Stonehenge, astronomy and managing astronomical attributes of Outstanding Universal Value

By Amanda Chadburn, PhD FSA FSAScot

Most people know *something* about Stonehenge and astronomy. Quite a few know that the monument is aligned on the solstitial axis, oriented on both the midsummer sunrise and the midwinter sunset. This linkage between the monument and astronomy was noted in the nomination documents (submitted 1985) for the property Stonehenge, Avebury and Associated Sites, and is now agreed as one of its attributes of Outstanding Universal Value:

- Attribute 4. The design of Neolithic and bronze age funeral and ceremonial sites and monuments in relation to the skies and astronomy.

It is more difficult to imagine what this means in practice in managing the World Heritage Site (WHS), and this short article suggests some considerations. However, in order to understand how to manage an attribute, one has to understand the monument or monuments in question. Attributes are here defined as tangible features (such as ancient burial mounds) which convey the World Heritage Site's Outstanding Universal Value. This was explored globally in relation to astronomical heritage sites in two important ICOMOS/IAU volumes "*Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention"* published in 2010 and 2017.

Stonehenge is one of several monuments and sites within the Stonehenge and Avebury WHS which display *precise* astronomical alignments. It is this precision which is exceptional. (Interestingly, the Avebury part of the WHS does not have these, and its only link with astronomy is more general. This article therefore concentrates on the Stonehenge part of the WHS and precise alignments).

All the alignments in the WHS are sightlines, not just orientations. A sightline is an imaginary line as viewed outwards from a monument towards a distant landscape feature or astronomical target (e.g. the place where the sun rises). They give the monuments a functionality, where an action has to take place (viewing an astronomical event). At the Stonehenge WHS, all the accepted alignments are views from a structure to a horizon, through paired timbers or stones or along rows, to a sun or moon rise or set at particular times. These rises and sets are the "astronomical targets". Fig. 1 shows all these alignments – and also shows how far they extend outside the current WHS boundary. As well as Stonehenge itself, other monuments which are precisely, solstitially aligned include the Southern Circle and its Avenue at Durrington Walls, Woodhenge, the Stonehenge Avenue and a recently discovered Timber Row at Lark Hill.

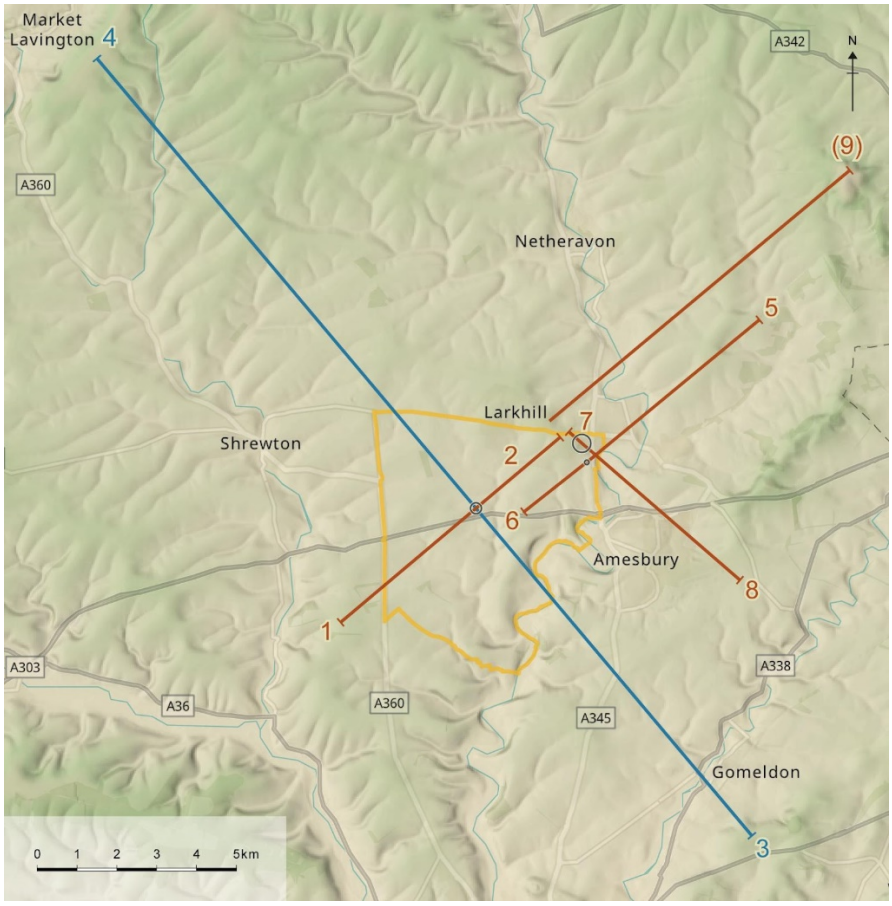

Fig. 1. Map showing all sightlines in the WHS and the boundary of the WHS in orange. (From Ruggles and Chadburn, 2024. Graphic by Sharon Soutar/ Historic England).

As well as its famous connections to the summer and winter solstices, Stonehenge appears to have lunar alignments; its four Station Stones appear to be aligned on the most northerly moonset and the most southerly moonrise. These events occur during a 1-2 year period, but this only comes around every 19 years or so. This period is called the Major Lunar Standstill (and is happening now 2024-5; two colleagues and I are researching it on site). (Figs 2 and 3).

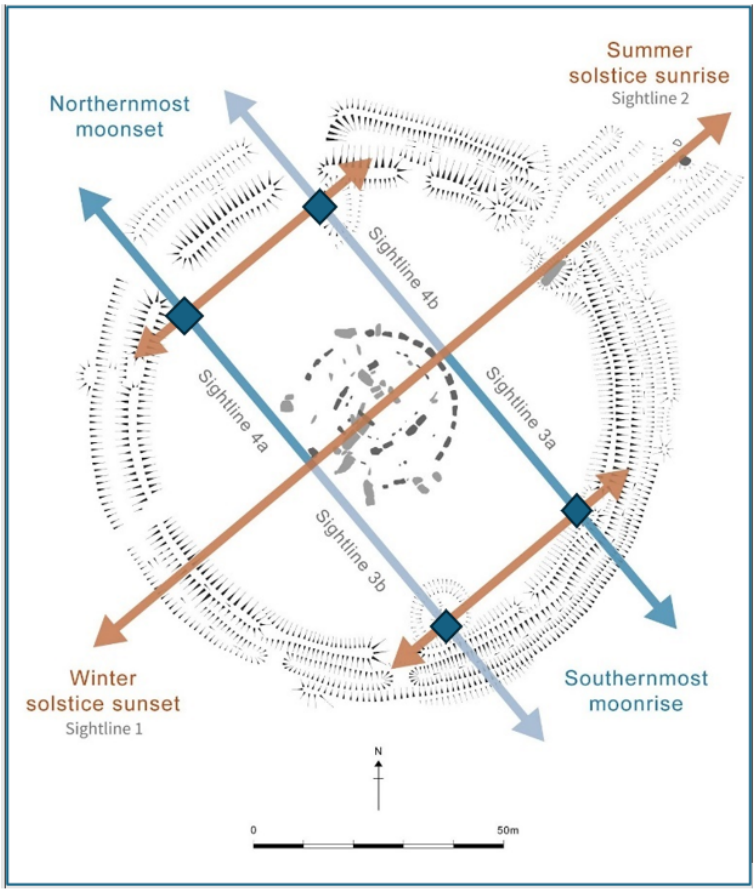

Fig 2. Solar and Lunar sightlines at Stonehenge, showing the positions of the Station Stones marked by blue diamonds. (After Ruggles and Chadburn, 2024. Graphic by Sharon Soutar/ Historic England, with additions by the author).

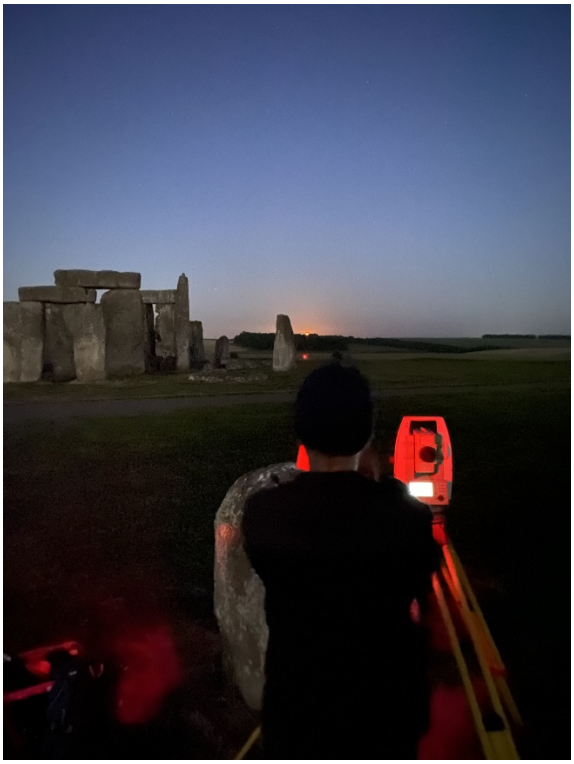

Fig 3. The most southerly moonrise at Stonehenge, taken on June 22nd 2024. The red light in the middle distance marks the position of a missing station stone. Photo: the author.

So what does all this mean for managing the WHS? Firstly, it is important to preserve these sightlines as near to their original form as possible, in order to understand the functionality of a monument (or at least one phase of its existence) and to preserve its integrity and authenticity. In many ways, this is similar to preserving a particular view from a historic building, methodologies for which are well understood. This has implications for land outside the WHS and planning policies should take that into consideration. At the time of writing, Wiltshire Council is consulting on a setting study which takes detailed astronomical sightlines into consideration.

The sightlines require the preservation of both the monument AND its target on the horizon. Some of these sightlines are already compromised or even badly damaged. For example, the view of the winter solstice sunset at Stonehenge – arguably the most important at Stonehenge and the one which the stone architecture appears to best reflect – is compromised by traffic on the A303 and blocked by tree plantations. If possible, such blockages should be removed.

New development similarly should not block alignments and – most importantly – should not break the horizon and block the target. This also applies to new planting.

Another consideration is the preservation of dark skies in the WHS. This is obviously most important when trying to understand and view lunar events. Our fieldwork over the last year or two has shown us how damaging the light pollution from settlements, traffic and military installations can be.

There are relatively few astronomical sites on the World Heritage List, and perhaps because of this, the preservation of their functionality and contexts has not been well considered and is an emerging field of management. It would be good to develop some best practice guidelines to help improve this. In the context of ancient sites of archaeoastronomy, this should include consideration of any sightlines and their astronomical or other targets on horizons, whether human-made or natural. At present, no such guidelines exist.

Author Biography: Dr Amanda Chadburn is an archaeologist and heritage adviser. She worked for over 35 years in English Heritage/ Historic England until retiring in 2022, holding various positions including Lead Adviser, Stonehenge and Avebury World Heritage Site, when she was responsible for the World Heritage Team and the Stonehenge Curatorial Unit. She has also worked in the Heritage Team of the DCMS. Amanda served on the Council of the Society of Antiquaries and the National Trust's Archaeology Panel for many years. She currently undertakes heritage consultancy; does research; teaches archaeology and heritage management at Oxford University and is the Secretary of the charity World Heritage UK.