DATE / REF
29/09/2023
IS01-20031

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By Email
Rob.Miller@argentllp.co.uk

Rob Miller
Argent (Property Development) Services LLP
4 Stable Street
London
N1C 4AB

Dear Rob,

Re: East Nethershields - Overshadowing Assessment

In response to concerns over effects to neighbouring properties, you have requested that GIA provide an assessment of the potential shadows cast by the proposed design of the site at East Nethershields. In particular, it is understood that concerns have been raised in relation to any potential shadow cast towards two properties:

- Burn Farm, and
- Maiden Lea Cottage.

Overshadowing effects to neighbouring areas of amenity are generally assessed with reference to the BRE's publication 'Site Layout Planning for Daylight and Sunlight' (BR209:2022) which states in this summary at 3.3.17:

> *"It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable."*

Methodology

To understand the potential effects to these properties, therefore, we have created a 3D model of the local terrain from Ordnance Survey information as shown in the below image:

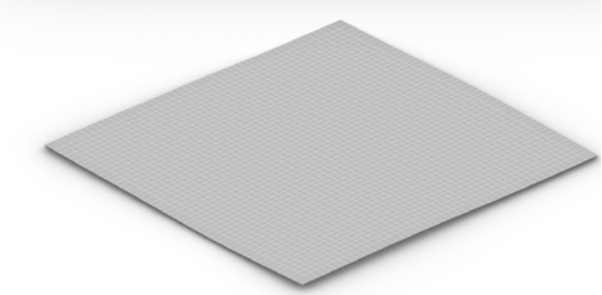


Figure 1: 3D model of existing terrain

With the terrain built, we proceeded to include 3D models of the trees proposed, based upon the height/spread and density suggested by Tilhills (presented within page XX of the enclosed technical assessment) understood to be representative of the typical height and spread of the relevant species at maturity.

The resultant model is shown below:

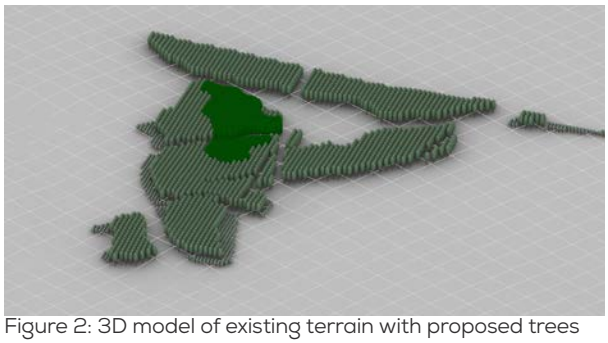


Figure 2: 3D model of existing terrain with proposed trees

With the above completed, specialist lighting simulation software was used to present the shadows cast across the terrain at hourly intervals on the 21st March (equinox) as well as the 21st December (winter solstice, representative of the winter and the longest shadows possible) and the 21st June (summer solstice, representative of summer and the longest shadows possible). It is relevant to note here that the two solstices are presented for information only as the relevant guidance refers only to the mid point of the 21st March.

Finally, the images were compiled with aerial imagery to help understand the scale of shadow likely to be cast:

Figure 3: Shadows cast at midday on the equinox

For ease of reference, the two properties in question have been highlighted in the enclosed assessment.

Conclusions - Burn Farm

The assessment has shown no shadows will reach Burn Farm on the equinox and as such the proposal is fully compliant with the recommendations of BR209.

With no shadows cast on the equinox, it follows that there will be no effect either on the 21st June when shadows are at their shortest.

On the winter solstice, however, shadows are naturally very long even from modestly sized trees, walls and buildings. The assessment has shown the potential for shadows to reach Burn Farm throughout this short day but here it is relevant to note that the majority of the trees proposed are deciduous in nature and as such will be bare at this time. For this reason, an additional study has been undertaken to remove the canopies from the deciduous trees and split any effect between these (where sunlight will continue to filter through the bare branches) and evergreen trees continuing to cast relatively dense shadow. This has shown that the evergreen trees would be capable of casting shadow over Burn Farm at this time but only at the start of the day with only deciduous trees able to cast shadow over Burn Farm from 11am onwards.

Overall, the effects of the proposal on Burn Farm are fully compliant with the guidance set out within BR209 and

would be considered negligible. There is the potential for long shadows to be cast on the winter solstice but this is when the trees are bare and as such any effect is mitigated. For the majority of the year, however, no shadows will be cast over Burn Farm.

Conclusions - Maiden Lea Cottage

The assessment has shown no shadows will reach Maiden Lea Cottage on the equinox and as such the proposal is fully compliant with the recommendations of BR209.

With no shadows cast on the equinox, it follows that there will be no effect either on the 21st June when shadows are at their shortest.

On the winter solstice, however, shadows are longer and the assessment has shown the potential for shadows to reach Maiden Lea Cottage in the morning. However, all the trees casting this shadow are deciduous in nature and so, with sunlight filtering through the bare branches in winter, this is an extreme worst-case scenario. The second study enclosed showing the effect of the trunks alone helps to indicate the very minor nature of this shadow.

Overall, the effects of the proposal on Maiden Lea Cottage are fully compliant with the guidance set out within BR209 and would be considered negligible. There is the potential for longer shadows to be cast over Maiden Lea Cottage only in the morning on the winter solstice but this is when the trees are bare and it can be expected that sunlight will filter through the branches. For the vast majority of the year, however, no shadows will be cast over Maiden Lea Cottage.

I trust the above provides you with the clarity you require at this time.

Yours sincerely,

For and on behalf of GIA

Alex Buckley

Partner
Alex.Buckley@gia.uk.com

Cc. Olivia FitzGerald – Tilhill

Encl. Appendix 01 – Transient Overshadowing Assessment

APPENDIX 01

TRANSIENT OVERSHADOWING ASSESSMENT

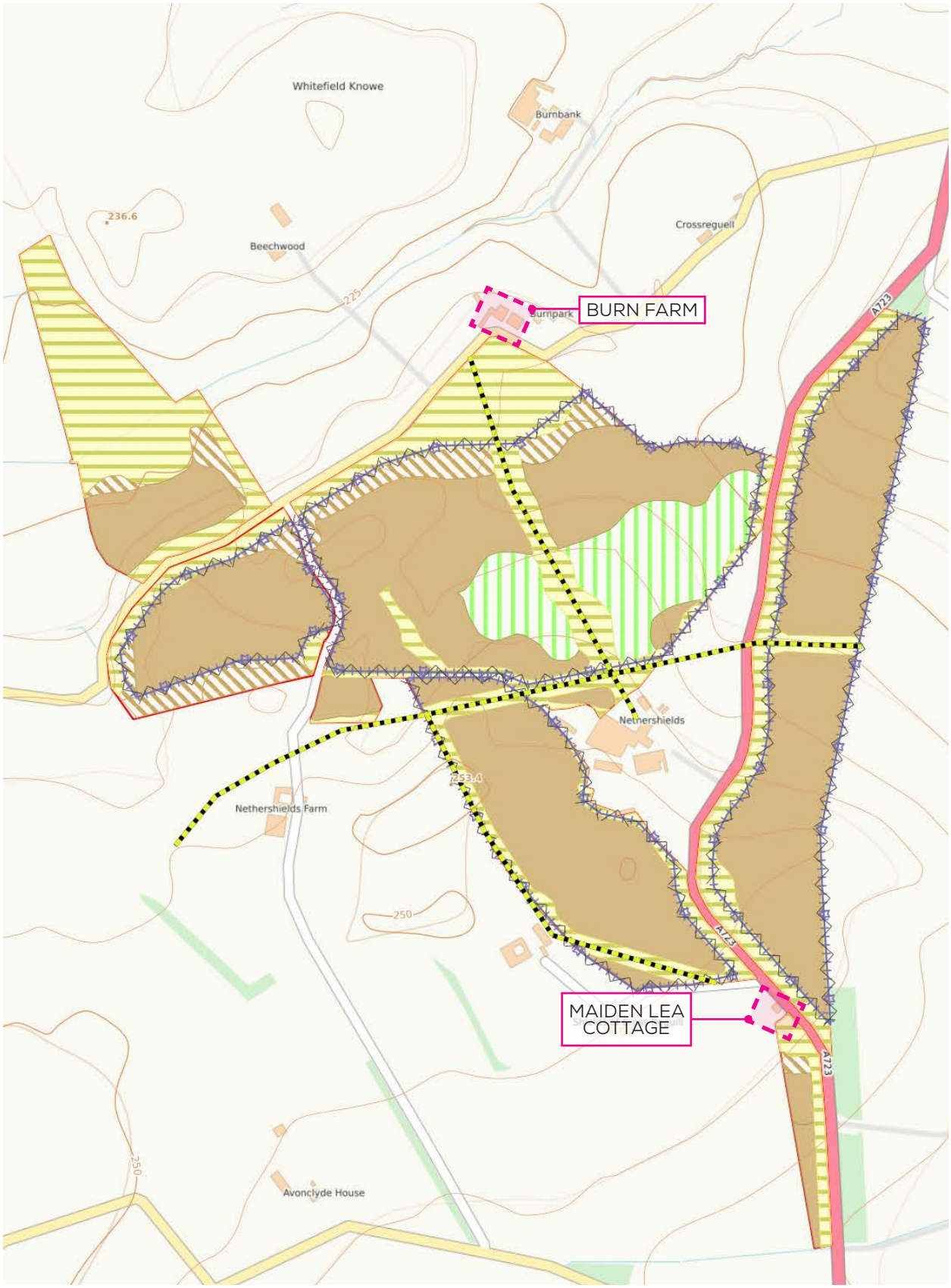
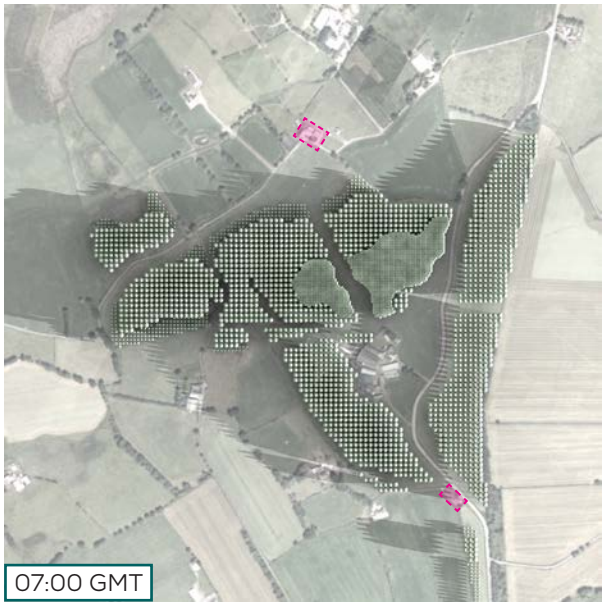
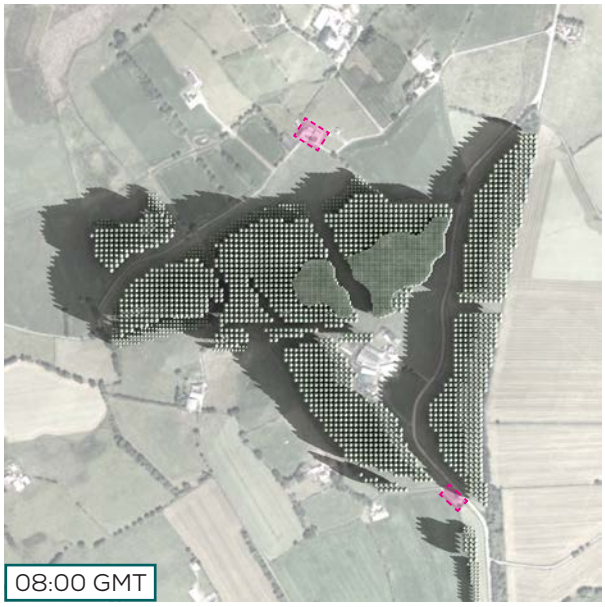


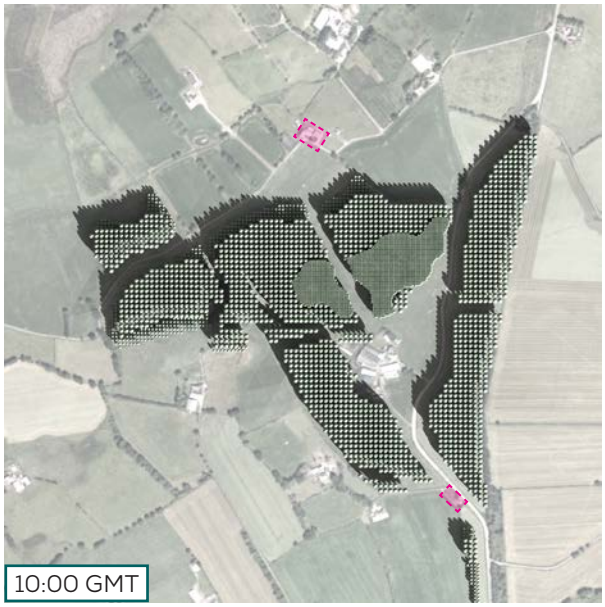
Fig. 01: Map -Tilhill

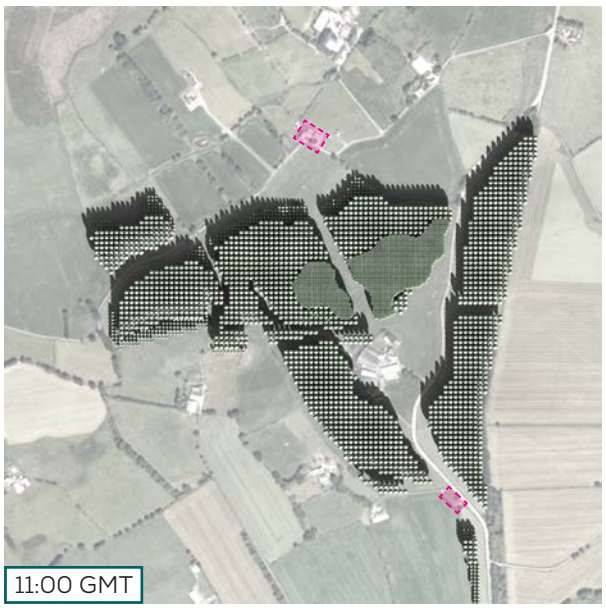
Open ground
Native broadleaves - height 40m / 10m wide / planted at a density of 1600/he.
Native broadleaves - height 40m / 5m wide / planted at a density of 1100/he.
Conifers - height 40m / 5m wide / planted at a density of 2500/he.

TRANSIENT OVERSHADOWING ASSESSMENT
21ST MARCH (07:00 - 17:00 GMT)

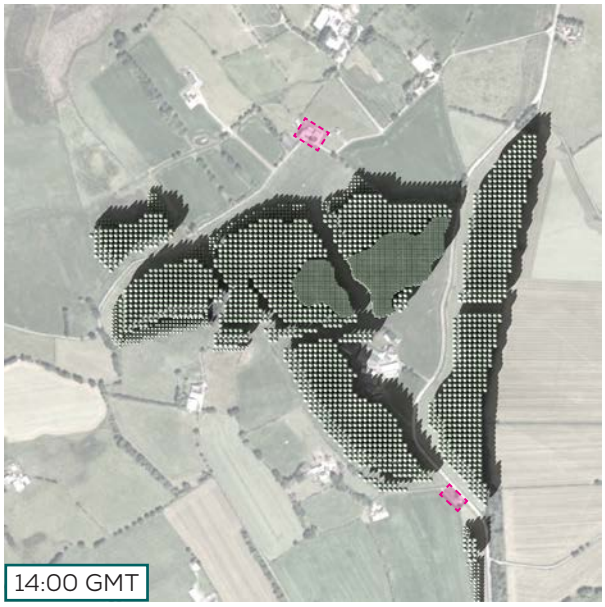









13:00 GMT

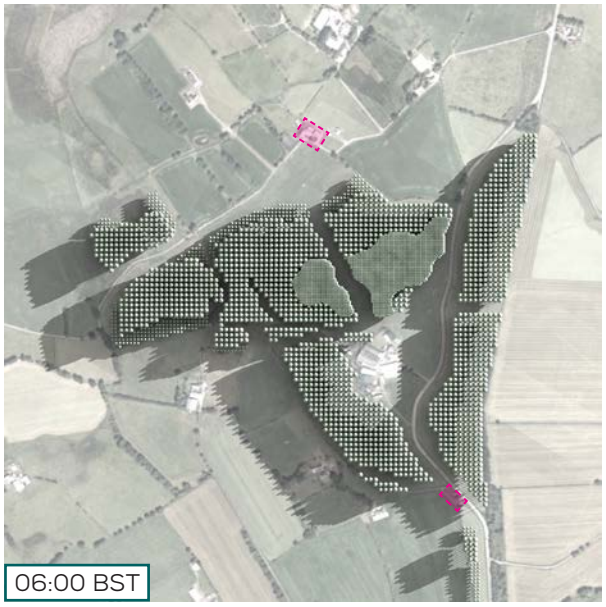

14:00 GMT

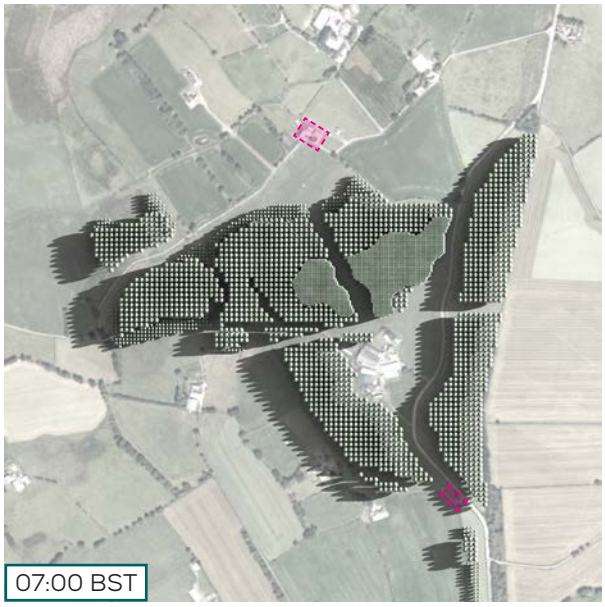

15:00 GMT


16:00 GMT


17:00 GMT

TRANSIENT OVERSHADOWING ASSESSMENT
21ST JUNE (06:00 - 20:00 BST)






12:00 BST


13:00 BST


14:00 BST


15:00 BST


16:00 BST

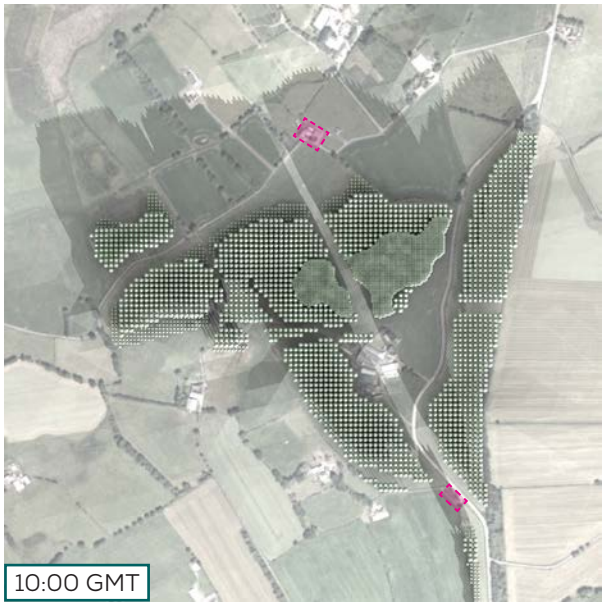

17:00 BST

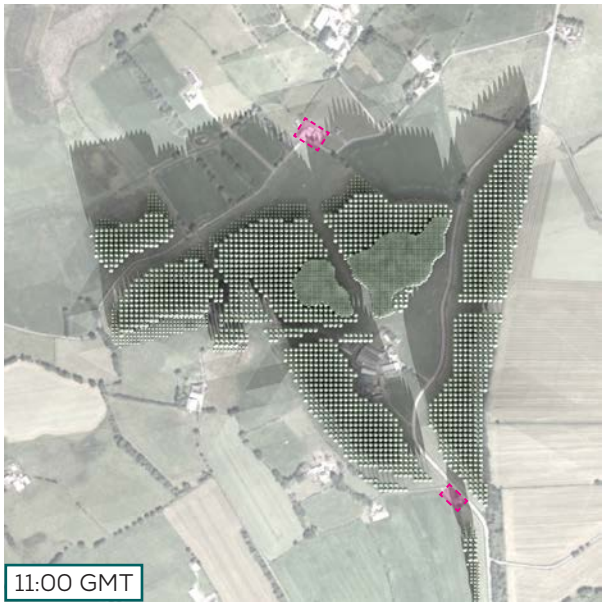

18:00 BST


19:00 BST

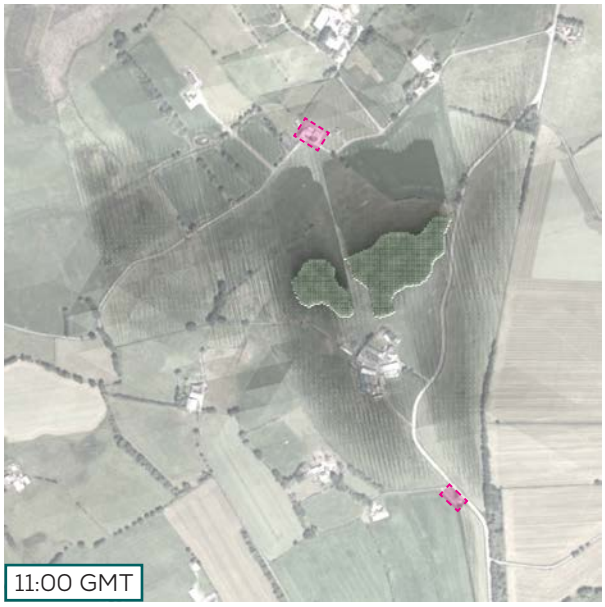

20:00 BST

TRANSIENT OVERSHADOWING ASSESSMENT
21ST DECEMBER (09:00 - 15:00 GMT)





TRANSIENT OVERSHADOWING ASSESSMENT - BARE DECIDUOUS TREES
21ST DECEMBER (09:00 - 15:00 GMT)



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