Infrastructure & Environment

Direct Tel: +44 20 3356 4741
Direct Email: stephen.brindle@watermangroup.com

Our Ref: WIE11375-104.R-1.2.2-SB_NCC
Your Ref:

Date: 21 July 2021

Ms Victoria Crosby
London Borough of Southwark
Planning Department
160 Tooley Street
London
SE1 2QH

Dear Victoria

RE: New City Court Amendments - Review of the environmental effects as a result of the proposed non-material amendments.

Waterman Infrastructure & Environment Limited has reviewed the amendments to the proposed design for New City Court development) being submitted as revisions to the currently undetermined application (Ref 21/AP/1361). On the basis of this review, no further environmental assessment is considered to be required to support the application. It is considered that the findings of the current Environmental Impact Assessment, as set out in the Environmental Statement of April 2021 are not significantly changed as a result of the amendments.

The Statement of Conformity has been lawfully undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) and as such this letter is to demonstrate our finding that no significant environmental effects arise from the amendments. Consideration of each technical chapter of the current Environmental Statement is provided as Annex 1 to this letter.

Should you have any queries or wish to discuss the conclusions of this letter, please do not hesitate to contact the undersigned.

Yours sincerely

Steve Brindle
Associate Director
For and On Behalf of Waterman Infrastructure & Environment Ltd

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Annex 1 – Review of the Amendments in relation to the Environmental Impact Assessment
Annex 2 – Solar Glare Review
Annex 3 – Environmental Statement Part 3 - Townscape, Visual Impact & Built Heritage Statement - Addendum

Annex 1 – Review of the Amendments in relation to the Environmental Impact Assessment

Introduction

A planning application (Ref 21/AP/1361 and 21/AP/1364) was submitted in April 2021 for the redevelopment of the land at 4 – 26 St Thomas Street, to provide an office-led, mixed use scheme (including new retail and restaurant/café floorspace) and significant, high quality public realm, along with a new access to London Bridge Underground Station (hereafter the 'Development')

The likely significant environmental impacts of the Development are identified along with mitigation measures in the April 2021 Environmental Statement (ES), which was submitted in support of the application under The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the 'EIA Regulations').

This letter, which should be read in conjunction with the April 2021 ES, provides our professional opinion on whether the findings of the EIA remain valid as an assessment of the likely significant environmental effects of the Development as a result of the proposed amendments.

Proposed Amendments

Following the submission of the planning application in April 2021 the design has continued to be developed, and as a result a number of amendments (hereafter referred to as the 'Proposed Amendments') are to be submitted though a substitution of plans, and submission of updated supporting information.

The Proposed Amendments are a continuation of the refinement of the design principles, which have sought to further enhance the sustainability credentials of the Development. The Proposed Amendments are summarised below:

- Improvements to the detailed design of the southern elevation, including provision of integrated photovoltaic panels and balconies, enhancing the operational energy strategy and urban greening factor;
- Reconfiguration of basement levels to facilitate the relocation of the Keats House façade, improve building management facilities and respond to UKPN comments;
- Improvements to Building Management facilities to enhance access and security measures;
- Development of façade to allow for safety egress from the building maintenance unit (BMU) and overall maintenance of the building envelope; and
- Introduction of additional security measures, including bollards, along the base of the building at St Thomas Street and King's Head Yard.

In addition to the above, the Proposed Amendments include for minor changes to the proposed accommodation, as set out in Table 1.

Table 1 – Proposed Land Use Amendments

Use	Use Class	Proposed GIA (sqm)	Change (sqm)
Office	Class E	44,141	-171
Affordable Workspace	Class E	4,908	-109
Flexible Office / Retail	Class E	328	-12
Food and Drink	Class E	421	0
Shared Rooftop Garden Access	-	183	-25
Shared Facilities and Plant	-	5,480	+237
Total		**55,461**	**-80**

Effect of the Changes upon the Findings of the Environmental Impact Assessment

Each of the technical chapters has been reviewed to determine if the Proposed Amendments described above are likely to affect the likely significant environmental effects previously identified and reported in the April 2021 ES. Unless stated otherwise the Proposed Amendments will result in no change from the likely significant environmental effects set out in the April 2021 ES. The review is presented within the following paragraphs.

Transportation and Access

Whilst the Proposed Amendments would result in minor reductions to the quantum of accommodation proposed, it is not anticipated that these changes would result in a material change in trip generation as a result of the Development from that previously predicted. Further it is considered that the predicted vehicular and non-vehicular trips predicted in the April 2021 provide a reasonable worst case scenario. On this basis the transport consultant, TPP, has reviewed the Proposed Amendments and considers that they will have no material effect on trip generation or the assessment of transportation related effects previously presented in the April 2021 ES, which remain unchanged by the Proposed Amendments.

Noise and Vibration

Since the Proposed Amendments would result in no material changes to the trip generation rates forecasted to and from the Development, the traffic data used for the noise modelling and assessment in the April 2021 ES remains valid. Given this, together with no new or more sensitive land uses introduced into the Development, the Proposed Amendments would not materially alter the assessment of noise generated from traffic.

On the basis that traffic generated noise would remain materially unchanged from that previously assessed and that all plant would be unchanged and required to meet statutory requirements, the overall findings of the potential effects, mitigation measures and likely residual effects associated with noise from the Development, remain valid and as reported in the April 2021 ES.

Air Quality

The trip generation rates forecasted to and from the Development would not materially change as a result of the Proposed Amendments. Consequently, the traffic data used for the previous air quality modelling and assessment of traffic emissions in the April 2021 ES remains valid. Similarly, no changes are proposed with regard to using air source heat pumps as part of the energy strategy, therefore a detailed assessment on combustion plant is still not required.

The Proposed Amendments also do not alter the massing of the Proposed Development, nor any new or more sensitive land uses, consequently, the most sensitive land uses within the Development have already been assessed in the April 2021 ES.

In light of above, the potential effects, mitigation measures and likely residual effects associated with air quality at and surrounding the Development, as reported in the April 2021 ES, remain materially unaltered and valid in relation to the Proposed Amendments.

Archaeology

The Proposed Amendments include a minor reduction in the extent of basement proposed adjacent to Keats Terrace, as a result of the reconfiguration of uses within the two basement levels. The Proposed Amendments do not materially affect the potential and likely residual effects of the Development previously reported in the ES, together with the mitigation strategy and additional information required to discharge relevant planning conditions. The findings of the April 2021 ES are, therefore, considered to remain valid and applicable, taking account of the Proposed Amendments.

Water Resources and Flood Risk

The Proposed Amendments do not introduce any new land uses to the Development, nor are there any proposed changes to the strategy for managing storm water and foul water flows. The Proposed Amendments do not materially affect vulnerability or flood risk previously assessed, and thus the conclusions and recommendations described in the previously submitted Flood Risk Assessment remain valid. Similarly, the Proposed Amendments do not require any alternative drainage regime, as such the drainage strategy remains valid.

The Proposed Amendments do not result in any material changes to the assessment of the potential effects, mitigation measures and subsequent nature and significance of likely residual effects of the Development identified in the April 2021 ES which therefore remain valid.

Wind Microclimate

Wirth Research has undertaken a desk based review of the Proposed Amendments. This determined that, as with the balconies on the northern façade of the tower, the wind conditions at the proposed Juliet balconies would be suitable for use, with sitting conditions predicted in the summer, and sitting / standing in the winter months. The impact on pedestrian level wind conditions also reviewed, concluded that any change to the predicted wind conditions experienced by pedestrians as a result of the Proposed Amendments would likely be small and insignificant. Resultantly, it is considered that the Proposed Amendments do not result in material changes to the expected wind condition previously identified and reported in the April 2021 ES.

Daylight, Sunlight, Overshadowing, Solar Glare and Light Pollution

GIA has reviewed the Proposed Amendments with respect to the effects they have on the daylight, sunlight, overshadowing, solar glare and light pollution within the Development and at neighbouring receptors. The review identified that the Proposed Amendments would not change the assessment undertaken as part of the EIA and presented in the April 2021 ES, with the exception of solar glare, as the overall massing is unchanged.

Due to the changes in the materials and design for part of the southern façade of the Tower, it was considered that an updated Solar Glare Assessment should be undertaken, to review the potential impacts of the Proposed Amendments. This identified non-significant changes with respect to solar glare. Therefore, the conclusions of April 2021 ES remain valid and materially unaltered by the Proposed Amendments. GIA's additional solar glare review is included as **Annex 2** of this document.

Townscape, Visual Impact, and Built Heritage Assessment

The Proposed Amendments have been considered in an Addendum to the Townscape, Visual Impact, and Built Heritage Assessment, which has been undertaken by Peter Stewart Consultancy and included as **Annex 3** of this document. Revised images have been provided by Miller Hare, where the Proposed Amendments are visible in the verified visual representations.

The conclusions of the TVIBHA Addendum (refer to **Annex 3** of this document) are that the overall assessment of effect of the April 2021 scheme, in terms of architecture, urban design, views, townscape and built heritage would remain valid, in relation to the proposed minor amendments. Therefore, the conclusions of the April 2021 ES remain valid and materially unaltered by the Proposed Amendments.

Cumulative Effects

Due to the relatively minor nature of the Proposed Amendments, it is considered that no additional cumulative effects would arise. It is anticipated that all new schemes that could result in cumulative effect will have considered the potential effects of the Development as set out in the April 2021 ES and identified these within their respective Environmental Statements. No additional schemes are

understood to have been granted planning approval, and on this basis the assessment has not been updated and is considered to be a robust assessment of the Development in combination with cumulative schemes.

Given the scale, nature and location of the Proposed Amendments the likely significant environmental effects in combination it is not considered to be materially altered, and the effects reported in the April 2021 ES and the ES for any relevant cumulative schemes remain valid.

Annex 2 – Solar Glare Review

gia
CHARTERED SURVEYORS

DAYLIGHT & SUNLIGHT

SOLAR GLARE ASSESSMENT

New City Court

21 July 2021

GIA No: **8684**

PROJECT DATA:

Client	**Great Portland Estates**
Architect	**AHMM**
Project Title	**New City Court**
Project Number	**8684**

REPORT DATA:

Report Title	**Solar Glare Assessment**
GIA Department	**Daylight & Sunlight**
Dated	**21 July 2021**

Prepared by	**GLE**
Checked by	**GLE**
Type	**ES Addedum**

Revisions	No:	Date:	Notes:	Signed:

SOURCES OF INFORMATION:

Information Received	**IR-57-8684**
Release Number	**Rel_12_8684_DSD**
Issue Number	**11**
Site Photos	**GIA**
3D models	**VERTEX**
OS Data	**FIND Maps**

Map data

CONTENTS

1 EXECUTIVE SUMMARY

GIA have been instructed to provide an addendum to the Solar Glare Assessment provided with the planning application for New City Court (21/AP/1361 and 21/AP/1364). The proposed amendments are limited to the southern façade, including the provision of two banks of PV panels and addition of inset balconies.

The majority of viewpoints remain identical to that previously assessed, as they do not have a view of the southern elevation. For those viewpoints where this façade is visible, **BH_1** (located on Borough High Street) and **SW_1** (located on Southwark Street), the reflections visible would be slightly different (i.e. now no reflections visible where inset balconies shield views of any reflective materiality + additional reflection from PVs). However, the changes would be very minor and occur beyond 20 degrees of a driver's line of sight, with those changes closest to driver's line of sight being beneficial.

Overall, whilst marginally different reflections would potentially occur at two viewpoints, BH_1 and SW_1, these are not considered material and would not change the effects previously reported in the ES Chapter.

2 INTRODUCTION

GIA have assessed the proposed scheme in order to ascertain whether solar reflections given off the proposed building's facade will be visible from sensitive viewpoints which may affect road users and train drivers.

1.1 GLARE

Glare is a phenomenon occurring in the eye that is caused by the presence of bright light sources within the visual field. It can lead to visual discomfort and, if the glare source is very bright compared to its surrounding, even be disabling in the sense that objects become hard or impossible to see. This is because they are cloaked by the high intensity glare source, whose light gets scattered within the eye.

The CIE 146:2002 Collection on Glare expresses the latter type of glare more formally as:

"Disability glare is glare that impairs vision (CIE, 1987). It is caused by scattering of light inside the eye [...]. The veiling luminance of scattered light will have a significant effect on visibility when intense light sources are present in the peripheral visual field and the contrast of objects to be seen is low. "

"Disability glare is most often of importance at night when contrast sensitivity is low and there may well be one or more bright light sources near to the line of sight, such as car headlights, streetlights or floodlights. But even in daylight conditions disability glare may be of practical significance: think of traffic lights when the sun is close to them, or the difficulty viewing paintings hanging next to windows."

Glare is of particular concern if it affects drivers of motor vehicles or trains, since it might impair the visibility of signals and traffic signs, potentially putting the driver, passengers or other parties at risk.

1.2 GLARE FROM REFLECTED SUNLIGHT

Whether or not a sun reflection will cause an instance of glare depends upon a number of factors, these are summarised below:

- The location of the observer and his view direction;
- The sun's position in the sky, which changes not only with the hour of the day, but with the seasons too;
- The location and orientation of the reflective surface, e.g. a glazed facade, in relation to the observer's view direction;
- The specific quality of the reflective surface, e.g. sheen, specularity, etc.;
- The observer's physiology, e.g. age and eye pigmentation; and
- The background brightness defining the state of adaptation in the observer's eye;

This final point is an important one as the same brightness which could cause glare against a dark background may be perfectly acceptable when looked against a light one. A typical example of adaptation is illustrated in Figs. 01 and 02 where the same headlights cause glare at night whereas they do not during daytime hours.

Understanding whether solar glare is likely to occur is based on the observer's position and view direction. Given the transitory nature of the phenomenon, due to the sun's constant movement, any glare assessment should be carried out for a number of representative locations and view directions.

Such studies are often carried out with the help of sun path protractors, as depicted in Fig. 03 below, or with the aid of a full 3 dimensional computer simulation.

When a large number of locations need to be looked at, studies involving solar protractors become rather impractical. Computer software allows multiple view points to be assessed with greater ease so that it has even become feasible to render video sequences showing when and where reflections may become an issue.

Fig. 01: Headlights at night

Fig. 02: Headlights during day

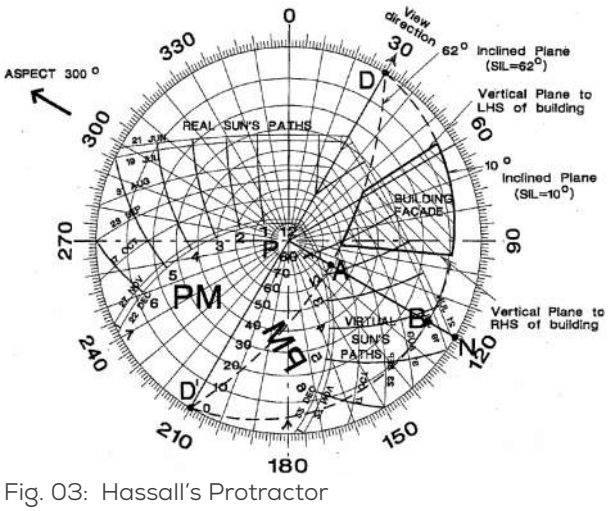


Fig. 03: Hassall's Protractor

1.3 EXISTING GUIDANCE

In the UK, guidance that is relevant to glare assessments is limited to a short section in Littlefair's Site Layout Planning for Daylight and Sunlight published by the BRE in 2011. This document is commonly referred to as BR 209. It suggests that:

"If it is likely that a building may cause solar dazzle the exact scale of the problem should be evaluated. This is done by identifying key locations such as road junctions and windows of nearby buildings, and working out the number of hours of the year that sunlight can be reflected to these points. BRE Information Paper IP 3/87 gives details."

BR IP3/87 provides more detailed instructions on why and how solar dazzle can be calculated:

"Glare or dazzle can occur when sunlight is reflected from a glazed facade. For vertical facades this problem usually occurs only when the sun is low in the sky; but some types of modern design incorporate sloping glazed facades which can, under certain circumstances, reflect unwanted high altitude sunlight into the eyes of motorists, pedestrians and people in nearby buildings."

Both BR 209 and BR IP3/87 only deal with geometrical considerations of glare by identifying when and where reflections occur. However, neither pieces of guidance suggest any threshold values above which reflected sunlight may give rise to an instance of glare. That such a threshold exists in theory becomes clear from the guidance in BR 209:

"... Substituting clear or absorbing glass for reflective glass can also help although sometimes even clear glass may cause reflected glare if, eg, a motorist has the reflected sun close to the centre of their line of sight."

Recommendations on acceptable limits for solar glare is equally sparse in other countries. The only document dealing with the subject is Hassall's Dealing with Rogue Solar Reflections from 1996. Although published in Australia, the theory, methodology and recommendations it introduced are equally applicable in other countries such as the UK.

The severity of glare can be calculated as the equivalent veiling luminance which is caused by the excess light being scattered in the eye thereby creating a 'veil' through which objects are seen. If the brightness of the veil is sufficiently high compared to that of the actual object, the latter becomes less visible. In very severe cases of disability glare, the object cannot be seen at all.

The veiling luminance can be calculated with a simple empirical formula first proposed by Holladay:

$$L_{seq}\ [cd/m^2] = K*E_{gl}/\theta^n < threshold$$

The Holladay glare formula depends on four variables, namely:

- **K**, which is a factor accounting for the observer's sensitivity to glare (eg. age);
- $\mathbf{E_{gl}}$, which is the illuminance from the glare source, measured at the eye of the observer;
- **θ**, the angle between the line of sight and the glare source;
- **n**, indicating the power with which θ affects the outcome;

An individual's sensitivity to glare is affected primarily by age. We used a K factor of 17.5 in our calculations, which represents a 65-year old driver.

According to CIE 146:2002, the n power in Holladay's equation has three angular domains:

- θ^3 for angles between 0.1° and 1°;
- θ^2 for angles between 1° and 30°; and
- θ for angles beyond 30°;

This angular dependency means that a glare source close to the object being looked at has a much more severe impact upon the visibility of that object than a glare source at the periphery of the observer's visual field.

As stated in CIE 146:2002, occurrences at angles beyond 30° would be of little significance in most situations, but may be relevant in exceptional circumstances. When seated in a driving seat of a typical car, for example, the limits of the windscreen would generally obstruct the driver's view at angles beyond 30° from the line of sight. We have therefore adopted the 1° to 30° domain as a reference for our calculations.

Hassall in his paper proposes a threshold value of 500 cd/m^2, which we have adopted as a threshold in our assessments.

3 GIA'S APPROACH

Following the guidance documents referenced above, GIA have developed specialised computer software in order to undertake reflected glare assessments.

The preparation of reflected solar glare assessments is based upon the approach described below, which entails:

- The construction of a three-dimensional computer model that includes the proposed building and its relevant setting;
- The physically accurate description of the reflective surface properties;
- Rendering of stills or video animations of the solar reflections;
- Masking the images to represent the human field of view; and
- Image analysis;

The individual steps of our work flow are further explained below.

Fig. 04: High-resolution aerial photograph

3.1 3D COMPUTER MODELLING

Detailed geometry of the proposed building, specifically of its facade and glazing configuration is provided by the project architects either in 2d format i.e. plans, sections and elevation drawings, or 3d format as a computer model. The received information is processed by GIA and prepared for assessment with our proprietary software.

A computer model of the proposed building's context is built from high resolution stereoscopic aerial photographs, examples of which are shown in Figs 04 and 05.

This includes rail tracks, sleepers, gantries and signals as well as relevant neighbouring buildings. An example is provided in Fig. 06.

Fig. 05: High-resolution aerial photograph (close-up)

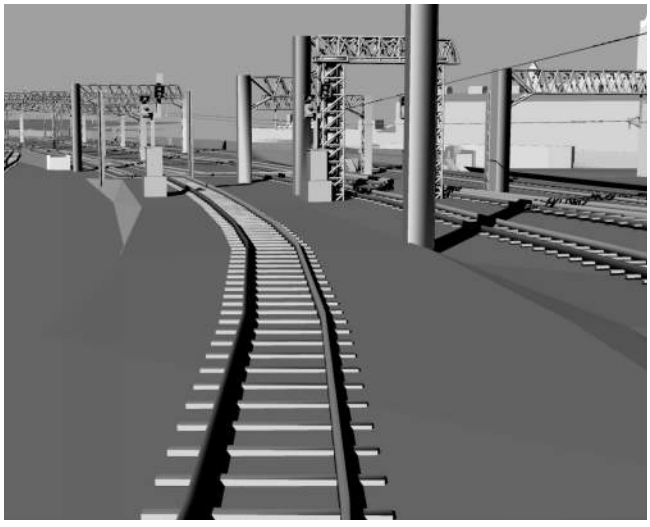


Fig. 06: Computer model of train tracks & signals from photogrammetry

3.2 REFLECTIVE SURFACE PROPERTIES

In order to undertake the glare studies it is necessary to acquire physically accurate computer representations of all materials that have the potential of specularly reflecting sunlight, thereby becoming sources of glare. Such materials would include all vertical or sloped glazing, but also certain facade materials such as metal cladding or glazed building tiles.

Diffuse surface reflectance values and object colours can be measured relatively easily however, the same cannot be said of their specular characteristics. These parameters are very hard to estimate yet critical for the study of glare. It is therefore best practice to have samples of the glazing or cladding materials studied in specialised optical laboratories. An example of such a data set is given in Fig. 07. It shows the angular dependency of the reflective properties of a glazed cladding tile.

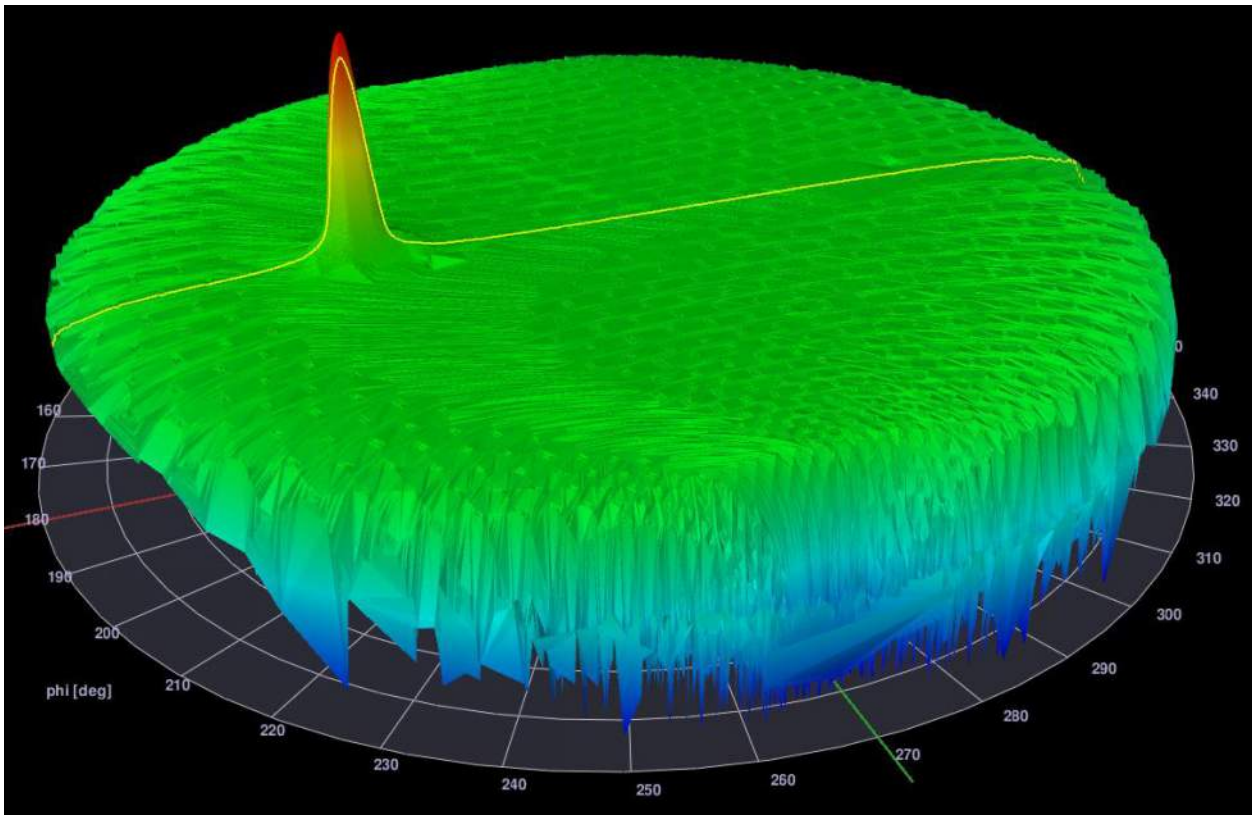


Fig. 07: Reflective properties measurement of a glazed tile

4 METHODOLOGY

The methodology described below is not aimed at addressing the intensity of an instance of reflected solar glare, but its occurrence and duration throughout the year and the location of this occurrence in respect of a driver's line of sight.

This will inform the necessity of implementing mitigations at either early or detailed design stage.

For this purpose the glazed facade of the proposed development is assumed to have the same properties of a mirror i.e. it is fully reflective and all of its reflected component is specular. This therefore portrays a worst-case scenario.

The potential for reflected solar glare or dazzle from the glazed or reflective façades of the development are assessed using specialist lighting software.

Potentially sensitive viewpoints around the site are selected. These viewpoints representing locations where reflected solar glare may cause adverse impacts to those travelling towards the development, such as road users or train drivers. The viewpoints are generally located at the minimum stopping distance and at the driver's eye height. The focal point is a relevant traffic element, such as signals or incoming traffic.

The stopping distance is calculated as the combination of thinking and breaking distances $D_{total} = D_{thinking} + D_{breaking} = V*T + V^2/(2\mu*g)$, where each component is:

V = Relevant vehicle speed, typically the road speed limit.

T = Thinking time (0.67 sec)

μ = Breaking effort (considered 0.65 for cars, 0.5 for buses and 0.031 for trains)

g = Gravity acceleration.

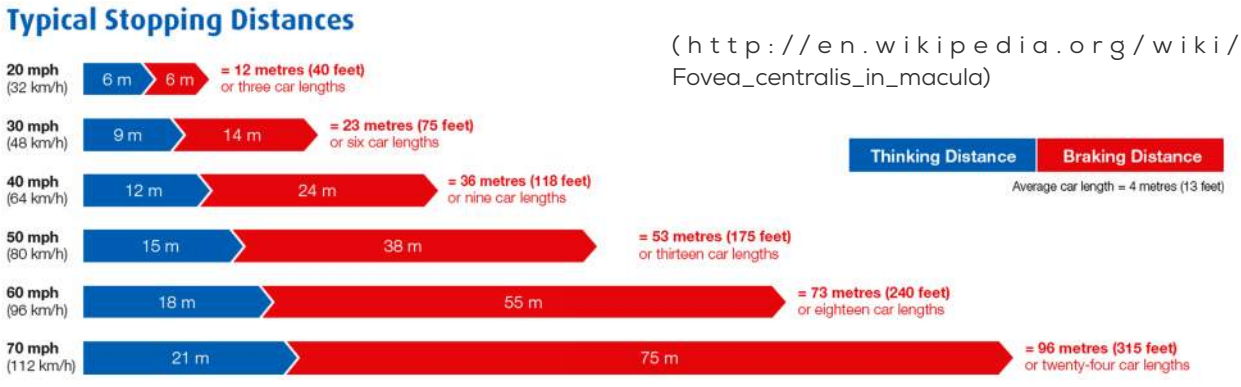


Fig. 08: Typical car stopping distances for various speed limits

The height of the viewpoint is considered to be 1.5 m for cars, 2.0 m for buses and 2.75 m for trains.

I.e. A viewpoint for car driving at 30 mph would be placed at 23 m (see Figure 4) from a traffic light and at 1.5 m above the ground.

4.1 FIELD OF VIEW

"The field of view (also field of vision) is the angular extent of the observable world that is seen at any given moment."

"Different animals have different fields of view, depending on the placement of the eyes. Humans have an almost 180-degree forward-facing field of view[...]."

(http://en.wikipedia.org/wiki/Field_of_view)

"The normal human visual field extends to approximately 60° nasally (toward the nose, or inward) in each eye, to 100° temporally (away from the nose, or outwards), and approximately 60° above and 75° below the horizontal meridian. In the United Kingdom, the minimum field requirement for driving is 60° either side of the vertical meridian, and 20° above and below horizontal. The macula corresponds to the central 13° of the visual field; the fovea to the central 3°."

(http://en.wikipedia.org/wiki/Visual_field)

"The fovea centralis, also generally known as the fovea, is a part of the eye, located in the center of the macula region of the retina. The fovea is responsible for sharp central vision (also called foveal vision), which is necessary in humans for reading, watching television or movies, driving, and any activity where visual detail is of primary importance."

(http://en.wikipedia.org/wiki/Fovea_centralis_in_macula)

4.2 RENDERING OF STILLS AND VIDEO ANIMATIONS

As mentioned above, glare is a phenomenon that depends on the observer's location, but also on his view direction. In the case of a train driver the view direction is defined by the rail tracks. UK recommendations set the eye level of the driver at 2.75 m above the rails. The view point is centred between the tracks for ease of reference. Although train drivers sit slightly to the left within the cabin, this bears no material effect on the analysis of the images as the signals are visible at a distance of hundreds of metres at which point the slight shift in the cabin equates to a very small angular change. Fig. 09 shows the typical set up of our viewpoints. Actual trains and driver's cabin are not included in our 3d computer model.

Individual virtual cameras located accordingly in our 3d computer model are spaced between 1 and 3m apart in the direction of travel. Before the stills are compiled into video clips, a human field of view mask is overlayed onto them in order to define the angular distance between the instance of reflection and the observer's line of sight.

This procedure allows for the assessment of entire stretches of railway tracks providing a complete overview of potential risks as well as information about signal sighting.

4.3 IMAGE ANALYSIS

The assessment shows the path of the sun for the entire year around the development. Two computer generated angular images are produced for each selected viewpoint, indicating the area which sees the reflection of the sunpath at any point during the year. A modified diagram portraying a standardised extent of human vision (Fig. 10) is then overlaid onto the image.

The image highlights the degrees of vision corresponding to the foveal view with a red circle of 3° of angle in order to identify the area most sensitive to reflected solar glare.

Another red circle represents the incidence of the 30° radius of our typical field of view in order to identify a secondary area of sensitivity to potential reflected glare instances.

As stated in the CIE 146:2002 occurrences at angles beyond 30° would be of little significance in most situations, but may be relevant in exceptional circumstances. When seated in a driving seat of a typical car, for example, the limits of the windscreen would generally obstruct the driver's view at angles beyond 30° from the line of sight.

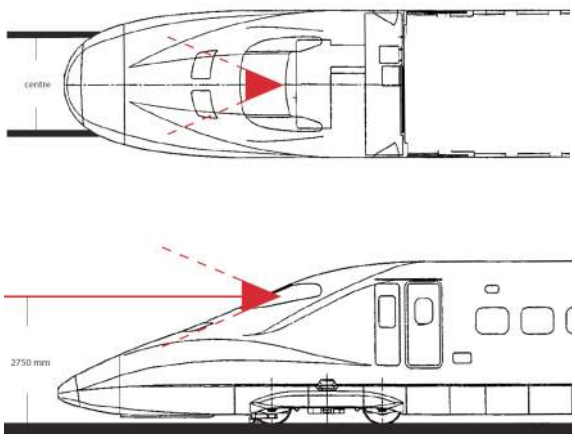


Fig. 09: Driver Viewpoint

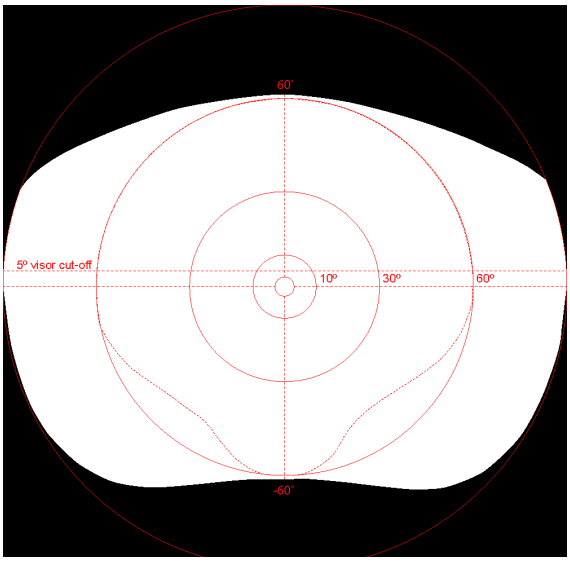


Fig. 10: Typical human field of view

4.4 LIMITATIONS

The methodology described above is not suitable to quantify the intensity of reflected solar glare. Wherever the potential for reflected solar glare is identified it should be assumed that its intensity is sufficient to cause nuisance and thus mitigating measures ought to be investigated.

Although great care is taken in identifying typical viewpoints around a new development this does not guarantee that there are no further sensitive locations where reflected solar glare could present a particular risk. This assessment is based on the assumption that in an urban environment moving traffic represents the biggest risk factor and so viewpoints and focus points are selected accordingly.

For practical reasons the area of the assessment is limited to the vicinity of a new development. The occurrence of reflected solar glare at greater distances is not subject of this assessment.

IMPORTANT: The hours shown in the diagrams and described in the text reflect solar time and therefore do not take Daylight Saving Hours into account.

5 SCENARIO OVERVIEW

Fig. 11: Site Overview Perspective

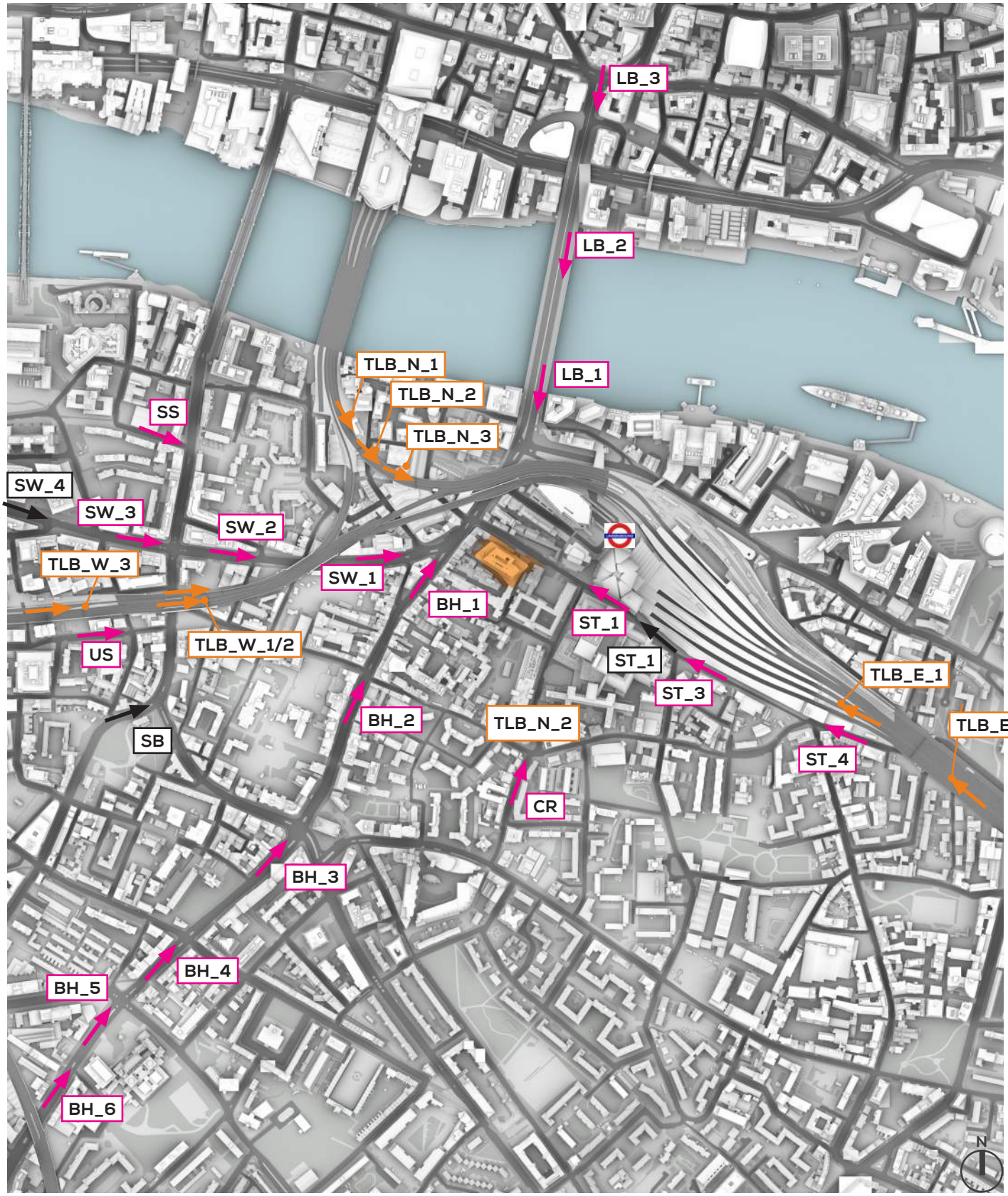


Fig. 12: Top View - Viewpoints assessed

Road Junctions / Traffic Lights

Train Tracks / Train Signals

Proposal not visible from viewpoint

6 SOLAR GLARE ASSESSMENT

The following pages present our Stage 1 Assessment results

60° FIELD OF VIEW: TIME OF DAY
BOROUGH HIGH STREET - JUNCTION 1 (BH_1)

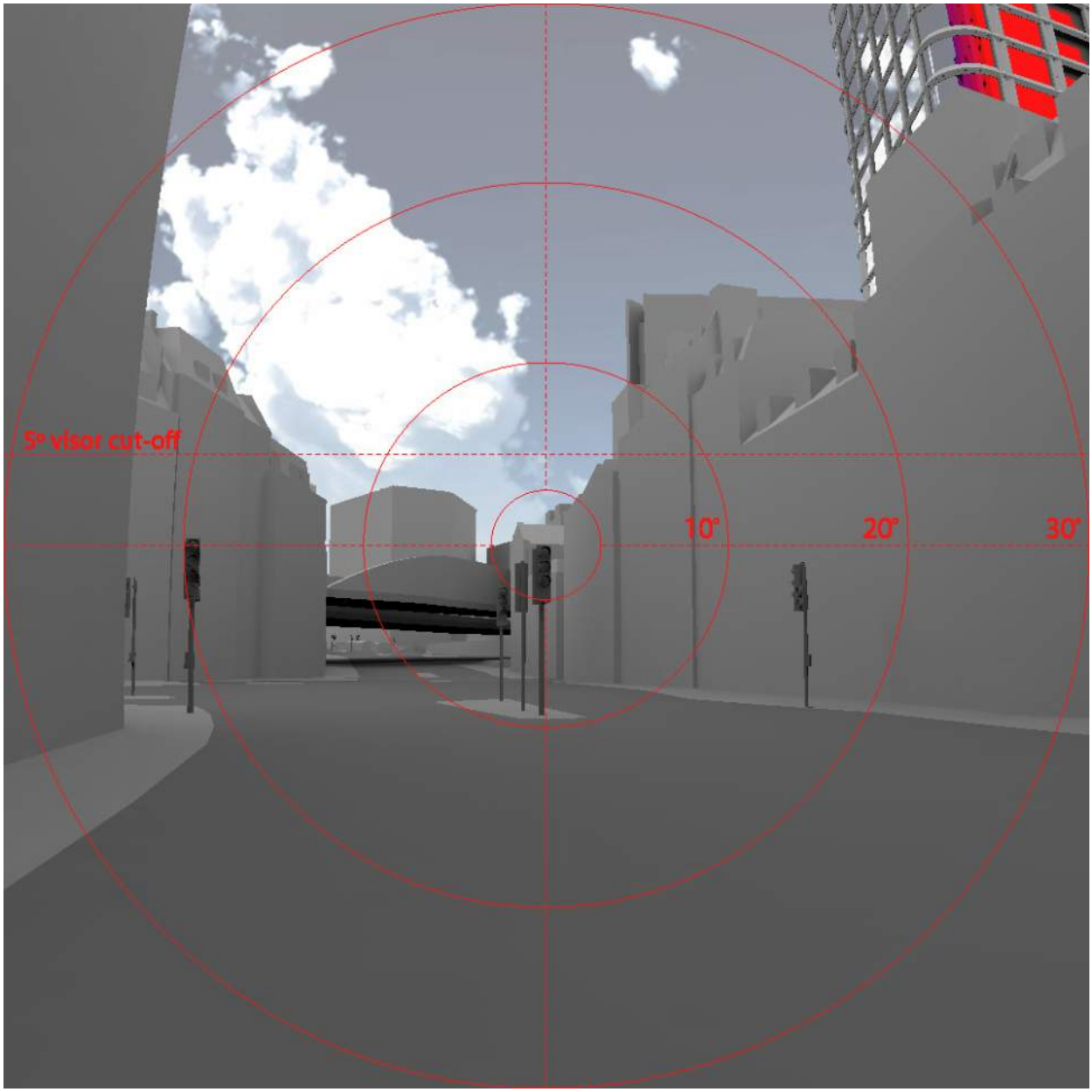
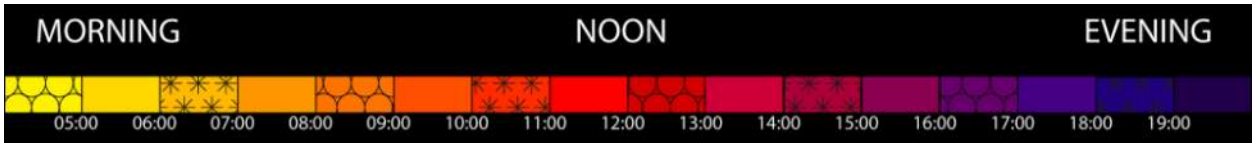


Fig. 13: Solar reflections



60° FIELD OF VIEW: SEASON
BOROUGH HIGH STREET - JUNCTION 1 (BH_1)

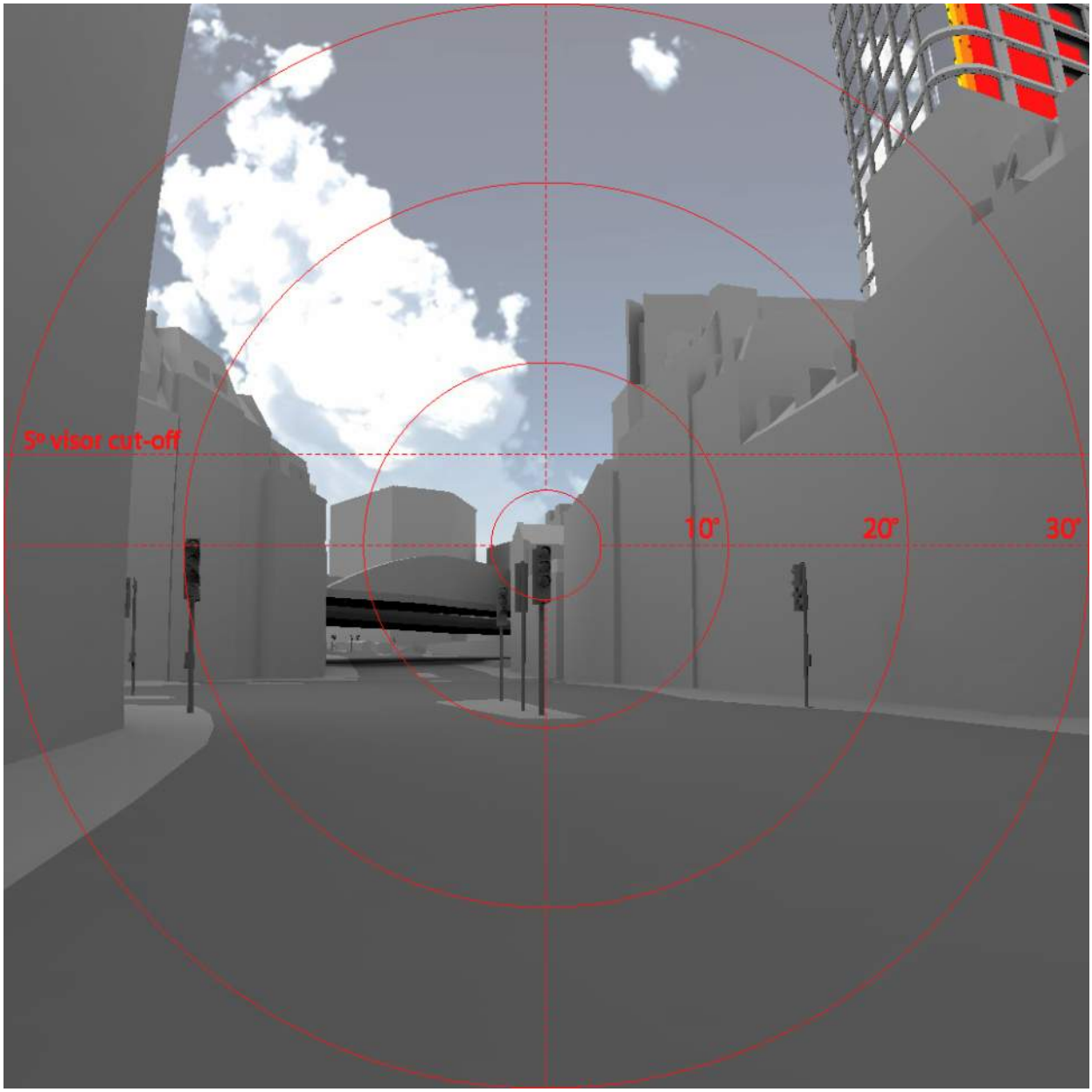


Fig. 14: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
BOROUGH HIGH STREET - JUNCTION 2 (BH_2)

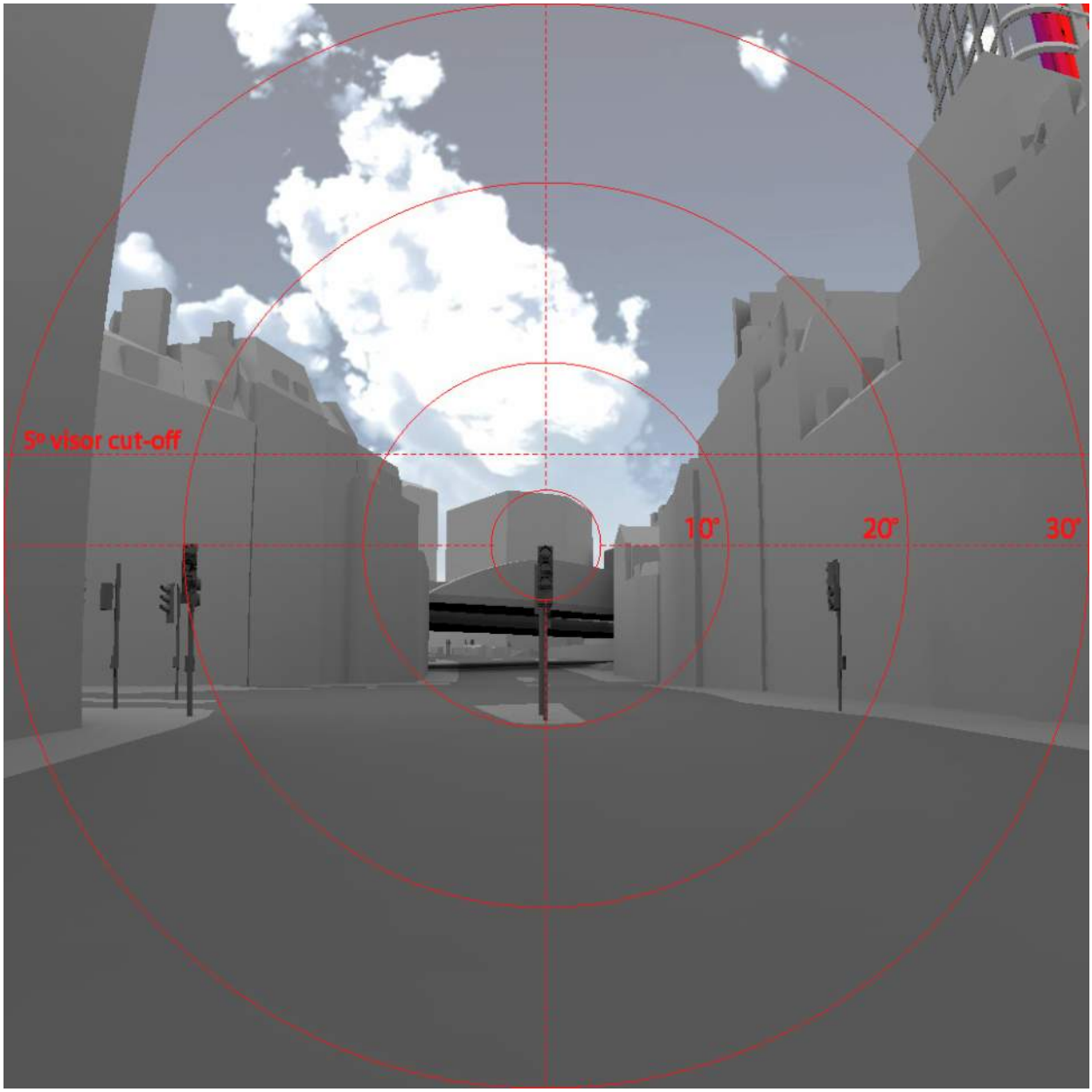
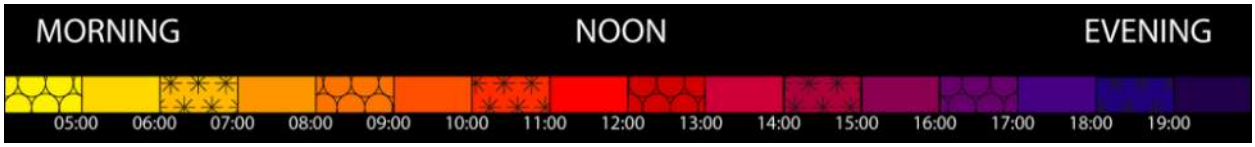


Fig. 15: Solar reflections



60° FIELD OF VIEW: SEASON
BOROUGH HIGH STREET - JUNCTION 2 (BH_2)

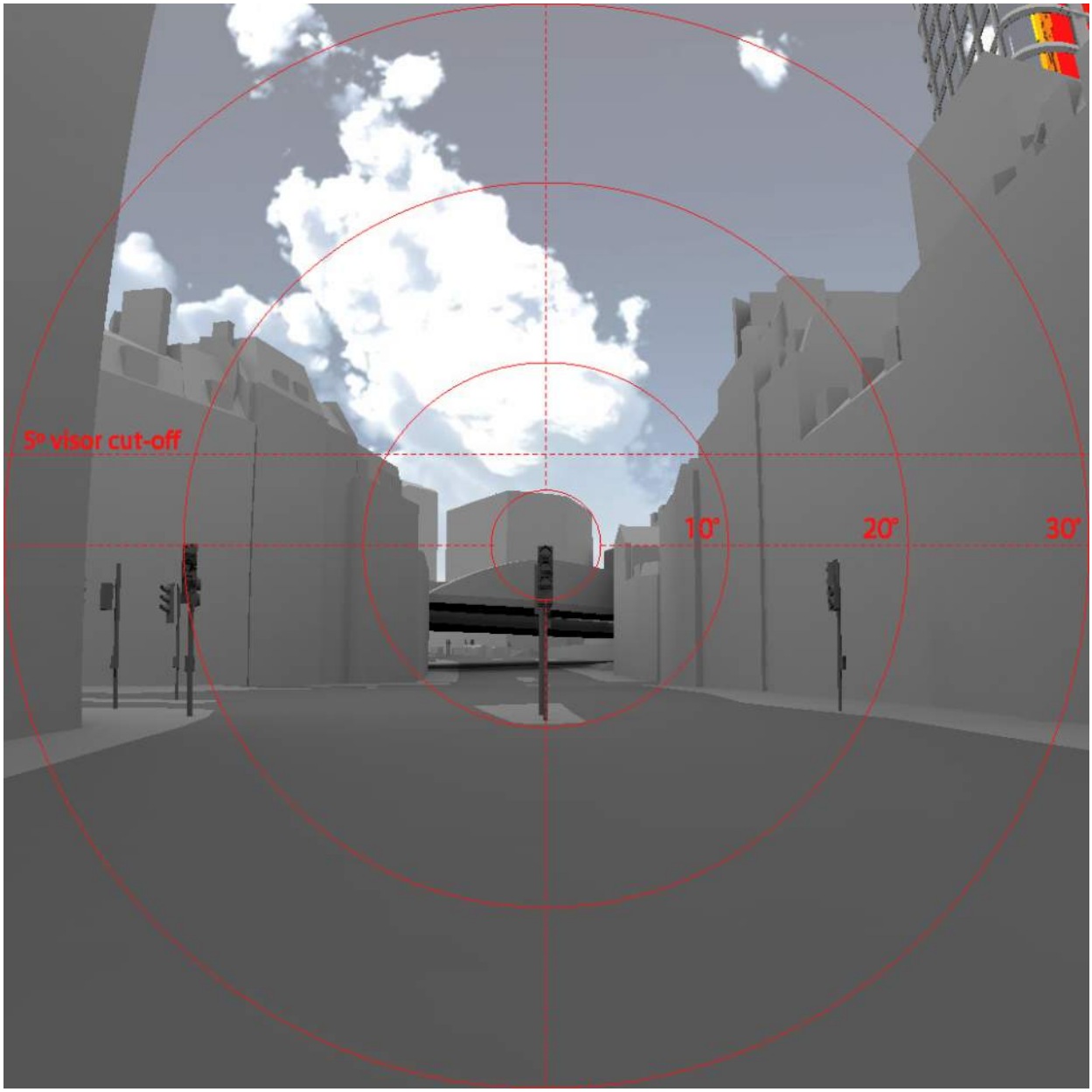


Fig. 16: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
BOROUGH HIGH STREET - JUNCTION 3 (BH_3)

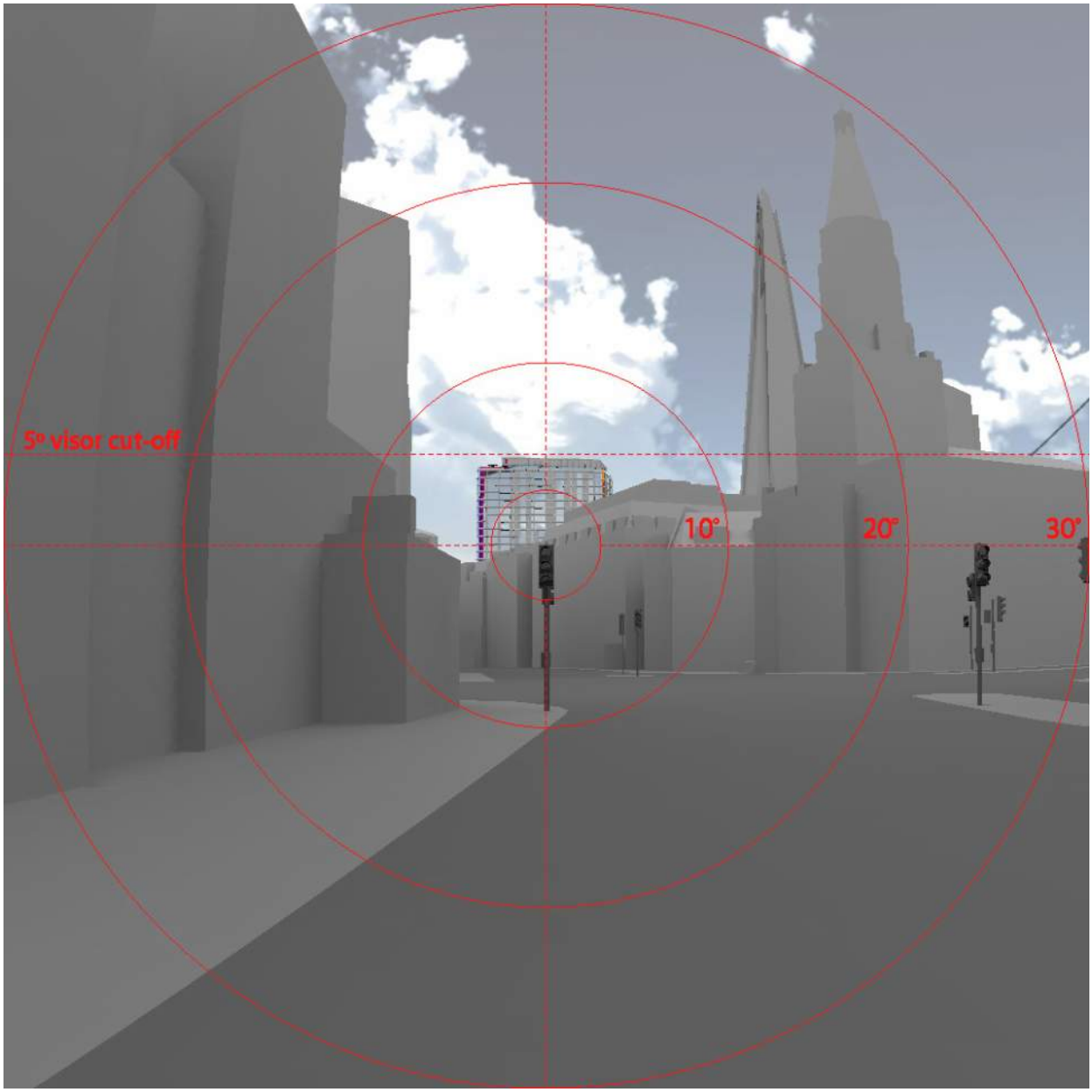
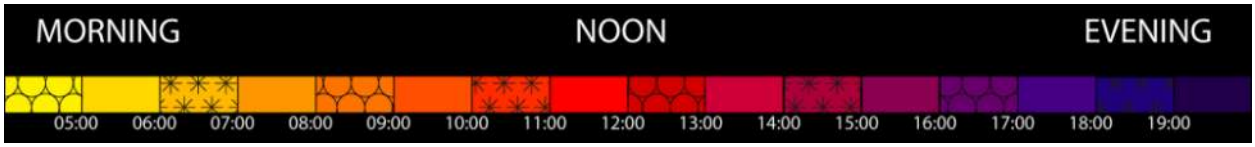


Fig. 17: Solar reflections



60° FIELD OF VIEW: SEASON
BOROUGH HIGH STREET - JUNCTION 3 (BH_3)

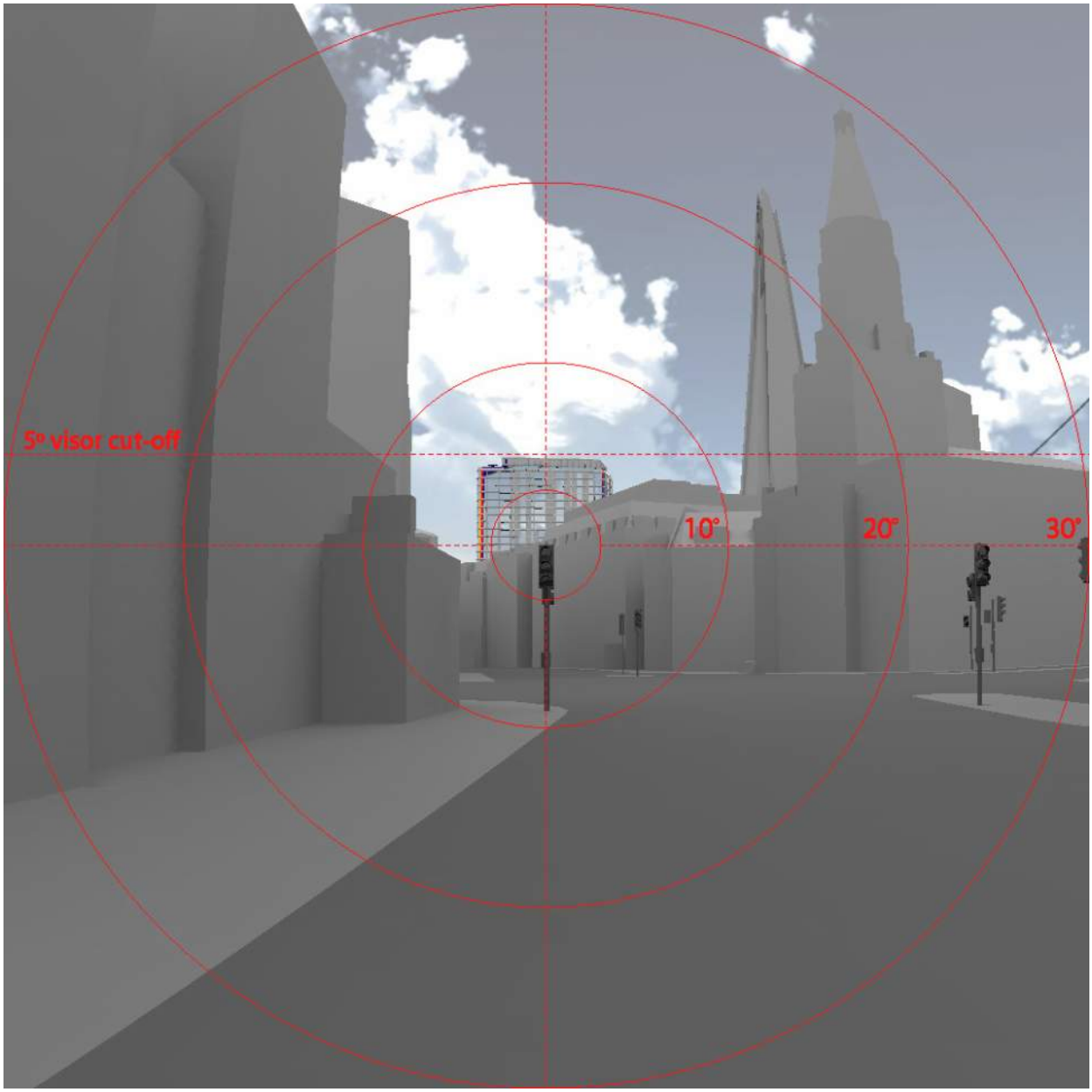


Fig. 18: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
BOROUGH HIGH STREET - JUNCTION 4 (BH_4)

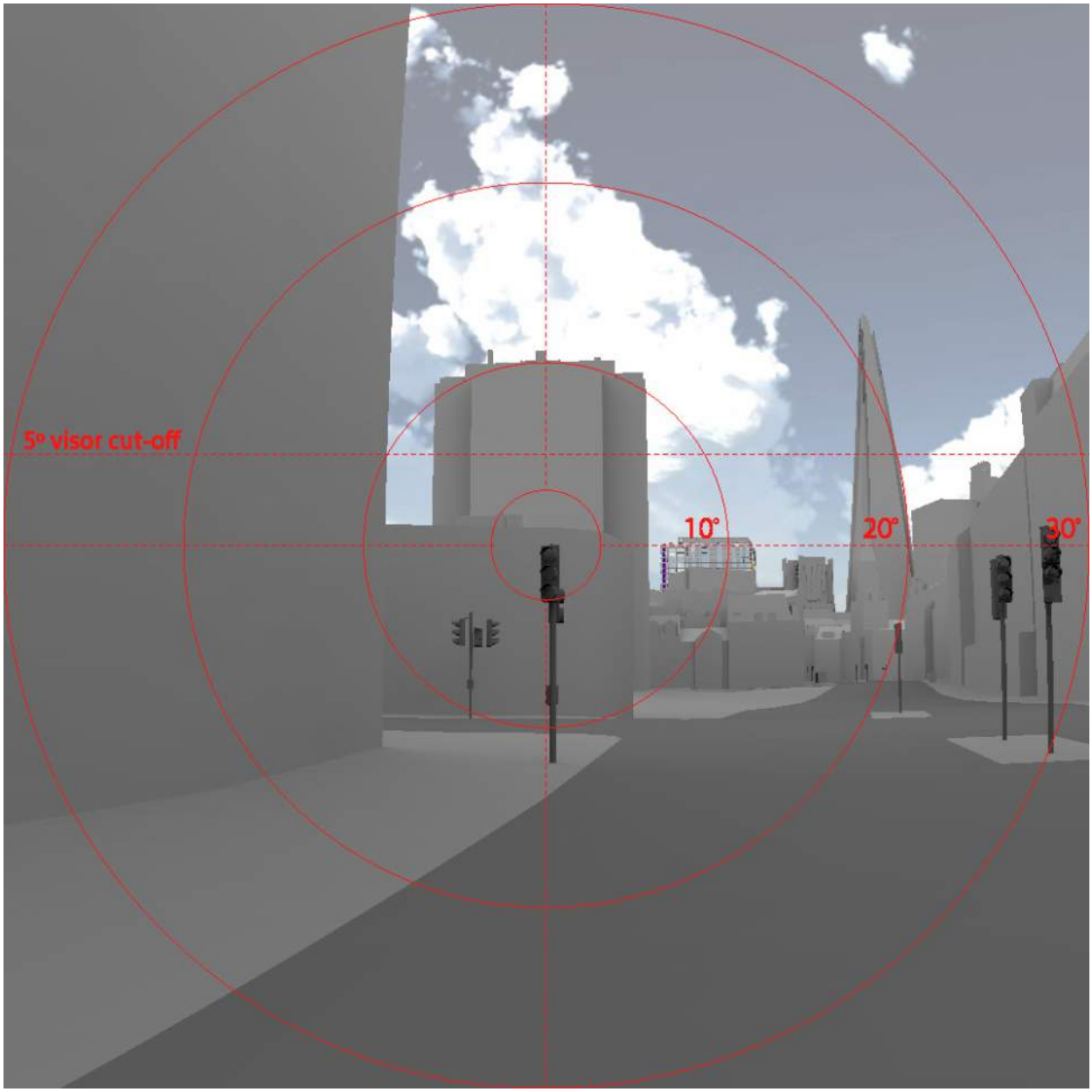
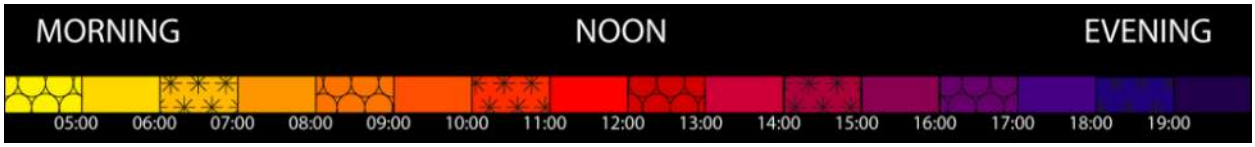


Fig. 19: Solar reflections



60° FIELD OF VIEW: SEASON
BOROUGH HIGH STREET - JUNCTION 4 (BH_4)

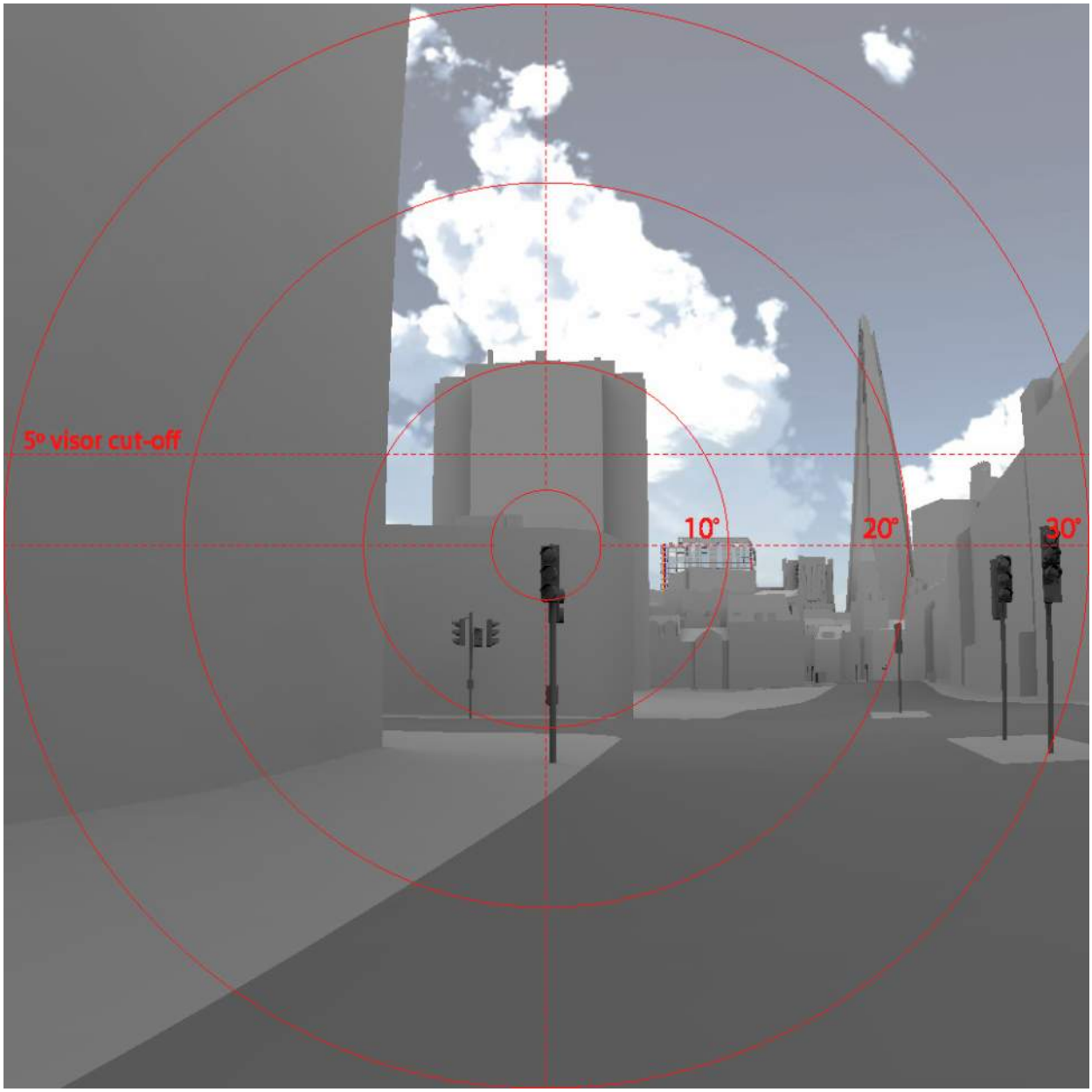


Fig. 20: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
BOROUGH HIGH STREET - JUNCTION 5 (BH_5)

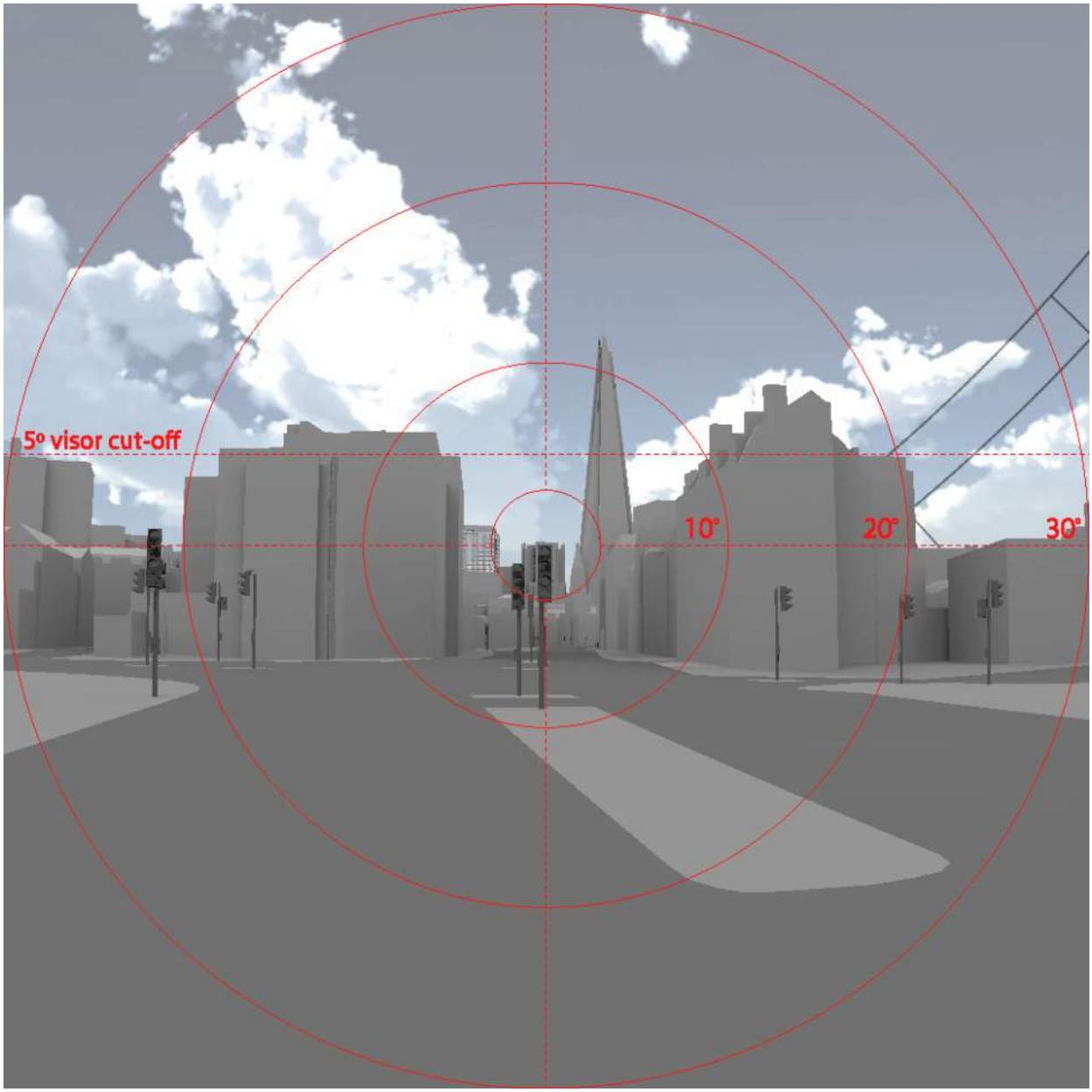
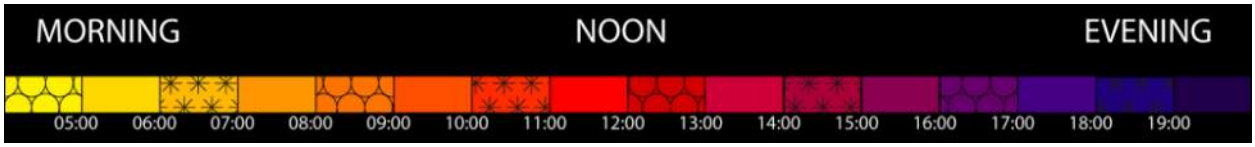


Fig. 21: Solar reflections



60° FIELD OF VIEW: SEASON
BOROUGH HIGH STREET - JUNCTION 5 (BH_5)

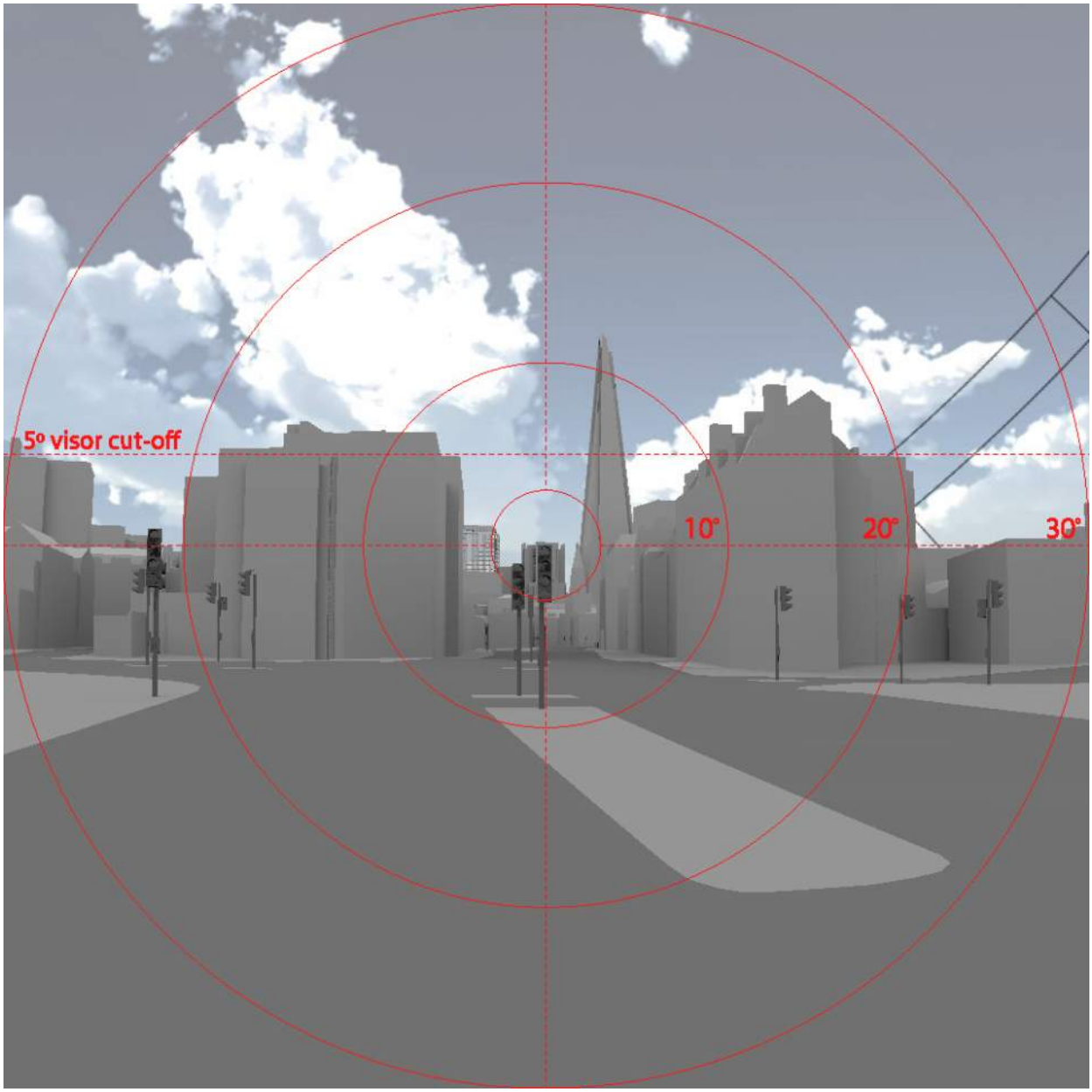


Fig. 22: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
BOROUGH HIGH STREET - JUNCTION 6 (BH_6)

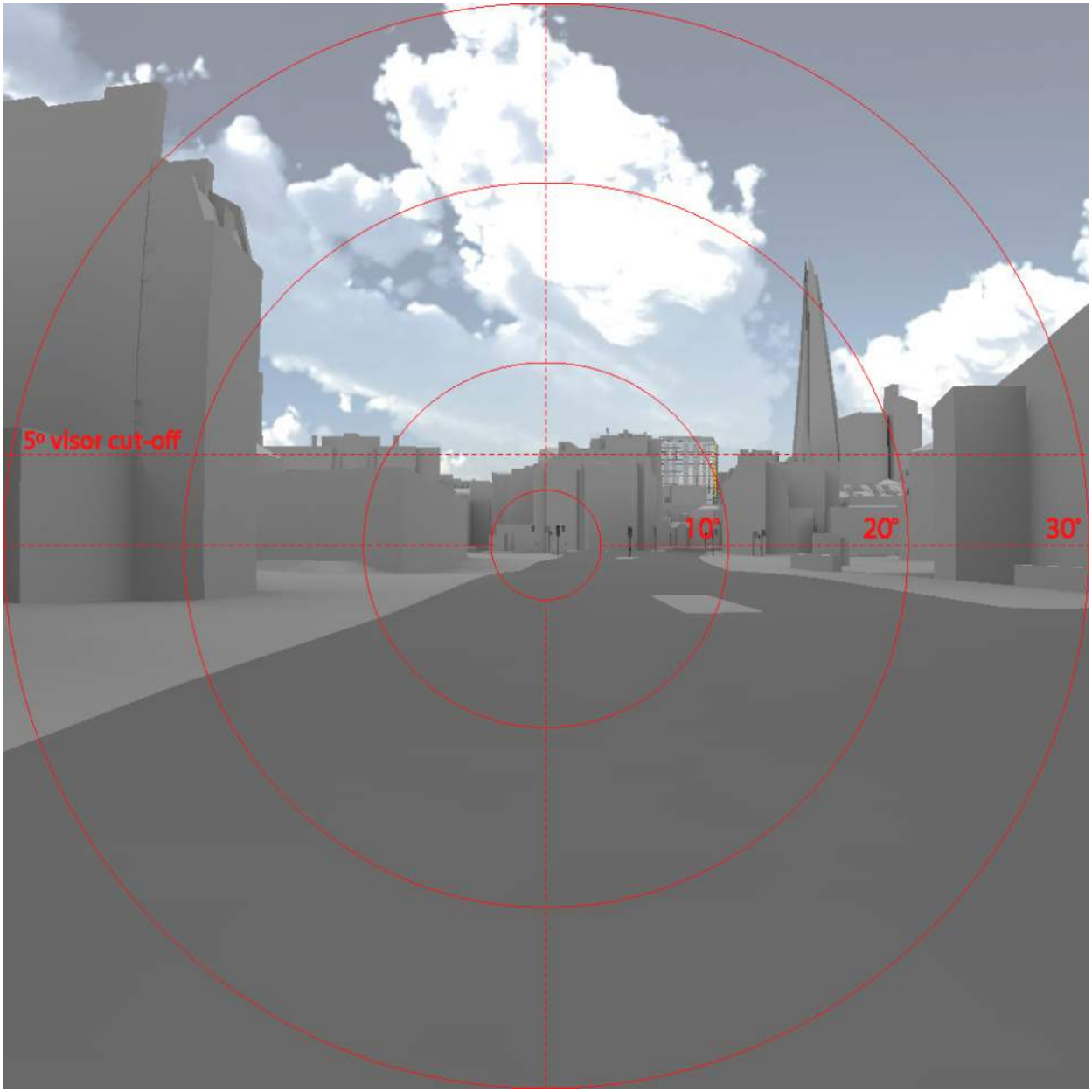
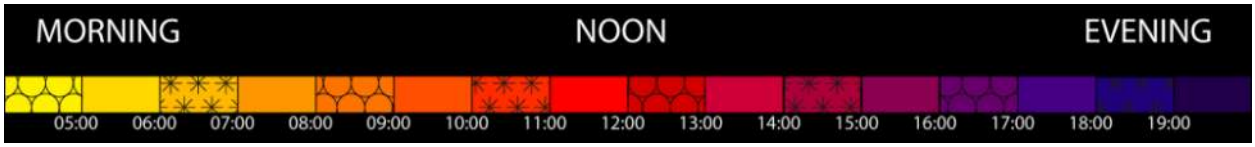


Fig. 23: Solar reflections



60° FIELD OF VIEW: SEASON
BOROUGH HIGH STREET - JUNCTION 6 (BH_6)

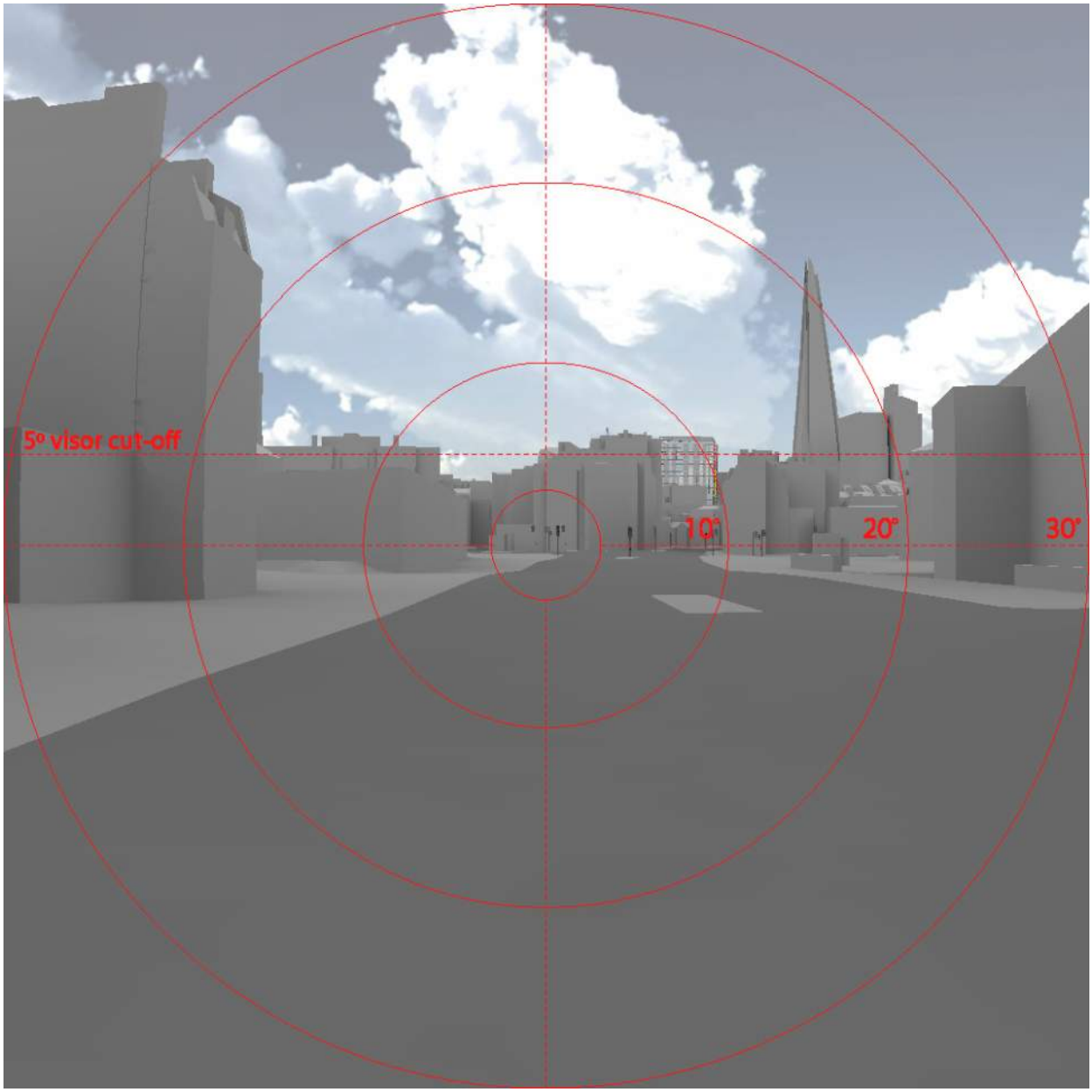


Fig. 24: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
UNION STREET (US)

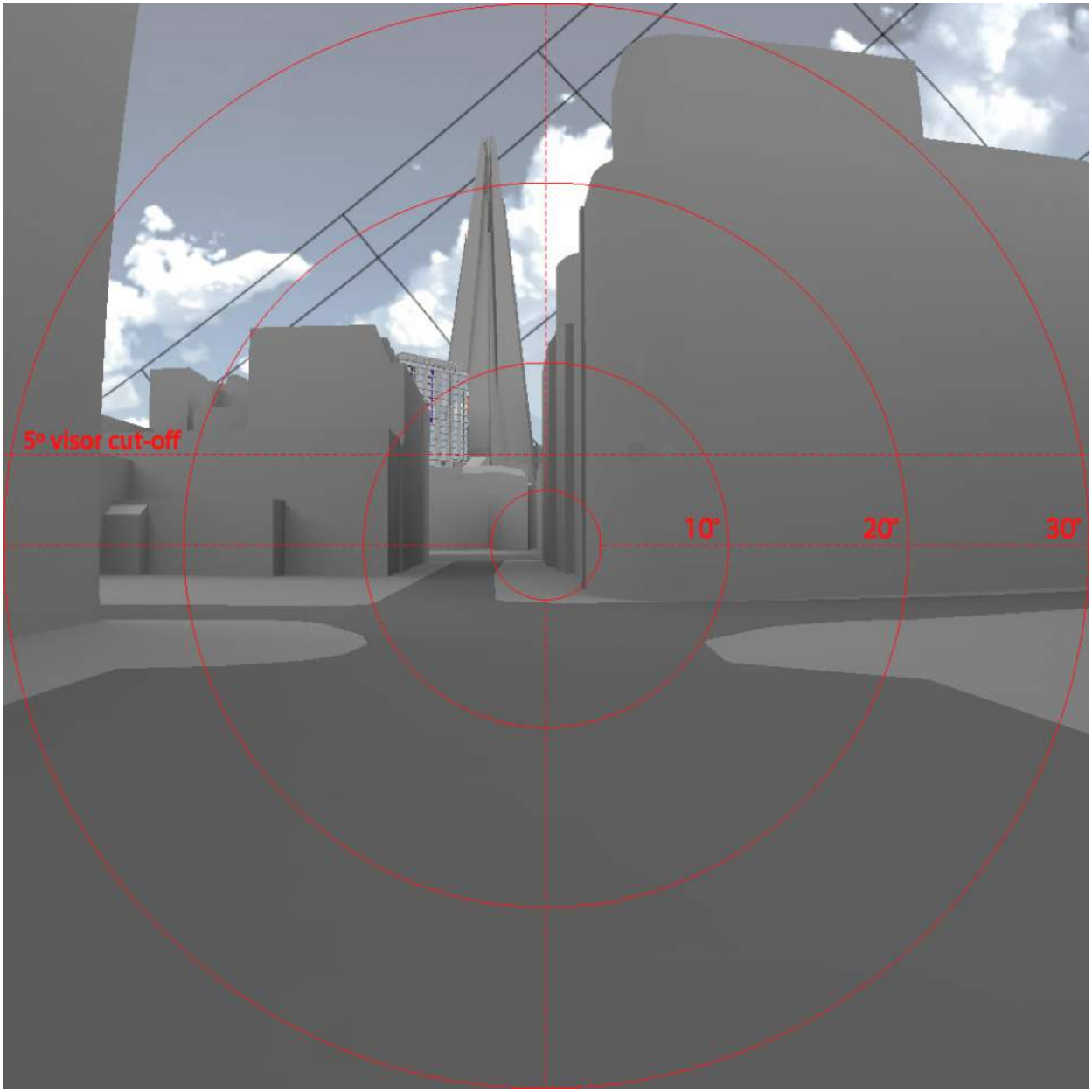
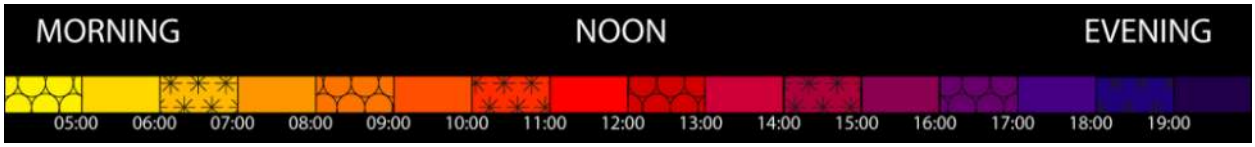


Fig. 25: Solar reflections



60° FIELD OF VIEW: SEASON
UNION STREET (US)

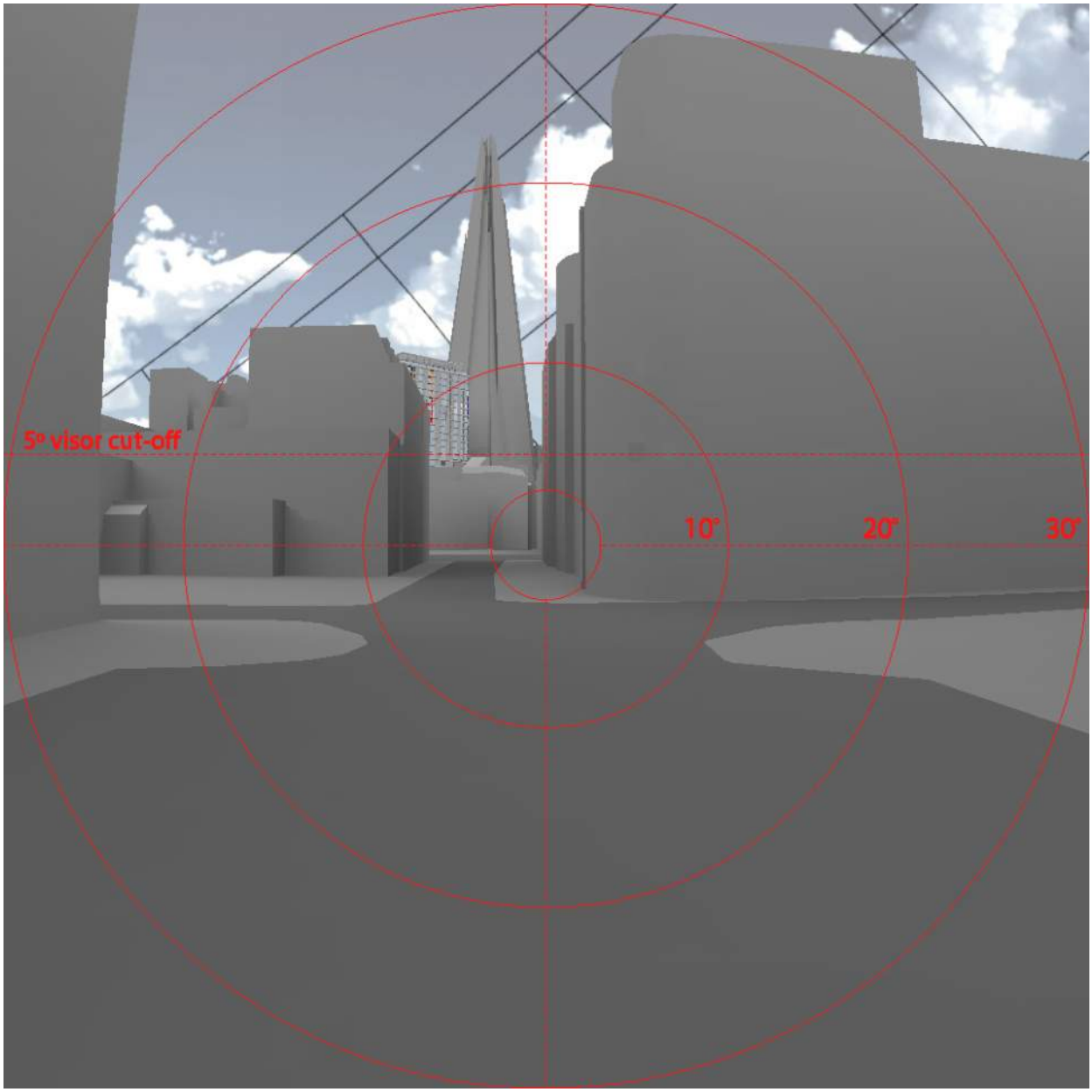


Fig. 26: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
SOUTHWARK STREET - JUNCTION 1 (SW_1)

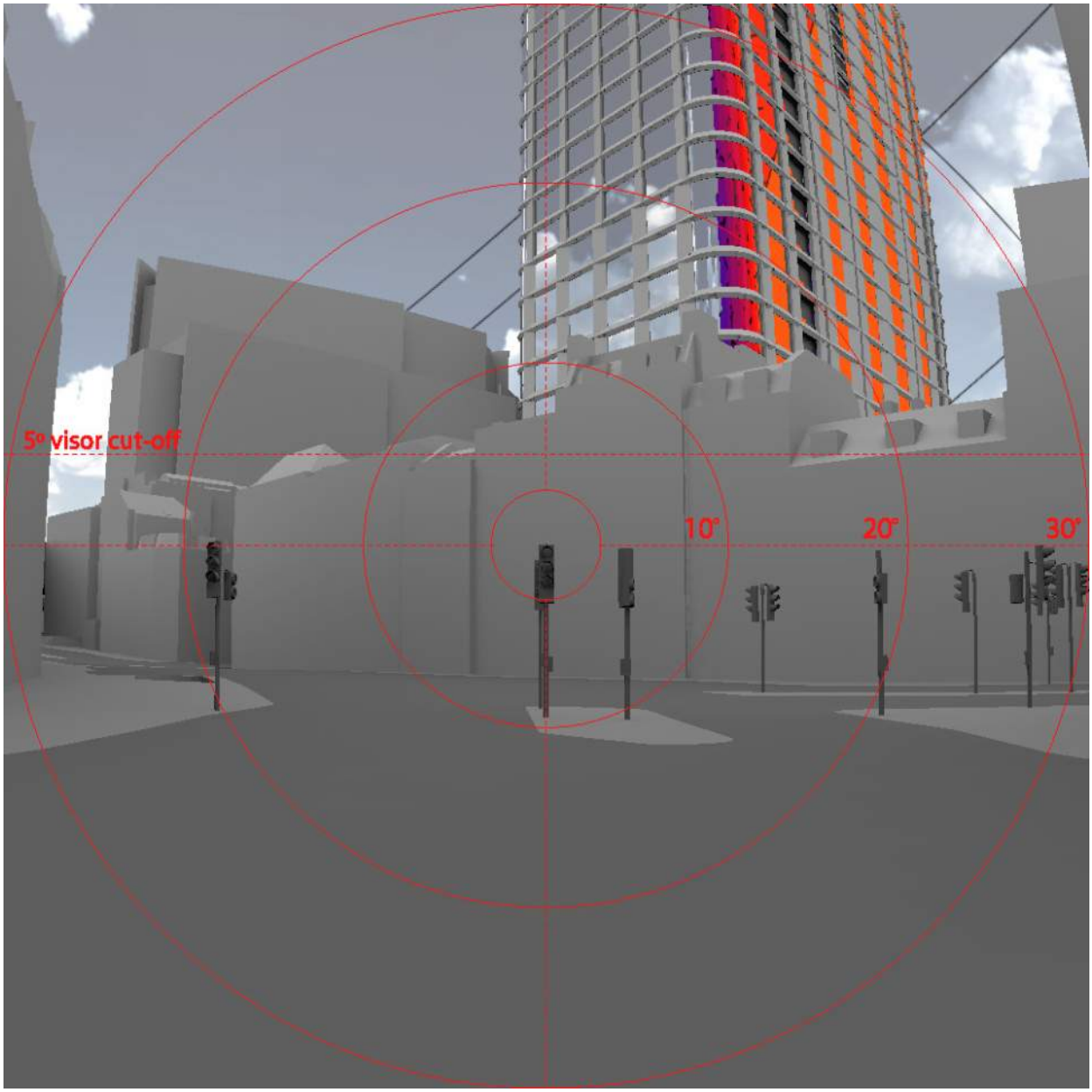
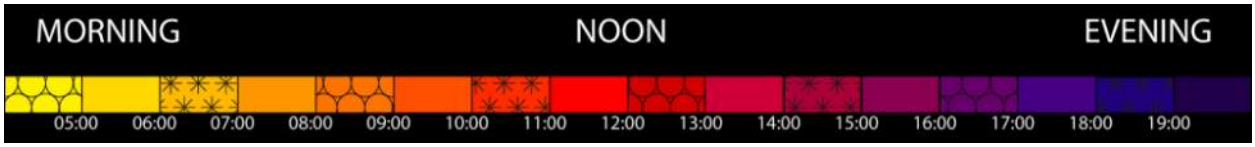


Fig. 27: Solar reflections



60° FIELD OF VIEW: SEASON
SOUTHWARK STREET - JUNCTION 1 (SW_1)

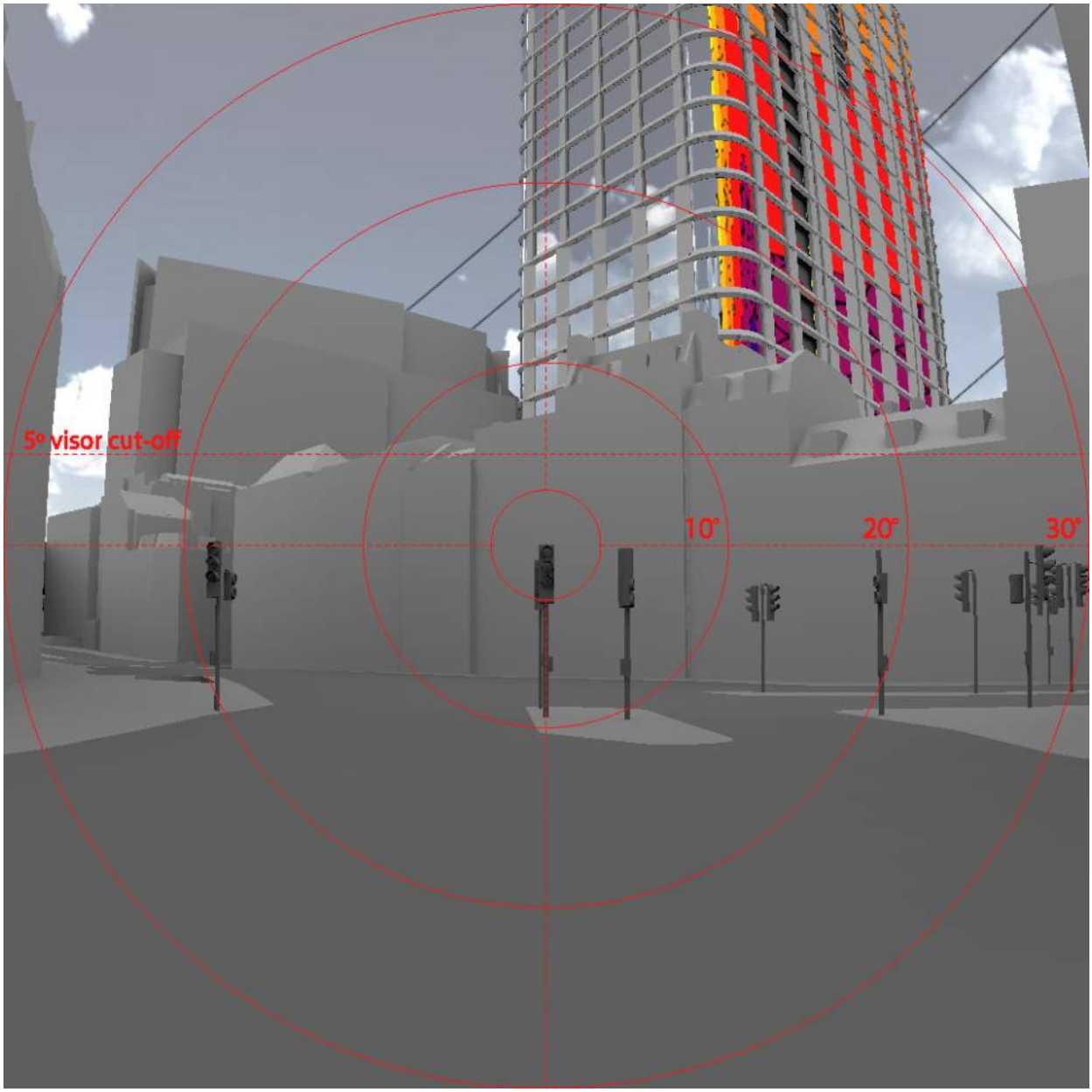


Fig. 28: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
SOUTHWARK STREET - JUNCTION 2 (SW_2)

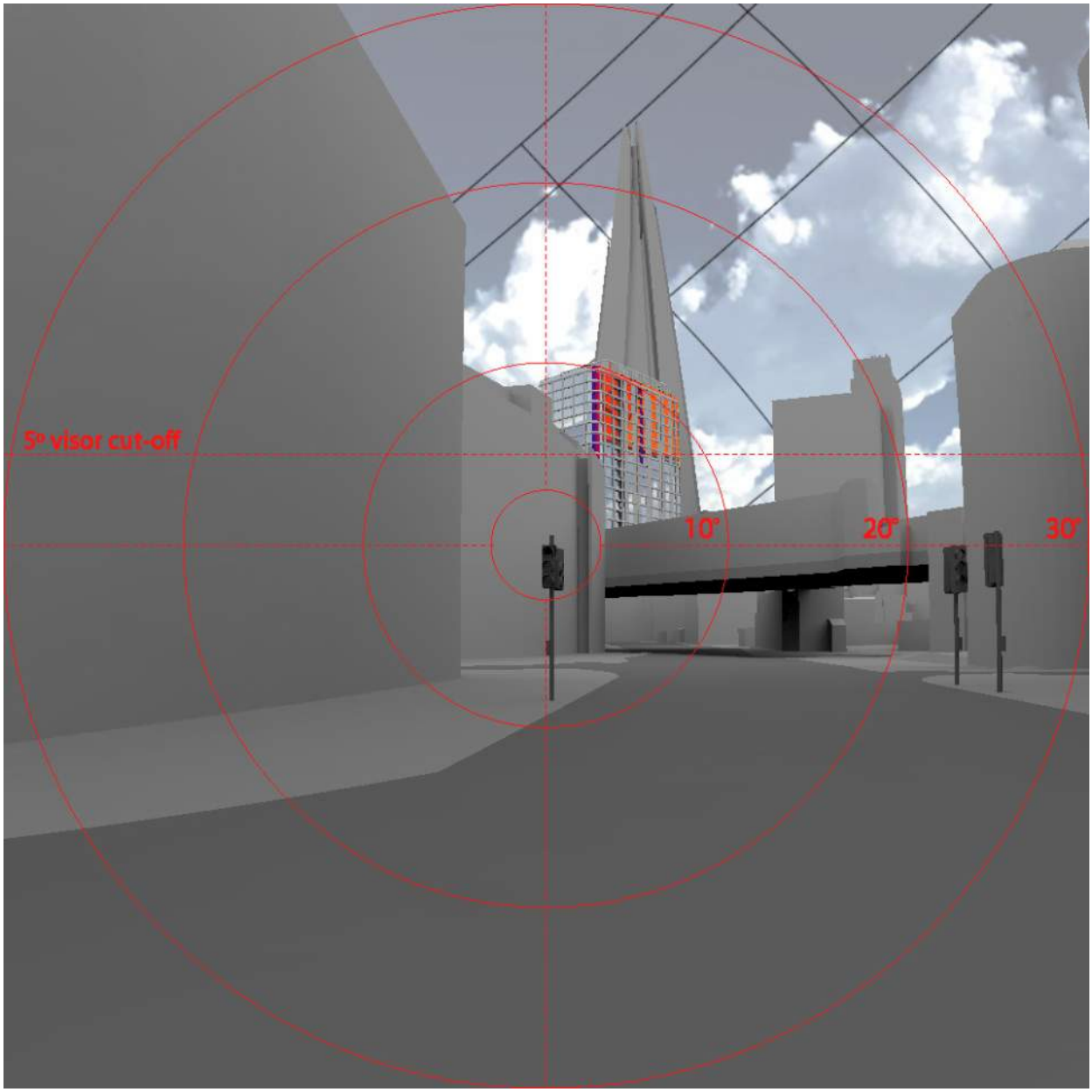
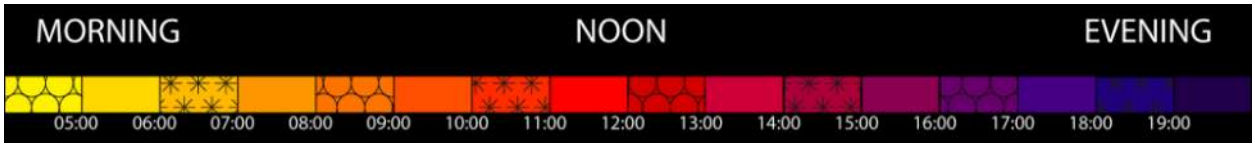


Fig. 29: Solar reflections



60° FIELD OF VIEW: SEASON
SOUTHWARK STREET - JUNCTION 2 (SW_2)

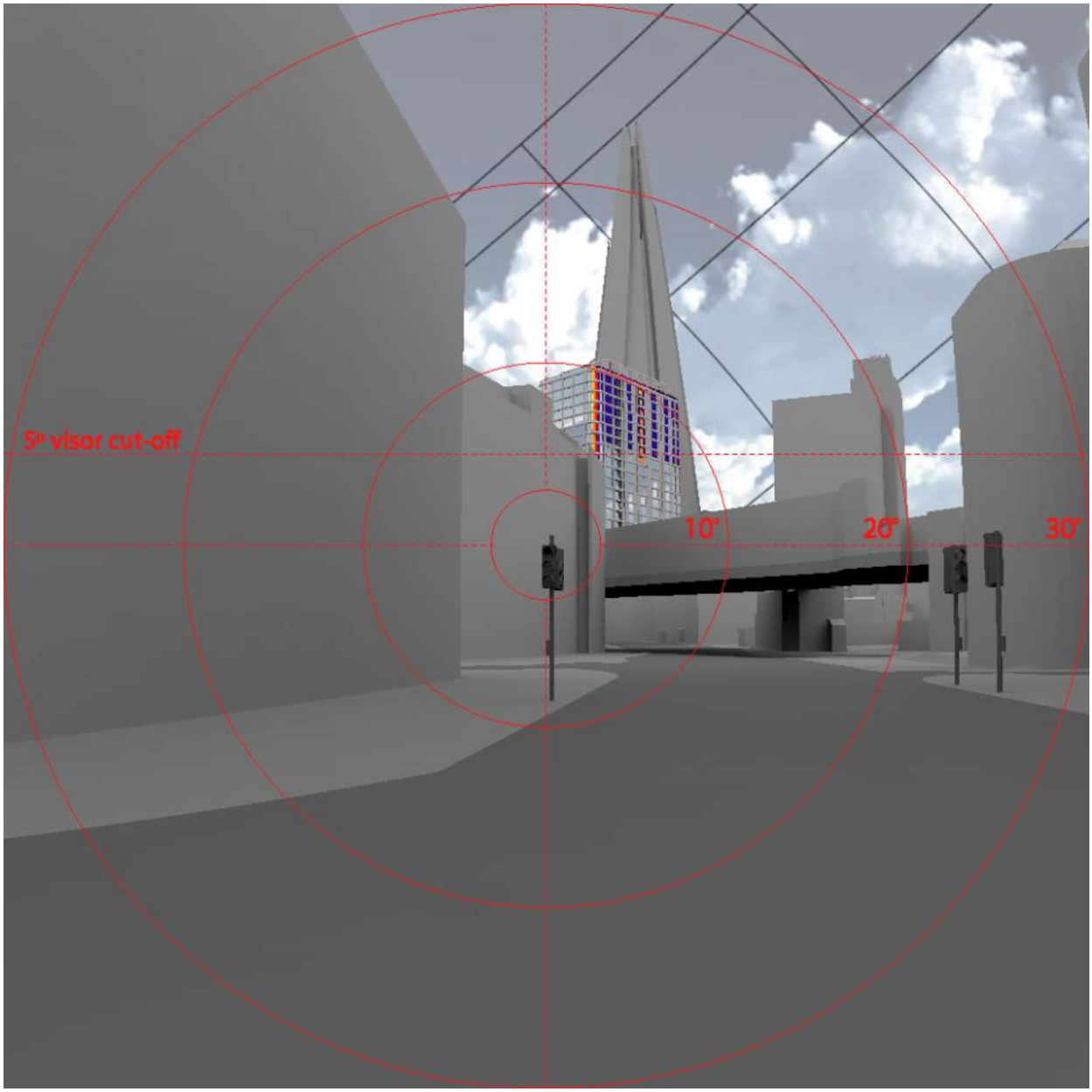


Fig. 30: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
SOUTHWARK STREET - JUNCTION 3 (SW_3)

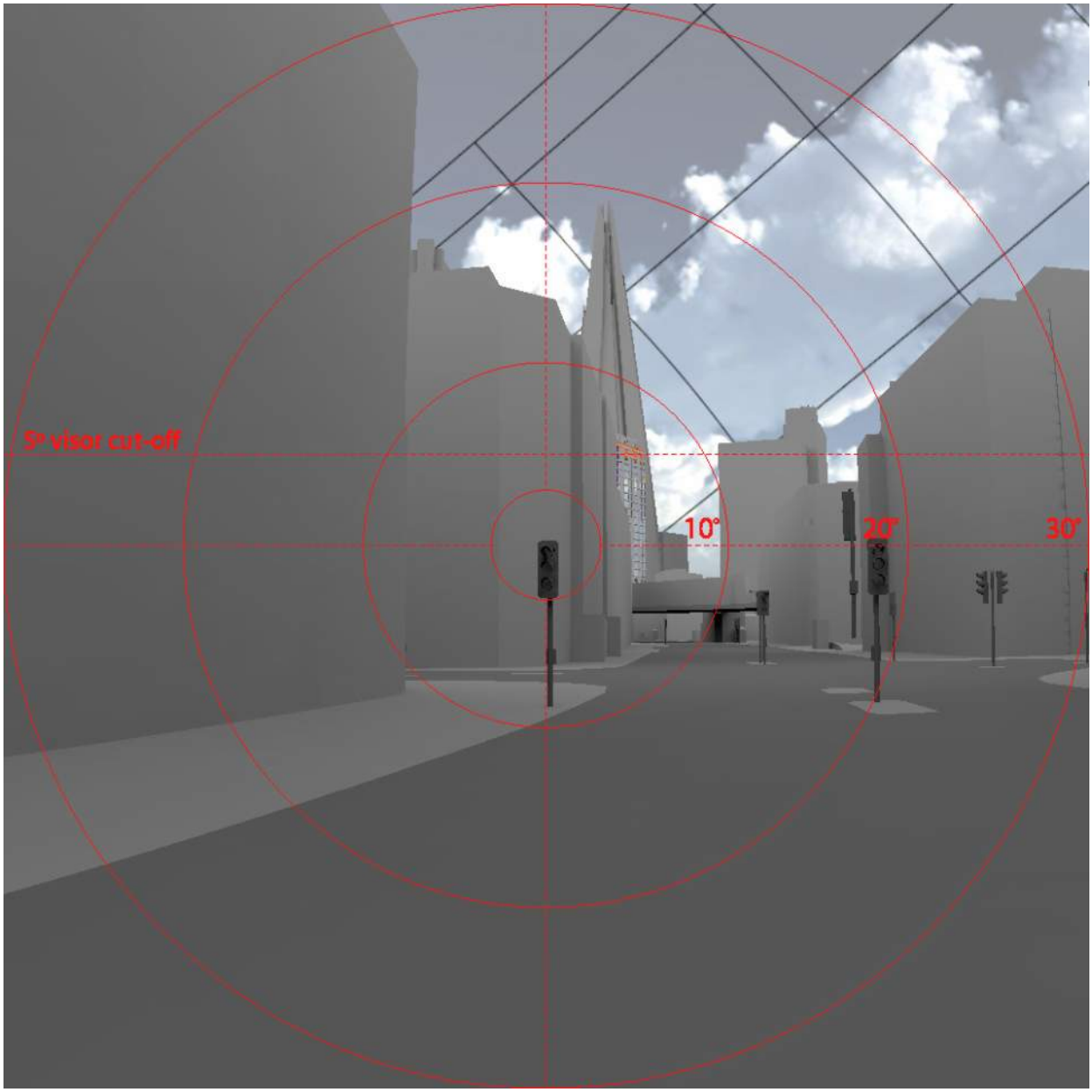
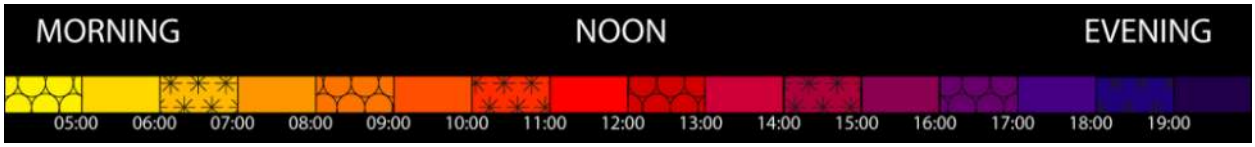


Fig. 31: Solar reflections



60° FIELD OF VIEW: SEASON
SOUTHWARK STREET - JUNCTION 3 (SW_3)

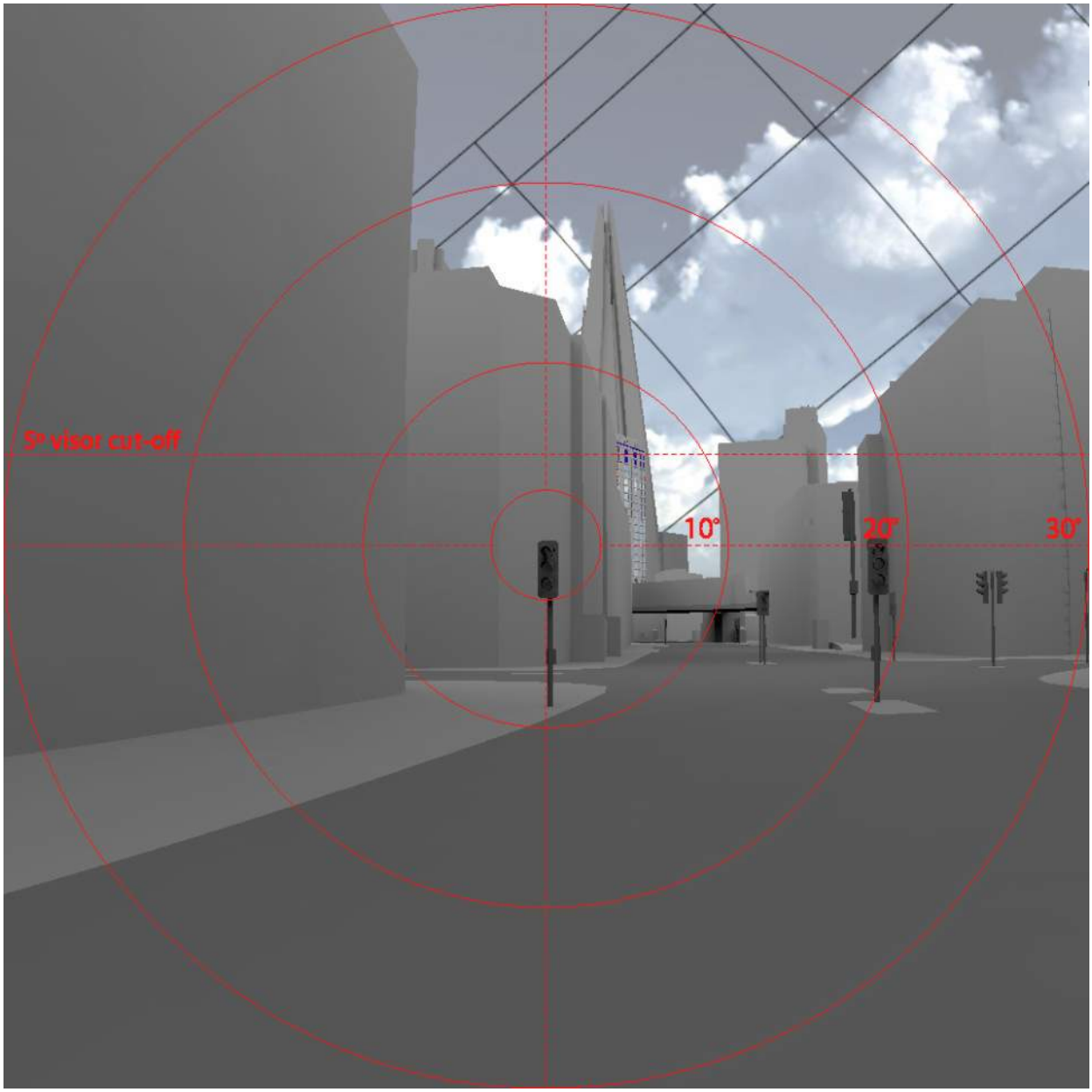


Fig. 32: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
SUMMER STREET (SS)

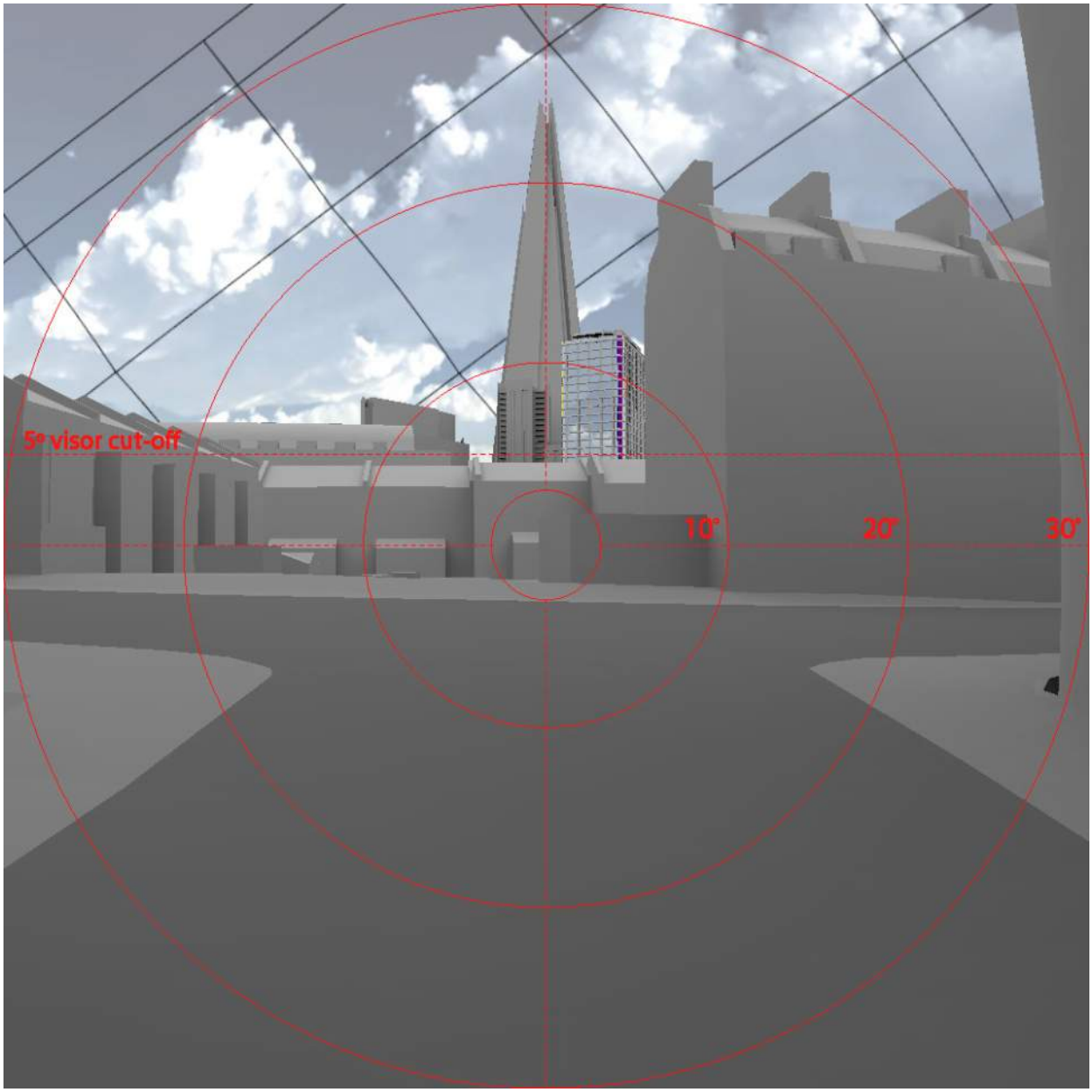
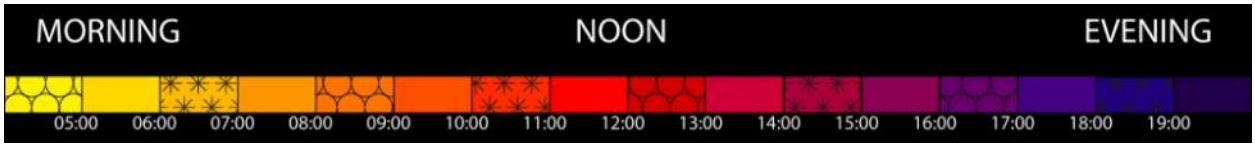


Fig. 33: Solar reflections



60° FIELD OF VIEW: SEASON
SUMMER STREET (SS)

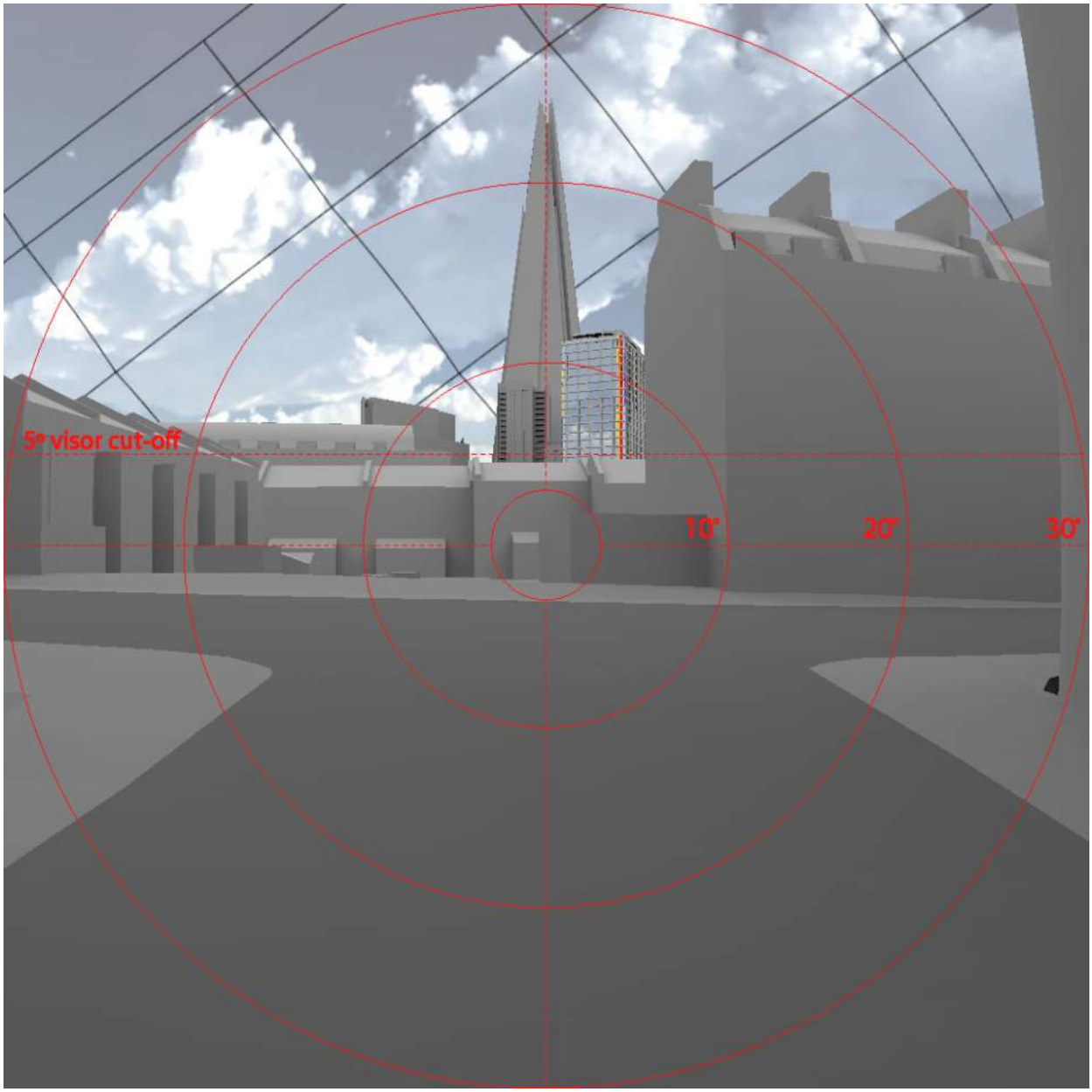


Fig. 34: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE - JUNCTION 1 (LB1)

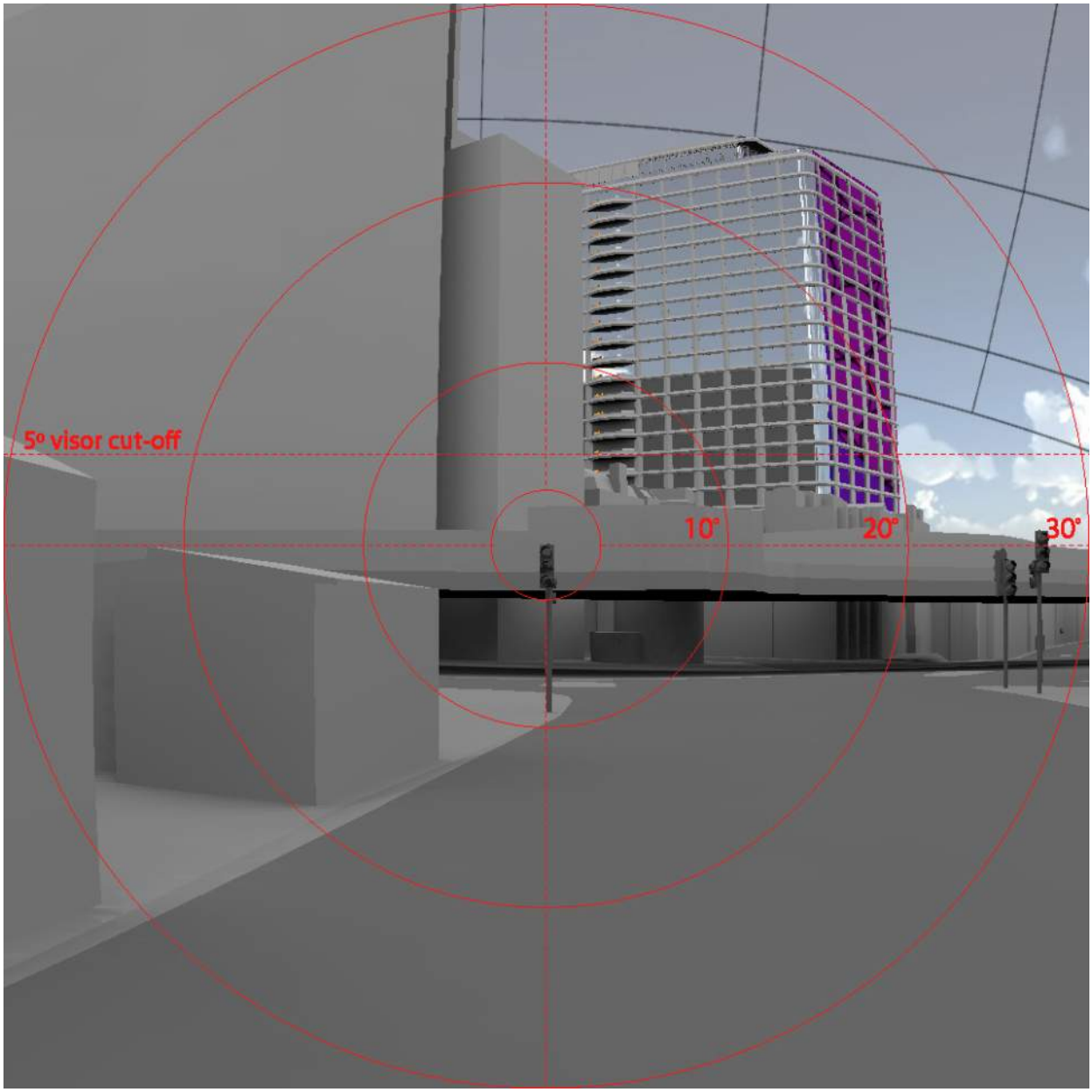
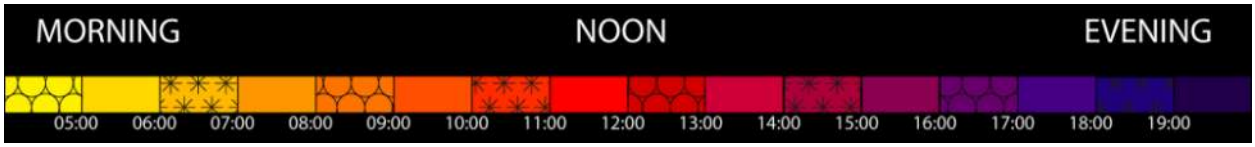


Fig. 35: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE - JUNCTION 1 (LB1)

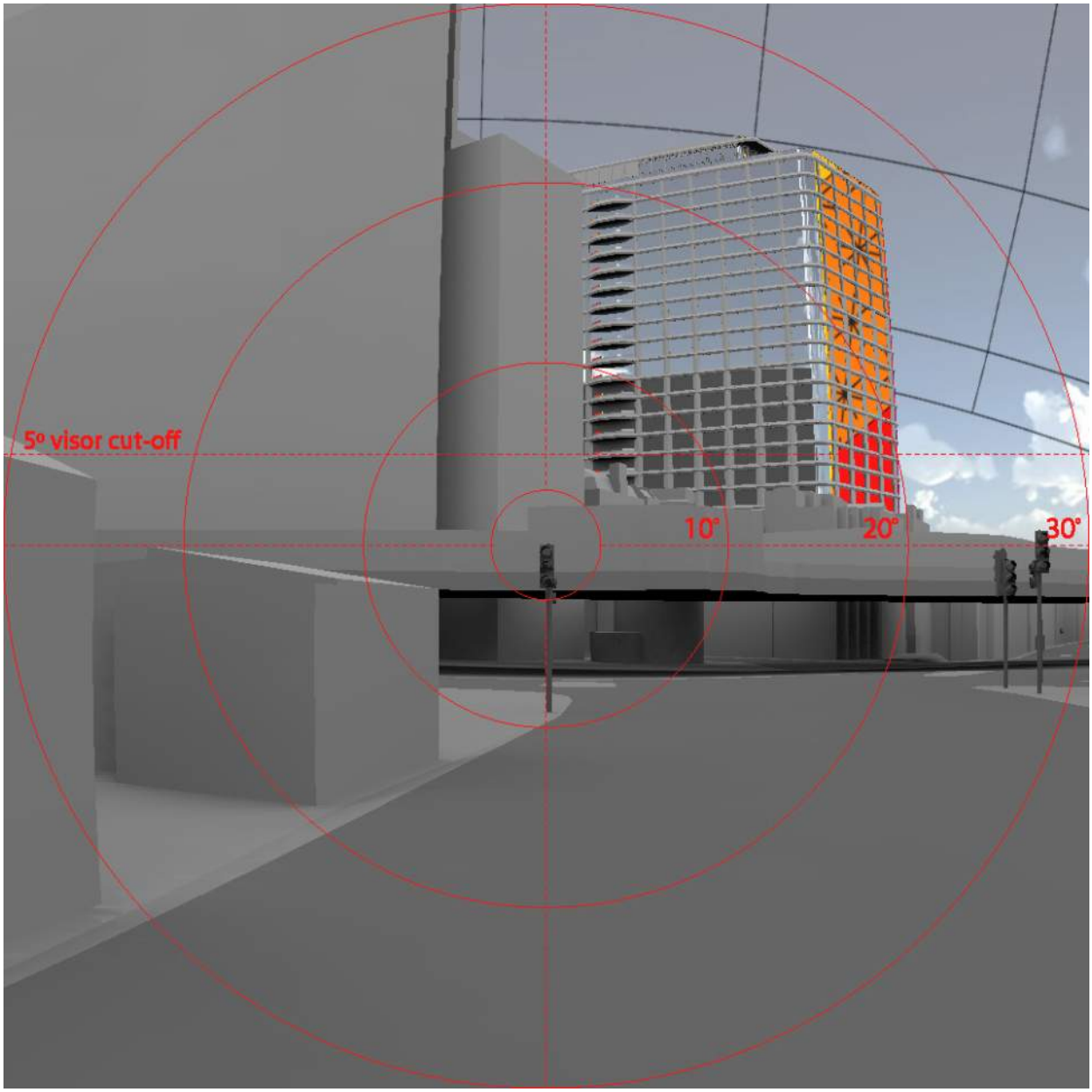


Fig. 36: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE 2 (LB2)

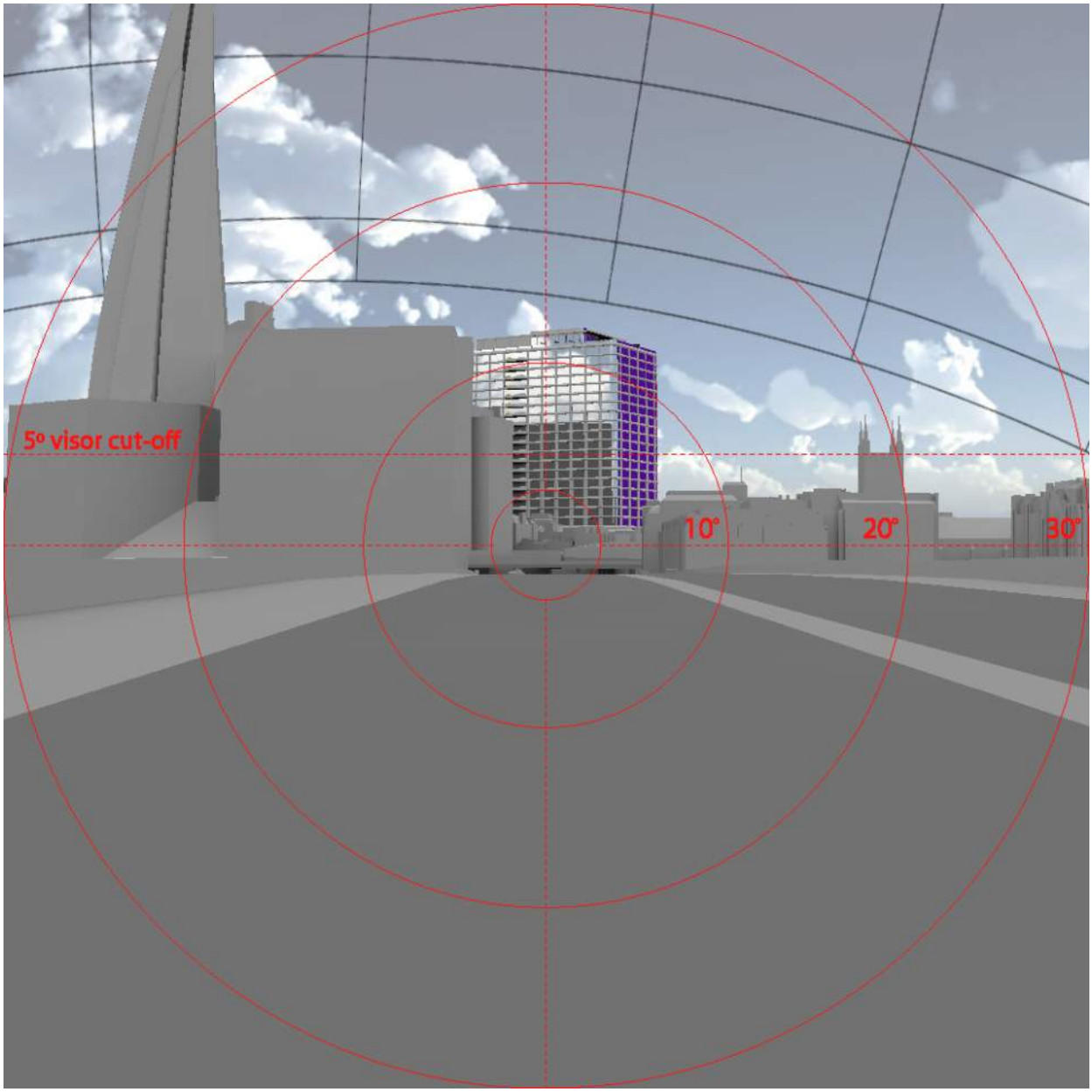
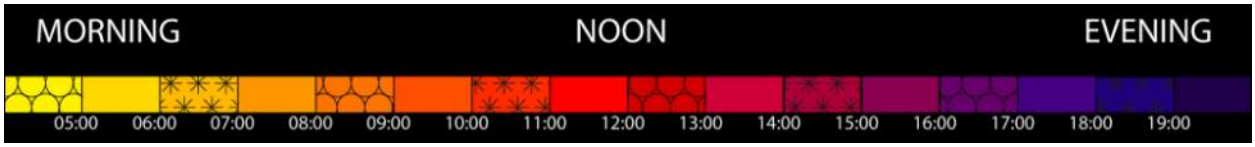


Fig. 37: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE 2 (LB2)

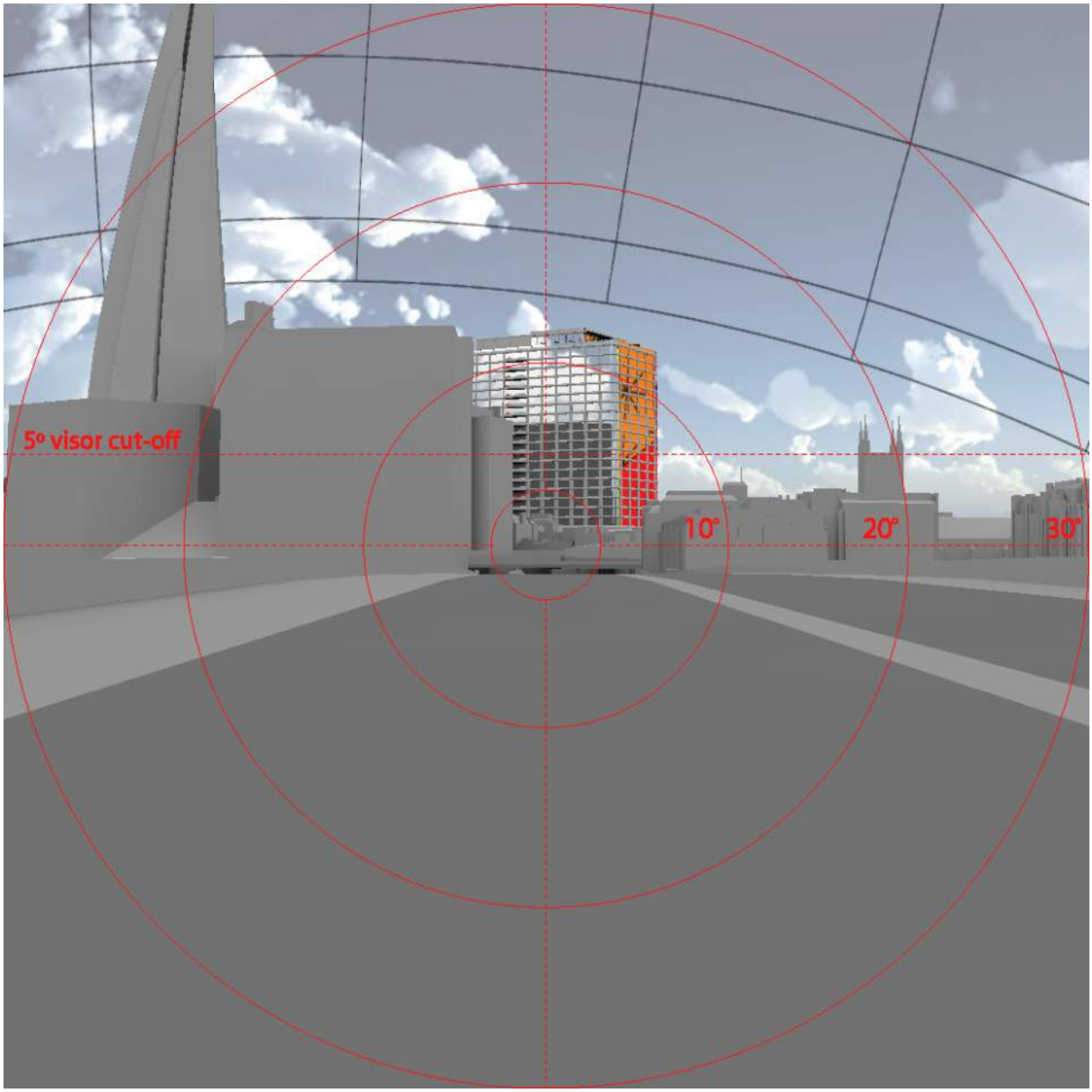


Fig. 38: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE 3 (LB2)

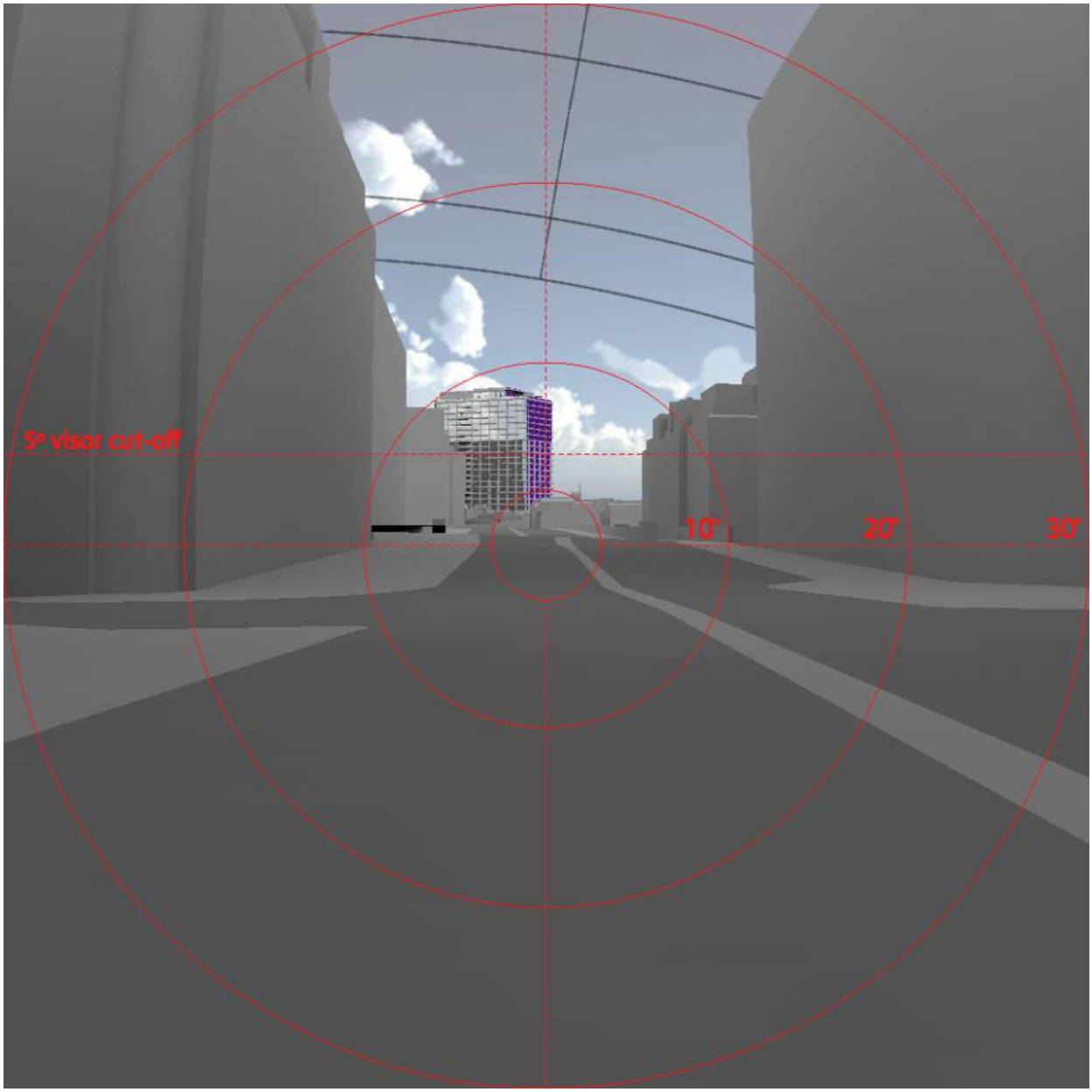
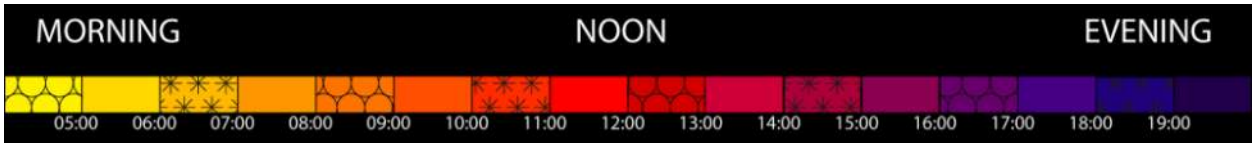


Fig. 39: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE 3 (LB2)

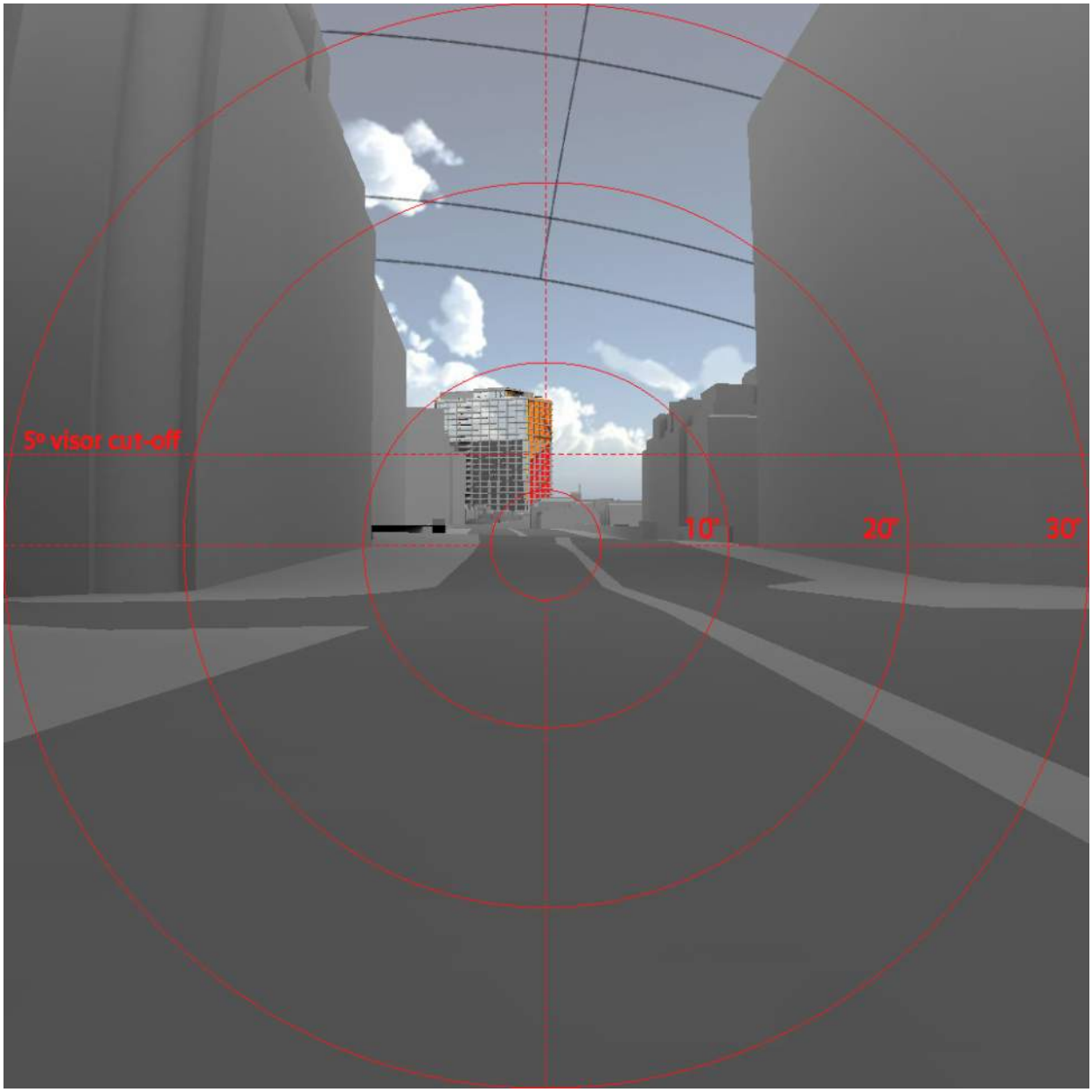


Fig. 40: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
ST THOMAS STREET - JUNCTION 1 (ST1)

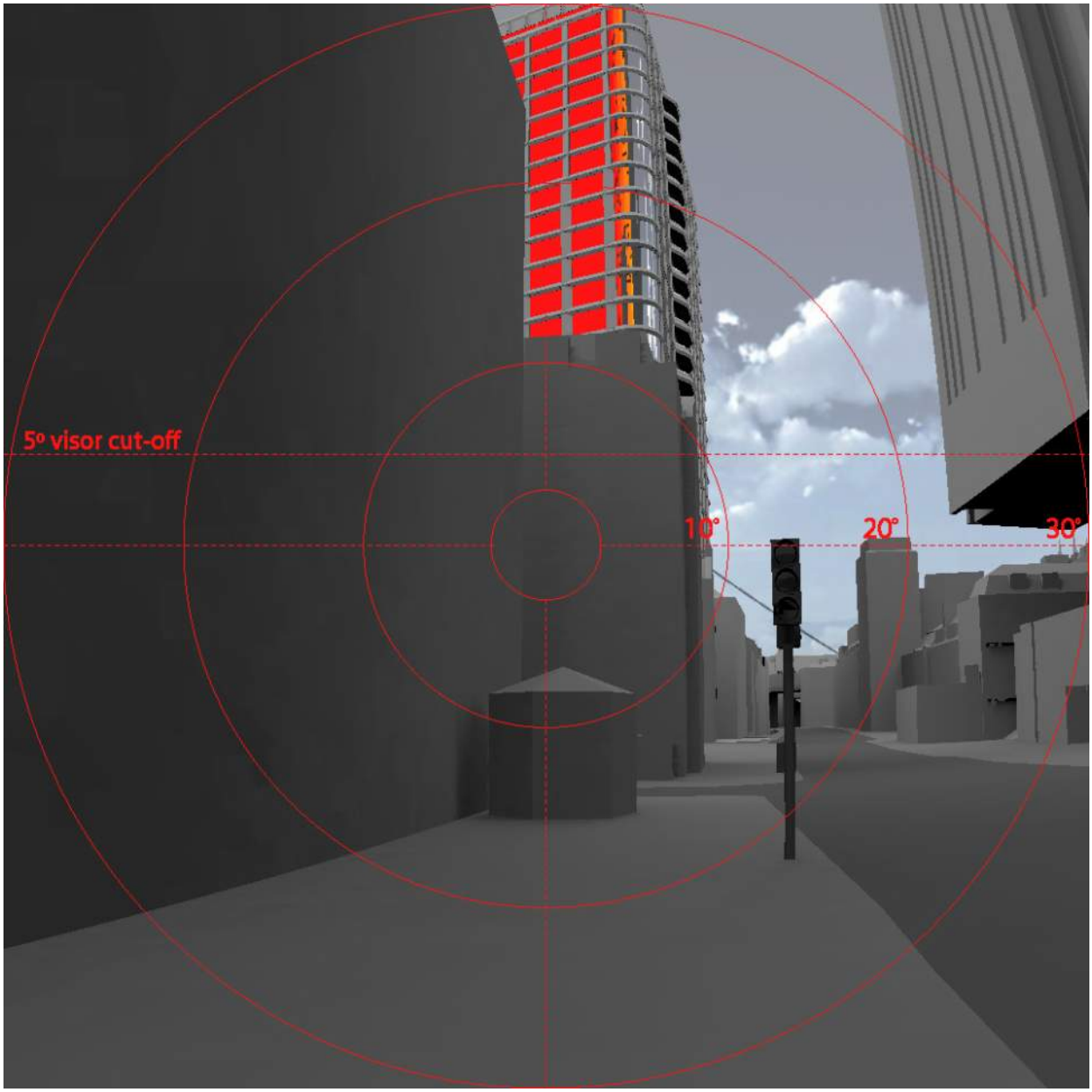
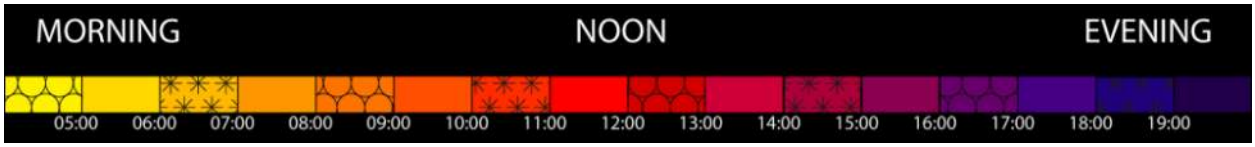


Fig. 41: Solar reflections



60° FIELD OF VIEW: SEASON
ST THOMAS STREET - JUNCTION 1 (ST1)

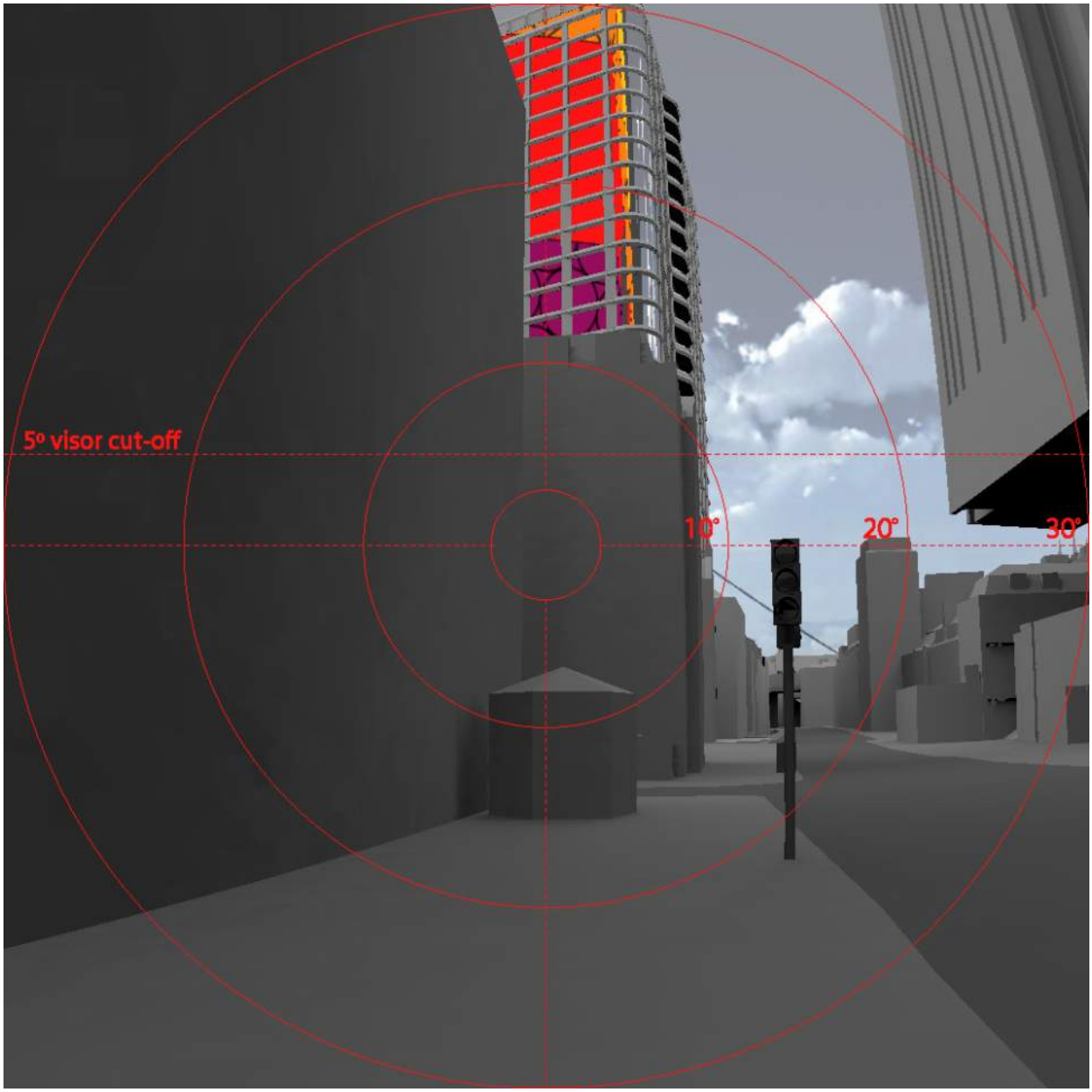


Fig. 42: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
ST THOMAS STREET - JUNCTION 3 (ST3)

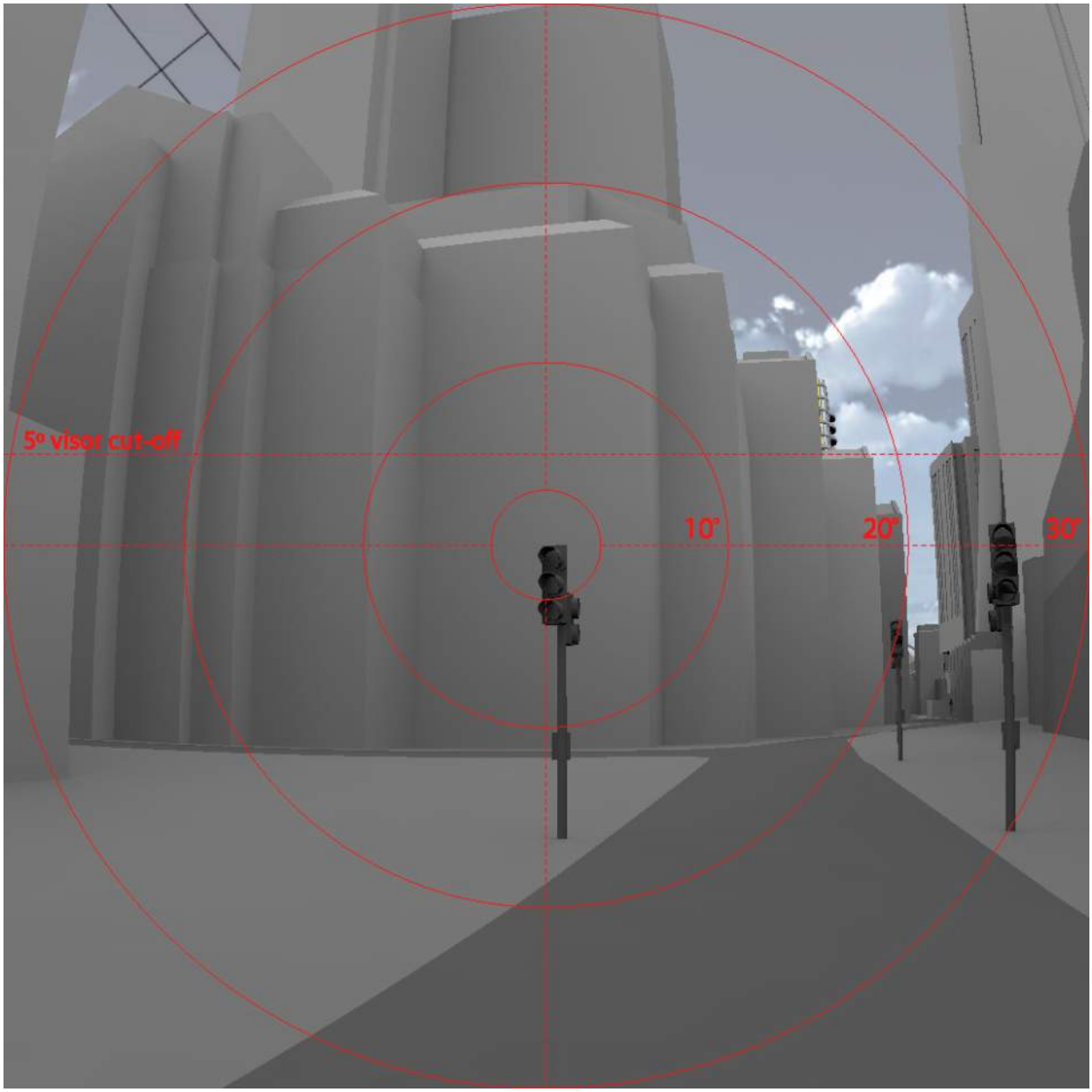
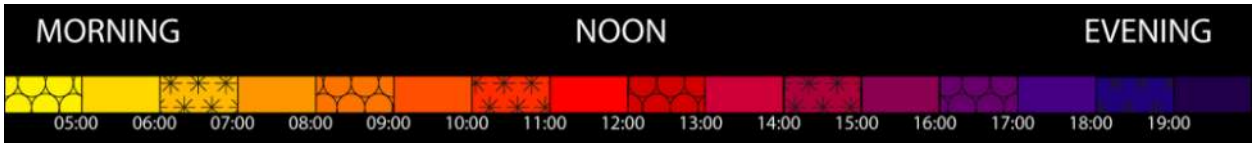


Fig. 43: Solar reflections



60° FIELD OF VIEW: SEASON
ST THOMAS STREET - JUNCTION 3 (ST3)

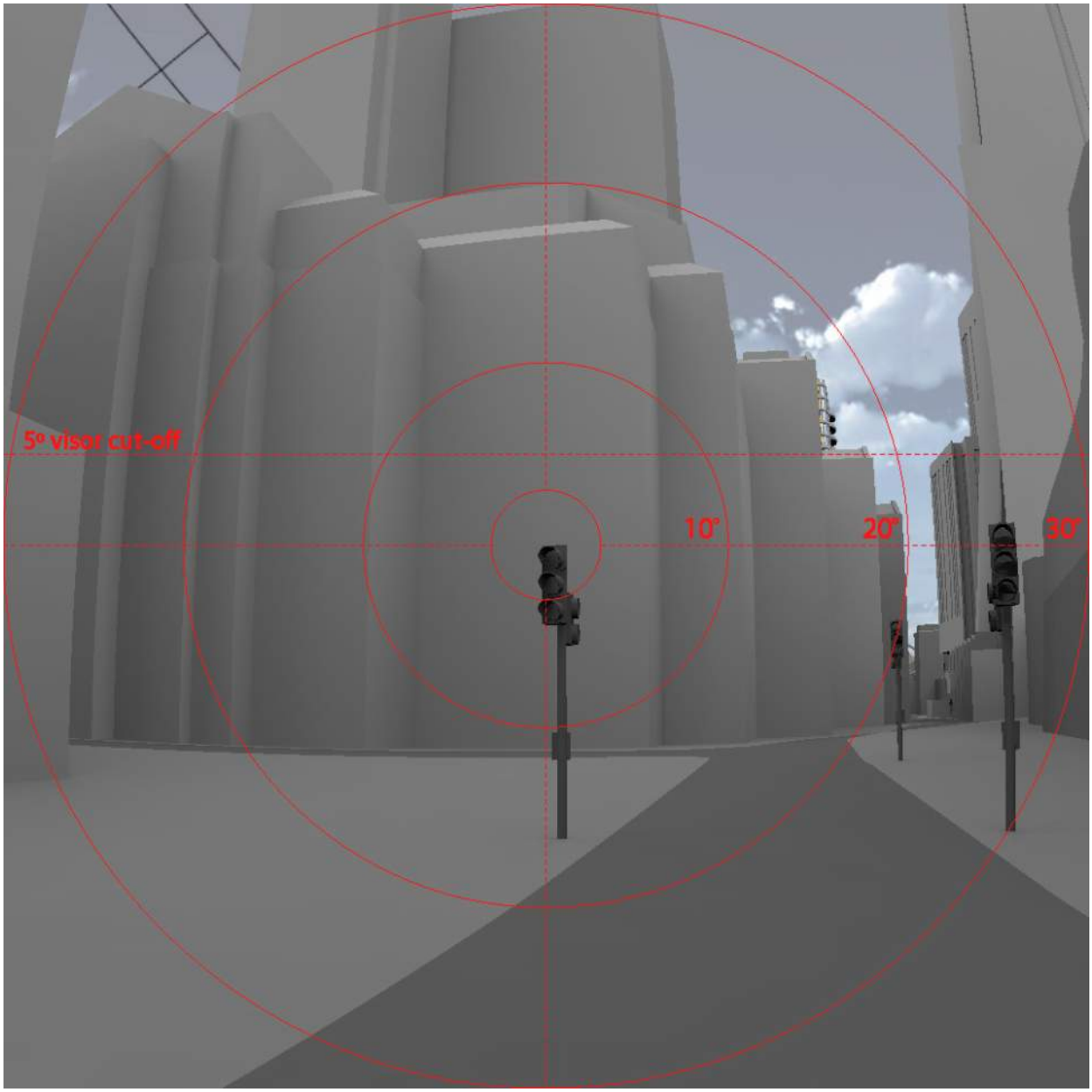


Fig. 44: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
ST THOMAS STREET - JUNCTION 4 (ST4)

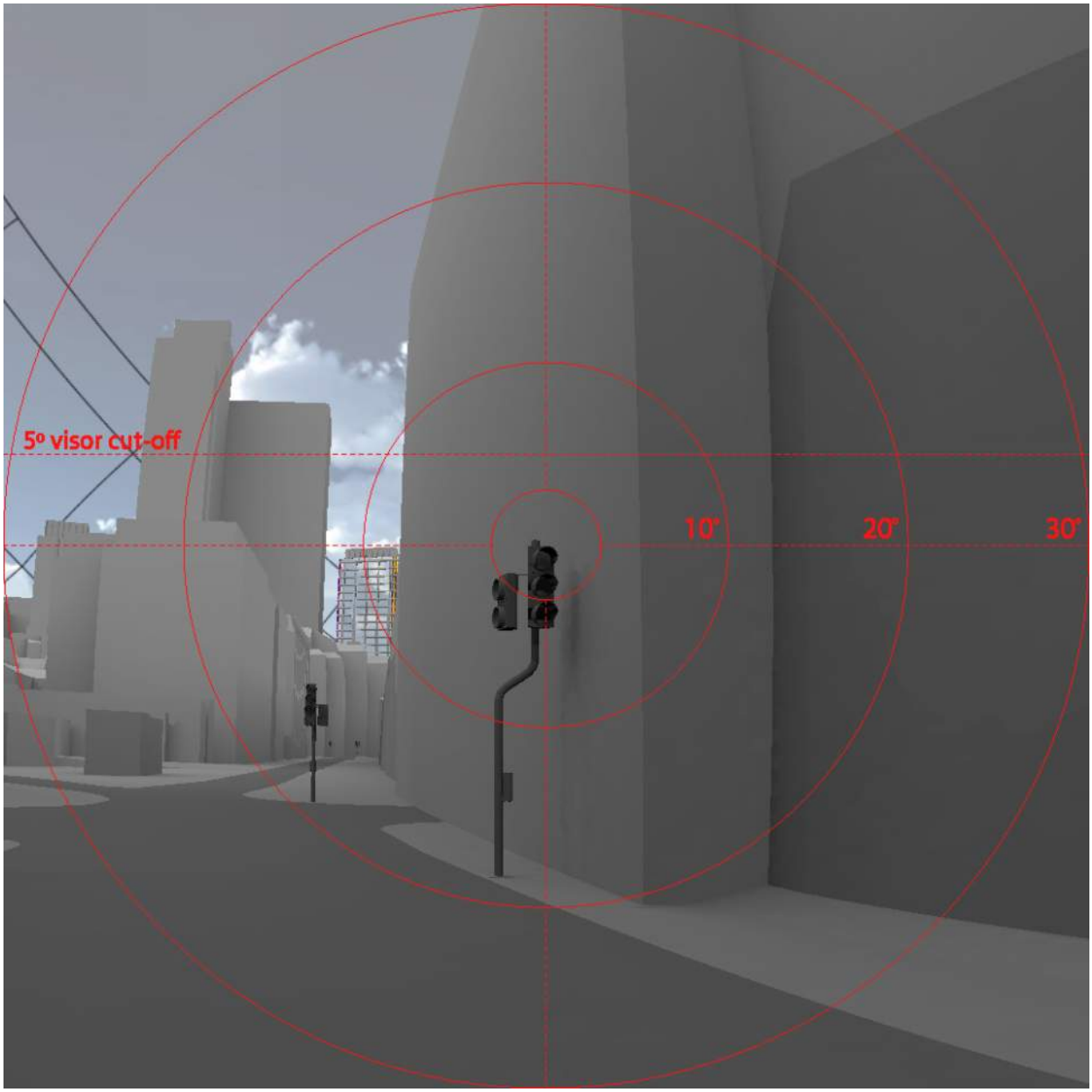
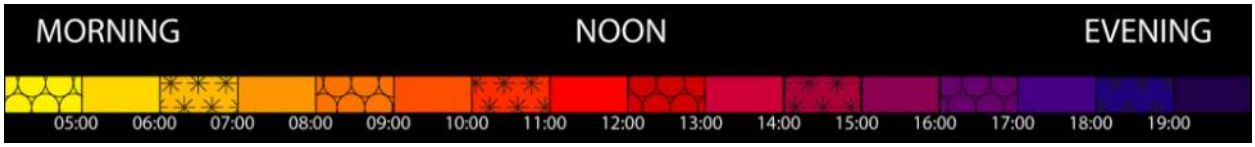


Fig. 45: Solar reflections



60° FIELD OF VIEW: SEASON
ST THOMAS STREET - JUNCTION 4 (ST4)

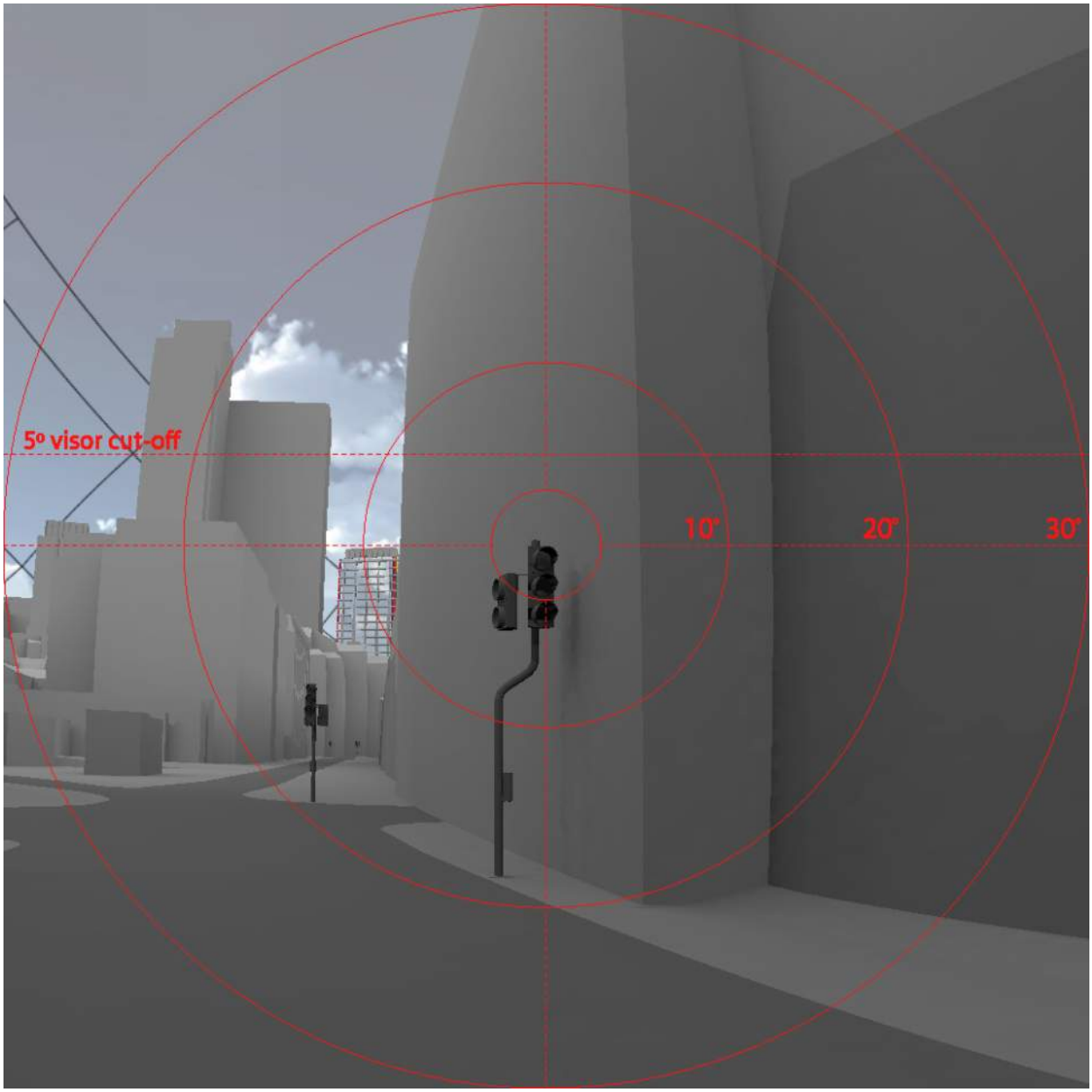


Fig. 46: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
CROSBY ROW (CR)

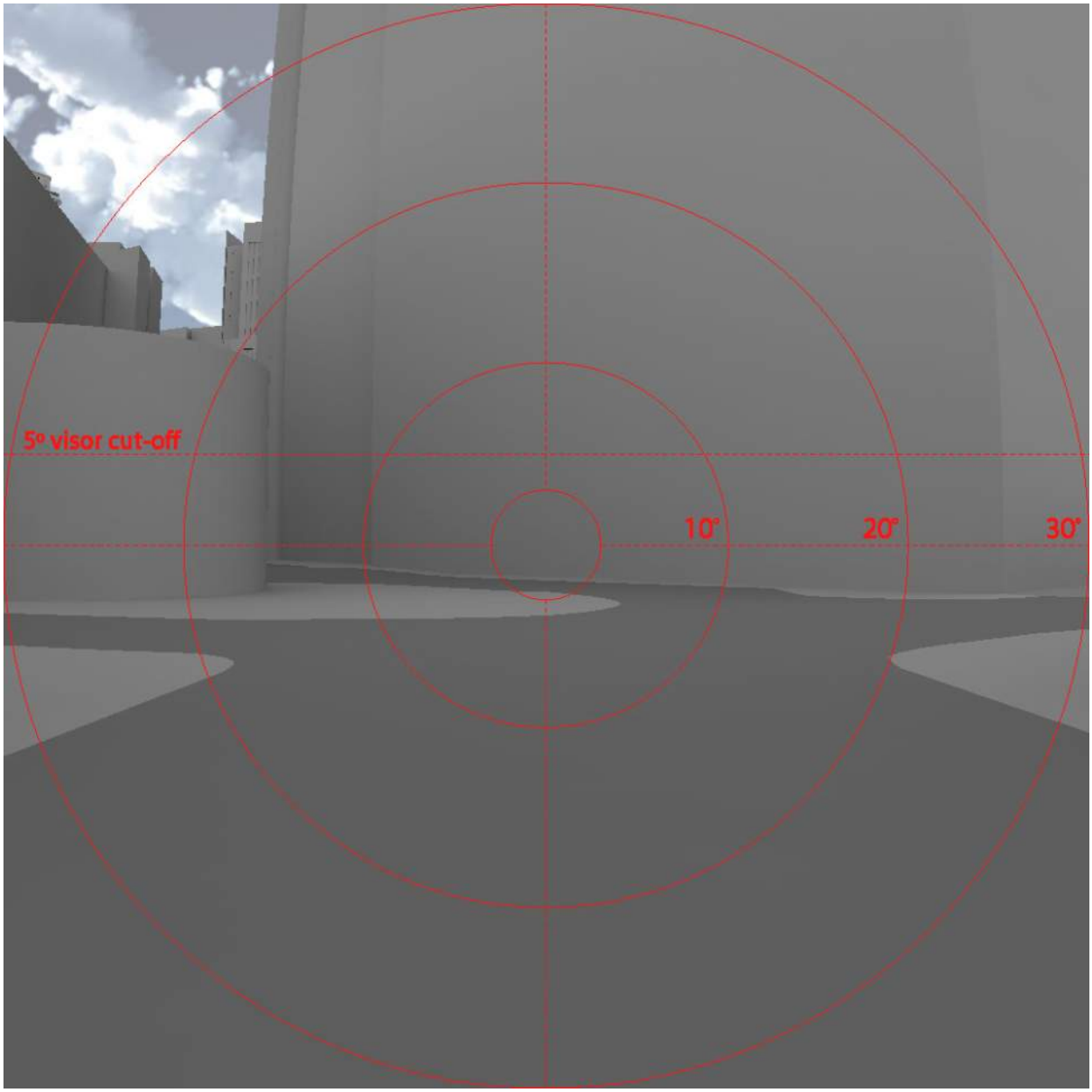
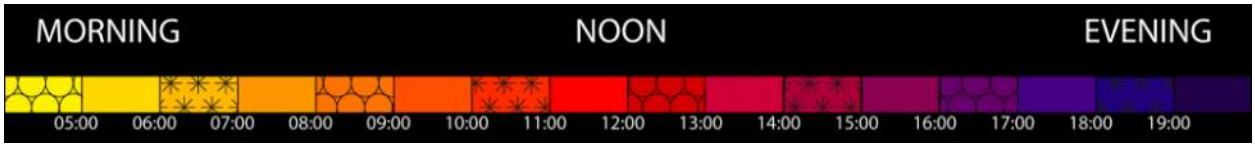


Fig. 47: Solar reflections



60° FIELD OF VIEW: SEASON
CROSBY ROW (CR)

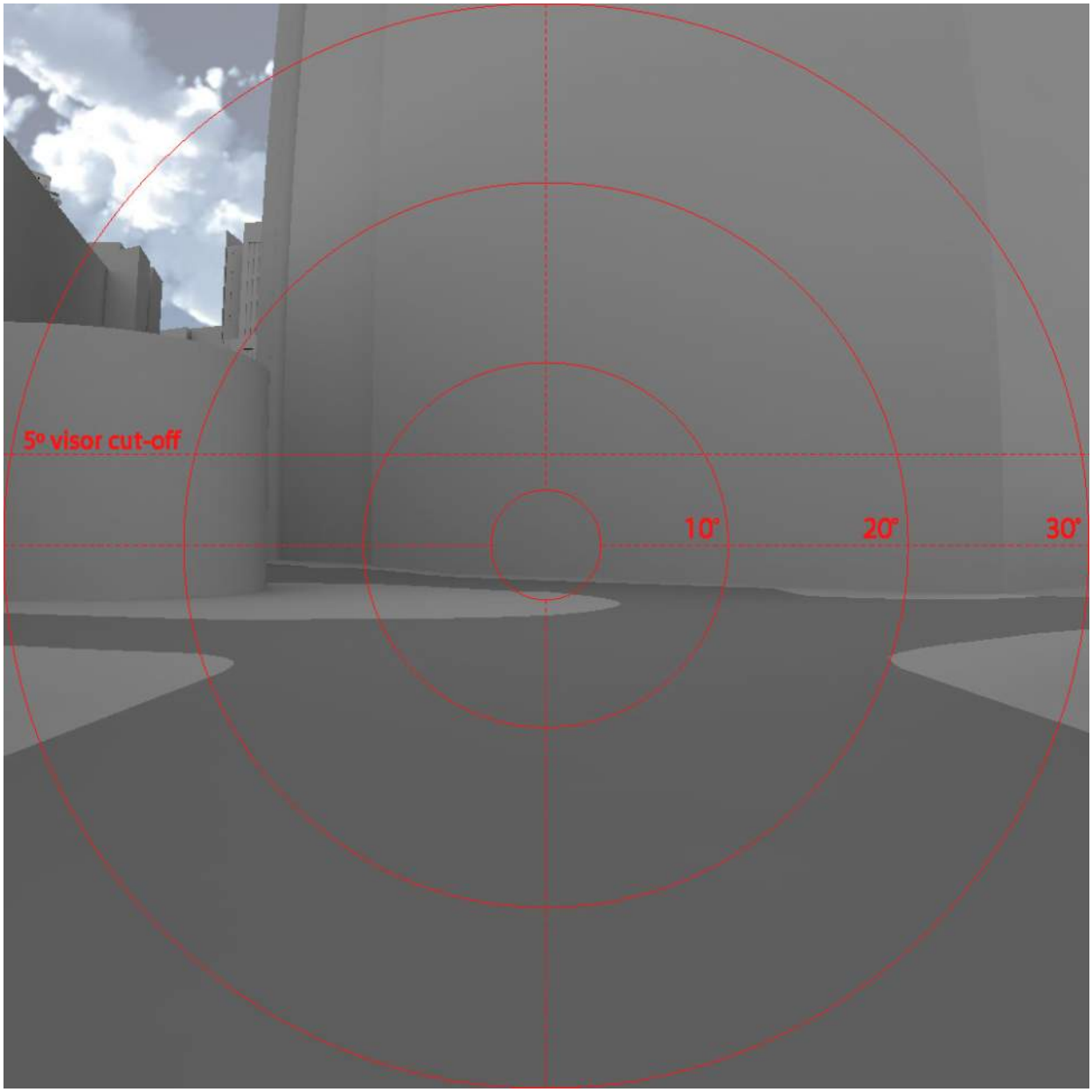


Fig. 48: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK EAST - VIEW 1_A (TLB_E_1)

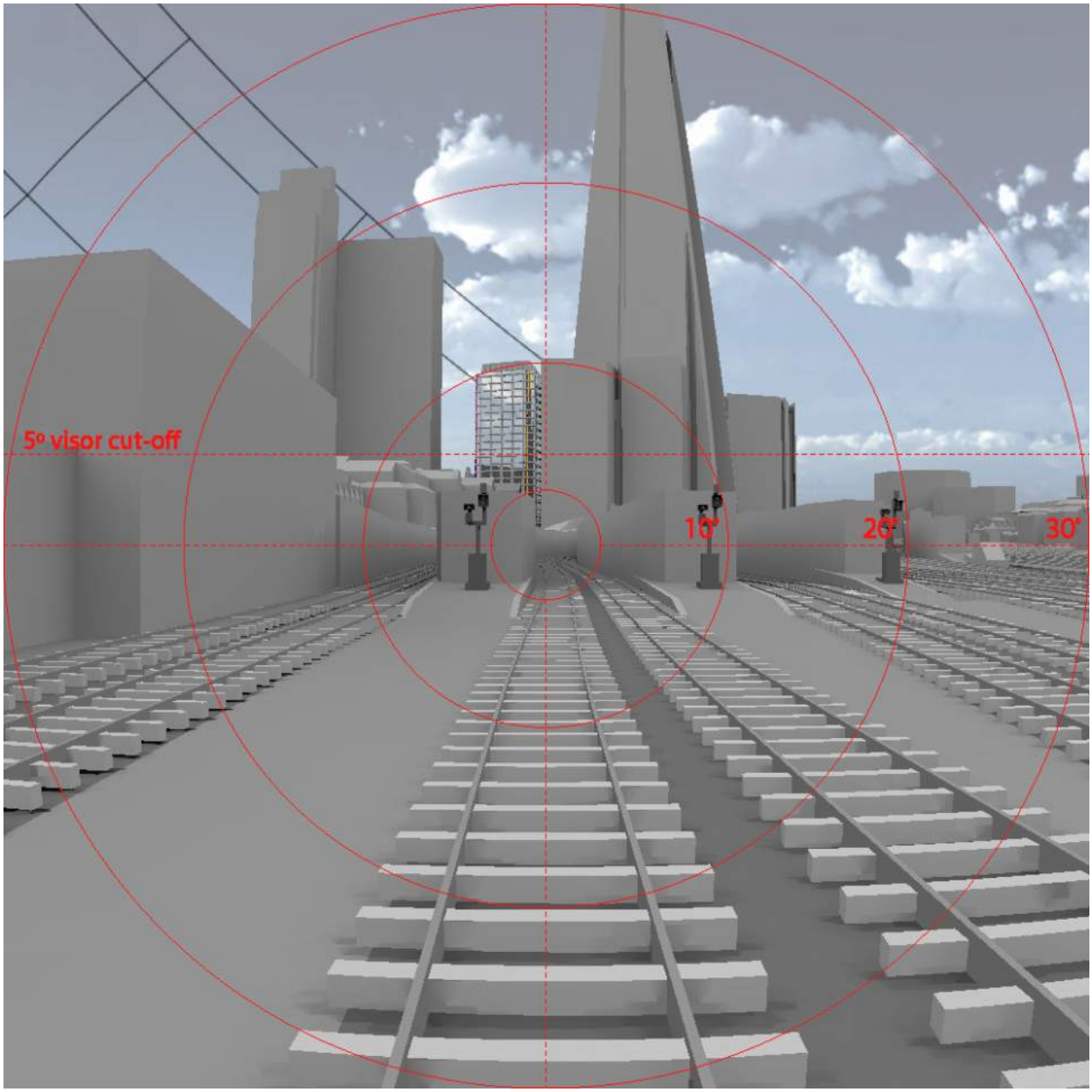
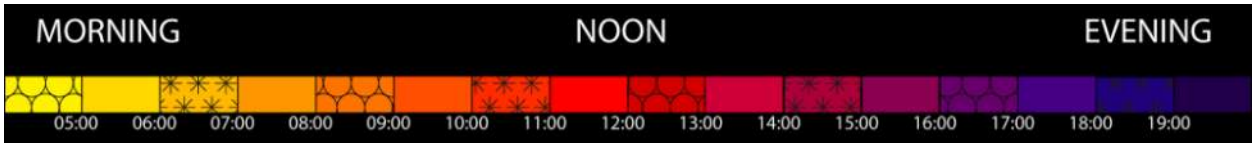


Fig. 49: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK EAST - VIEW 1_A (TLB_E_1)

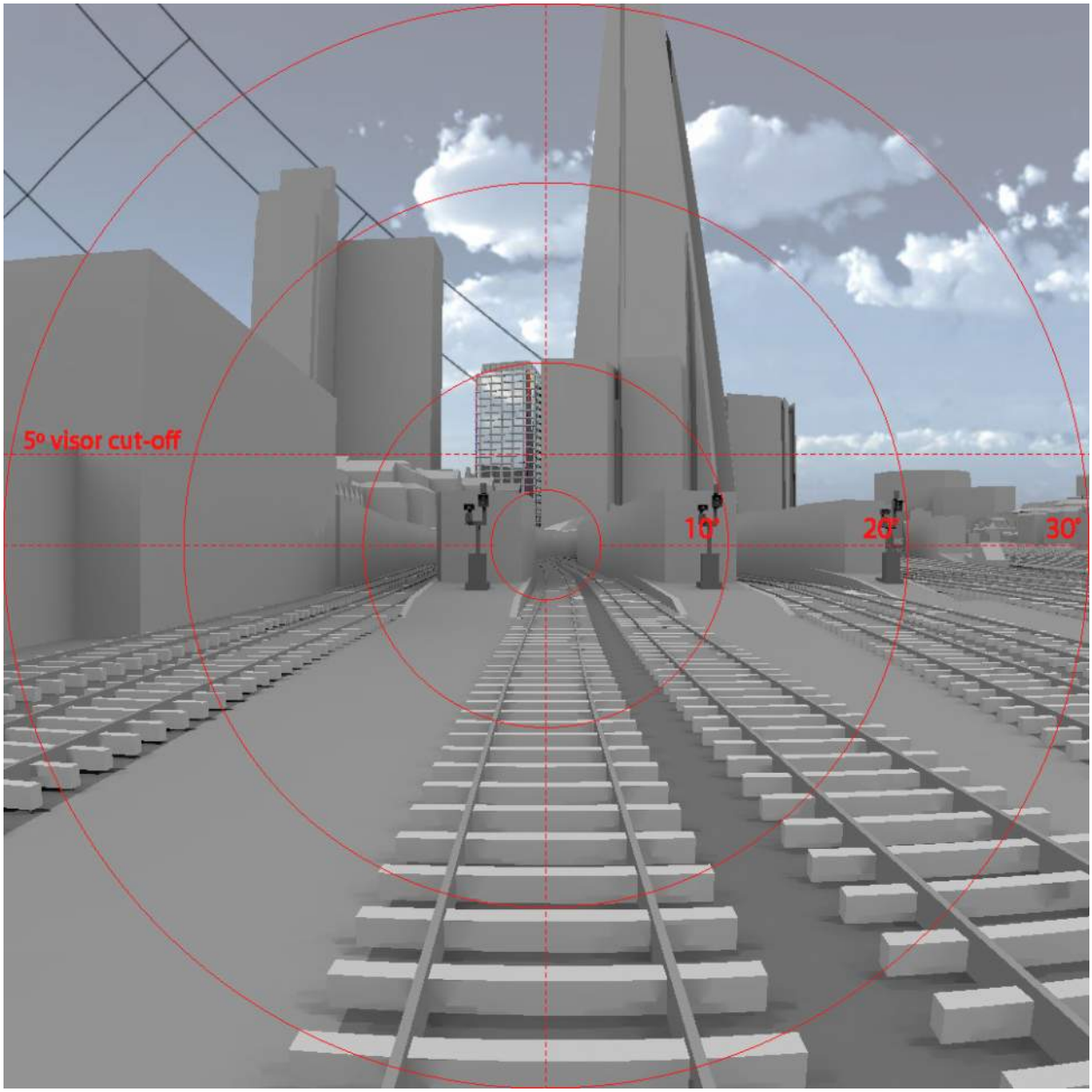


Fig. 50: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK EAST - VIEW 1_B (TLB_E_1)

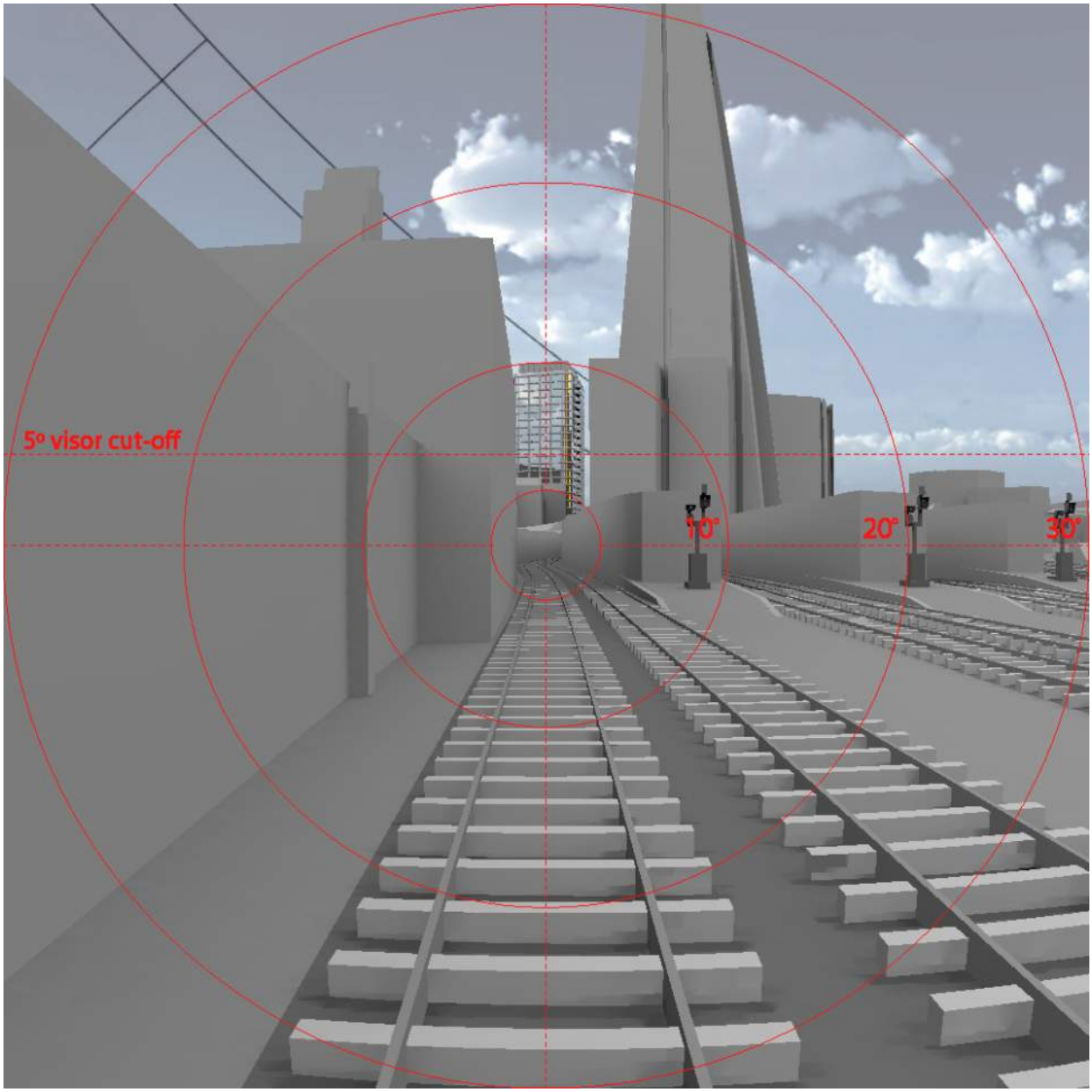
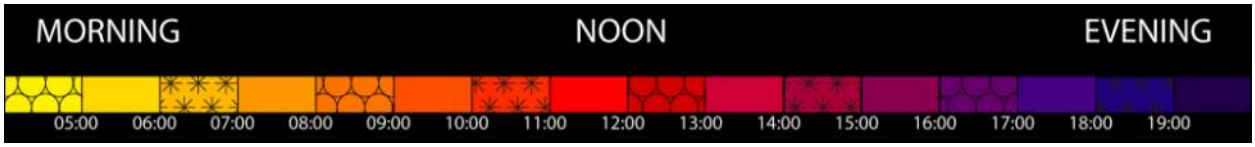


Fig. 51: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK EAST - VIEW 1_B (TLB_E_1)

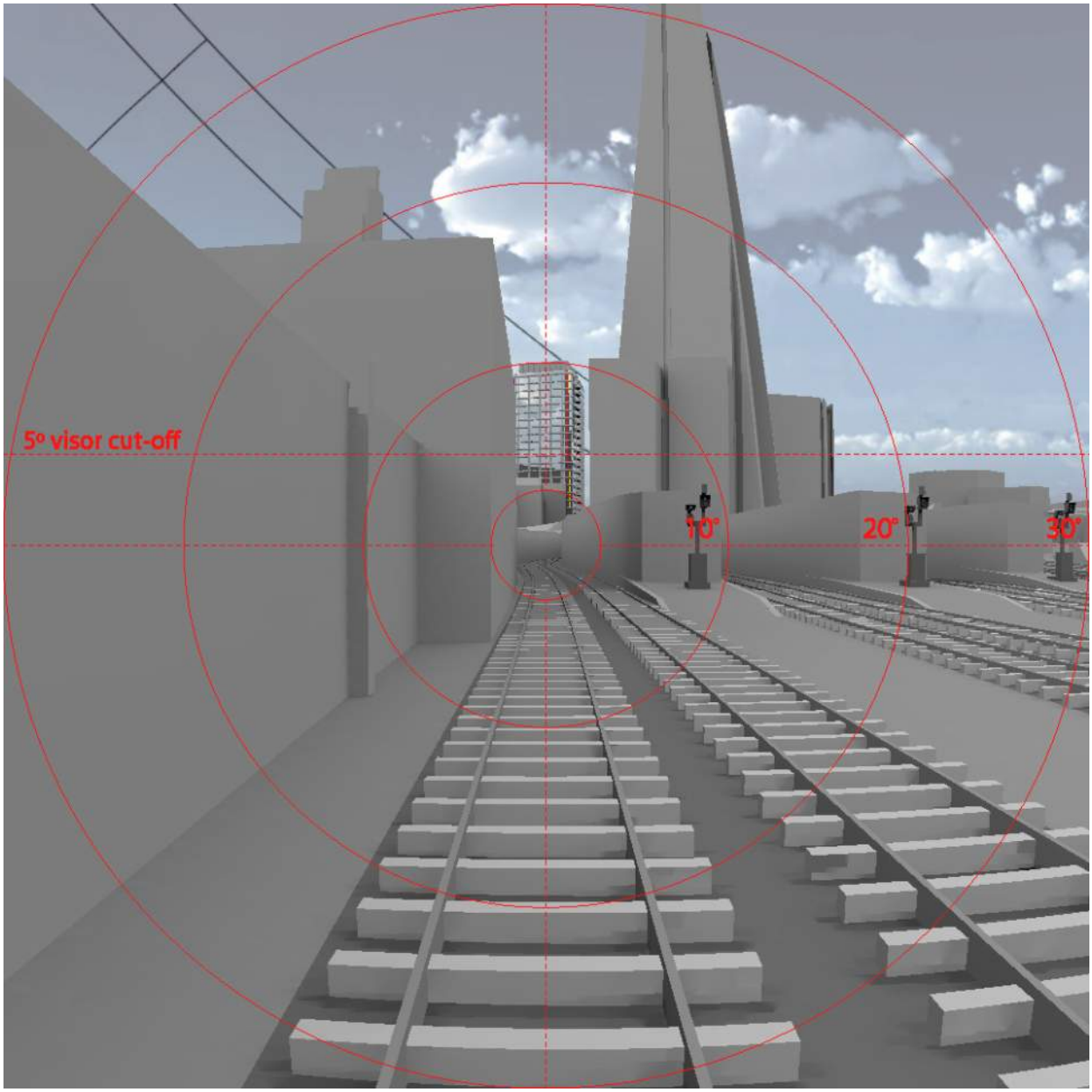


Fig. 52: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK EAST_ VIEW 2 (TLB_E_2)

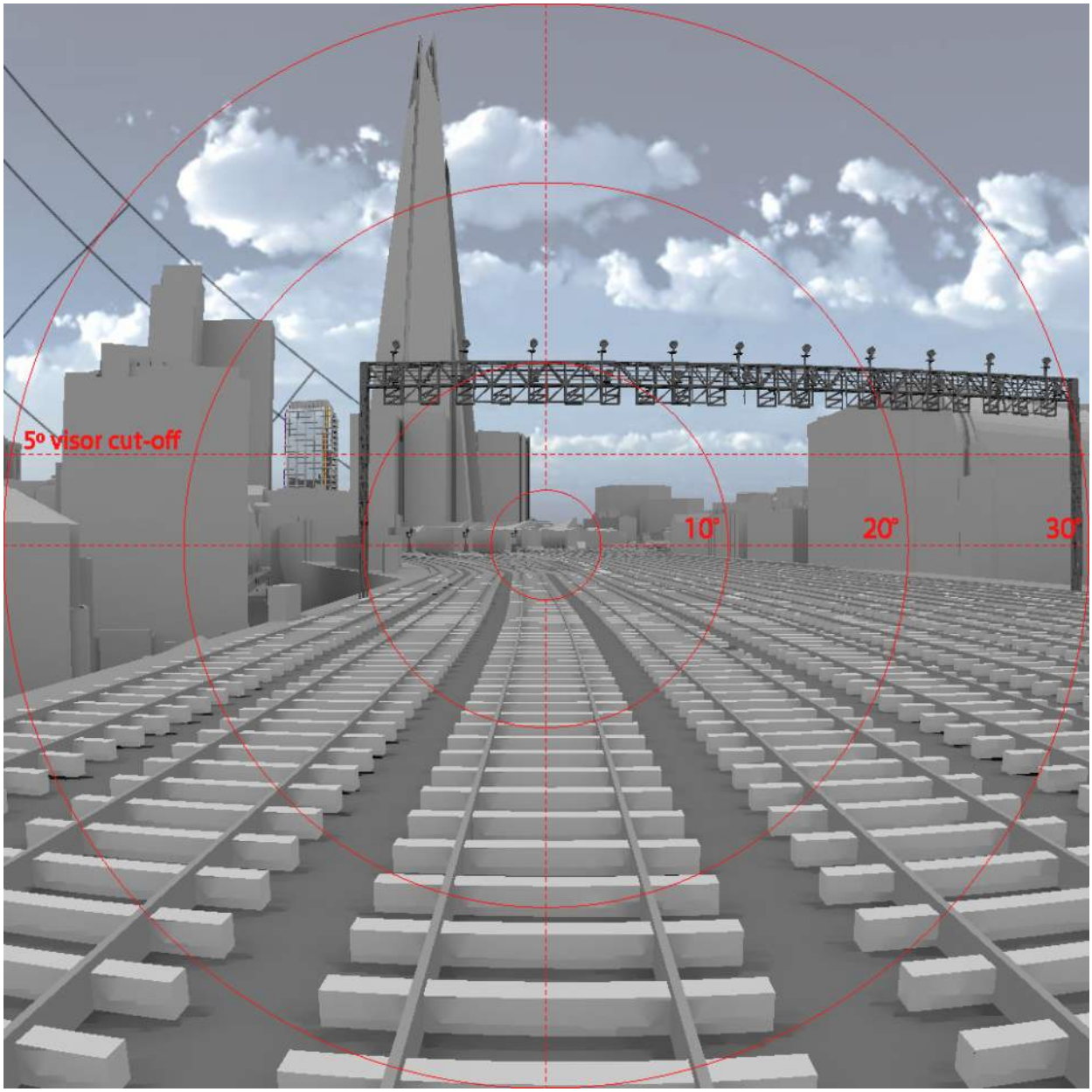
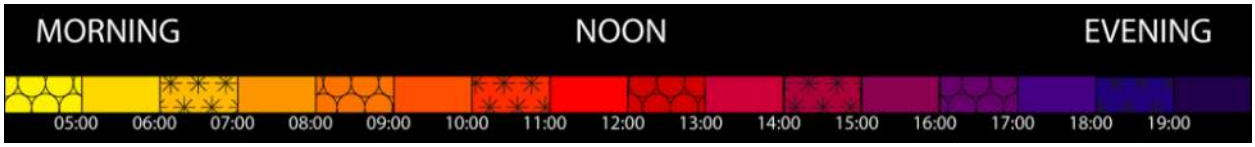


Fig. 53: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK EAST_ VIEW 2 (TLB_E_2)

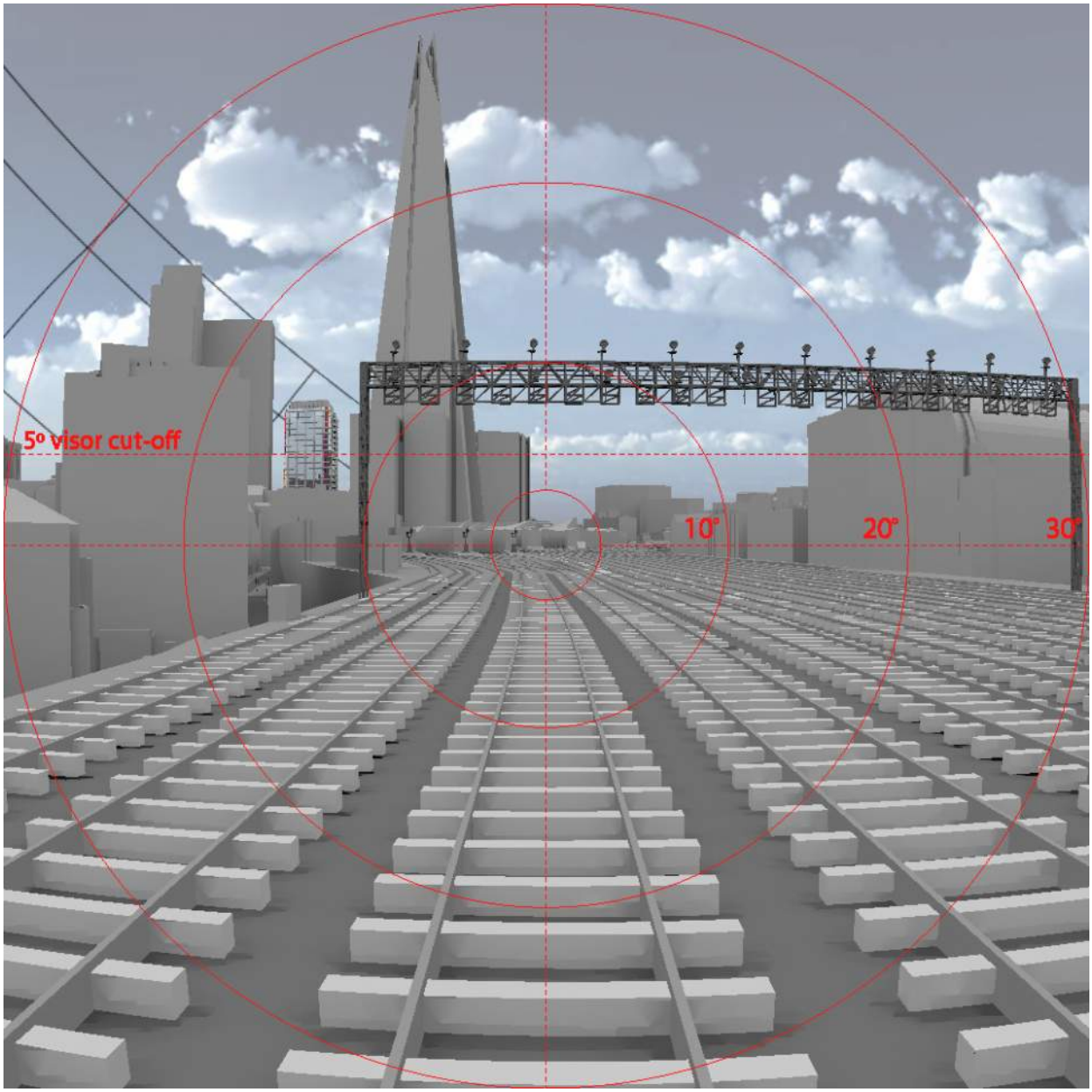


Fig. 54: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK NORTH _ VIEW 1 (TLB_N_1)

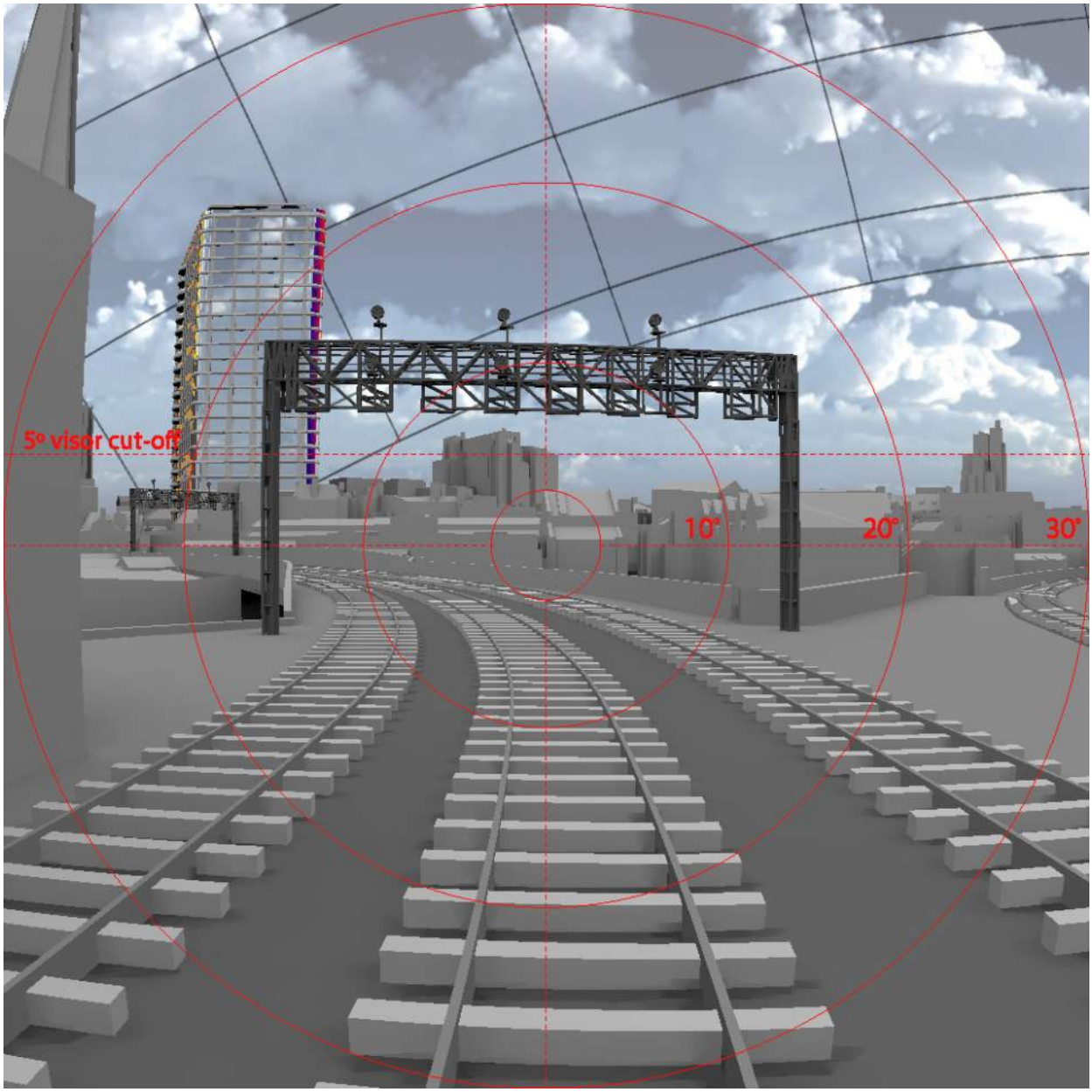
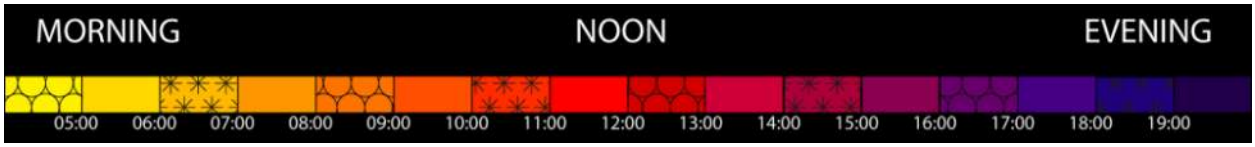


Fig. 55: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK NORTH _ VIEW 1 (TLB_N_1)

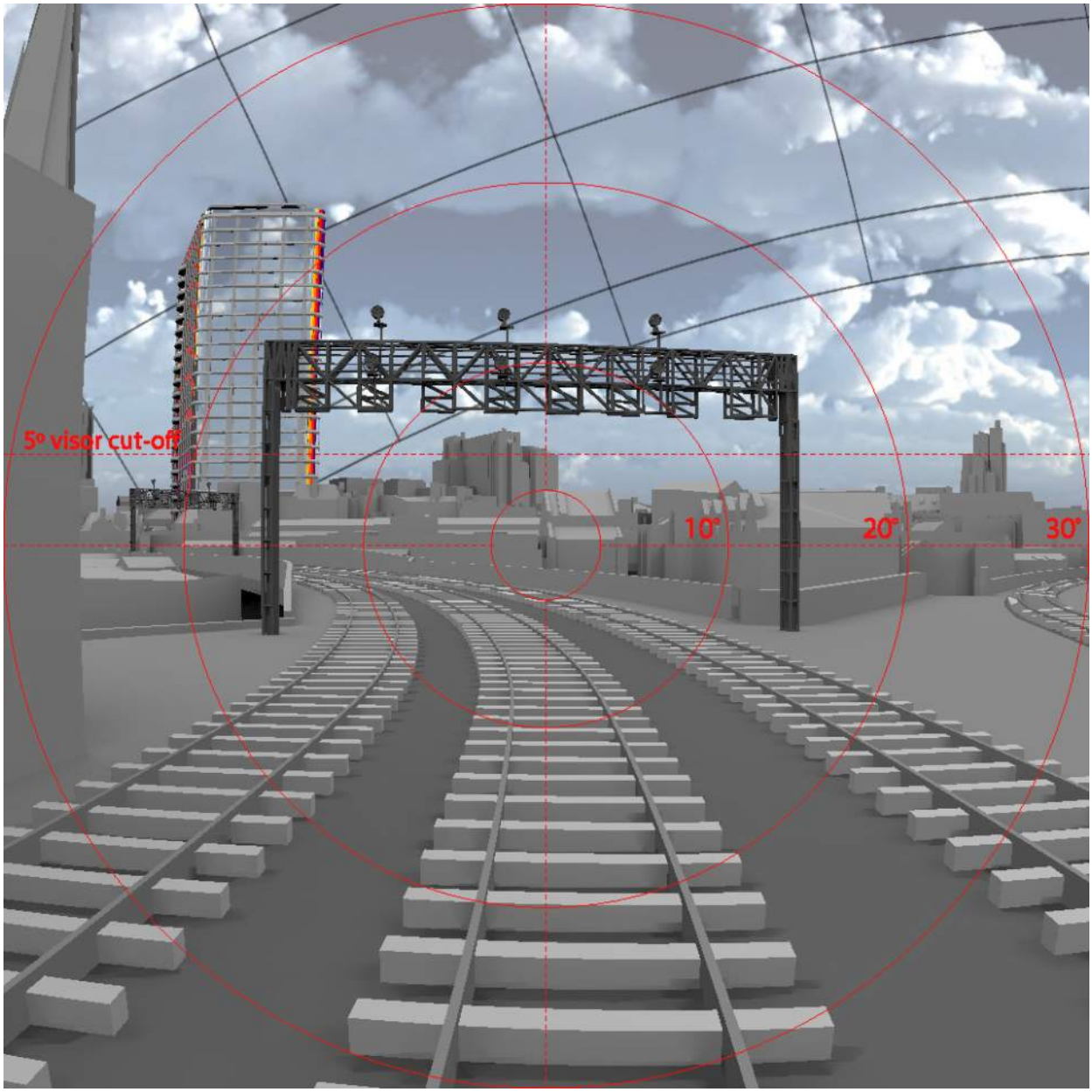


Fig. 56: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK NORTH _ VIEW 2 (TLB_N_2)

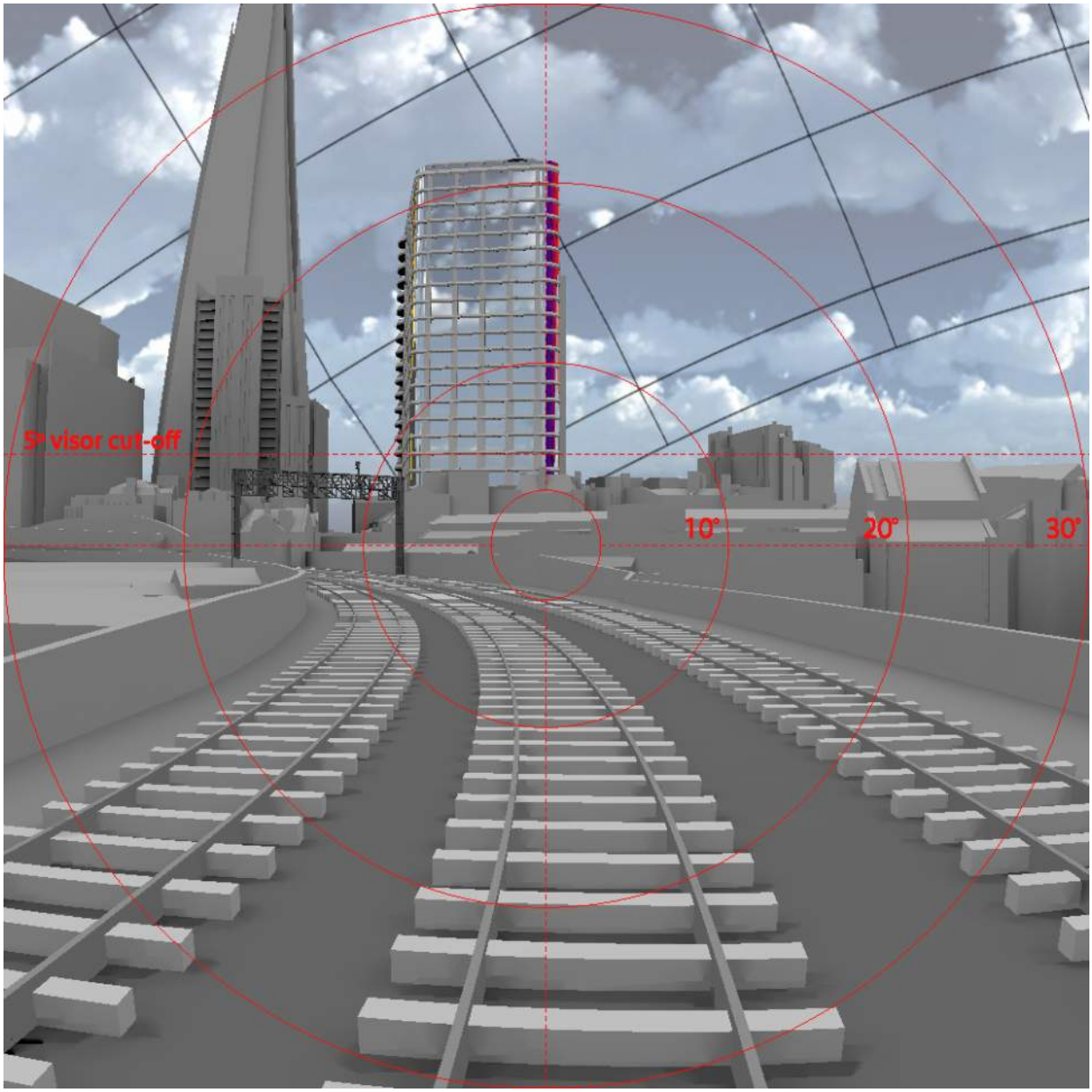
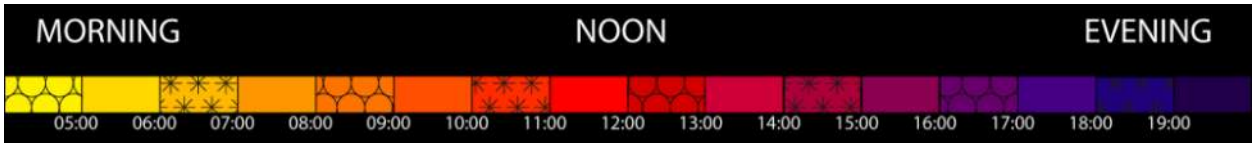


Fig. 57: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK NORTH _ VIEW 2 (TLB_N_2)

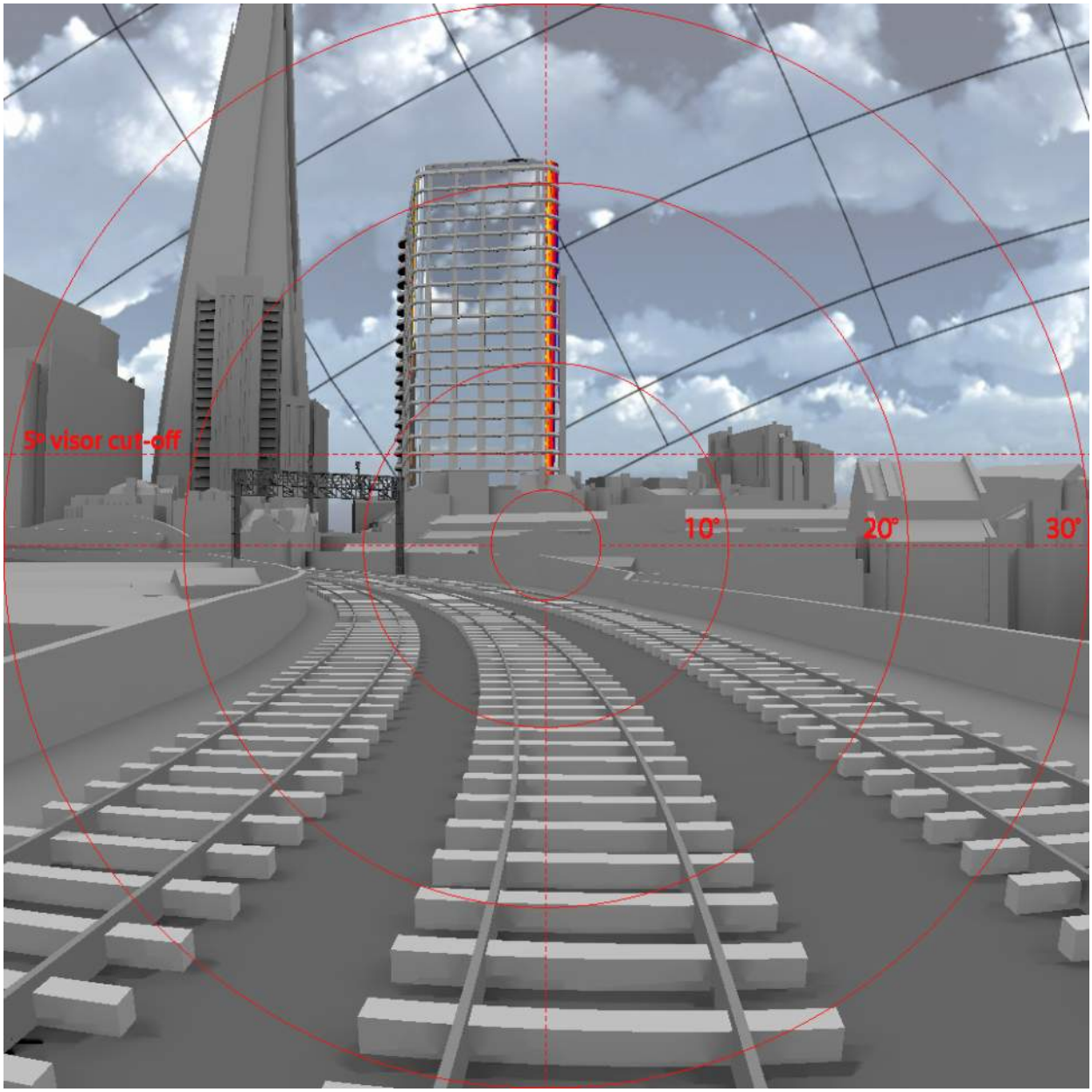


Fig. 58: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK NORTH _ VIEW 3 (TLB_N_3)

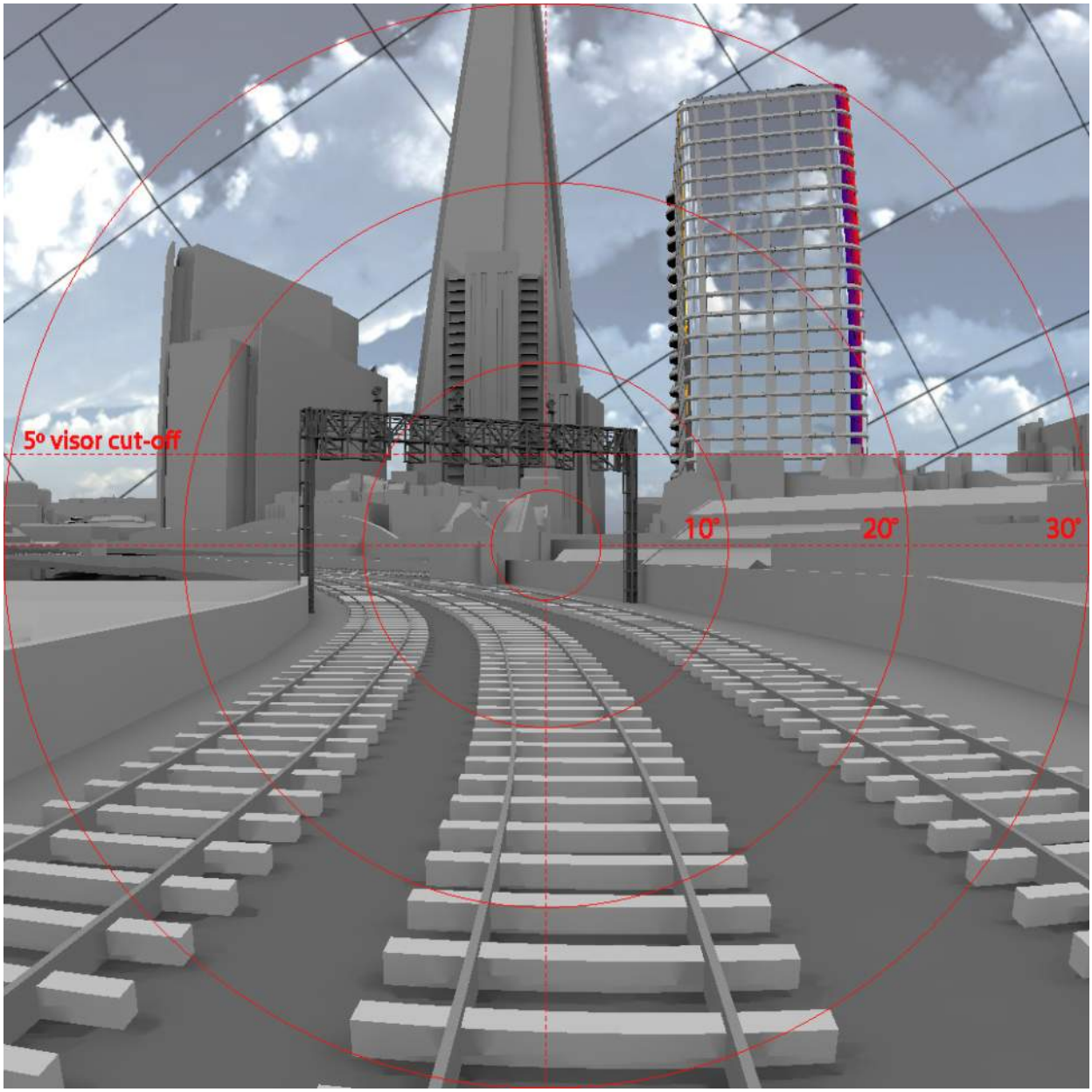
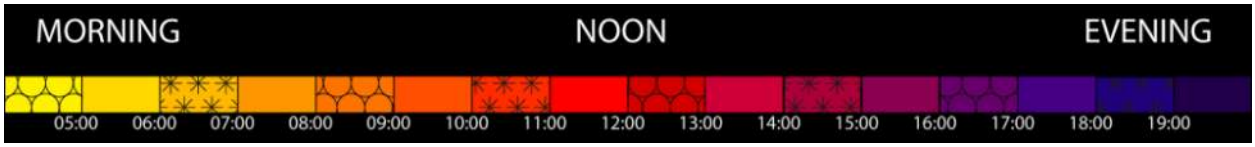


Fig. 59: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK NORTH _ VIEW 3 (TLB_N_3)

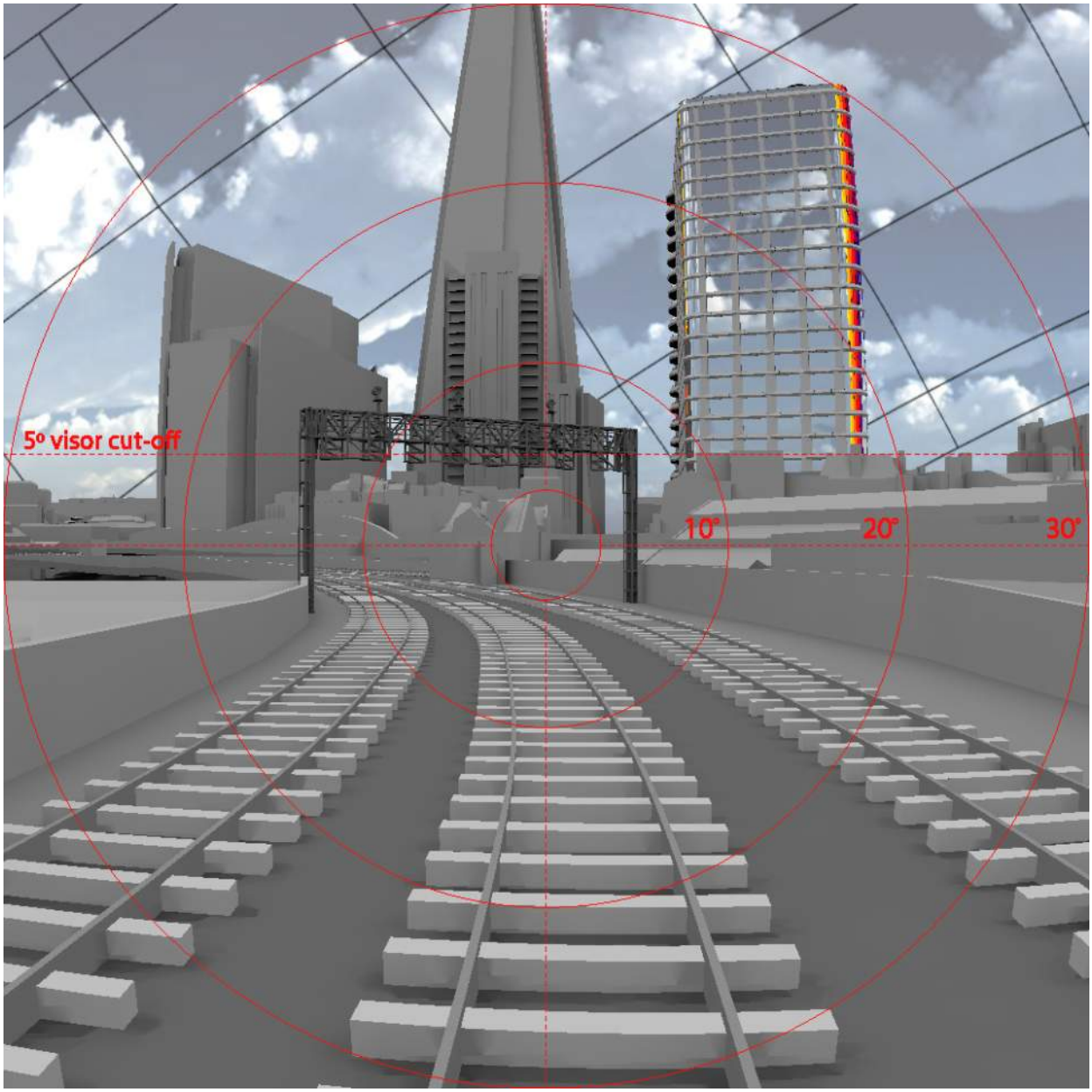


Fig. 60: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK WEST _ VIEW 1 (TLB_W_1)

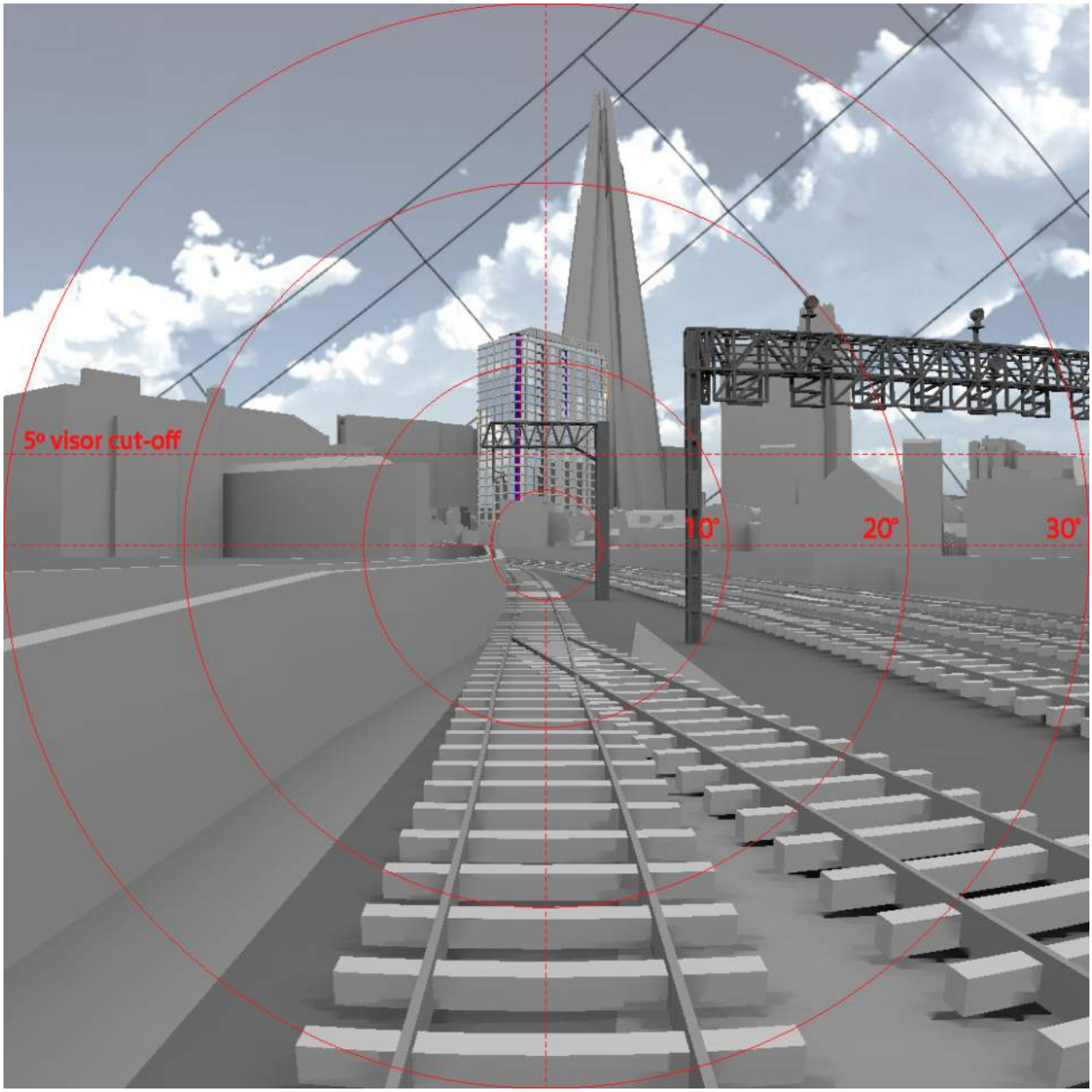
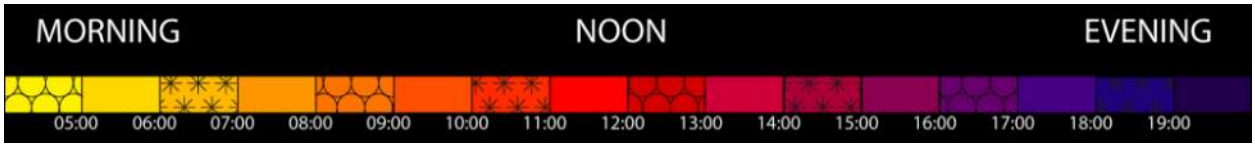


Fig. 61: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK WEST _ VIEW 1 (TLB_W_1)

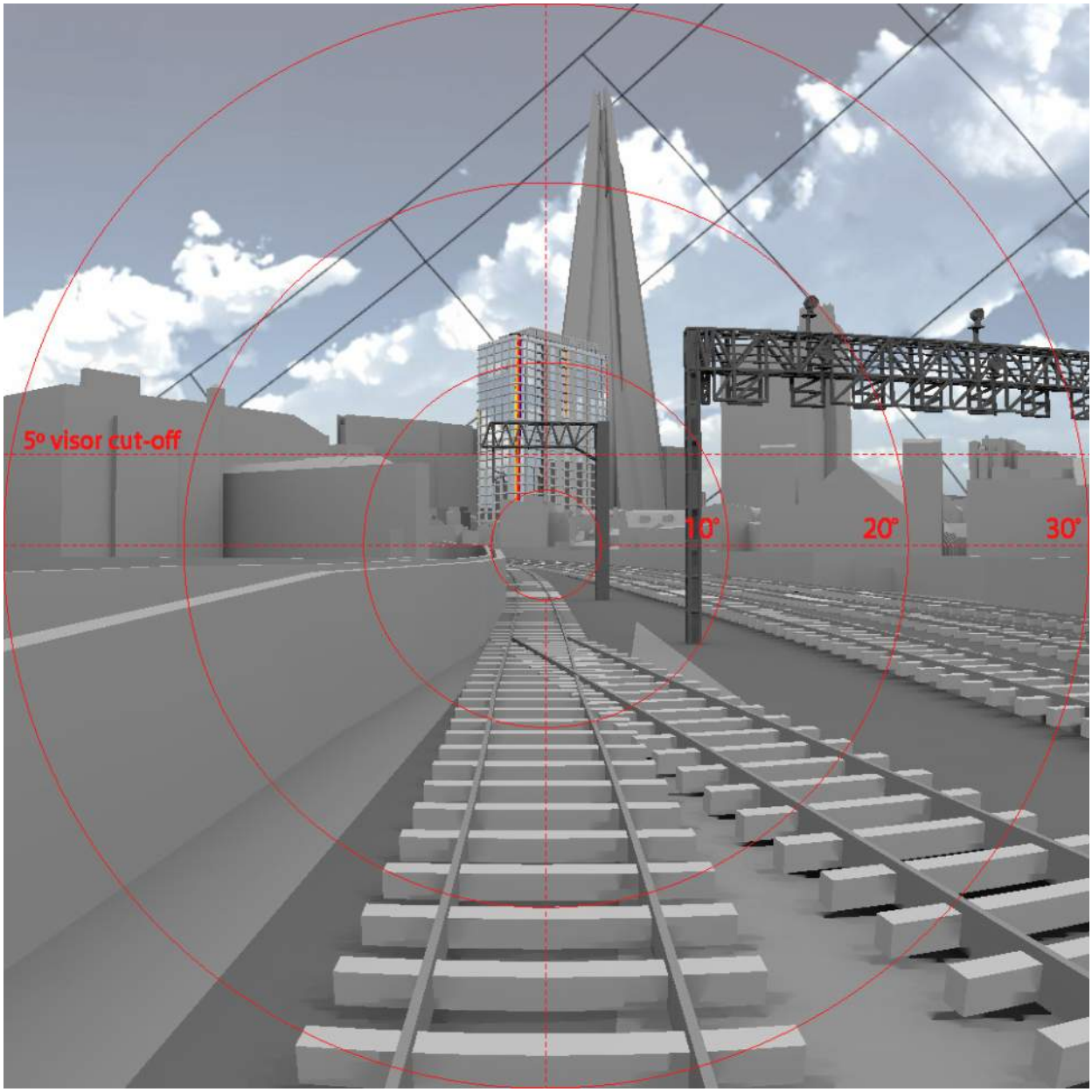


Fig. 62: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK WEST _ VIEW 3 (TLB_W_2)

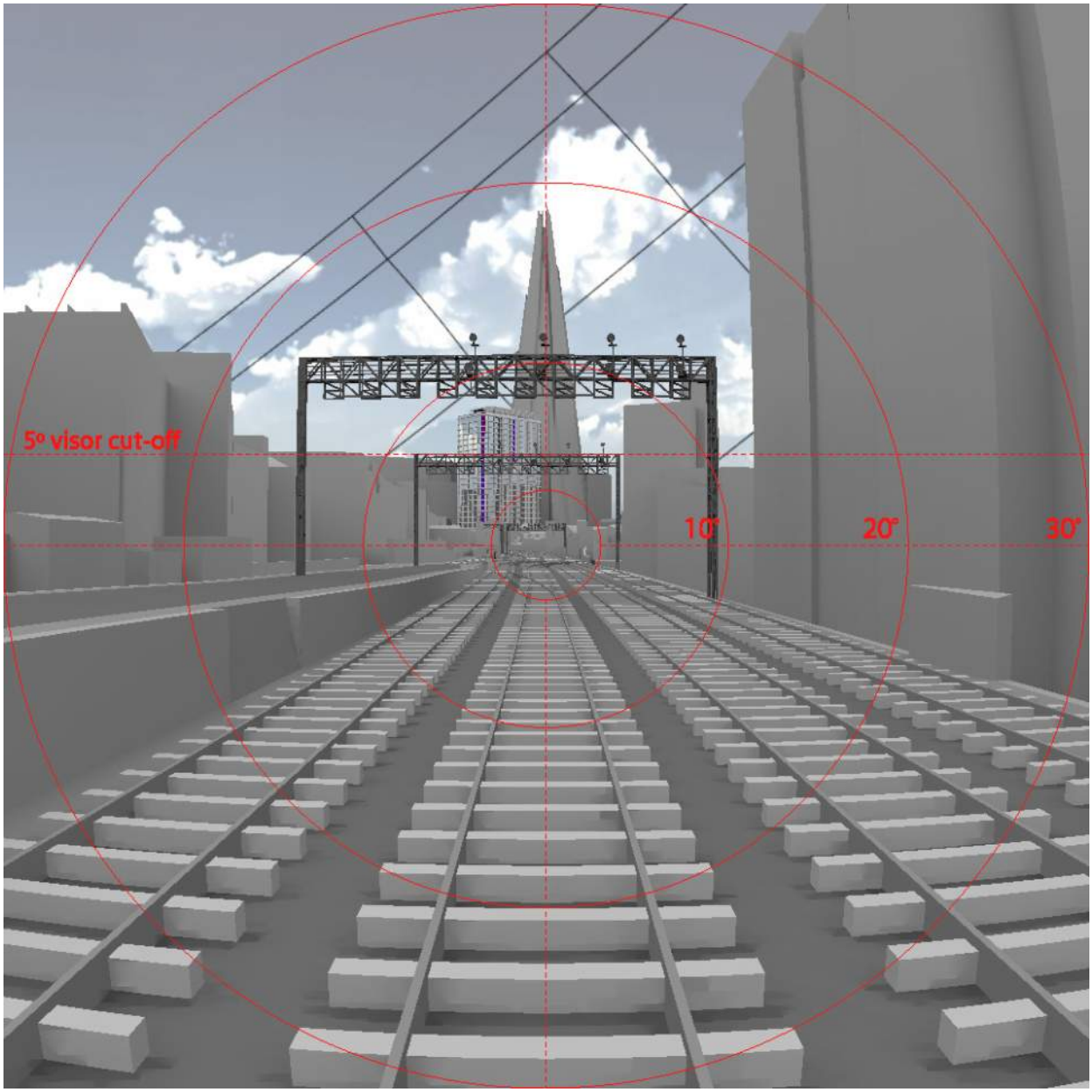
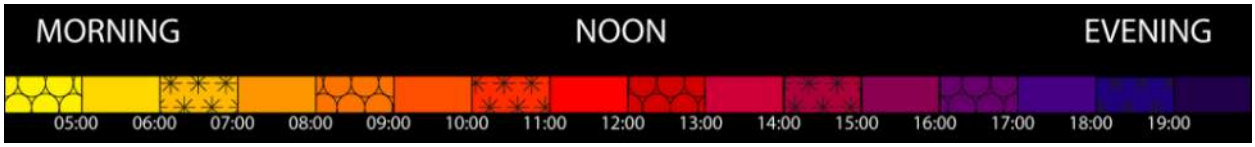


Fig. 63: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK WEST _ VIEW 3 (TLB_W_2)

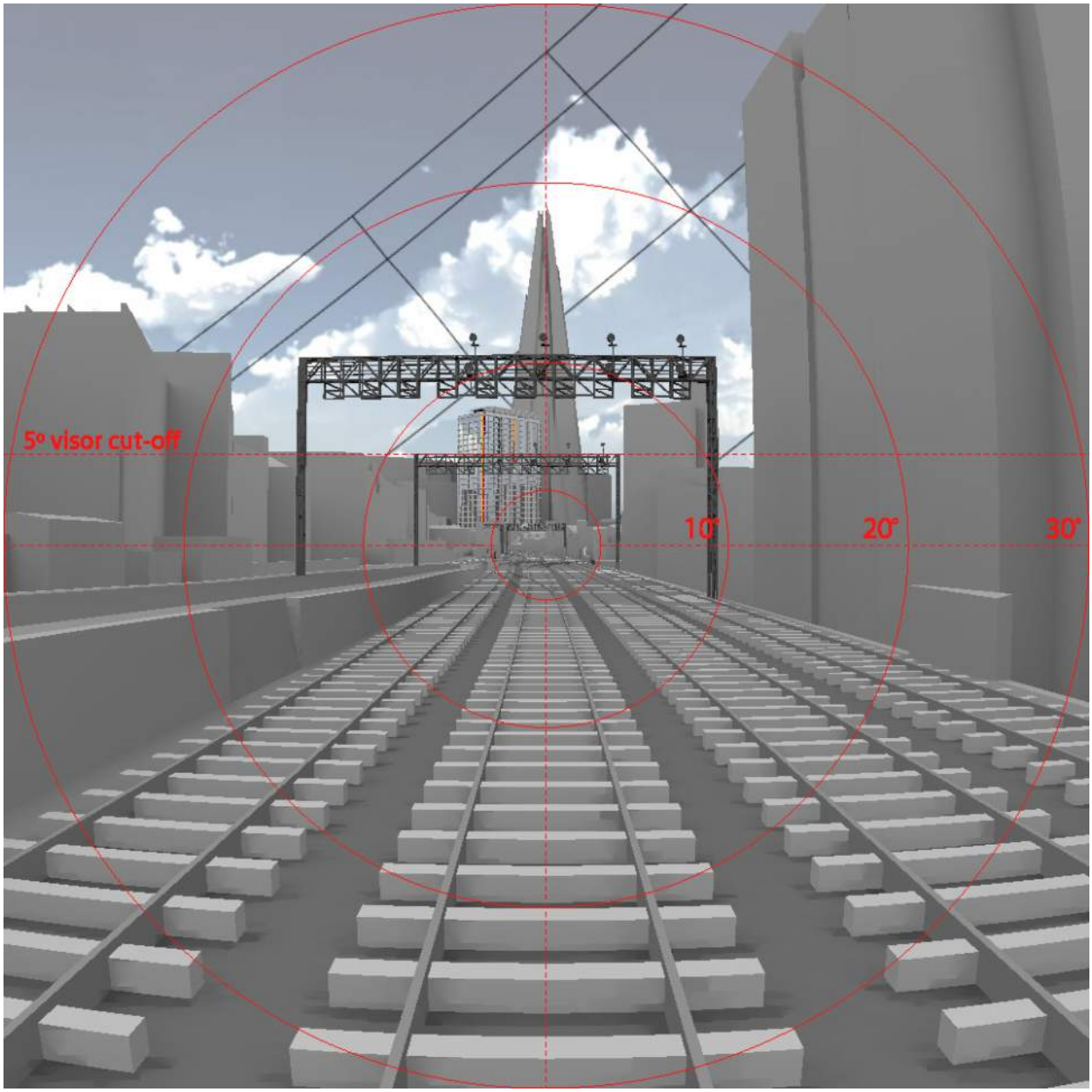


Fig. 64: Solar reflections

60° FIELD OF VIEW: TIME OF DAY
LONDON BRIDGE STATION - TRACK WEST _ VIEW 2 (TLB_W_3)

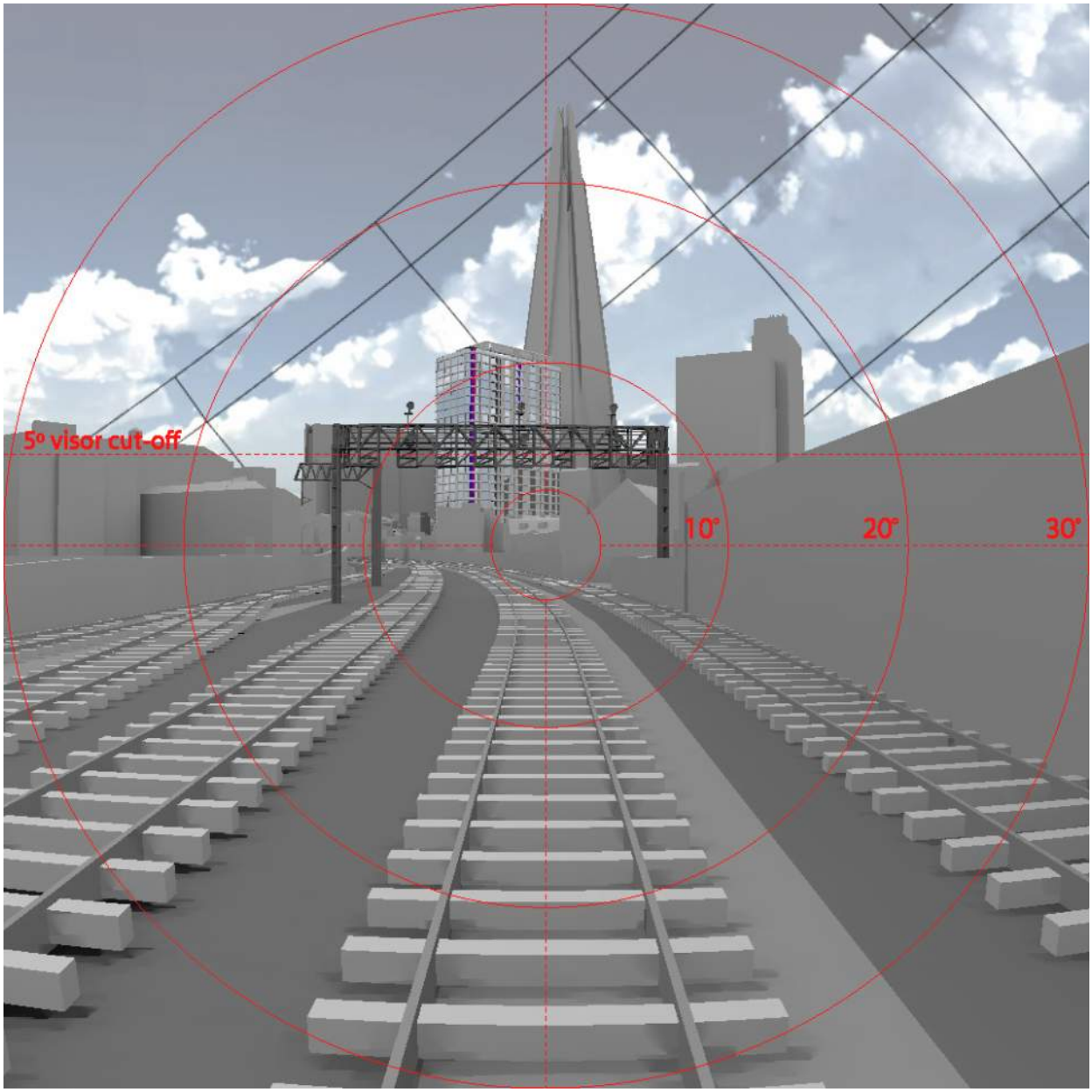
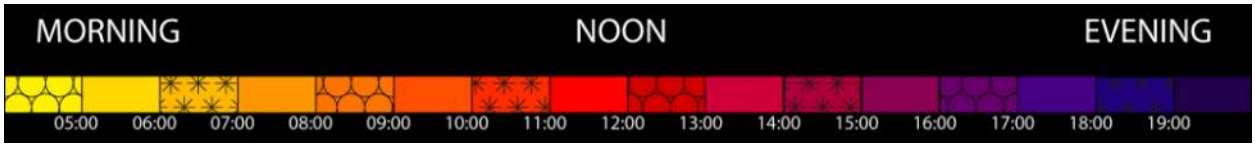


Fig. 65: Solar reflections



60° FIELD OF VIEW: SEASON
LONDON BRIDGE STATION - TRACK WEST _ VIEW 2 (TLB_W_3)

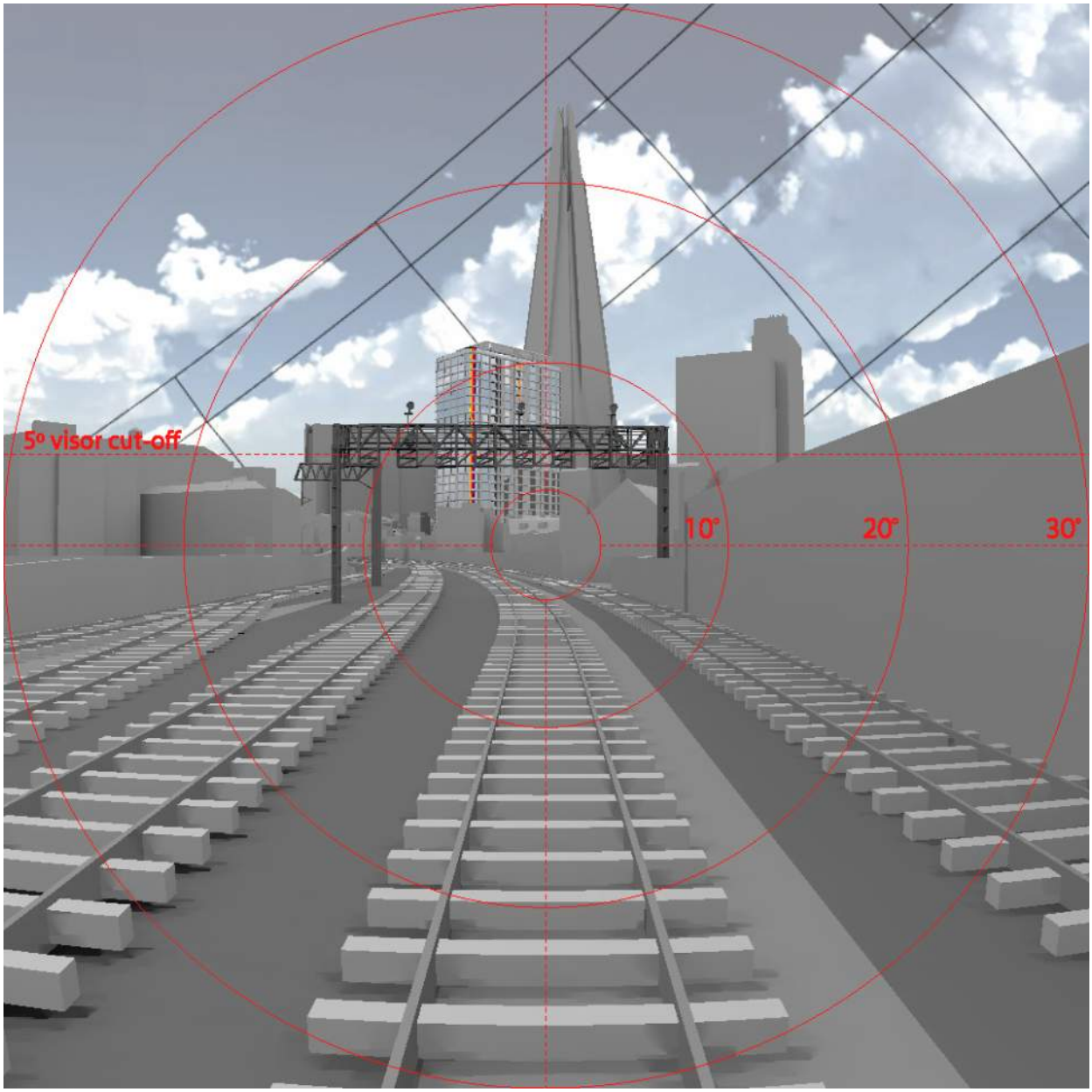


Fig. 66: Solar reflections

Annex 3 – Environmental Statement Part 3 - Townscape, Visual Impact & Built Heritage Statement - Addendum

NEW CITY COURT

Environmental Statement Part 3 - Townscape, Visual Impact & Built Heritage Statement - Addendum

Peter Stewart Consultancy + Millerhare

Contents

1.0 Introduction

1.1 This ES Addendum has been prepared by Peter Stewart Consultancy (PSC) in relation to minor amendments to the submitted April 2021 scheme (planning reference number 21/AP/1361) at New City Court, nos. 4-8, 12-16, 20 and 24-26 St Thomas Street (the Site).

1.2 The preparation of this addendum follows a review of the previous environmental assessment of the summitted scheme by PSC: ES Part 3: Townscape, Visual Impact and Built Heritage Assessment, April 2021 (the 'TVIBHA').

1.3 The Design and Access Statement Addendum (July 2021) by the architects of the scheme, AHMM, sets out the full set of proposed design amendments to the April 2021 scheme. In summary, these comprise:

- Improvements to the detailed design of the southern elevation, including provision of integrated photovoltaic panels and balconies, enhancing the operational energy strategy and urban greening factor;
- Reconfiguration of basement levels to facilitate the relocation of the Keats House façade, improve building management facilities and respond to UKPN comments;
- Improvements to Building Management facilities to enhance access and security measures;
- Development of façade to allow for safety egress from the BMU and overall maintenance of the building envelope;
- Introduction of additional security measures, including bollards, along the base of the building at St Thomas Street and King's Head Yard.

1.4 This addendum considers those amendments that have the potential to affect the assessment and conclusions of the TVIBHA by virtue of their potential visibility from the surrounding townscape, namely the addition of juliet balconies and photovoltaic panels to the south elevation of the proposed office building.

1.5 The purpose of this addendum is to focus on the likely significant effects outlined in the TVIBHA and to consider whether any new significant effects are likely as a result of the relevant amendments

noted above, taking into account any significant changes to the baseline context, planning policy and cumulative schemes.

1.6 This addendum addresses the likely significant environmental effects of the proposed amendments to the submitted scheme, as required by the EIA Regulations. It should be read together with the TVIBHA. Unless otherwise indicated, the conclusions of the TVIBHA remain unchanged as a result of the amendments.

1.7 Planning policy, guidance, legislation / law, assessment methodology, and baseline conditions remain as set out in the TVIBHA.

1.8 The conclusions of this addendum are informed by a set of updated Accurate Visual Representations (AVRs). These AVRs, which can be found in the Appendix to this addendum (Appendix 1), are as follows:

- View 33: Southwark Street – east of the railway bridge;
- View 35: Borough High Street, St Saviours Southwark War Memorial;
- View 36: Southwark Street / Stoney Street;
- View 38: George Inn Yard;
- View 39: Guy's Hospital: West Wing Quad; and
- View 40: Guys Courtyard – near the War Memorial

1.9 The above represent those TVIBHA views where the changes proposed to the south elevation of the office building would be most noticeable.

1.10 For each view, there are images of the view 'as existing', 'as proposed' and 'as proposed and cumulative'.

1.11 The 'as proposed' AVRs are provided as rendered (photorealistic) images. Cumulative schemes are represented as 'wirelines' (diagrammatic representations showing the outline of these schemes in blue) in the 'as proposed and cumulative' AVRs.

1.12 The cumulative schemes considered in this addendum are the same as those previously considered in the TVIBHA.

2.0 Assessment

The Works

2.1 The minor amendments would not give rise to any changes to the TVIBHA's assessment of effects of the April 2021 scheme on views, townscape, and built heritage during the Works.

Completed Development

Visual impact assessment

2.2 The updated AVRs reveal that the proposed amendments would enhance the visual interest of the south elevation of the proposed office building. The new planted balconies will further enliven this façade, not only through their use, but also as a consequence of the added depth and contrast lent to the elevation. The addition of photovoltaic panels will heighten that contrast between light and shade across this façade. The south elevation will from many viewpoints be read obliquely with the shorter elevations to the east or west, as illustrated in the AVRs. In such views, there will be a stronger sense of continuity and balance between these elevations, with the rhythm of repeating bays on the shorter façades more closely echoed in the southern elevation as a result of the changes.

2.3 Taken together, the changes will ensure that there is more to see and appreciate in local and mid-distance views of the building from the south, south-east and south-west. Notwithstanding the positive qualities noted above, the assessment of significance in respect of views would remain as presented in the April 2021 TVIBHA.

Townscape assessment

2.4 The effect of the minor amendments on townscape has been considered. There would be no change to the assessment of effects on the townscape character areas (TCA) previously considered. As with the April 2021 scheme, the amended scheme would reinforce the existing character of TCA 1 (Bankside, Borough and Potters Fields) within which it is located. In places, it would result in a pronounced contrast in height in relation to the lower scale development of the area,

echoing similar juxtapositions created by post-war and modern tall development at London Bridge. As a consequence, there would be a limited number of significant adverse effects on individual views within the TCA, as was the case with the April 2021 scheme. The amended scheme would enhance the Site's appearance and amenity value through its contribution to the legibility and composition of the grouping of tall buildings around London Bridge, its distinctive, high quality architecture, and through the provision of new routes and public spaces.

2.5 As was the case for the April 2021 scheme, the amended scheme would add coherently to an existing background layer of townscape of central London, as seen from TCA 2 (Newington) and TCA3 (Bermondsey), in particular, augmenting the grouping of large scale and tall buildings at London Bridge, from those viewpoints where the amended scheme would be seen to any noticeable extent.

2.6 Likewise, the amended scheme would be seen to add recognisably to the existing grouping of large scale and tall buildings marking London Bridge Station from TCA 4 (Tower) and TCA 5 (North Bank). Its high quality architecture would lend it an affinity with the modern buildings in this group – the News Building, The Shard and Shard Place.

Built Heritage Assessment

2.7 The assessment of effects of the April 2021 scheme on built heritage, as set out in the TVIBHA, would remain valid in the context of the proposed scheme amendments.

Cumulative effects assessment

2.8 The assessment and conclusions of the TVIBHA with regards to the effect of the April 2021 scheme on views, townscape and built heritage in the cumulative condition would remain valid in the context of the proposed scheme amendments.

3.0 Conclusion

3.1 The overall assessment of effect of the April 2021 scheme, in terms of architecture, urban design, views, townscape and built heritage (as provided within the TVIBHA) would remain valid in relation to the proposed minor amendments. It would continue to be a high quality and well considered scheme, which would represent a substantial improvement on the existing condition of the Site.

Peter Stewart Consultancy
Somerset House
Strand
London WC2R 1LA

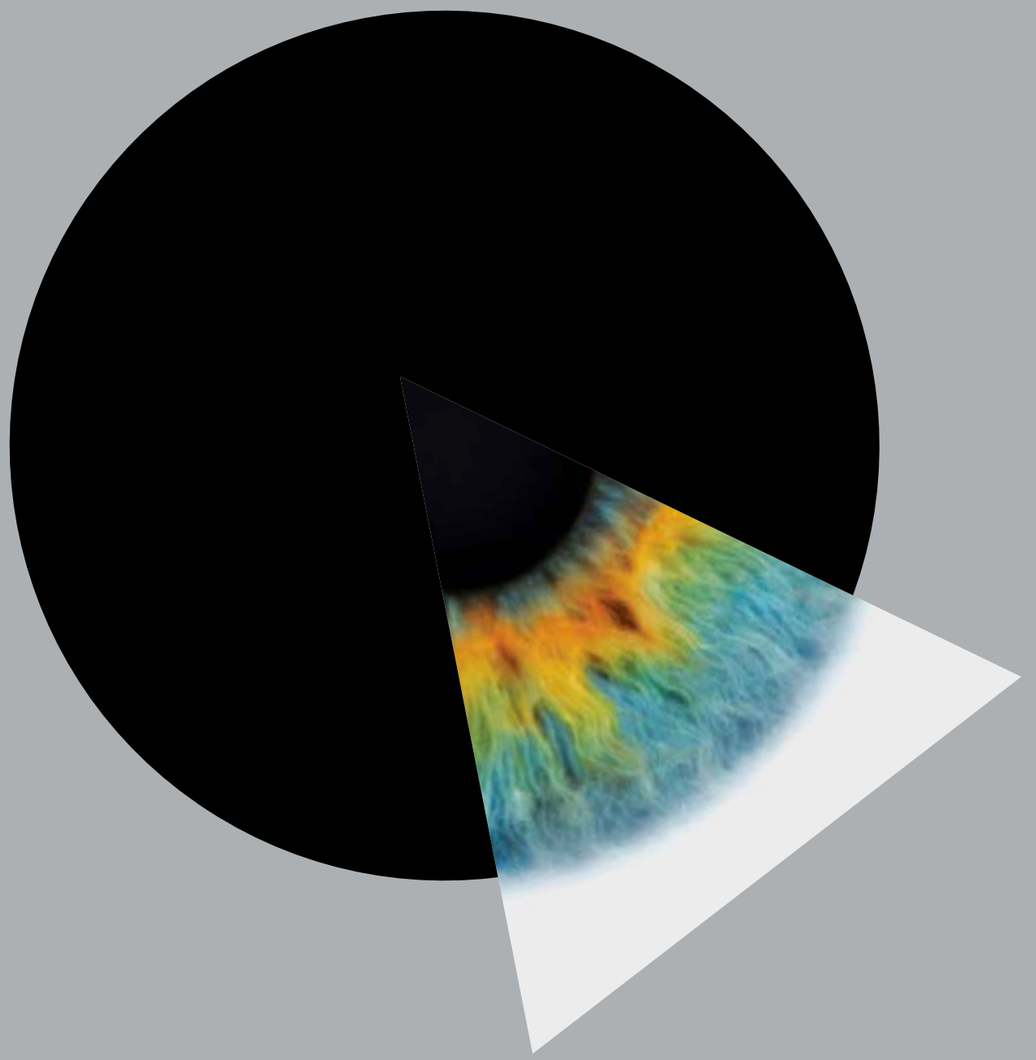
July 2021

Appendix 1 – Verified views

New City Court

Townscape, Visual Impact and Built Heritage Assessment Addendum

July 2021



millerhare

Miller Hare Limited
Mappin House
4 Winsley Street
London W1W 8HF

+44 20 7691 1000
info@millerhare.com

New City Court

Townscape, Visual Impact and Built Heritage Assessment Addendum

July 2021

Contents

Client
GPE (St Thomas Street) Limited

Architect
Allford Hall Monaghan and Morris LLP

Townscape Consultant
Peter Stewart Consultancy

Visualisation
Millerhare

millerhare

1 Views Assessment

The Views

33 I Southwark Street – east of the railway bridge

35 I Borough High Street, St Saviours Southwark War Memorial

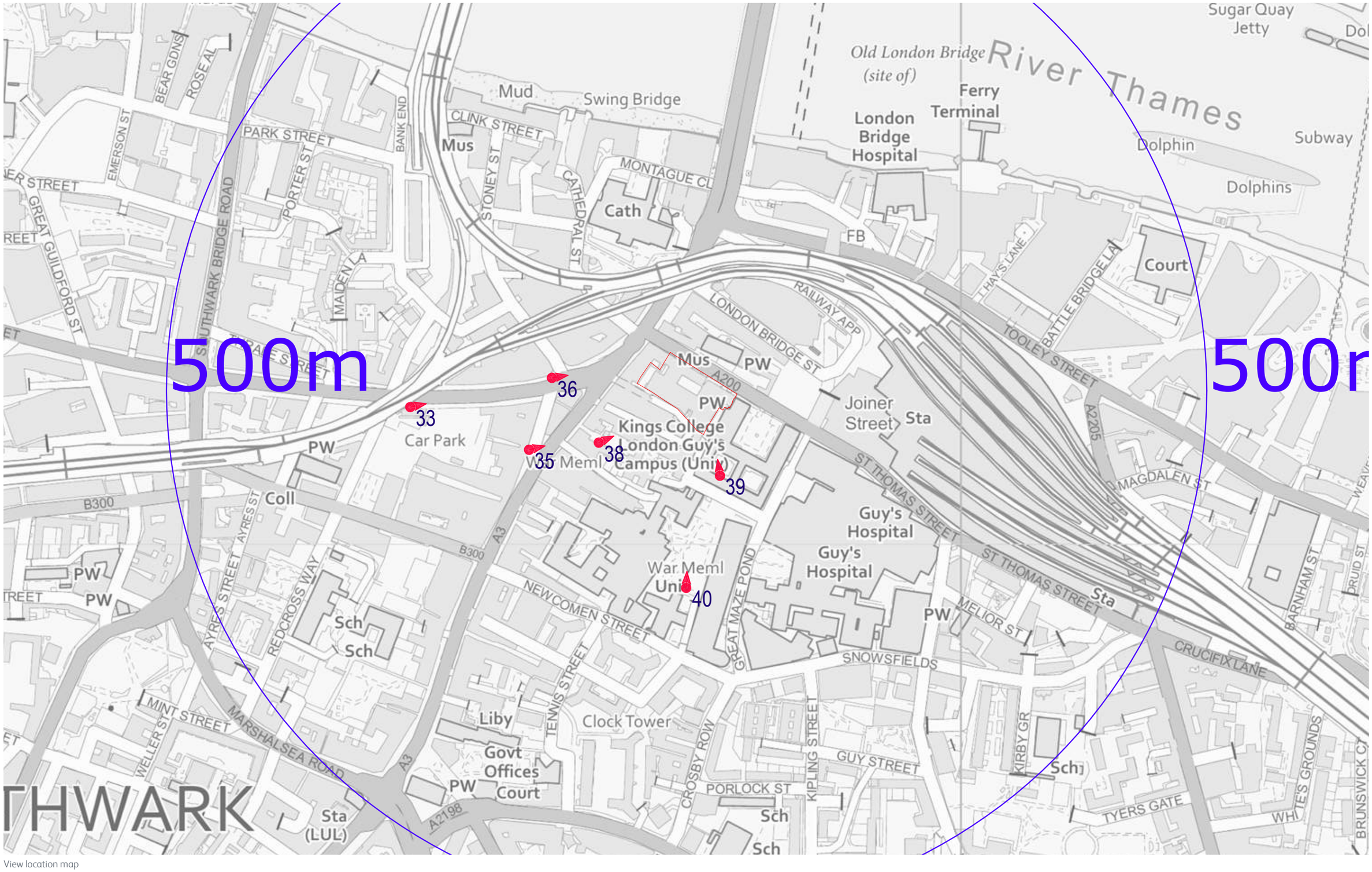
36 I Southwark Street / Stoney Street

38 I George Inn Yard

39 I Guy's Hospital: West Wing Quad I Panorama

40 I Guys Courtyard – near the War Memorial

					Camera Location					HFOV				
View	**Description**	**MH Reference**	**Type**	**Method**	**Easting**	**Northing**	**Height**	**Camera**	**Lens**	**Photo**	**Image**	**Photo date/time**	**Bearing**	**distance (km)**
33	Southwark Street – east of the railway bridge	2200	AVR3	Verified	532471.5	180132.0	5.84	Canon EOS 5D Mark IV DSLR	24mm	73.7	73.2	10/02/2021 15:19	86.8	0.3
35	Borough High Street, St Saviours Southwark War Memorial	1800	AVR3	Verified	532585.7	180091.0	5.92	Canon EOS 5D Mark IV DSLR	24mm	73.7	73.2	10/02/2021 15:28	68.2	0.2
36	Southwark Street / Stoney Street	3110	AVR3	Verified	532607.6	180160.0	6.43	Canon EOS 5D Mark IV DSLR	24mm	73.4	73.2	05/02/2021 15:06	96.9	0.1
38	George Inn Yard	1710	AVR3	Verified	532652.7	180097.8	5.53	Canon EOS 5D Mark II DSLR	24mm	72.7	72.7	24/09/2017 13:43	55.6	0.1
39	Guy's Hospital: West Wing Quad I Panorama	1600	AVR3	Verified	532769.2	180066.0	6.99	na	na	65.0	65.0	na	330.0	0.1
40	Guys Courtyard – near the War Memorial	2850	AVR3	Verified	532736.7	179958.3	6.48	Canon EOS 5D Mark IV DSLR	24mm	73.5	73.3	05/02/2021 10:03	355.8	0.2



View location map

Existing

As currently proposed

As currently proposed with cumulative

April 2021 proposed

April 2021 proposed with cumulative

4536_1801

Existing

4536_1805

As currently proposed

4536_1806

As currently proposed with cumulative

4536_1808

April 2021 proposed

4536_1809

April 2021 proposed with cumulative

4536_3111

Existing

4536_3115

As currently proposed

As currently proposed with cumulative

4536_3118

April 2021 proposed

4536_3119

April 2021 proposed with cumulative

4536_1711

Existing

4536_1715

As currently proposed

As currently proposed with cumulative

4536_1718

April 2021 proposed

April 2021 proposed with cumulative

4536_1601

Existing

4536_1605

As currently proposed

4536_1606

As currently proposed with cumulative

4536_1608

April 2021 proposed

4536_1609

April 2021 proposed with cumulative

4536_2851

Existing

As currently proposed

As currently proposed with cumulative

April 2021 proposed

April 2021 proposed with cumulative

Appendices

A1 Views for on-site assessment

Introduction

A1.1 The following pages show the Cumulative condition of each view printed at the optimum scale for assessing the Proposed Development on site. When these pages are held at a comfortable viewing distance features shown in the AVRs will appear at the same size as they do in the actual scene.

Desktop versus on-site assessment

A1.2 The AVRs prepared for this document have been based on photography taken with a small range of lenses. The choice of lens is based on the principles defined in the Method Statement. In making a lens selection, and hence of the Field of View to be included, the primary criterion is the need to provide clear reproduction whilst including adequate context to assess the Proposed Development.

A1.3 In Section 1 "Views Assessment" the presentation of the AVRs has been designed to present a clear assessment of the Proposed Development suitable for desktop study. In combining the AVRs with the assessment text a page layout has been adopted which facilitates comparison between the baseline, proposed and cumulative conditions and ensures that wherever possible the commentary can be read alongside the view being discussed.

A1.4 In situations where the decision makers or consultees wish to review the AVRs on site, which is highly recommended, there may be an additional requirement to provide a means of comparison between the view as perceived today and as it would appear were the Proposed Development present.

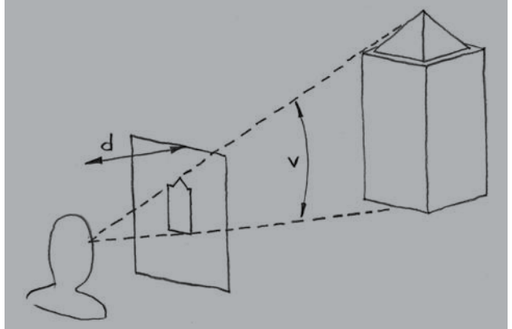
A1.5 In such situations it can be argued that the ideal presentation is one were, while holding the document at a comfortable viewing distance, features in the AVR have the same apparent scale on the paper as they do in the real scene. This effect is achieved if the images can be viewed at their "Natural Viewing Distance (see side panel).

A1.6 In the following pages, the Cumulative condition of each view is printed at a scale such that the Natural Viewing Distance is 40 cm. This means that each page can be held up to the view at approximately arms length and when doing so the angle subtended by a feature on the page will be very close to the angle subtended by the feature in the real scene.

Natural Viewing Distance

The Natural Viewing Distance of a print is the distance at which the perspective of the photograph correctly reproduces the perspective seen from the location from which the photograph was taken (distance d in the diagram below).

When viewed from this distance the angle occupied by a feature in the print will be the same as the angle occupied by the feature in the real world (v).



This distance is also referred to as the Correct Viewing Distance. Note that a camera and lens combination does not of itself have a Natural Viewing Distance; it is a function of both the lens used for the original photograph and the dimensions at which it is reproduced.

If the print is held further away from the eye than the Natural Viewing Distance then features will appear too small compared with the real world, and conversely if the print is held too close then objects will appear to be too large.

When using A3 sized prints a viewing distance in the range 30 cm to 50 cm is preferred. In this range the viewer is able to hold the document at a comfortable viewing distance and alternate their focus between the AVR and the existing scene and make a direct comparison between the two. If the Natural Viewing Distance is too small then only the AVR or the scene would be visible at one time.

A natural consequence of the use of A3 sized prints and a viewing distance in the range 30 cm to 50 cm is that images which exhibit either weak or strong perspective are avoided.

Methodology

A1.7 All images in this section have been placed on the page at a scale calculated to give a Natural Viewing Distance of 40 cm. Using this dimension, most assessors will be able to hold the document comfortably and focus on the print.

A1.8 Due to the maximum paper size of A3, some AVRs require cropping of the view in order to enlarge the image to a point where the correct viewing distance can be achieved.

A1.9 When the AVR fills the A3 page, the Horizontal Field of View represented is 55 degrees. Intermediate angles are indicated with a simplified graticule at the edge of the page.

A1.10 When the Horizontal Field of View of the base photograph is less than 55 degrees, some white space will be present around the AVR.

A1.11 Portrait format views are rotated by 90 degrees in order to show the maximum amount of the AVR.

Viewing distance 40cm

25 20 15 10 5 5 10 15 20 25

35 Borough High Street, St Saviours Southwark War Memorial

Viewing distance 40cm

25 20 15 10 5 5 10 15 20 25

Southwark Street / Stoney Street

36

Viewing distance 40cm


15
10
5
Viewing distance 40cm
5
10
15

Guy's Hospital: West Wing Quad | Left

39.2

15

10

5

Viewing distance 40cm

5

10

15

40 Guys Courtyard – near the War Memorial

Appendices (continued)

A2 Millerhare's technical notes on the Views

Scope

A2.1 This study tests the visual impact of the Proposed Development by Great Portland Estates plc at New City Court, 4-26 St Thomas Street, London, SE1 9RS. It consists of a series of accurately prepared photomontage images or Accurate Visual Representations (AVR) which are designed to show the visibility and appearance of the Proposed Development from a range of publicly accessible locations around the site. The views have been prepared by Miller Hare Limited.

A2.2 The views included in the study were selected by the project team and they include, where relevant, standard assessment points defined by the Mayor of London and the London Borough of Southwark. Where requested, view locations have been refined and additional views added. The full list of views is shown in thumbnail form on the following pages, together with a map showing their location. Detailed co-ordinates for the views, together with information about the source photography are shown in Appendix A3 "View Locations".

A2.3 In preparing each AVR a consistent methodology and approach to rendering has been followed. General notes on the AVRs are given in Appendix A6 "Accurate Visual Representations", and the detailed methodology used is described in Appendix A7 "Methodology for the production of Accurate Visual Representations".

A2.4 From each viewpoint a large format photograph has been taken as the basis of the study image. The composition of this photograph has been selected to allow the Proposed Development to be assessed in a meaningful way in relation to relevant elements of the surrounding context. Typically, photographs have been composed with a horizontal axis of view in order to allow vertical elements of the proposals to be shown vertically in the resulting image. If required in order to show the full extent of the proposals in an natural way the horizon line of the image has been allowed to fall above or below the centre of the image. This has been achieved by applying vertical rise at source using a large format camera or by subsequent cropping of the image. In a limited number of cases the source photograph has been extended vertically to ensure that the full height of the proposals are shown in the images of the future condition. In all cases the horizon line and location of the optical axis are clearly shown by red arrow markers at the edges of the image.

A2.5 The lenses chosen for the source photography have been selected to provide a useful Field of View given the distance of the viewpoint from the site location. The lenses used for each view are listed in Appendix A3 "View Locations".

A2.6 In this study the following groups of views have been defined:

- **Mid-distance views** – horizontal Field of View approximately 74 degrees (equivalent to a 24mm lens on 35mm film camera)
- **Local views** – horizontal Field of View approximately 74 degrees (equivalent to a 24mm lens on 35mm film camera)

A2.7 For each AVR image, the precise Field of View, after any cropping or extension has been applied is shown clearly using indexed markings running around the edges of the image. These indicate increments of 1, 5 and 10 degrees marked away from Optical Axis. Using this peripheral annotation it is possible to detect optical distortions in parts of the image away from the Optical Axis . It is also possible to simulate a different field of view by masking off an appropriate area of the image. More detailed information on the border annotation is contained in Appendix A6 "Accurate Visual Representations".

Conditions

A2.8 From each selected viewpoint a set of accurate images have been created comparing the future view with the current conditions represented by a carefully taken large format photograph. In this study the following conditions are compared:

- **Existing** – the appearance today as recorded on the specified date and time
- **As currently proposed** – the future appearance were the Proposed Development to be constructed
- **As currently proposed with cumulative** – the Proposed Development is shown in the context of other significant schemes considered relevant by the project team
- **April 2021 proposed** – the future appearance were the April 2021 Proposed Development to be constructed
- **April 2021 proposed with cumulative** – the April 2021 Proposed Development is shown in the context of other significant schemes considered relevant by the project team

Presentation

A2.9 For each view the AVRs have been presented using two double page layouts; the first which facilitates desktop study and the second designed specifically for on-site assessment. The first layout shows all conditions at the same size and scale on the page and, wherever possible, the assessment text is placed alongside the view being discussed.

A2.10 In the second layout the 'As currently proposed with cumulative' conditions of each view has been printed at the optimum scale for assessing the Proposed Development on site. When these pages are held at a comfortable viewing distance features shown in the AVRs will appear at the same size as they do in the actual scene. For an explanation of how these views are constructed see Appendix A1 "Views for on-site assessment".

Styles

A2.11 For each viewpoint, the Proposed Development is shown in a defined graphical style. These styles comply with the definitions of AVR style defined by the London View Management Framework. The styles used in this study are:

- **AVR 3** – a fully rendered representation of the building showing the likely appearance of the proposed materials under the lighting conditions obtaining in the selected photograph.

Schemes

A2.12 In the Cumulative view, the Proposed Development has been shown in the context of other schemes shown in silhouette form (AVR 1) using an orange line. Where parts of these schemes would not be visible they are shown as a dotted line. The details of the additional schemes included in the Cumulative view are given in the schedule and overview map included in Appendix A4 "Details of schemes", these include:

- 1 Bank End
- 133 Park Street and 105 Sumner Street (2020)
- Southwark Fire Station
- Capital House (2018)
- 185 Park Street (2017)
- Guinness Court
- Arthouse, 2-4 Melior Place
- Royal Mint Court
- 130 Fenchurch Street – S73 (2019)
- Bank Station (OSD)
- Seal House (2018)
- Vinegar Yard
- Bermondsey – Snowsfields – 2020
- Guy's Campus Student Village
- Landmark Court
- EDGE London Bridge
- Colechurch House
- 151-157 Tower Bridge Road (2018)
- 1 Undershaft
- 6-8 Bishopsgate (2017)
- 100 Leadenhall Street
- 1 Leadenhall (2018)
- 40 Leadenhall Street
- 70 Gracechurch Street
- 50 Fenchurch Street (2019)
- 55 Gracechurch Street
- Bankside Yards East – Sampson House
- Bankside Yards West – Ludgate House
- 18 Blackfriars (2016) – Office Tower
- 18 Blackfriars (2016) – Residential Tower
- Paris Gardens (2018)
- Friars Bridge Court
- 216-220 Blackfriars Road
- ITV Headquarters
- Doon Street
- Elizabeth House (2019)
- Rose Court
- 135 Park Street (2019)

- Lavington Street
- 49-53 Glengall Road
- Bianca Warehouse Glengall Road
- Malt Street Regeneration
- Southernwood Old Kent Road
- 153-159 Borough High Street
- King's Place (2018)

A2.13 The Proposed Development shown in the study has been defined by drawings and specifications prepared by the client's design team issued to Millerhare in June 2021 Computer models reflecting the Proposed Development have been assembled and refined by Millerhare and images from these models have been supplied to the project team to be checked for accuracy against the design intent. An overview of the study model annotated with key heights is illustrated in Appendix A4 "Details of schemes".

A3 View Locations

33 | Southwark Street – east of the railway bridge

Camera Location
National Grid Reference 532471.5E 180132.0N
Camera height 5.84m AOD
Looking at Centre of Site
Bearing 78.4°, distance 0.3km
Photography Details
Height of camera 1.60m above ground
Date of photograph 10/02/2021
Time of photograph 15:19
Canon EOS 5D Mark IV DSLR
Lens 24mm

35 | Borough High Street, St Saviours Southwark War Memorial

Camera Location
National Grid Reference 532585.7E 180091.0N
Camera height 5.92m AOD
Looking at Centre of Site
Bearing 76.5°, distance 0.1km
Photography Details
Height of camera 1.60m above ground
Date of photograph 10/02/2021
Time of photograph 15:28
Canon EOS 5D Mark IV DSLR
Lens 24mm

36 | Southwark Street / Stoney Street

Camera Location
National Grid Reference 532607.6E 180160.0N
Camera height 6.43m AOD
Looking at Centre of Site
Bearing 80.8°, distance 0.1km
Photography Details
Height of camera 1.60m above ground
Date of photograph 05/02/2021
Time of photograph 15:06
Canon EOS 5D Mark IV DSLR
Lens 24mm

38 | George Inn Yard

Camera Location
National Grid Reference 532652.7E 180097.8N
Camera height 5.53m AOD
Looking at Centre of Site
Bearing 66.7°, distance 0.1km
Photography Details
Height of camera 1.60m above ground
Date of photograph 24/09/2017
Time of photograph 13:43
Canon EOS 5D Mark II DSLR
Lens 24mm

39.2 | Guy's Hospital: West Wing Quad | Left

Camera Location
National Grid Reference 532769.2E 180066.0N
Camera height 6.99m AOD
Looking at Centre of Site
Bearing 352.0°, distance 0.1km
Photography Details
Height of camera 1.60m above ground
Date of photograph 05/02/2021
Time of photograph 10:16
Canon EOS 5D Mark IV DSLR
Lens 24mm

40 | Guys Courtyard – near the War Memorial

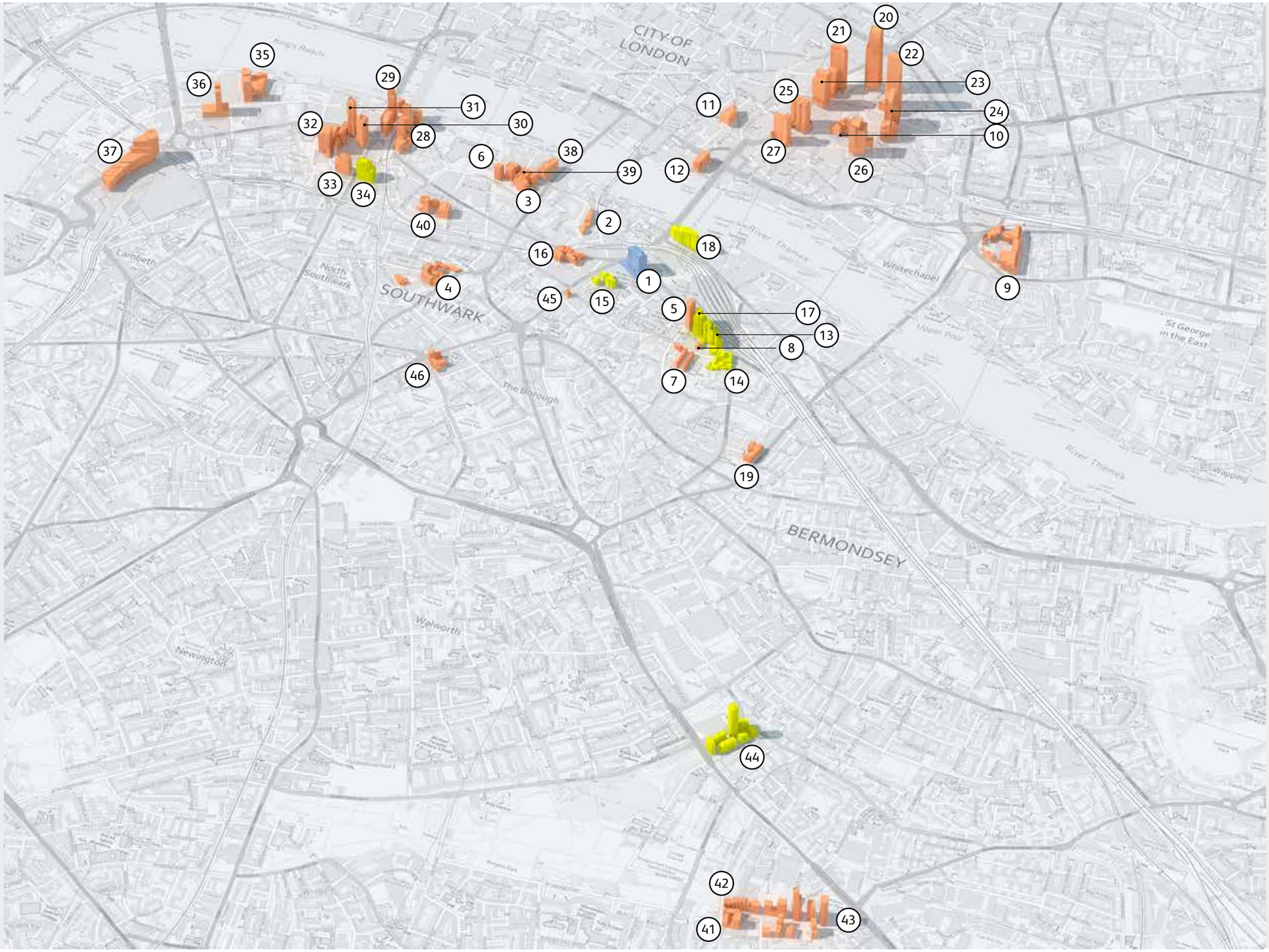
Camera Location
National Grid Reference 532736.7E 179958.3N
Camera height 6.48m AOD
Looking at Centre of Site
Bearing 2.7°, distance 0.2km
Photography Details
Height of camera 1.60m above ground
Date of photograph 05/02/2021
Time of photograph 10:03
Canon EOS 5D Mark IV DSLR
Lens 24mm

A4 Details of schemes

index	scheme name	address	reference	PA	status	source of model data	positioning method	MH reference	colour
1	New City Court (2021)	New City Court, 4-26 St Thomas Street, London, SE1 9RS	n/a	SC	Proposed	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0139-b.detail210302-ahmm-proposed	Blue
2	1 Bank End	1 Bank End (site, including Railway Arches and Thames House, bounded by Stoney Street, Clink Street and Park Street	15/AP/3066	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0105.mass160916-rb-consented	Orange
3	133 Park Street and 105 Sumner Street (2020)	n/a	20/AP/3751	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0088-b.profile210303-proposed	Orange
4	Southwark Fire Station	Southwark Fire Station, 94 Southwark Bridge Road, London, SE1 0EG, Grotto Place and Grotto Podiums	17/AP/0367	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0263.profile180328-dp-consented	Orange
5	Capital House (2018)	Capital House, 42-46 Weston Street, London SE1 3QD	18/AP/0900	SC	Legal Consent granted	Model supplied by KPF	Position relative to O.S. supplied by architect	swrk0292.surface181004-kpf-proposed-rb	Orange
6	185 Park Street (2017)	185 Park Street, Southwark, London, SE1	17/AP/1944	SC	Legal Consent granted	Model supplied by KPF	Position relative to O.S. supplied by architect	swrk0087.surface150401-nl-consented	Orange
7	Guinness Court	Guinness Court, Snowsfield Street, London, SE1 3TA	16/AP/3819	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0351.mass180220-dp-proposed	Orange
8	Arthouse, 2-4 Melior Place	2-4 Melior Place, London, SE1 3SZ	18/AP/3229	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0350.profile190103-jh-proposed	Orange
9	Royal Mint Court	Royal Mint Court, London, EC3N 4QN	PA/16/00479/A1	THBC	Legal Consent granted	Model supplied by Sheppard Robson	Position relative to O.S. supplied by architect	towh0004.surface190130-sr-proposed	Orange
10	130 Fenchurch Street – S73 (2019)	Fountain House 130 Fenchurch Street London EC3M 5DJ	19/00713/FULMAJ	CoL	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	city0263-b.mass181113-dp-proposed-rb	Orange
11	Bank Station (OSD)	Site Bounded By King William Street, Cannon Street, Abchurch Lane & Nicholas Lane Incorporating 10 King William Street, 12 Nicholas Lane, 14 Nicholas Lane, 135-141 Cannon Street, 143-149 Cannon Street & 20 Abchurch Lane London EC4	14/00178/FULEIA	CoL	Legal Consent granted	Model supplied by Wikinson Eyre Architects and simplified by Millerhare	Position relative to O.S. supplied by architect	city0253.profile140520-wea-proposed	Orange
12	Seal House (2018)	Seal House 1 Swan Lane London EC4R 3TN	18/01178/FULMAJ	CoL	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	city0115-a.profile190312-fg-consented	Orange
13	Vinegar Yard	Land Bounded By St Thomas Street Fenning Street Vinegar Yard And Snowfields Including Nos. 1-7 Fenning Street And No. 9 Fenning Street SE1 3QR	18/AP/4171	SC	Submitted for planning	Model supplied by KPF	Position relative to O.S. supplied by architect	swrk0348.detail201111-kpf-proposed	Yellow
14	Bermondsey – Snowsfields – 2020	40-44 Bermondsey Street, Vinegar Yard Warehouse, 9-17 Vinegar Yard And Land Adjacent To 1-7 Snowsfields SE1	19/AP/0404	SC	Submitted for planning	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0305-i.mass201113-rpbw-proposed	Yellow
15	Guy's Campus Student Village	Kings College London, Land rear of 89-111 Borough High Street, London, SE1	19/AP/0405	SC	Submitted for planning	Model supplied by architect	Position relative to O.S. supplied by architect	swrk0139-e.detail180817-bdg-proposed-chalk	Yellow
16	Landmark Court	Landmark Court Land Bounded By Southwark Street Redcross Way And Cross Bones Graveyard London SE1	19/AP/0830	SC	Legal Consent granted	Model supplied by Allies and Morrison	Best fit to Ordnance Survey	swrk0103.detail190828-am-proposed-chalk	Orange
17	EDGE London Bridge	60-68 St Thomas Street and 42 Weston Street	20/AP/0944	SC	Submitted for planning	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0349.detail200213-pp-proposed	Yellow
18	Colechurch House	Colechurch House, London Bridge Walk, London	20/AP/3013	SC	Submitted for planning	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0120.mass201113-dp-proposed	Yellow
19	151-157 Tower Bridge Road (2018)	151-157 Tower Bridge Road, London, SE1 3JE	18/AP/3167	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0301.profile210303-dp-proposed	Orange
20	1 Undershaft	1 Undershaft London EC3P 3DQ	16/00075/FULEIA	CoL	Legal Consent granted	Model supplied by Cityscape	Position related to O.S. supplied by Cityscape	city0311-f.profile160620-cs-proposed	Orange
21	6-8 Bishopsgate (2017)	6 – 8 Bishopsgate & 150 Leadenhall Street London EC2N 4DA & EC3V 4QT	17/00447/FULEIA	CoL	Legal Consent granted	Model supplied by Wilkinson Eyre Architects and simplified by Millerhare	Position relative to O.S. supplied by architect	city0311-c.profile170321-wea-proposed	Orange
22	100 Leadenhall Street	100 Leadenhall Street London EC3A 3BP	18/00152/FULEIA	CoL	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	city0310-c.profile180316-dp-proposed	Orange
23	1 Leadenhall (2018)	Leadenhall Court, 1 Leadenhall Street, London, EC3V 1PP	18/00740/FULEIA	CoL	Legal Consent granted	Model supplied by Make	Position relative to O.S. supplied by architect	city0261-a.surface180607-make-consented	Orange
24	40 Leadenhall Street	Site Bounded By 19-21 & 22 Billiter Street, 49 Leadenhall Street, 108 & 109-114 Fenchurch Street, 6-8 & 9-13 Fenchurch Buildings London EC3	13/01004/FULEIA	CoL	Legal Consent granted	Model supplied by Make Architects and simplified by Millerhare	Position relative to O.S. supplied by architect	city0273.surface150604-fg-proposed-plant	Orange
25	70 Gracechurch Street	70 Gracechurch Street, London, EC3V 0HR	20/00816/FULEIA	CoL	Legal Consent granted	Model supplied by KPF	Position relative to O.S. supplied by architect	city0261-e.surface200707-kpf-proposed	Orange
26	50 Fenchurch Street (2019)	Site Bounded By Fenchurch Street, Mark Lane, Dunster Court And Mincing Lane. London EC3M 3JY	19/01307/FULEIA	CoL	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	city0286-b.detail191010-proposed-chalk	Orange
27	55 Gracechurch Street	55 Gracechurch Street, London, EC3V 0EE	20/00671/FULEIA	CoL	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	city0245.surface200608-fp-proposed	Orange
28	Bankside Yards East – Sampson House	Sampson House, 64 Hopton Street, London, SE1 9JH	17/AP/2286	SC	Legal Consent granted	Model supplied by architect	Position relative to O.S. supplied by architect	swrk0079.surface180410-plp-proposed	Orange
29	Bankside Yards West – Ludgate House	64 Hopton Street, London SE1	17/AP/2286	SC	Legal Consent granted	Model supplied by architect	Position relative to O.S. supplied by architect	swrk0077.surface170505-plp-proposed	Orange
30	18 Blackfriars (2016) – Office Tower	Land at 18 Blackfriars Road bounded by Stamford Street, Paris Gardens and Christ Church Gardens, London, SE1 8NY	16/AP/5239	SC	Legal Consent granted	Model supplied by architect	Position relative to O.S. supplied by architect	swrk0001-b.profile161014-bg-proposed-office	Orange

Appendices (continued)

index	scheme name	address	reference	PA	status	source of model data	positioning method	MH reference	colour
31	18 Blackfriars (2016) – Residential Tower	Land at 18 Blackfriars Road bounded by Stamford Street, Paris Gardens and Christ Church Gardens, London, SE1 8NY	16/AP/5239	SC	Legal Consent granted	Model supplied by architect	Position relative to O.S. supplied by architect	swrk0001-a.profile161014-wea-proposed-resi	Orange
32	Paris Gardens (2018)	1-5 Paris Gardens and 16-19 Hatfields, London, SE1 8ND	17/AP/4230	SC	Legal Consent granted	Model supplied by KPF	Position relative to O.S. supplied by architect	swrk0030-c.profile180515-kpf-consented	Orange
33	Friars Bridge Court	Friars Bridge Court, 41-45 Blackfriars Road, London SE1 8NZ	16/AP/1660	SC	Legal Consent granted	Model supplied by PLP Architects	Position relative to O.S. supplied by architect	swrk0002-b.detail160309-plp-proposed-chalk	Orange
34	216-220 Blackfriars Road	Land, Including Edward Edwards House And The Prince William Pub, Suthring House, At 216-220 Blackfriars Road (north Of Nicholson Street), SE1	20/AP/3250	SC	Submitted for planning	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0050.surface210201-dp-consented	Yellow
35	ITV Headquarters	The London Television Centre, 60 – 72 Upper Ground, London, SE1 9LT	17/03986/FUL	LBC	Legal Consent granted	Model supplied by Hopkins Architects and simplified by Millerhare	Position relative to O.S. supplied by architect	lamb0047.profile170613-hopkins-proposed	Orange
36	Doon Street	Coin Street Site A, Doon Street, London. SE1	11/00996/FUL	LBC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	lamb0057-pa1.surface070620-ru-consented	Orange
37	Elizabeth House (2019)	Elizabeth House, 39 York Road, London, SE1 7NQ	19/01477/EIAFUL	LBC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	lamb0207.surface190610-ahmm-proposed	Orange
38	Rose Court	Rose Court 2 Southwark Bridge Road SE1 9HS	18/AP/2302	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0089-c.surface180515-bdg-proposed	Orange
39	135 Park Street (2019)	135 Park Street London SE1 9EA And 4-8 Emerson Street London SE1	19/AP/0240	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0088-a.profile200225-dp-consented	Orange
40	Lavington Street	Lavington Street, London SE1	16/AP/2668	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0102-b.surface170324-am-proposed	Orange
41	49-53 Glengall Road	49-53 Glengall Road, London, SE15 6NF	17/AP/4612	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	okr10-d.mass190405-dp-consented	Orange
42	Bianca Warehouse Glengall Road	Bianca Warehouse 43 Glengall Road London Southwark	20/AP/0039	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0421.mass200806-jg-consented	Orange
43	Malt Street Regeneration	Malt Street Regeneration Site, land bounded by Bianca Road, Latona Road, Heymerle Road, Frensham Street and Malt Street, London SE1	17/AP/2773	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	okr10-e.mass190509-rb-proposed	Orange
44	Southernwood Old Kent Road	Southernwood Retail Park, 2 Humphrey Street, London, SE1 5JJ	18/AP/3551	SC	Submitted for planning	Paper planning application drawings from local authority	Best fit to Ordnance Survey	okr4.mass190520-rb-consented	Yellow
45	153-159 Borough High Street	153-159 Borough High Street, London, SE1 1HR	15/AP/4980	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0290-g.profile171122-dp-consented	Orange
46	King's Place (2018)	Land at 19, 21 and 23 Harper Road, 325 Borough High Street, 1-5 and 7-11 Newington Causeway, London, SE1 6AW	18/AP/0657	SC	Legal Consent granted	Paper planning application drawings from local authority	Best fit to Ordnance Survey	swrk0269-a.profile181025-dp-consented	Orange



Aerial diagram showing location of schemes

A5 Model Overview

Aerial view of Proposed Development

A6 Accurate Visual Representations

A6.1 Each of the views in this study has been prepared as an Accurate Visual Representation (AVR) following a consistent methodology and approach to rendering. Appendix C of the London View Management Framework: Supplementary Planning Guidance (March 2012) defines an AVR as:

> *"An AVR is a static or moving image which shows the location of a proposed development as accurately as possible; it may also illustrate the degree to which the development will be visible, its detailed form or the proposed use of materials. An AVR must be prepared following a well-defined and verifiable procedure and can therefore be relied upon by assessors to represent fairly the selected visual properties of a proposed development. AVRs are produced by accurately combining images of the proposed building (typically created from a three-dimensional computer model) with a representation of its context; this usually being a photograph, a video sequence, or an image created from a second computer model built from survey data. AVRs can be presented in a number of different ways, as either still or moving images, in a variety of digital or printed formats."*

A6.2 The Landscape Institute Technical Guidance Note 06/19 "Visual Representation of Development Proposals" notes that the production of technical visualisations:

> "should allow competent authorities to understand the likely effects of the proposals on the character of an area and on views from specific points."

A6.3 Paragraph 2.2 highlights that the baseline photography should:

> *"be sufficiently up-to-date to reflect the current baseline situation"*
>
> *"include the extent of the site and sufficient context;"*
>
> *"be based on good quality imagery, secured in good, clear weather conditions wherever reasonably possible;"*

A6.4 In this study the baseline condition is provided by carefully taken large format photography. The proposed condition is represented as an accurate photomontage, which combines a computer generated image with the photographic context. In preparing AVRs of this type certain several key attributes need to be determined, including:

- the Field of View
- the representation of the Proposed Development
- documentation accompanying the AVR

Selection of Field of View

A6.5 The choice of telephoto, standard or wide-angle lens, and consequently the Field of View, is made on the basis of the requirements for assessment which will vary from view to view.

A6.6 In the simple case the lens selection will be that which provides a comfortable Viewing Distance. This would normally entail the use of what most photographers would refer to as a "standard" or "normal" lens, which in practice means the use of a lens with a 35mm equivalent focal length of between about 40 and 58 mm.

A6.7 However in a visual assessment there are three scenarios where constraining the study to this single fixed lens combination would not provide the assessor with the relevant information to properly assess the Proposed Development in its context.

Field Of View

The term 'Field Of View' (FOV) or more specifically Horizontal Field of View (HFOV), refers to the horizontal angle of view visible in a photograph or printed image and is expressed in degrees. It is often generally referred to as 'angle of view', 'included angle' or 'view cone angle'.

Using this measure it becomes practical to make a comparison between photographs taken using lens of various focal lengths captured on to photographic film or digital camera sensors of various size and proportions. It is also possible to compare computer renderings with photographic images.

Studies of this type use a range of camera equipment; in recent times digital cameras have largely superseded the traditional film formats of 35mm, medium format (6cm x 6cm) and large format (5in x 4in). Comparing digital and film formats may be achieved using either the HFOV or the 35mm equivalent lens calculation, however quoting the lens focal length (in mm) is not as consistently applicable as using the HFOV when comparing AVRs.

35mm Lens	HFOV degrees	Lens focal length (mm)
Wide angle lens	74.0	24
Medium wide lens	54.4	35
Standard lens	39.6	50
Telephoto lens	28.8	70
Telephoto lens	20.4	100
Telephoto lens	10.3	200
Telephoto lens	6.9	300

The FOV of digital cameras is dependent on the physical dimensions of the CCD used in the camera. These depend on the make and model of the camera. The comparison table uses the specifications for a Canon EOS-5D Mark II which has CCD dimensions of 36.0mm x 22.0mm.

A6.8 Firstly, where the relationship being assessed is distant, the observer would tend naturally to focus closely on it. At this point the observer might be studying as little as 5 to 10 degrees in plan. The printing technology and image resolution of a print limit the amount of detail that can be resolved on paper when compared to the real world, hence in this situation it is appropriate to make use of a telephoto lens.

A6.9 Secondly, where the wider context of the view must be considered and in making the assessment a viewer would naturally make use of peripheral vision in order to understand the whole. A print has a fixed extent which constrains the angle of view available to the viewer and hence it is logical to use a wide angle lens in these situations in order to include additional context in the print.

A6.10 Thirdly where the viewing point is studied at rest and the eye is free to roam over a very wide field of view and the whole setting of the view can be examined by turning the head. In these situations it is appropriate to provide a panorama comprising of a number of photographs placed side by side.

A6.11 The Landscape Institute Technical Guidance Note 06/19 Appendix 1 suggests that where a standard lens in landscape or portrait orientation cannot capture the view then the use of wider-angled prime lenses should be considered. Appendix 13 further notes:

> *"The 24mm tilt shift is typically used for visualisation work where viewpoints are located close to a development and the normal range of prime lenses will not capture the proposed site"*

A6.12 For some views two of these scenarios might be appropriate, and hence the study will include two versions of the same view with different fields of view.

Representation of the Proposed Development and cumulative schemes

Classification of AVRs

A6.13 AVRs are classified according to their purpose using Levels 0 to 3. These are defined in detail in Appendix C of the London View Management Framework: Supplementary Planning Guidance (July 2007). The following table is a summary.

AVR level	showing	purpose
AVR 0	Location and size of proposal	Showing Location and size
AVR 1	Location, size and degree of visibility of proposal	Confirming degree of visibility
AVR 2	As level 1 + description of architectural form	Explaining form
AVR 3	As level 2 + use of materials	Confirming the use of materials

A6.14 In practice the majority of photography based AVRs are either AVR 3 (commonly referred to as "fully rendered" or "photoreal") or AVR 1 (commonly referred to as "wire-line"). Model based AVRs are generally AVR 1.

AVR 3 – Photoreal

Example of AVR 3 – confirming the use of materials (in this case using a 'photo-realistic' rendering technique)

A6.15 The purpose of a Level 3 AVR is to represent the likely appearance of the Proposed Development under the lighting conditions found in the photograph. All aspects of the images that are able to be objectively defined have been created directly from a single detailed description of the building. These include the geometry of the building and the size and shape of shadows cast by the sun.

A6.16 Beyond this it is necessary to move into a somewhat more subjective arena where the judgement of the delineator must be used in order to define the final appearance of the building under the specific conditions captured by the photographic and subsequent printing processes. In this area the delineator is primarily guided by the appearance of similar types of buildings at similar distances in the selected photograph. In large scope studies photography is necessarily executed over a long period of time and sometimes at short notice. This will produce a range of lighting conditions and photographic exposures. The treatment of lighting and materials within these images will respond according to those in the photograph.

A6.17 Where the Proposed Development is shown at night-time, the lightness of the scheme and the treatment of the materials was the best judgment of the visualiser as to the likely appearance of the scheme given the intended lighting strategy and the ambient lighting conditions in the background photograph. In particular the exact lighting levels are not based on photometric calculations and therefore the resulting image is assessed by the Architect and Lighting Designer as being a reasonable interpretation of the concept lighting strategy.

AVR 1 – Outline

Example of AVR 1 confirming degree of visibility (in this case as an occluded 'wire-line' image)

A6.18 The purpose of a wire-line view is to accurately indicate the location and degree of visibility of the Proposed Development in the context of the existing condition and potentially in the context of other proposed schemes.

A6.19 In AVR1 representation each scheme is represented by a single line profile, sometimes with key edges lines to help understand the massing. The width of the profile line is selected to ensure that the diagram is clear, and is always drawn inside the true profile. The colour of the line is selected to contrast with the background. Different coloured lines may be used in order to distinguish between proposed and consented status, or between different schemes.

A6.20 Where more than one scheme is represented in outline form the outlines will obscure each other as if the schemes where opaque. Trees or other foliage will not obscure the outline of schemes behind them. This is because the transparency of trees varies with the seasons, and the practical difficulties of representing a solid line behind a filigree of branches. Elements of a temporary nature (e.g. cars, tower cranes, people) will similarly not obscure the outlines.

Framing the view

A6.21 Typically AVRs are composed with the camera looking horizontally i.e. with a horizontal Optical Axis. This is in order to avoid converging verticals which, although perspectively correct, appear to many viewers as unnatural in print form. The camera is levelled using mechanical levelling devices to ensure the verticality of the Picture Plane, being the plane on to which the image is projected; the film in the case of large format photography or the CCD in the case of digital photography.

A6.22 For a typical townscape view, a Landscape camera format is usually the most appropriate, giving the maximum horizontal angle of view. Vertical rise may be used in order to reduce the proportion of immediate foreground visible in the photograph. Horizontal shift will not be used. Where the prospect is framed by existing buildings, portrait format photographs may be used if this will result in the proposal being wholly visible in the AVR, and will not entirely exclude any relevant existing buildings.

A6.23 Where the Proposed Development would extend off the top of the photograph, the image may be extended vertically to ensure that the full height of the Proposed Development is show. Typically images will be extended only where this can be achieved by the addition of sky and no built structures are amended. Where it is necessary to extend built elements of the view, the method used to check the accuracy of this will be noted in the text.

Documenting the AVR

Border annotation

A6.24 A Millerhare AVR image has an annotated border or 'graticule' which indicates the field of view, the optical axis and the horizon line. This annotation helps the user to understand the characteristics of the lens used for the source photograph, whether the photographer applied tilt, vertical rise or horizontal shift during the taking of the shot and if the final image has been cropped on one or more sides.

A6.25 The four red arrows mark the horizontal and vertical location of the 'optical axis'. The optical axis is a line passing through the eye point normal to the projection plane. In photography this line passes through the centre of the lens, assuming that the film plane has not been tilted relative to the lens mount. In computer rendering it is the viewing vector, i.e the line from the eye point to the target point.

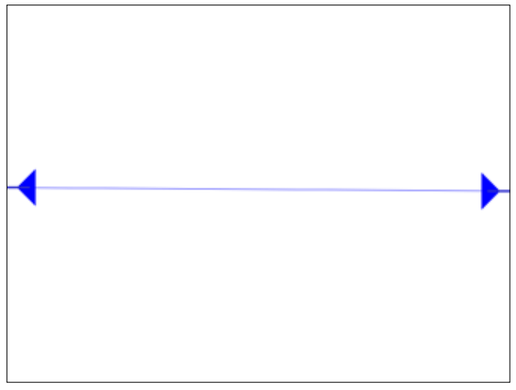
A6.26 If the point indicated by these marks lies above or below the centre of the image, this indicates either that vertical rise was used when taking the photograph or that the image has subsequently been cropped from the top or bottom edge. If it lies to the left or right of the centre of the image then cropping has been applied to one side or the other, or more unusually that horizontal shift was applied to the photograph.

Sample graticule showing optical axis markers

A6.27 The vertical and horizontal field of view of the final image is declared using a graticule consisting of thick lines at ten degree increments and intermediate lines every degree, measured away from the optical axis. Using this graticule it is possible to read off the resultant horizontal and vertical field of view, and thereby to compare the image with others taken using specific lens and camera combinations. Alternatively it can be used to apply precise crops during subsequent analysis

A6.28 .

A6.29 The blue marks on the left and right indicate the calculated location of the horizon line i.e. a plane running horizontally from the location of the camera. Where this line is above or below the optical axis, this indicates that the camera has been tilted; where it is not parallel with the horizontal marking of the optical axis, this indicates that the camera was not exactly horizontal, i.e. that "roll" is present. Note that a small amount of tilt and roll is nearly always present in a photograph, due to the practical limitations of the levelling devices used to align the camera in the field.



Sample graticule showing horizon line markers

Comparing AVRs with different FOVs

A6.30 A key benefit of the index markings is that it becomes practical to crop out a rectangle in order to simulate the effect of an image with a narrower field of view. In order to understand the effect of using a longer lens it is simply necessary to cover up portions of the images using the graticule as a guide.

A7 Methodology for the production of Accurate Visual Representations

Overview of Methodology

A7.1 The study was carried out by Millerhare (the Visualiser) by combining computer generated images of the Proposed Development with either large format photographs or with rendered images from a context model at key strategic locations around the site as agreed with the project team. Surveying was executed by Absolute Survey (the Surveyor).

A7.2 The methodology employed by Millerhare is compliant with Appendix C of the London View Management Framework: Supplementary Planning Guidance (March 2012) and Landscape Institute Technical Guidance Note 06/19.

A7.3 The project team defined a series of locations in London where the proposed buildings might have a significant visual effect. At each of these locations Millerhare carried out a preliminary study to identify specific Assessment Points from which a representative and informative view could be taken. Once the exact location had been agreed by the project team, a photograph was taken which formed the basis of the study. The precise location of the camera was established by the Surveyor using a combination of differential GPS techniques and conventional observations.

A7.4 For views where a photographic context was to be used additional surveying was carried out. A number of features on existing structures visible from the camera location were surveyed. Using these points, Millerhare has determined the appropriate parameters to permit a view of the computer model to be generated which exactly overlays the appropriate photograph. Each photograph has then been divided into foreground and background elements to determine which parts of the current context should be shown in front of the Proposed Development and which behind. When combined with the computer-generated image these give an accurate impression of the impact of the Proposed Development on the selected view in terms of scale, location and use of materials (AVR Level 3).

Spatial framework and reference database

A7.5 All data was assembled into a consistent spatial framework, expressed in a grid coordinate system with a local plan origin. The vertical datum of this framework is equivalent to Ordnance Survey (OS) Newlyn Datum.

A7.6 By using a transformation between this framework and the OSGB36 (National Grid) reference framework, Millerhare have been able to use other data sets (such as OS land line maps and ortho-corrected aerial photography) to test and document the resulting photomontages.

A7.7 In addition, surveyed observation points and line work from Millerhare's London Model database are used in conjunction with new data in order to ensure consistency and reliability.

A7.8 The models used to represent consented schemes have been assembled from a variety of sources. Some have been supplied by the original project team, the remainder have been built by Millerhare from available drawings, generally paper copies of the submitted planning application. While these models have not been checked for detailed accuracy by the relevant architects, Millerhare has used its best endeavours to ensure that the models are positioned accurately both in plan and in overall height.

Process – photographic context

Reconnaissance

A7.9 At each Study Location the Visualiser conducted a photographic reconnaissance to identify potential Assessment Points. From each candidate position, a digital photograph was taken looking in the direction of the Proposed Development using a wide angle lens. Its position was noted with field observations onto an OS map and recorded by a second digital photograph looking at a marker placed at the Assessment Point.

A7.10 In the situation where, in order to allow the appreciation of the wider setting of the proposal, the assessor requires more context than is practical to capture using a wide angle lens, multiple photographs may be combined to create a panorama, typically as a diptych or triptych. This will be prepared by treating each panel as a separate AVR and then combining in to a single panorama as a final process.

A7.11 The Visualiser assigned a unique reference to each Assessment Point and Photograph.

Final Photography

A7.12 From each selected Assessment Point a series of large format photographs were taken with a camera height of approximately 1.6m. The camera, lens, format and direction of view are determined in accordance with the policies set out above

A7.13 Where a panoramic view is specified the camera/tripod head is rotated through increments of 40 degrees to add additional panels to the left and/or right of the main view.

A7.14 The centre point of the tripod was marked and a digital photograph showing the camera and tripod in situ was taken to allow the Surveyor to return to its location. Measurements and field notes were also taken to record the camera location, lens used, target point and time of day.

Surveying the Assessment Points

A7.15 For each selected Assessment Point a survey brief was prepared, consisting of the Assessment Point study sheet and a marked up photograph indicating alignment points to be surveyed. Care was taken to ensure that a good spread of alignment points was selected, including points close to the camera and close to the target.

A7.16 Using differential GPS techniques the Surveyor established the location of at least two intervisible stations in the vicinity of the camera location. A photograph of the GPS antenna in situ was taken as confirmation of the position.

A7.17 From these the local survey stations, the requested alignment points were surveyed using conventional observation.

A7.18 The resulting survey points were amalgamated into a single data set by the Surveyor. This data set was supplied as a spreadsheet with a set of coordinates transformed and re-projected into OSGB36 (National Grid) coordinates, and with additional interpreted lines to improve the clarity of the surveyed data.

A7.19 From the point set, the Visualiser created a three dimensional alignment model in the visualisation system by placing inverted cones at each surveyed point.

Photo preparation

A7.20 From the set of photographs taken from each Assessment Point, one single photograph was selected for use in the study. This choice was made on the combination of sharpness, exposure and appropriate lighting.

A7.21 The selected photograph was copied into a template image file of predetermined dimensions. The resulting image was then examined and any artefacts related to the digital image capture process were rectified.

A7.22 Where vertical rise has been used the image is analysed and compensation is applied to ensure that the centre of the image corresponds to the location of the camera's optical axis.

Calculating the photographic alignment

A7.23 A preliminary view definition was created within the visualisation system using the surveyed camera location, recorded target point and FOV based on the camera and lens combination selected for the shot

A7.24 A lower resolution version of the annotated photograph was attached as a background to this view, to assist the operator to interpret on-screen displays of the alignment model and other relevant datasets.

A7.25 Using this preliminary view definition, a rendering was created of the alignment model at a resolution to match the scanned photograph. This was overlaid onto the background image to compare the image created by the actual camera and its computer equivalent. Based on the results of this process adjustments were made to the camera definition. When using a wide angle lens observations outside the circle of distortion are given less weighting.

A7.26 This process was iterated until a match had been achieved between the photograph and alignment model. At this stage, a second member of staff verified the judgements made. An A3 print was made of the resulting photograph overlaid with the alignment model as a record of the match. This was annotated to show the extents of the final views to be used in the study.

Example of alignment model overlaid on the photograph

Preparing models of the Proposed Development

A7.27 A CAD model of the Proposed Development was created from 3D CAD models and 2D drawings supplied by the Architect. The level of detail applied to the model is appropriate to the AVR type of the final images.

A7.28 Models of the Proposed Development and other schemes are located within the spatial framework using reference information supplied by the Architect or, when not available, by best fit to other data from the spatial framework reference database . Study renders of the model are supplied back to the Architect for confirmation of the form and the overall height of the Proposed Development. The method used to locate each model is recorded. Each distinct model is assigned a unique reference code by the Visualiser.

Determining occlusion and creating simple renderings

A7.29 A further rendering was created using the aligned camera, which combined the Proposed Development with a computer-generated context. This was used to assist the operator to determine which parts of the source image should appear in front of the Proposed Development and which behind it. Using this image and additional site photography for information, the source file is divided into layers representing foreground and background elements.

A7.30 In cases where the Proposed Development is to be represented in silhouette or massing form (AVR1 or AVR2), final renderings of an accurate massing model were generated and inserted into the background image file between the foreground and background layers.

A7.31 Final graphical treatments were applied to the resulting image as agreed with the Architect and environmental and planning consultants. These included the application of coloured outlines to clarify the reading of the images or the addition of tones to indicate occluded areas.

Creating more sophisticated renderings

A7.32 Where more sophisticated representations of the Proposed Developments were required (AVR3) the initial model is developed to show the building envelope in greater detail. In addition, definitions were applied to the model to illustrate transparency, indicative material properties and inter-reflection with the surrounding buildings.

A7.33 For each final view, lighting was set in the visualisation system to match the theoretical sunlight conditions at the time the source photograph was taken, and additional model lighting placed as required to best approximate the recorded lighting conditions and the representation of its proposed materials.

A7.34 By creating high resolution renderings of the detailed model, using the calculated camera specification and approximated lighting scenario, the operator prepared an image of the building that was indicative of its likely appearance when viewed under the conditions of the study photograph. This rendering was combined with the background and foreground components of the source image to create the final study images.

A7.35 A single CAD model of the Proposed Development has been used for all distant and local views, in which the architectural detail is therefore consistently shown. Similarly a single palette of materials has been applied. In each case the sun angles used for each view are transferred directly from the photography records.

A7.36 Material definitions have been applied to the models assembled as described. The definitions of these materials have been informed by technical notes on the planning drawings and other available visual material, primarily renderings created by others. These resulting models have then been rendered using the lighting conditions of the photographs.

A7.37 Where the Proposed Development is shown at night-time, the lightness of the scheme and the treatment of the materials was the best judgment of the visualiser as to the likely appearance of the scheme given the intended lighting strategy and the ambient lighting conditions in the background photograph.

A7.38 Where a panoramic view is specified each panel is prepared by treating each photograph as an individual AVR following the process described in the previous paragraphs. The panels are then arranged side by side to construct the panorama. Vertical dividers are added to mark the edge of each panel in order to make clear that the final image has been constructed from more than one photograph.

Documenting the study

A7.39 For each Assessment Point a CAD location plan was prepared, onto which a symbol was placed using the coordinates of the camera supplied by the Surveyor. Two images of this symbol were created cross-referencing background mapping supplied by Ordnance Survey.

A7.40 The final report on the Study Location was created which shows side by side, the existing and proposed prospect. These were supplemented by images of the location map, a record of the camera location and descriptive text. The AVR level is described.

A7.41 Peripheral annotation was added to the image to clearly indicate the final FOV used in the image, any tilt or rise, and whether any cropping has been applied.

A7.42 Any exceptions to the applied policies or deviations from the methodology were clearly described.

A7.43 Where appropriate, additional images were included in the study report, showing the Proposed Development in the context of other consented schemes.

A7.44

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