBER 2009

LANDSCAPE/OTHER MATTERS

PAGE	PARAGRAPH HEADINGS	POINTS RAISED BY NATURAL ENGLAND	RESPONSE
5	<b>STONEHENGE WORLD HERITAGE SITE</b>	<i>In recognition of the aims of the European Landscape Convention to which the UK has signed up to and the World Heritage status of Stonehenge, Natural England would like to see resources dedicated to an exceptional solution of high environmental and sustainable design standard that reflects the uniqueness of the site. We believe that the final option should also look to maximise environmental gain not just mitigate for potential impact.</i>	Comment noted.
5	<b>Landscape Character and Visual Amenity</b>	<i>Natural England expects high standards of site restoration around the stones and site planning and design of new infrastructure associated with the visitor facilities. In many respects, particularly around the stones, the consultation process and the current proposals, have achieved this. It is important that the subsequent management and operation of the visitor facilities does not detract from the improved setting and experience.</i>	Comment noted.
5	<b>The Stones</b>	<p><i>The landscape context for the stones will be significantly improved by the removal of the existing visitor facilities that are currently so close to the stones, and by the landscape restoration work. Natural England welcome the fact that the proposals keep the service and vehicular access infrastructure at this site to a minimum, because the historic landscape character is expressed through wide views, natural landform punctuated by the archaeological features and open grassland.</i></p> <p><i>It will be imperative that the works are implemented appropriately so that the restoration of the existing road to grassland, and the associated verges and fencing, is as sympathetic to the existing/adjoining grassland sward as possible; an appropriate seed mix and grazing management should be specified to achieve this within a certain period of time; the annual management regime will affect the appearance of the grassland.</i></p> <p><i>We advise that thought should be given to alternative materials for the pedestrian access surfacing into the immediate area of the Stones. Artificial green finishes to most materials used in the countryside can be very difficult to blend effectively with natural vegetation and is likely to look incongruous until the finish has bleached/weathered over years. Other options such as a dark coloured aggregate or preferably consideration of a grass seeded, robust geotextile matting suitable for pedestrian use may be more appropriate. It would be helpful if alternative options could be provided for consideration, rather than one proposed solution.</i></p>	<p>Comment noted.</p> <p>It is considered that details of the landscaping scheme can be agreed through an appropriate Planning Condition.</p> <p>It is considered that details of materials and finishes can be agreed through an appropriate Planning Condition.</p>

STONEHENGE VISITOR CENTRE PLANNING APPLICATION - RESPONSE TO NATURAL ENGLAND LETTER OF 24TH NOVEMBER 2009

LANDSCAPE/OTHER MATTERS

PAGE	PARAGRAPH HEADINGS	POINTS RAISED BY NATURAL ENGLAND	RESPONSE
6	<p><b>The new infrastructure for the visitor centre – design and connection with the landscape</b></p>	<p><i>We welcome the systematic, logical approach taken to the selection and site planning of the new facilities. The coach park, a potentially conspicuous component has been well planned into the landscape, being situated on previously disturbed ground, utilising the existing belt of mature beech trees and with new planting to mask the site. This is a site that might otherwise have been available for the car park/visitor centre, but will now accommodate the coach park.</i></p> <p><i>The visitor centre design has not been quite so easy to track during the design process, and whilst the footprint for the building had been evident in the conceptual design stage, the architectural design - and the relationship with the landscape context is less clearly developed. The result is that while the car park and access road fit more organically into the land form, extra care needs to be taken to ensure the building and associated paving don't appear to be 'at odds' both with the grain of the land form (e.g. the building straddling the head of the shallow valley) and the overall aim to reduce the visual impact of the building (e.g. the canopy that increases the perceived height and mass of the building – particularly from the middle distance). A model of the building to scale, in the context of the landscape would assist in these judgements and facilitate better stakeholder input. It would be helpful to model amended building design options such as the current design with a lower roof height and shaping or revised position to assess how alternative options would relate to the landscape.</i></p> <p><i>Whilst the proposed building has some interesting features in the twist to the canopy roof and the irregular pattern of the supports, it does not appear to relate very strongly to the surrounding landscape, as might be expected of a visitor centre within the Stonehenge World Heritage Site. (this may have been the intention re the design philosophy- re light and reversible, deferential to the Stones) The building does however have some similarity in scale to the modern barns found in the area, although the barns are positioned and designed with shelter from wind and rain in mind.</i></p> <p><i>The paved areas associated with and external to, the building are very rectilinear in contrast to the more organic pedestrian approach paths. We would advise that further consideration is given to the variety (e.g. use of a simpler palette) in paving materials. Paved areas around the building should be sympathetic to the surrounding landscape and the proposed regular "apron" of paving creates an abrupt boundary against the adjoining landscape; therefore there may also be scope to soften the lines of paving within and around the building (relating to the curves in the roof).</i></p> <p><i>A more organic, natural character should be reinforced by the use of some selective scrub vegetation planting and allowing natural regeneration in the vicinity of the building and the car park. The shallow valleys in the surrounding landscape often contain some scrub vegetation, and the planting would also help to blend the car park into the landscape, break up views of the cars and help to improve the landscape context of the reconstructed Neolithic dwellings that may otherwise be perceived as incongruous with the visitor centre.</i></p>	<p>Comments noted.</p> <p>Comments noted.</p> <p>Models of the visitor centre building have been produced.</p> <p>Comments noted.</p> <p>It is considered that details of materials and finishes can be agreed through an appropriate Planning Condition.</p> <p>It is considered that details of the landscaping scheme can be agreed through an appropriate Planning Condition.</p>

STONEHENGE VISITOR CENTRE PLANNING APPLICATION - RESPONSE TO NATURAL ENGLAND LETTER OF 24TH NOVEMBER 2009

LANDSCAPE/OTHER MATTERS

PAGE	PARAGRAPH HEADINGS	POINTS RAISED BY NATURAL ENGLAND	RESPONSE
7	<b>Large coach park adjacent to existing line of beech trees</b>	<i>We would advise that the planting should be designed to give an external shape that is sympathetic to the surrounding landscape, using locally characteristic plant species rather than a standard alkaline-tolerant planting mix such as Prunus spinosa (blackthorn) and Crataegus monogyna (hawthorn), Cornus sanguinea (dogwood), Corylus avellana (hazel) and Viburnum opulus (guelder rose) and Viburnum lantana (wayfaring tree).</i>	It is considered that details of the landscaping scheme can be agreed through an appropriate Planning Condition.
7	<b>Landscape Management Plan</b>	<i>We support the intention to produce a detailed Landscape Management Plan. This should set out the full details of the planting and landscape design details and longer term management proposed to achieve the desired screening, landscape and biodiversity objectives. The landscape design plan should be an holistic integrated document covering historic environment, wildlife, access and landscape considerations. Natural England would welcome the opportunity to comment on this document. The Management Plan should be a legally enforceable requirement of planning approval. To enable full evaluation /assessment of the impacts and proposed mitigation the Landscape Management plan should be agreed by the relevant parties and consultees before a final planning decision is made.</i>	It is considered that a Landscape Management Plan can be agreed through an appropriate Planning Condition.
7	<b>Decommissioning of the A344, existing Visitor Centre and car park</b>	<p><i>The proposals for the site of the existing visitor centre and car park should be a big improvement to the landscape around and the setting of the Stones at Stonehenge. The proposed use of suitable chalk grassland species rich grassland mix will also have biodiversity benefits. We would however raise the following points regarding the detail:</i></p> <p><i>We note in the current proposals that it is not intended to remove the existing road surface in total along the length from Byway 12 and on the site of the old car park. We could not find an explanation the documents for why this is the case. We would advise that it would be more sustainable and enable better establishment of the desired sward to remove the surfacing along the entire length not required for transit vehicles and car park rather than just puncturing the existing road surface and over topping with topsoil.</i></p> <p><i>More detail regarding the proposed methods and species is required. We would welcome the opportunity to comment on the methods set out in the Construction and Environmental Management Plan (CEMP), Ecological Construction Management and Monitoring Management Plan (EEMP) and Landscape Management Plan.</i></p> <p><i>With regard to the selected use of a sports rye grass seed mix on areas susceptible to high visitor pressure/ footfall- have alternative amenity/ sports turf mixes been investigated that would blend with adjacent existing recreated grassland and which would require less watering to sustain them.</i></p>	<p>Comments noted.</p> <p>It is considered that details of the landscaping scheme can be agreed through an appropriate Planning Condition.</p> <p>For clarification, an Outline Construction Environmental Management Plan (CEMP) has been submitted as Appendix A2.1 of the Environmental Statement. The CEMP incorporates an outline Ecological Construction Monitoring and Management Plan (ECMMP). It is considered that agreement of these details can be secured through an appropriate Planning Condition. It is also considered that a Landscape Management Plan can be agreed through an appropriate Planning Condition.</p> <p>It is considered that these details can be agreed as part of the Landscape Management Plan secured through an appropriate Planning Condition.</p>

STONEHENGE VISITOR CENTRE PLANNING APPLICATION - RESPONSE TO NATURAL ENGLAND LETTER OF 24TH NOVEMBER 2009

LANDSCAPE/OTHER MATTERS

	PARAGRAPH HEADINGS	POINTS RAISED BY NATURAL ENGLAND	RESPONSE
8	<b>Lighting</b>	<p>Sections 6.6.7 and 6.6.9 of the Landscape Section of the Environmental Statement summarise the landscape and visuals impact of the lighting associated with the operation of the new visitor Centre and associated car parking and other infrastructure. The sites are not only located at the margins of the World Heritage Site largely characterised by its historic landscape with tranquillity, open views and dark skies, but also the wider landscape is open and relatively sparsely populated with few points of more intensive lighting. The impact of lighting especially with regard to the new roundabout at Airman 's Corner (and Longbarrow roundabout) is a concern to Natural England, as potentially one of the largest new impact in terms of visible infrastructure by day( 19 columns) and light pollution at dusk/ night time/dawn. Horizontal cut off to prevent spill of upward lighting may not be enough to avoid flare from the site. We are pleased to see that this issue is being addressed and the intention is identify the optimal number, design and height of lighting columns. Initial proposals for lighting design have been given within the ES and Design Statement. The final scheme has yet to be finalised. We would welcome the opportunity to comment on the final details. The lighting design needs to minimise the impacts of road lighting on the night sky and surrounding landscape, through the use of baffled/ directional lighting, automatic dimming of lights during periods of low traffic and other appropriate lighting technologies to keep visual impacts to a minimum.</p> <p>The final lighting design should be agreed prior to planning approval and final strategy included as a legally enforceable planning condition.</p>	<p>Comments noted.</p> <p>It is considered that agreement of the detailed lighting design can be secured through an appropriate Planning Condition.</p>
8	<b>ACCESS AND GREEN TRAVEL PLAN</b>	<p>Natural England supports the objectives within the planning application to encourage the use of more sustainable uses of transport to reach the Visitor Centre and explore the wider landscape. This is an aspiration of the WHS management Plan. Further consideration needs to be given to the distribution of visitors throughout the World Heritage landscape on foot to and from drop off points and by cyclists and horse riders. The development and implementation of an integrated Green travel Plan is welcomed.</p>	<p>Comments noted.</p>

**STONEHENGE VISITOR CENTRE PLANNING APPLICATION - RESPONSE TO NATURAL ENGLAND LETTER OF 24TH NOVEMBER 2009**  
**LANDSCAPE/OTHER MATTERS**