



**United Kingdom Holocaust Memorial  
and Learning Centre**

Environmental Statement (Volume 5)  
Appendix H Daylight, Sunlight and Overshadowing Study  
December 2018

The Secretary of State for Housing Communities and Local Government



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## 1. INTRODUCTION

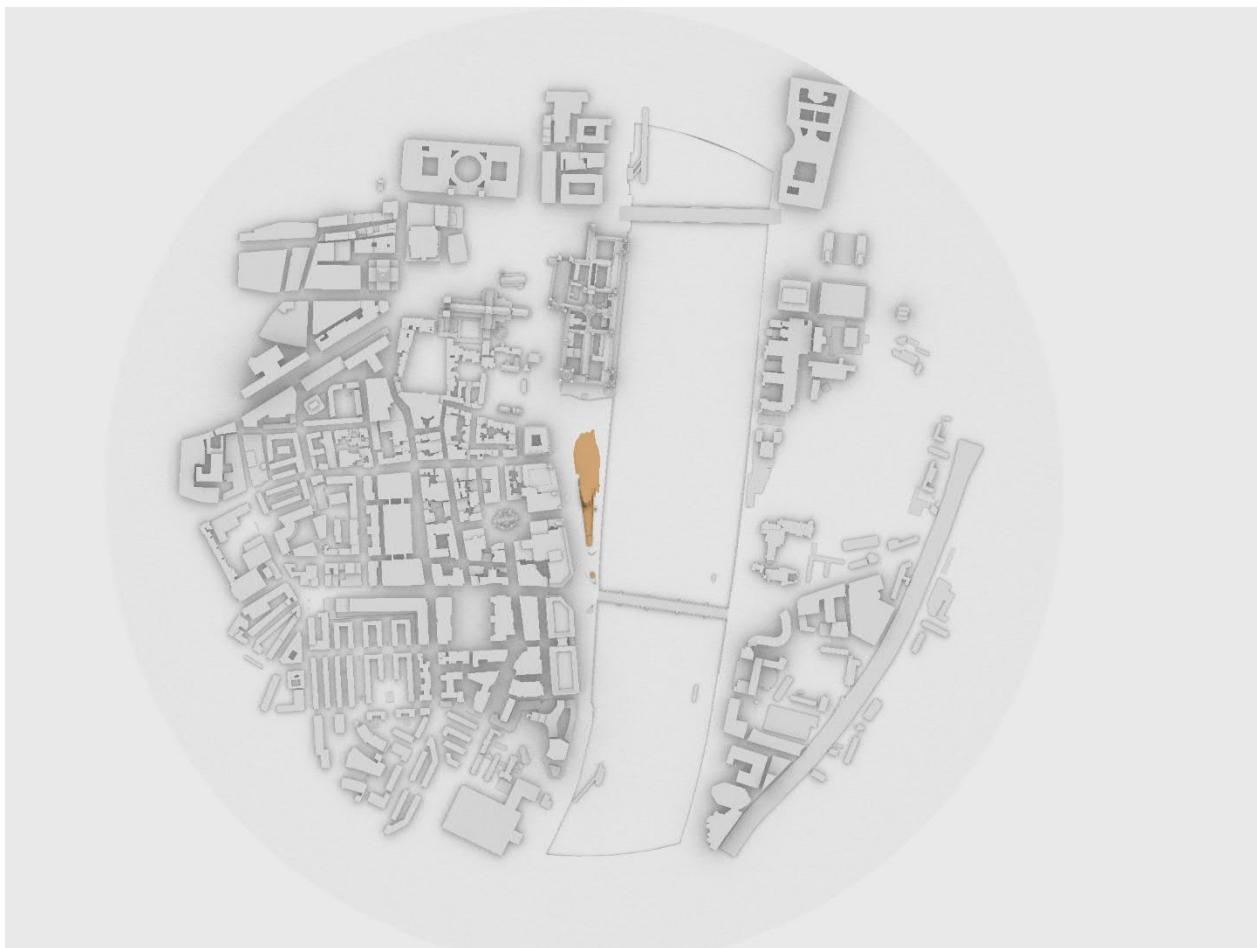
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WSP has been commissioned by Ministry of Housing, Communities and Local Government to carry out an assessment of the potential daylight, sunlight and overshadowing impacts arising from the UK Holocaust Memorial & Learning Centre. This report considers the effects on the existing residential and commercial buildings and public open amenity areas which will be subject to reductions in daylight and sunlight.

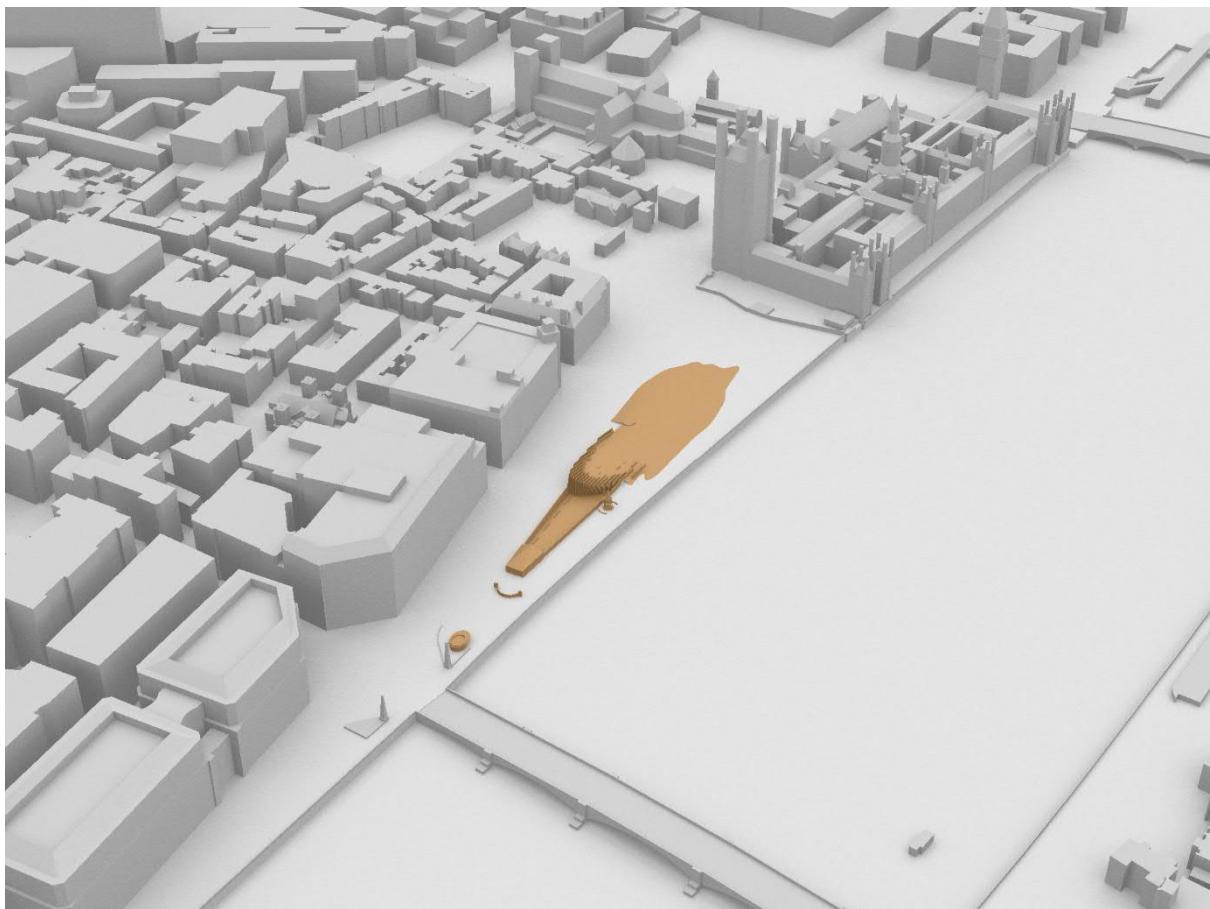
The proposed scheme of UK Holocaust Memorial & Learning Centre will be located within the Victoria Tower Gardens in Westminster.

This document considered the potential impact of UK Holocaust Memorial and Learning Centre (referred to as the proposed development) on the relevant surrounding properties and comprises the assessment of the potential impact during the operational phases of the proposed development on the level of daylight and sunlight available at the existing properties and open amenity areas around the site.

**Fig 1. Top view of the Proposed Development**



**Fig 2 Perspective view of the Proposed Development**



This document provides an assessment of the likely impact associated with the proposed development on the daylight and sunlight of the surrounding properties by utilising the latest assessment tools, software and guidance documents.

## 2. METHODOLOGY

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The assessment of the impact associated with daylight and sunlight reduction on the neighbouring properties has been undertaken in line with the BRE Guidance Criteria [Ref. 1]. The BRE Guide: Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice are is recognised as the most appropriate method for daylight, sunlight and overshadowing assessments. These guidelines were first published in 1991, and superseded the 1971 Department of the Environment document entitled Sunlight and Daylight. The latest edition of the BRE Guide was published in 2011. The BRE Guide gives criteria and methods for calculating daylight and sunlight both within new developments and the impact on existing surrounding windows.

The BRE Guide gives criteria and methods for calculating daylight and sunlight both within new developments and the impact on existing surrounding windows and open amenity areas. Based on the BRE Guide, the level of impact of the proposed development on the levels of daylight and sunlight availability of the surrounding properties and open spaces has been assessed using the parameters discussed below.

A 3D model has been developed for the daylight, sunlight and overshadowing impact assessments. This model has been based on the three-dimensional model provided by the architects, Edina maps and satellite images and includes the existing building on the site, the proposed development and the existing surrounding buildings.

### ANGLE OF VISIBLE SKY ( $\theta$ )

The Visible Sky Single ( $\theta$ ) gives the availability of daylight to a window and is measured from the top of the obstruction to the top of the window. For an unobstructed window  $\theta$  is 90°. If the Visible Sky Angle (VSA) is greater than 65° conventional window design usually gives reasonable results. If the VSA is between 45° and 65° then larger windows and shallow plan internal layouts would be needed to provide adequate daylight. For VSA between 25° and 45° it is very difficult to provide adequate daylight unless large windows are used. In situations where the VSA is lower than 25° no adequate daylight is possible even with a fully glazed wall.

### VERTICAL SKY COMPONENT

When the obstruction is not continuous, the visible sky angle ( $\theta$ ) is complex to calculate and the Vertical Sky Component (VSC) may be used instead. The calculation of VSC usually requires specialist computer software. The VSC measures the amount of sky that can be viewed from the centre of a window accounting for all external obstructions, (with 40% being the maximum value for an unobstructed window). The minimum recommended figure for VSC is 27% or greater to maintain good levels of daylight. For existing surrounding windows if the VSC is lower, then a comparison of existing and proposed VSC levels with the new development in place is calculated.

## PROBABLE SUNLIGHT HOURS

Access to sunlight is measured from the windows of habitable rooms, facing within 90° of due south. The Probable Sunshine Hours (PSH) calculation method measures the proportion of the window assessed that is sunlit for a period of time. In new developments, each dwelling should ideally have at least one main living room within 90° of due south to receive a reasonable amount of sunlight. The BRE Guide and BS 8206-02 recommend that the PSH is calculated for the whole year (APSH) and for the winter months (WPSH) (21st September to 21st March). The recommended sunlight criteria are as follows:

- The window reference point should receive more than 25% of APSH, including at least 5% of WPSH.
- If the available sunlight hours are both less than the amount given above and less than 0.8 times their former value, either over the whole year or during the winter, then the occupants of the existing building will notice some loss of sunlight.
- The overall loss of sunlight should be maintained below 4%.

## OVERTSHADING OF OPEN AREAS

For gardens or amenity areas, the BRE Guide (Ref 1) suggests that at least half the area should receive at least two hours of sunlight on 21<sup>st</sup> March (sunlight at an altitude of 10° or less is excluded). If as a result of a new development, an existing garden or amenity area does not meet the above criteria and the area which can receive two hours of sunlight on 21<sup>st</sup> March is less than 0.8 times its former value, then the loss of sunlight is likely to be significant.

## SENSITIVE RECEPTORS

The BRE guidelines focus mostly on residential buildings and the emphasis throughout the guide is on safeguarding natural light to existing dwellings. A receptor sensitivity rating has been developed using professional judgement, which is described below and categorised into high, medium and low based on the function or use of the space being assessed.

**Residential buildings** require suitable levels of daylight, adequate to their function. Windows to such building types are classified as having high sensitivity to daylight and sunlight. Schools and hospitals are also associated with good levels of natural light and have been classified as having high sensitivity to daylight and sunlight.

**Office buildings** tend to rely on supplementary artificial lighting and have been classified as having a medium sensitivity to daylight and sunlight.

**Hotel rooms** are mostly used during evenings and night time and have been classified as having a medium sensitivity to daylight and sunlight.

**Retail units** usually rely on mechanical control and are not considered spaces with an expectation of daylight or sunlight by the user. Thus, windows to such spaces can be classified as having a low sensitivity.

The development of UK Holocaust Memorial & Learning Centre is located within the Victoria Tower Gardens in Westminster. The majority of the surrounding properties are characterised by medium-rise commercial and government properties. Based on the BRE Guidance those type of building can be classified as medium to low sensitivity receptors.

With regard to the open amenity areas the assessment is mainly focused on the Victoria Tower Garden, as due to the massing of the building is unlikely to have any impact on any amenity areas further away.

### **3. DAYLIGHT IMPACT ASSESSMENT**

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Due to the massing which is relatively minor within the context and the location of the proposed development, a desktop assessment has been undertaken to investigate the potential impact of the proposed development to its surrounding properties in terms of daylight and sunlight. The results of the desktop assessment show that in all surrounding properties the angle to the horizontal subtended by the new development at the level of the centre of the lowest windows is below the recommended threshold of 25-degree. As the BRE guidelines state, if the angle between the new development and the centre of the lowest window is less than 25-degree for the whole of the development then it is unlikely to have any substantial effect on the diffuse skylight enjoyed by the existing building and there is no need for a more detailed assessment.

In addition, the majority of the surrounding properties are mainly government and commercial buildings which have medium and low sensitivity in terms of daylight.

Therefore, based on the above, it can be concluded that the proposed development is unlikely to have a significant impact on the daylight availability of the surrounding properties.

### **4. SUNLIGHT IMPACT ASSESSMENT**

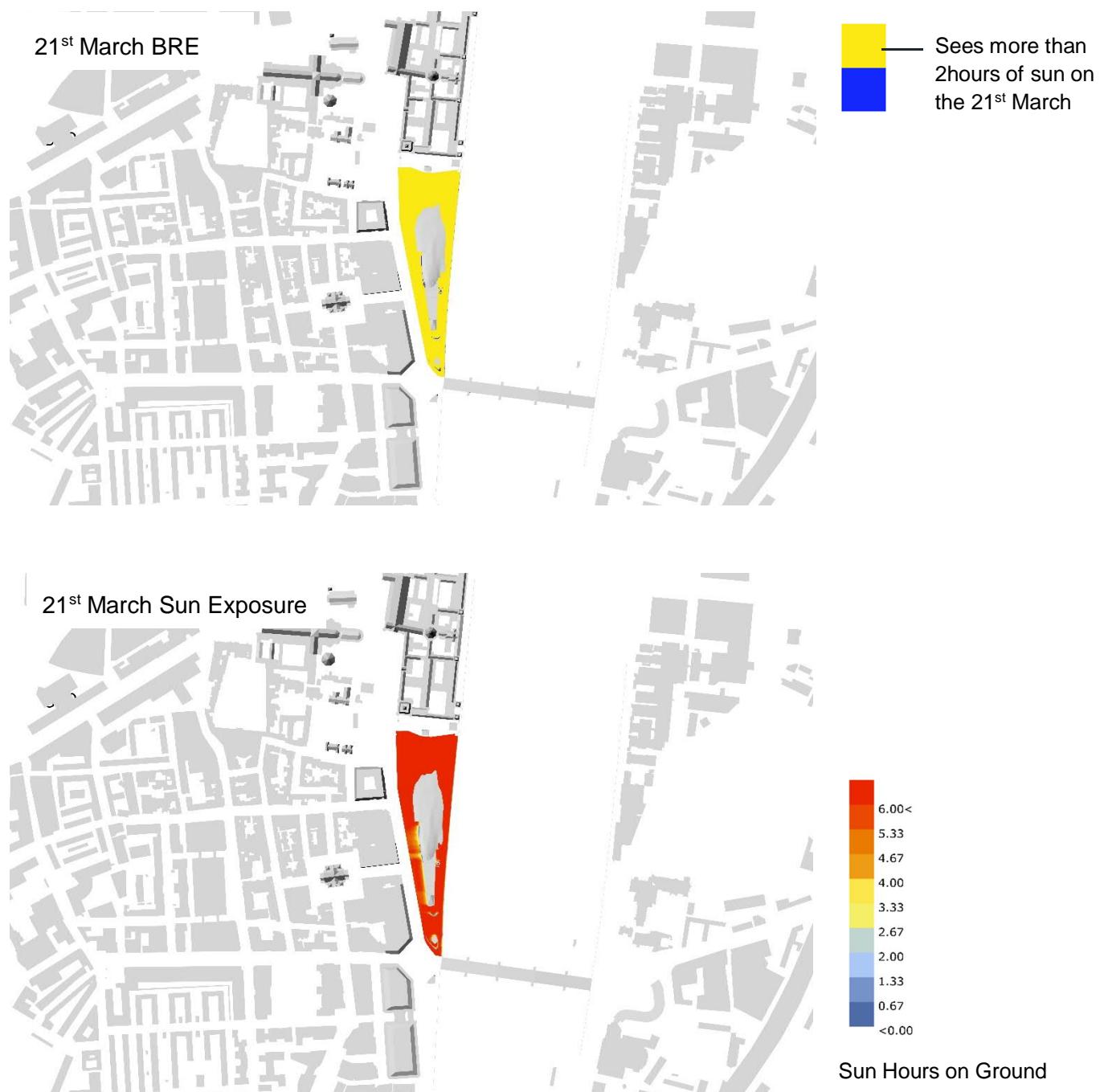
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The sunlight assessment focused on the receptors located on residential properties that have windows facing 90° of due south, in line with BRE Guidance. The immediate surrounding properties to the north have been identified as receptors of medium and low sensitivity commercial and government properties. Therefore, those windows can be excluded from the sunlight calculations and we can conclude that the proposed development will have no impact on the surrounding properties in terms of sunlight.

### **5. OVERSHADOWING ASSESSMENTS**

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The results of the overshadowing assessment show that the proposed scheme has no impact on any of the surrounding open amenity areas. Regarding the Victoria Tower Gardens, the results of the assessment indicate that the 98% of the tested area receives at least two hours of sunlight on the 21<sup>st</sup> of March, reduced only by 1% compare with the baseline. Therefore, we can conclude the UK Holocaust Memorial and Learning Centre will have a negligible impact on the surrounding open areas. The results of the overshadowing assessments are presented in more details in the Appendix A.

**Fig 3 Results of the Sun Hours on Ground Assessment**

## 6. SUMMARY AND CONCLUSION

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Based on the above analysis, for the purpose of this assessment the receptors identified have medium to low sensitivity and all of them have an obstruction angle below the 25-degree recommended by BRE. In addition all the receptors identified to the north of the site have a commercial use and they have been excluded from the calculations for the sunlight assessment.

With regard to the overshadowing assessment the results show that around 98% of the Victoria Tower Garden see at least two hours of sun on the 21<sup>st</sup> of March far above the BRE recommended value.

Therefore, it can be concluded that the proposed development is likely to have a negligible impact on the all surrounding properties and open amenity areas in terms of daylight, sunlight and overshadowing.

## 7. REFERENCES

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- 1 Littlefair, P.J. (1995) Site Layout and Planning for Daylight and Sunlight: a guide to good practice. BRE Construction Research Communications, Garston, UK. 2011 edition.

# **Appendix A**

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**TRANSIENT OVERSHADOWING  
ASSESSMENTS**

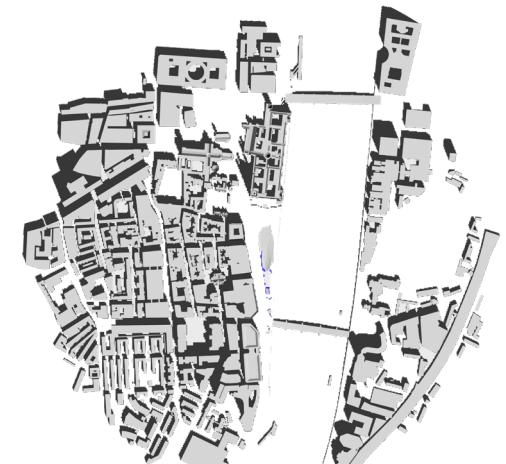
## Transient Overshadowing Assessment - 21<sup>st</sup> March



9:00 BST



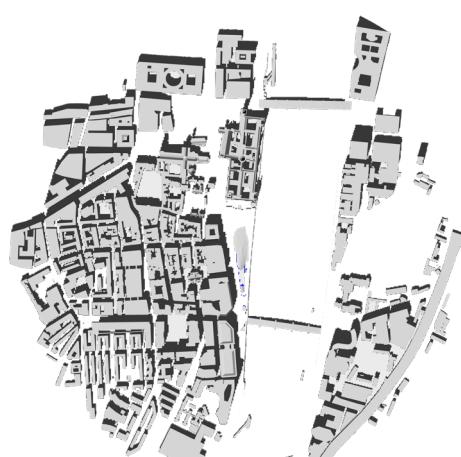
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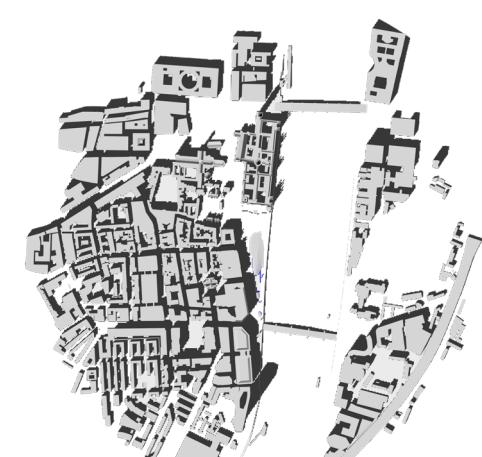
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## Transient Overshadowing Assessment - 21<sup>st</sup> March



15:00 BST



16:00 BST

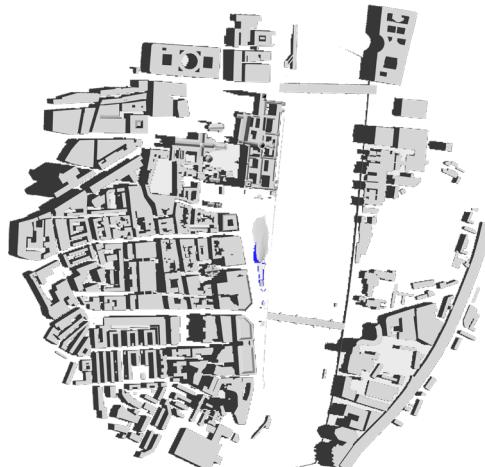


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## Transient Overshadowing Assessment - 21<sup>st</sup> June



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10:00 BST



11:00 BST



12:00 BST



13:00 BST

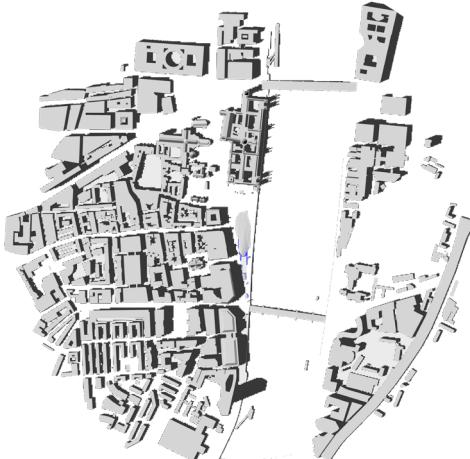


14:00 BST

## Transient Overshadowing Assessment - 21<sup>st</sup> June



15:00 BST



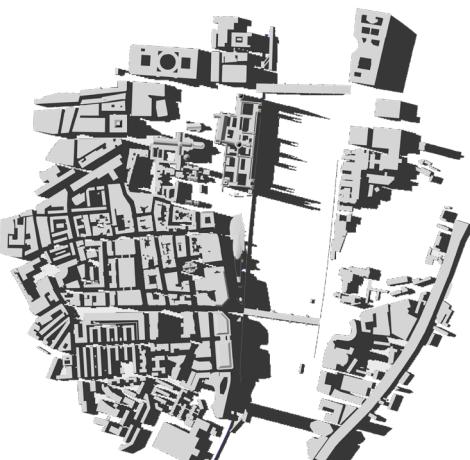
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## Transient Overshadowing Assessment - 21<sup>st</sup> December



9:00 BST



10:00 BST



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12:00 BST



13:00 BST



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## Transient Overshadowing Assessment - 21<sup>st</sup> December

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