

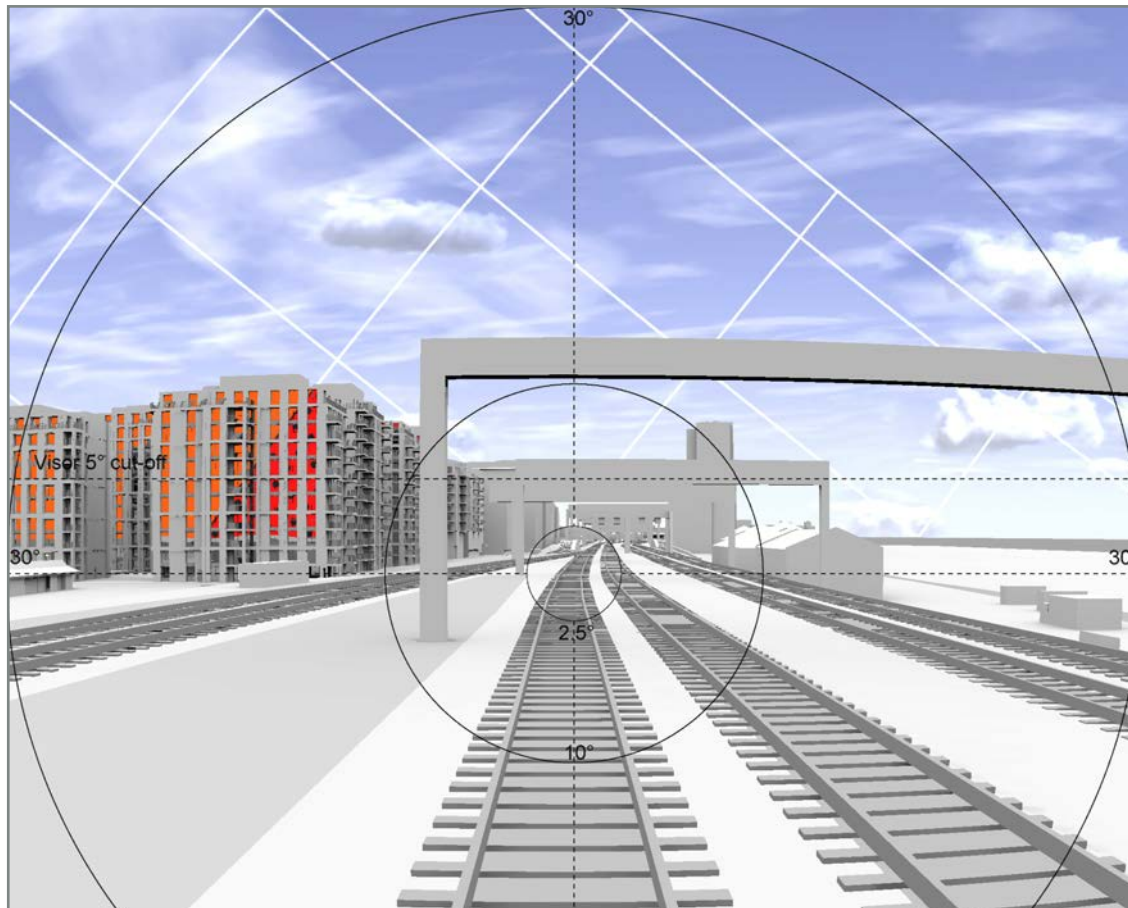


Fig. 46: Solar Glare - HOURS - Close-up

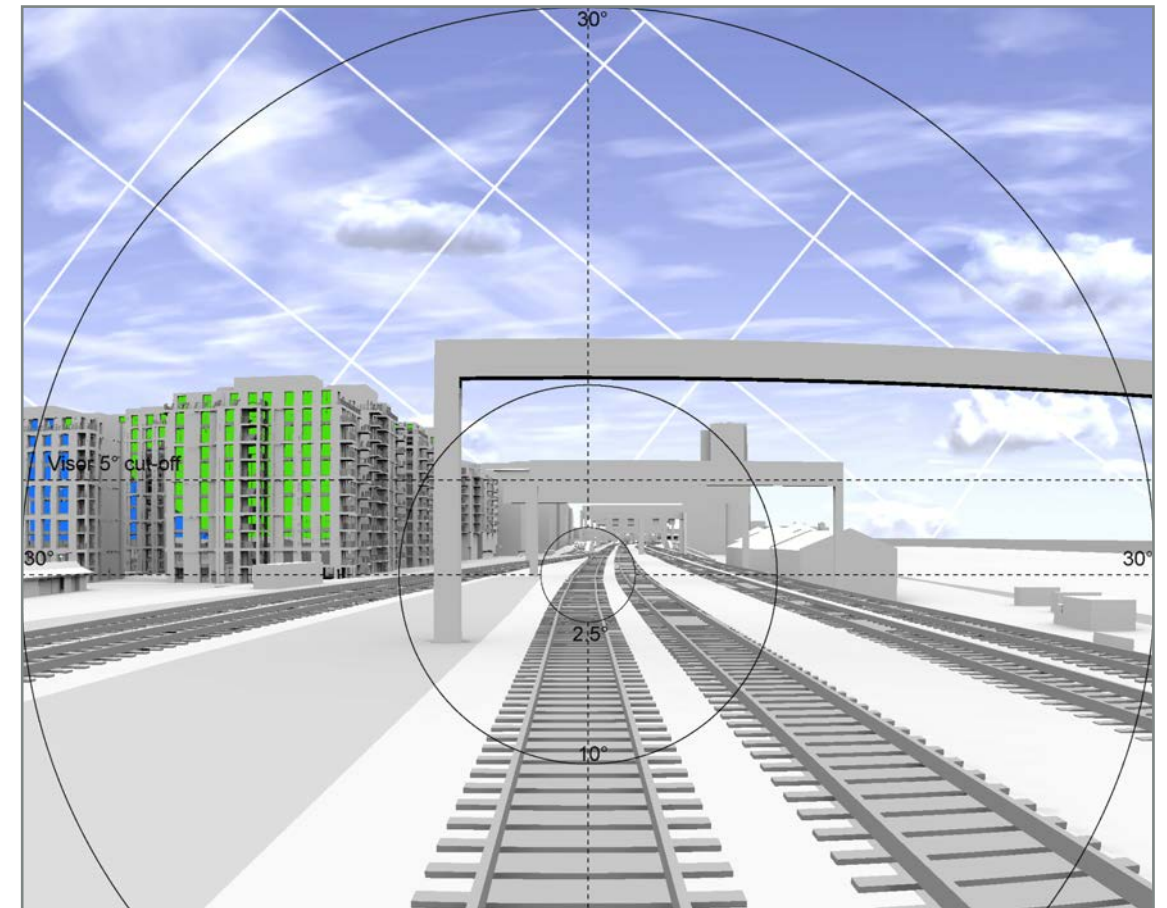


Fig. 47: Solar Glare - MONTHS - Close-up

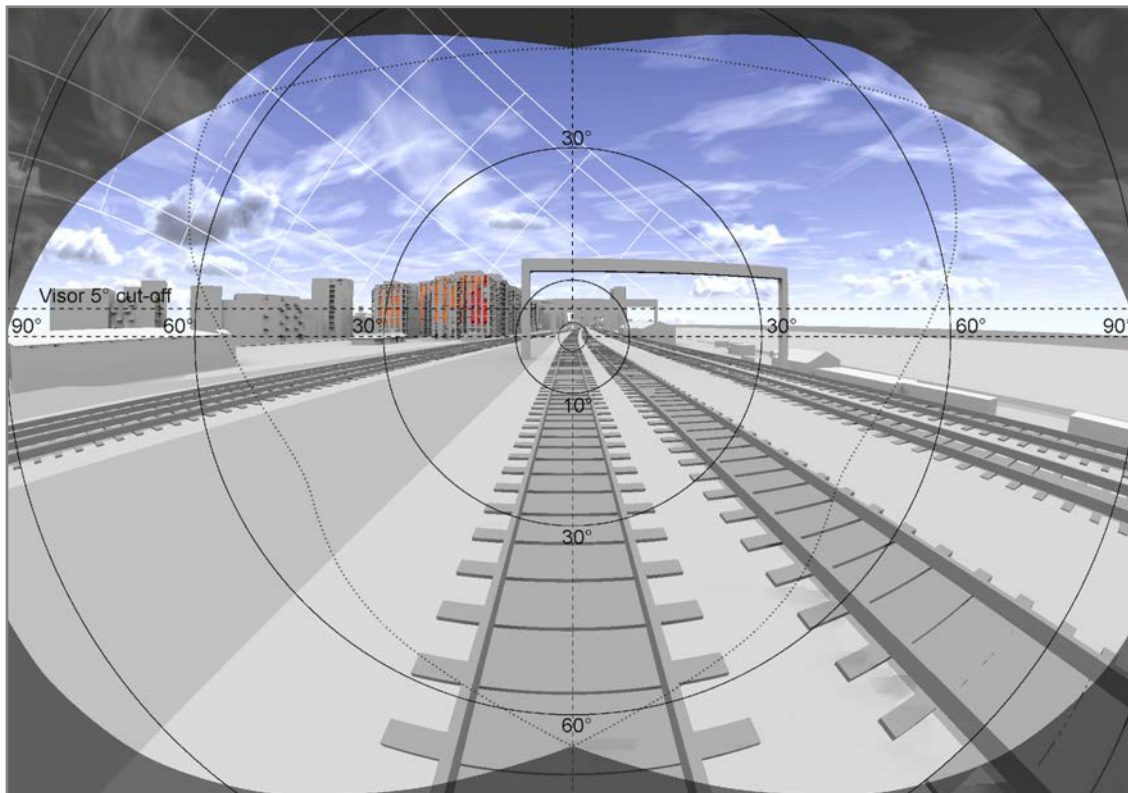


Fig. 48: Solar Glare - HOURS - 180 degrees view

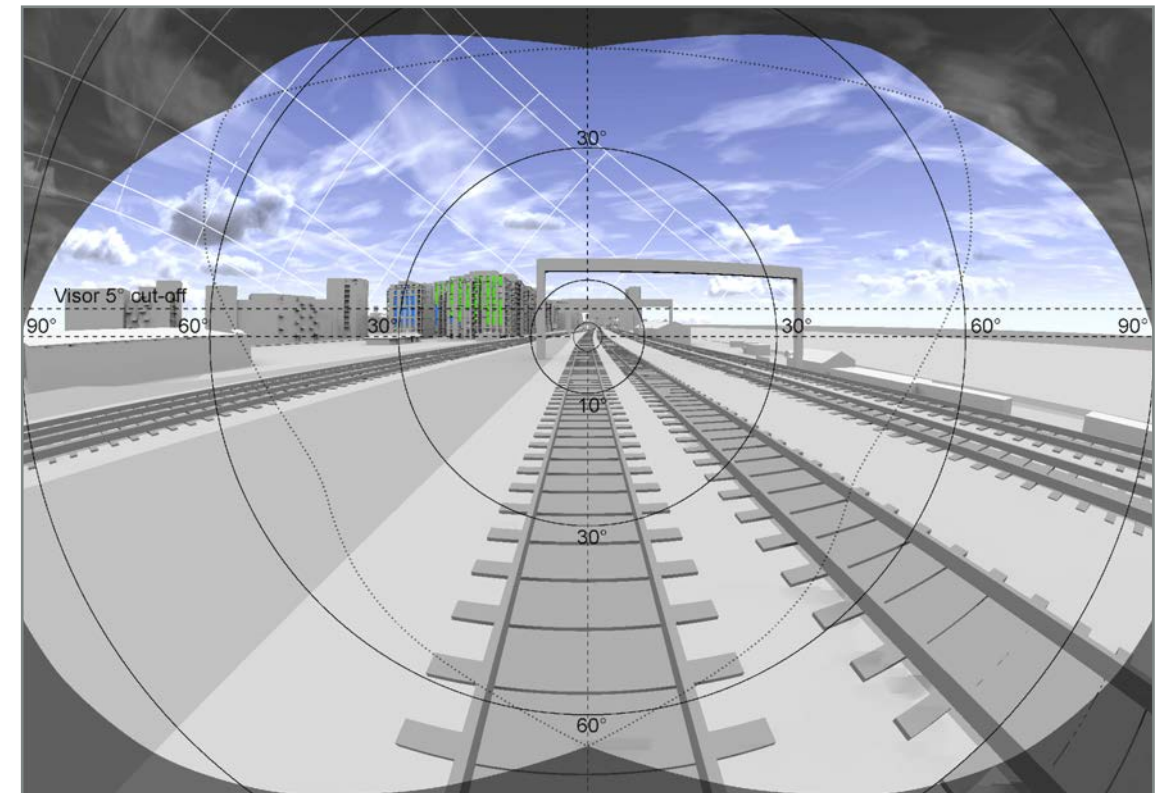
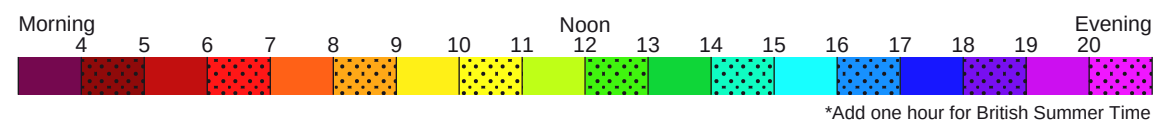
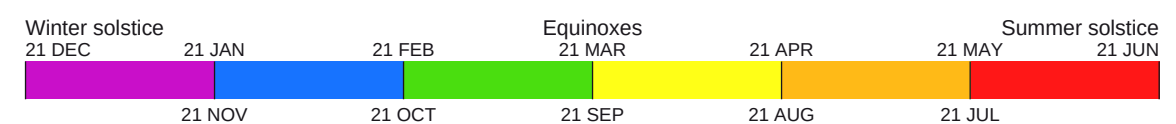


Fig. 49: Solar Glare - MONTHS - 180 degrees view



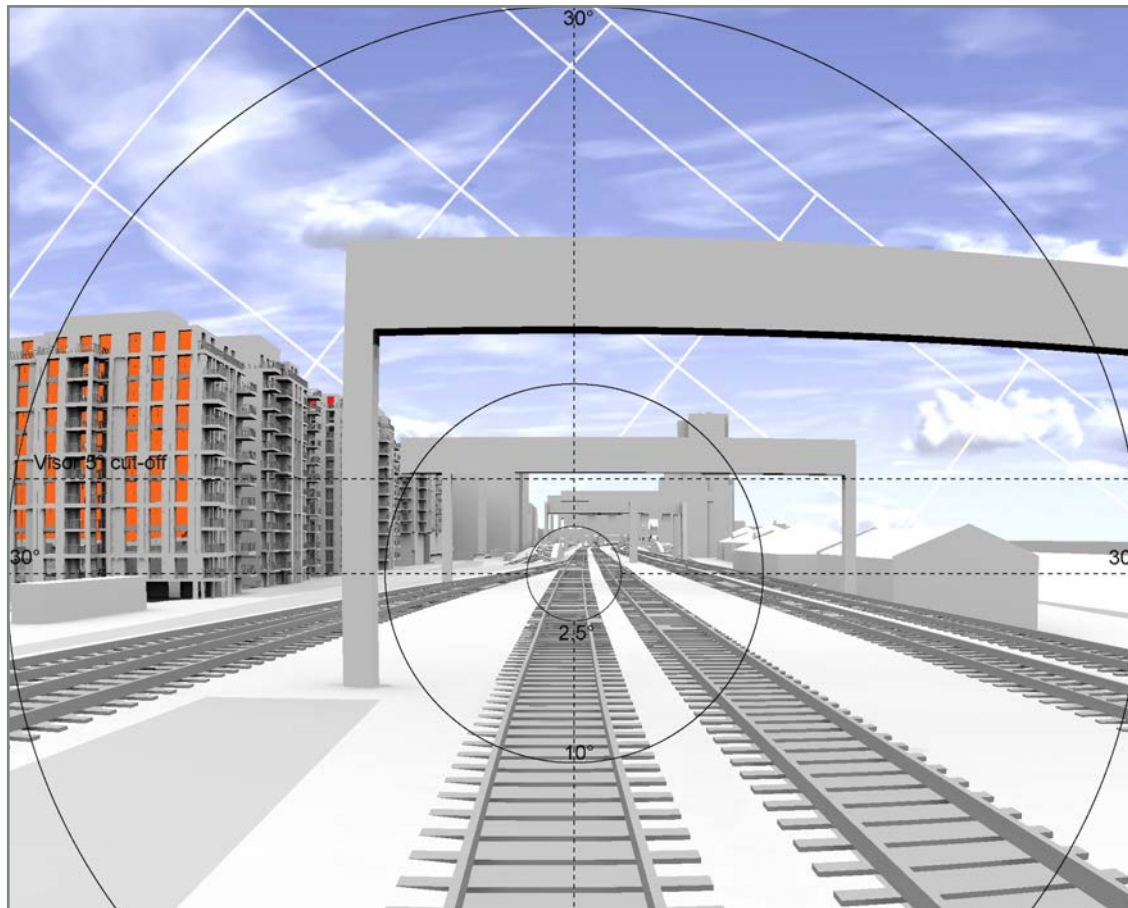


Fig. 50: Solar Glare - HOURS - Close-up

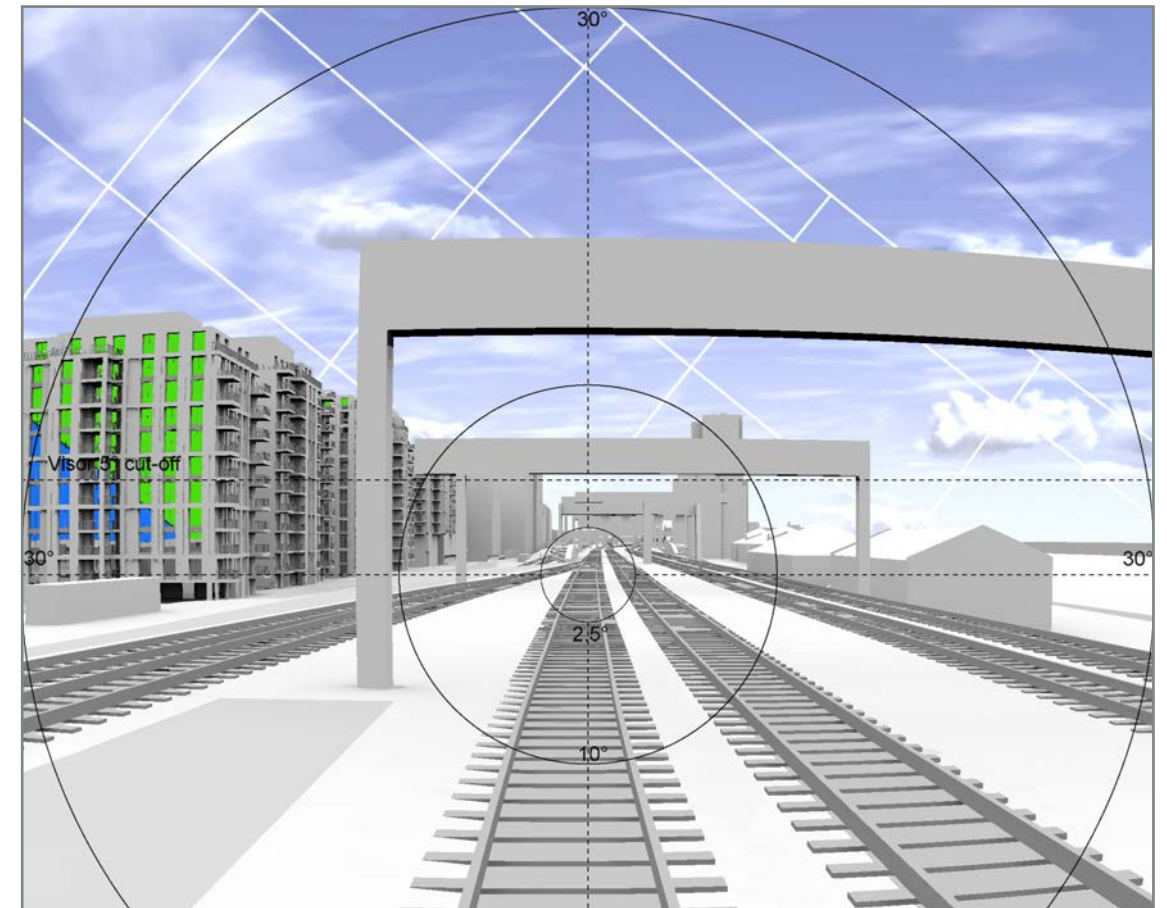


Fig. 51: Solar Glare - MONTHS - Close-up

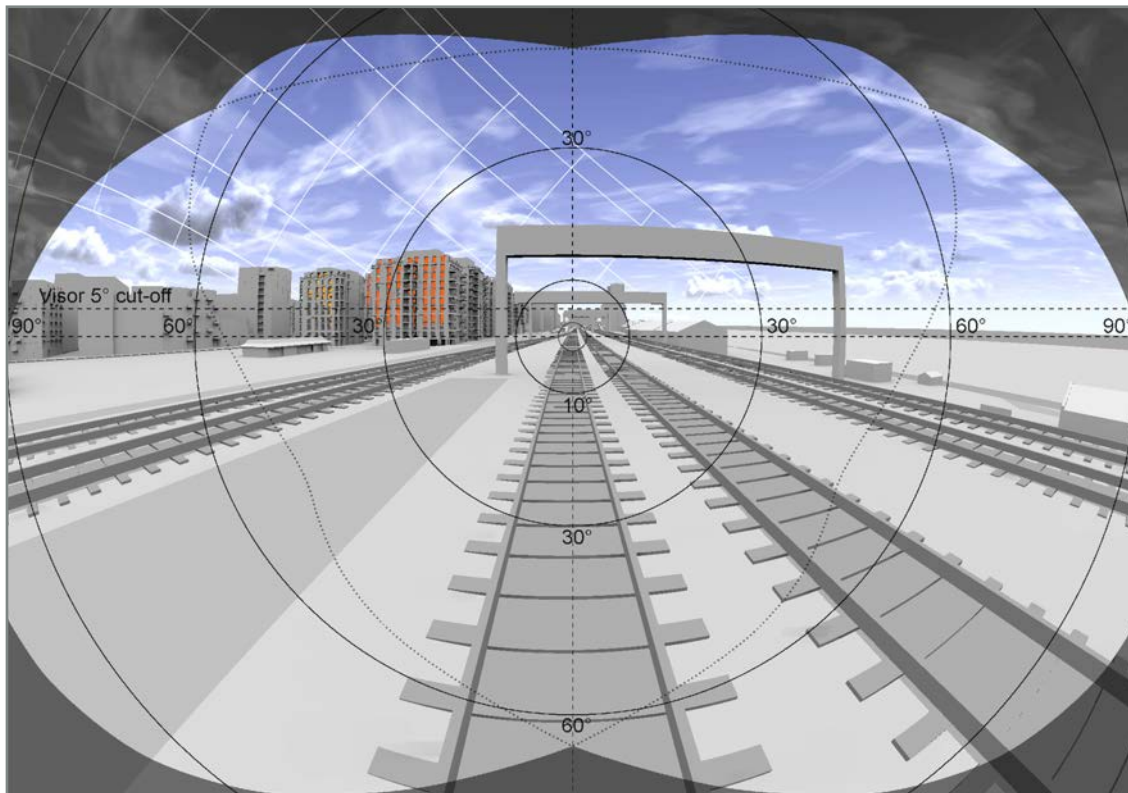


Fig. 52: Solar Glare - HOURS - 180 degrees view

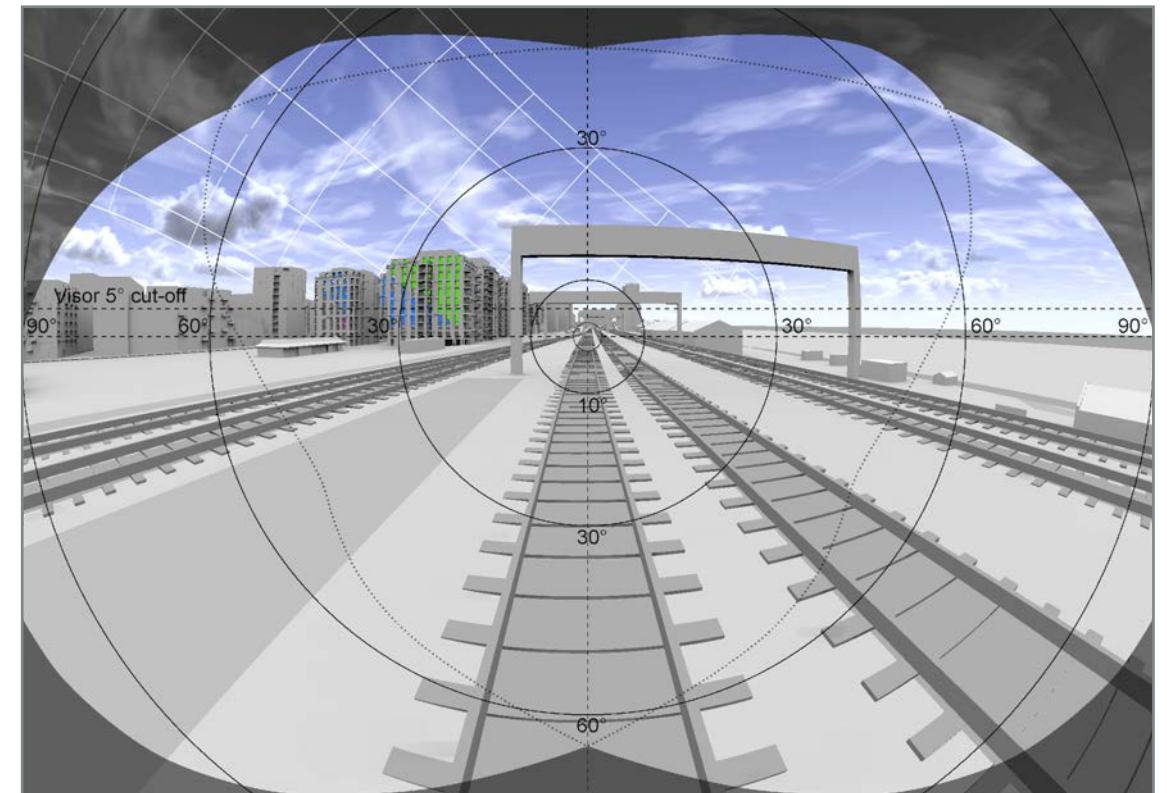
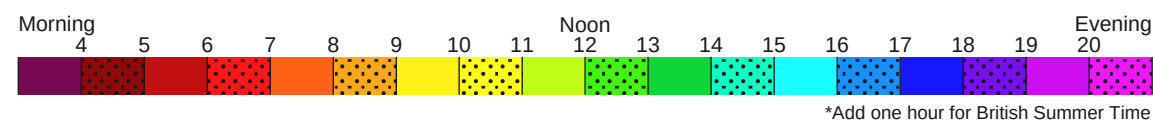
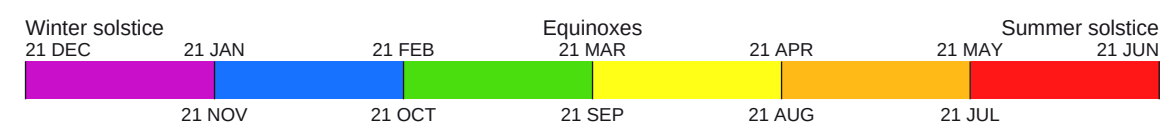


Fig. 53: Solar Glare - MONTHS - 180 degrees view



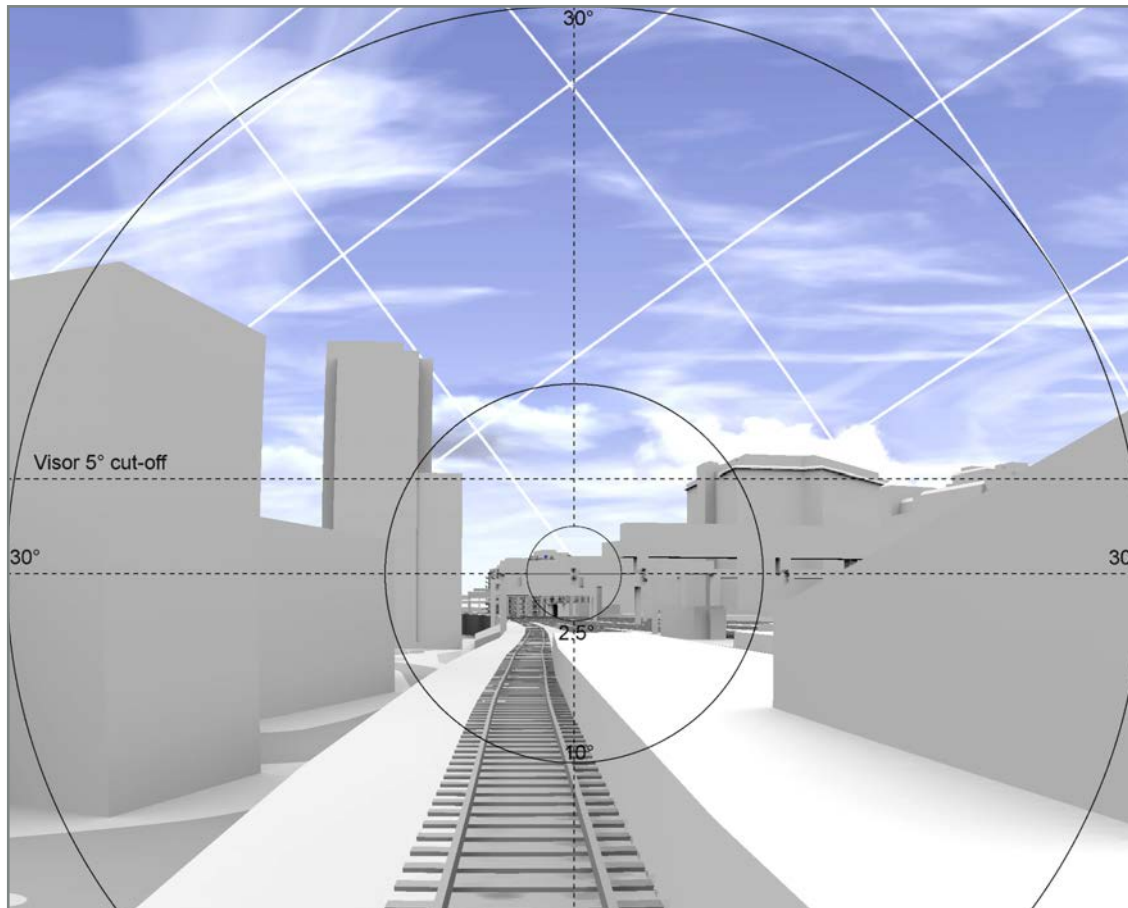


Fig. 54: Solar Glare - HOURS - Close-up

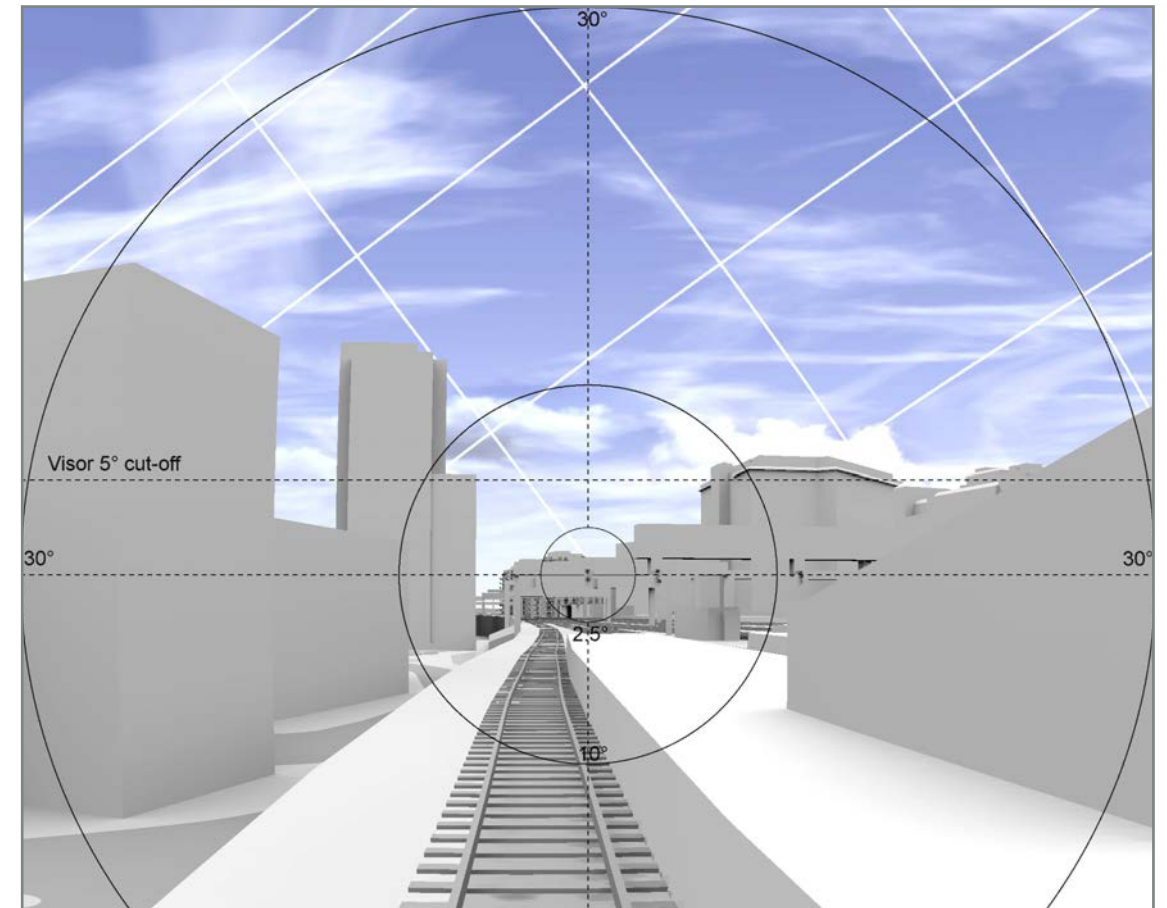


Fig. 55: Solar Glare - MONTHS - Close-up

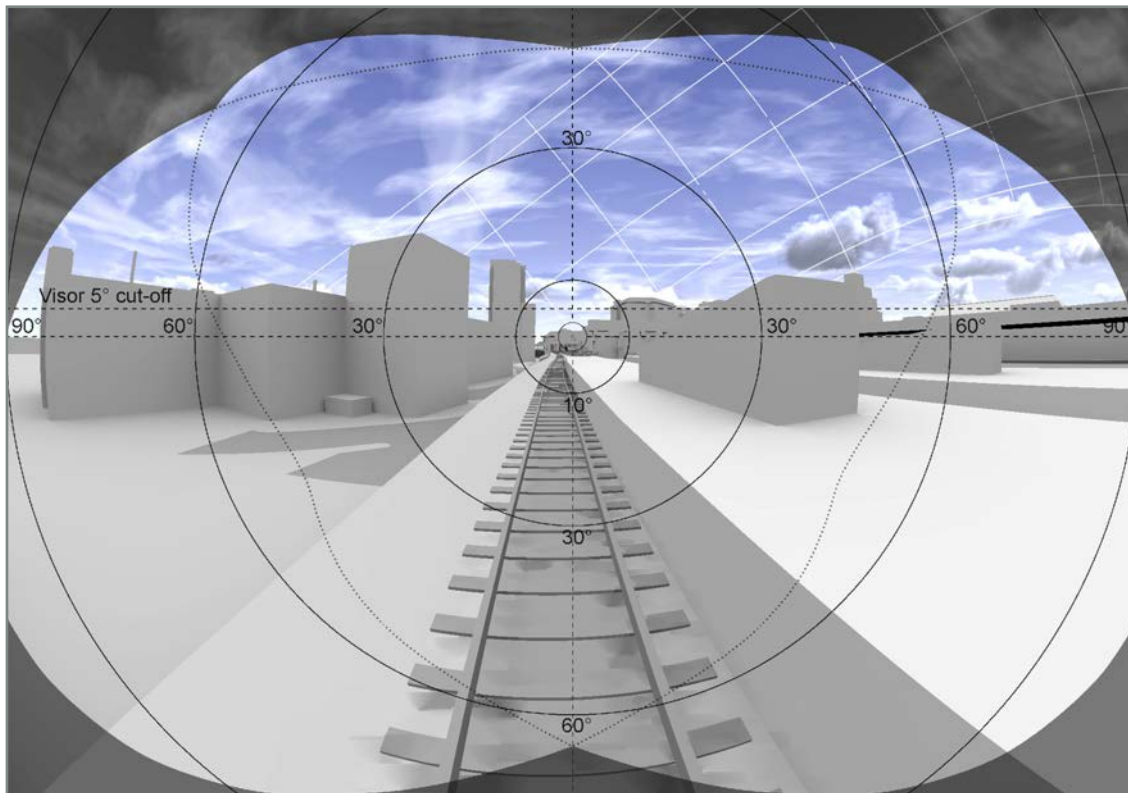


Fig. 56: Solar Glare - HOURS - 180 degrees view

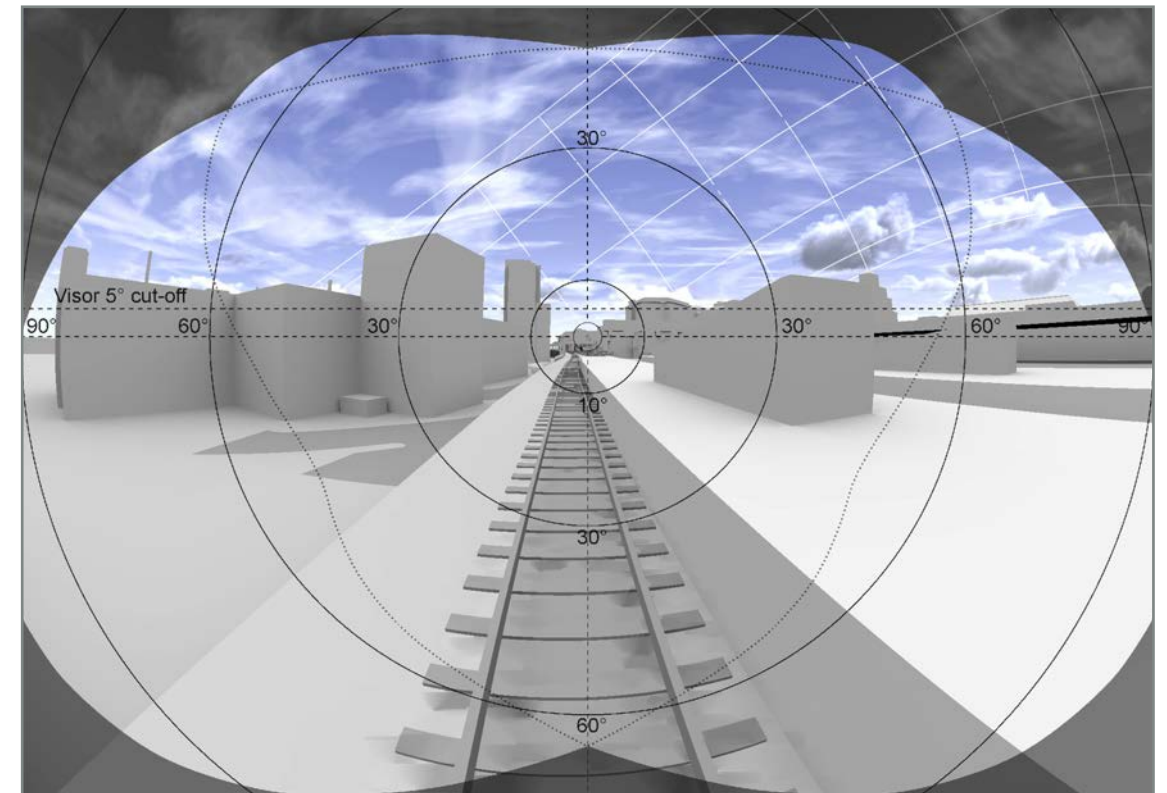
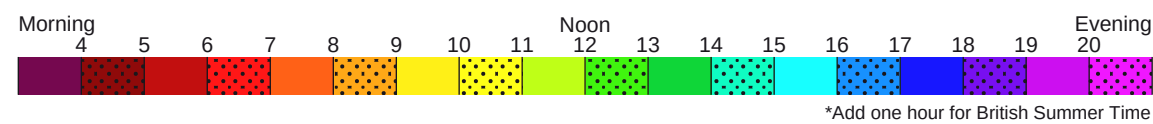
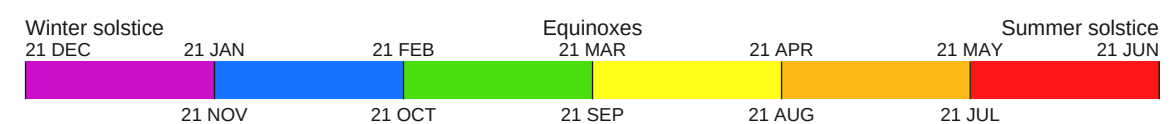


Fig. 57: Solar Glare - MONTHS - 180 degrees view



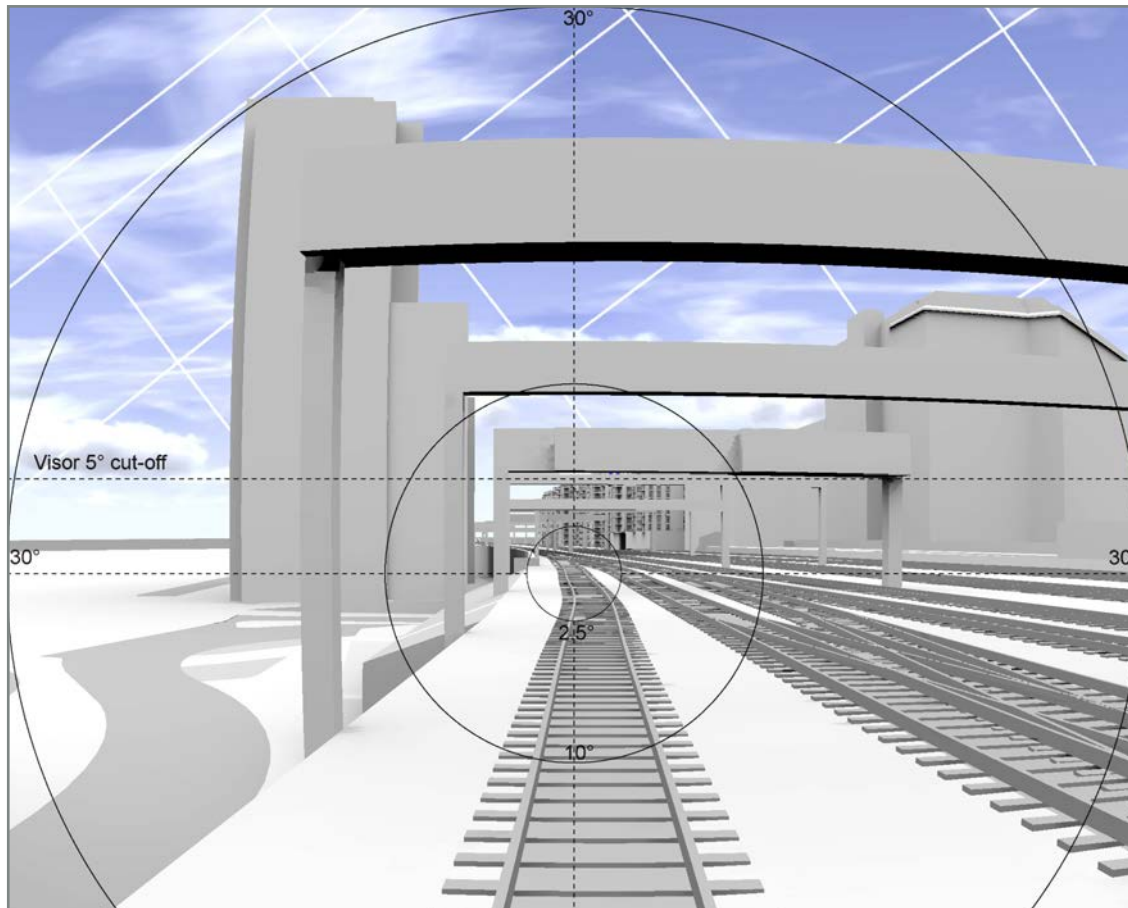


Fig. 58: Solar Glare - HOURS - Close-up

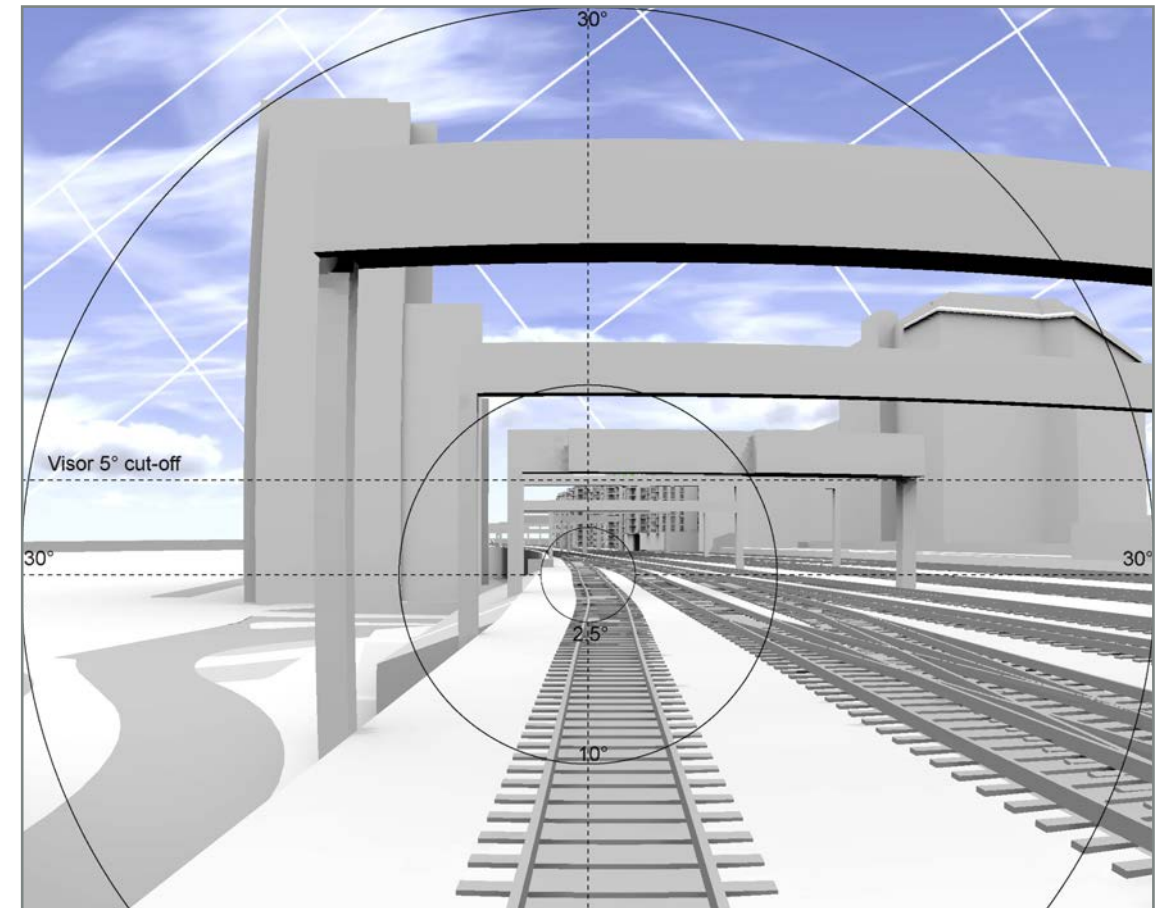


Fig. 59: Solar Glare - MONTHS - Close-up

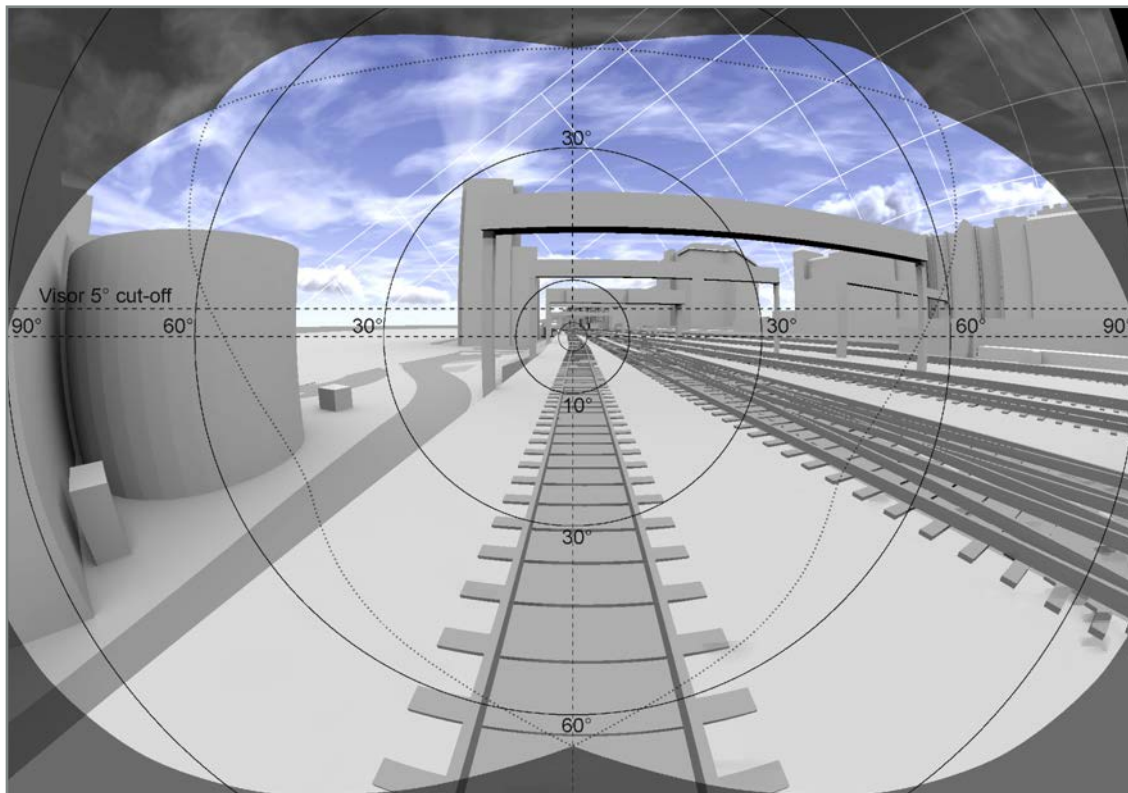


Fig. 60: Solar Glare - HOURS - 180 degrees view

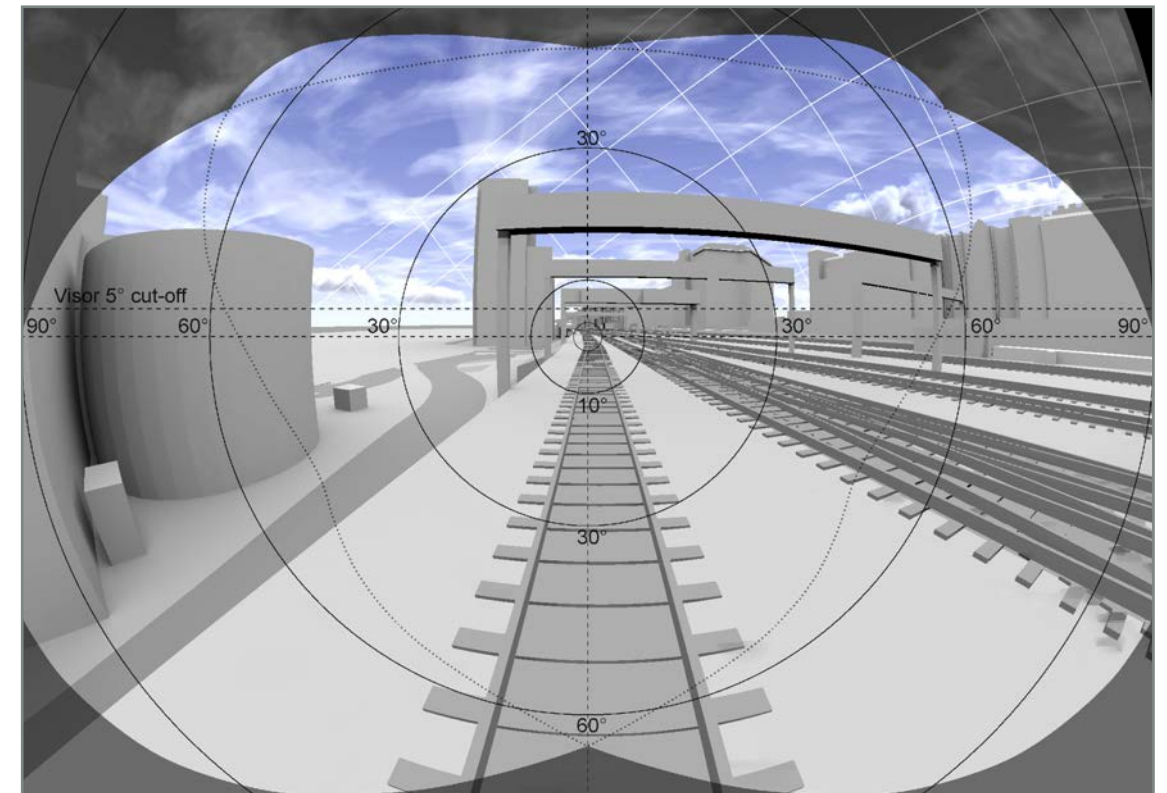
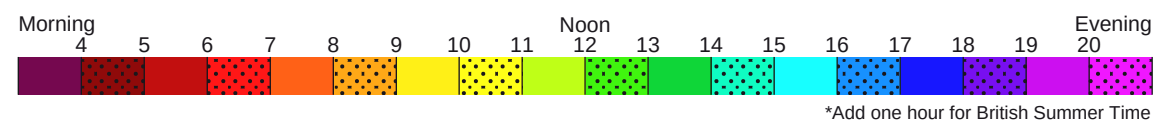
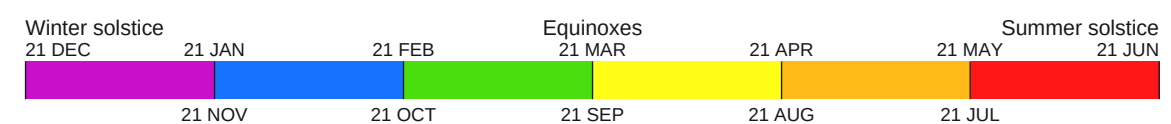


Fig. 61: Solar Glare - MONTHS - 180 degrees view



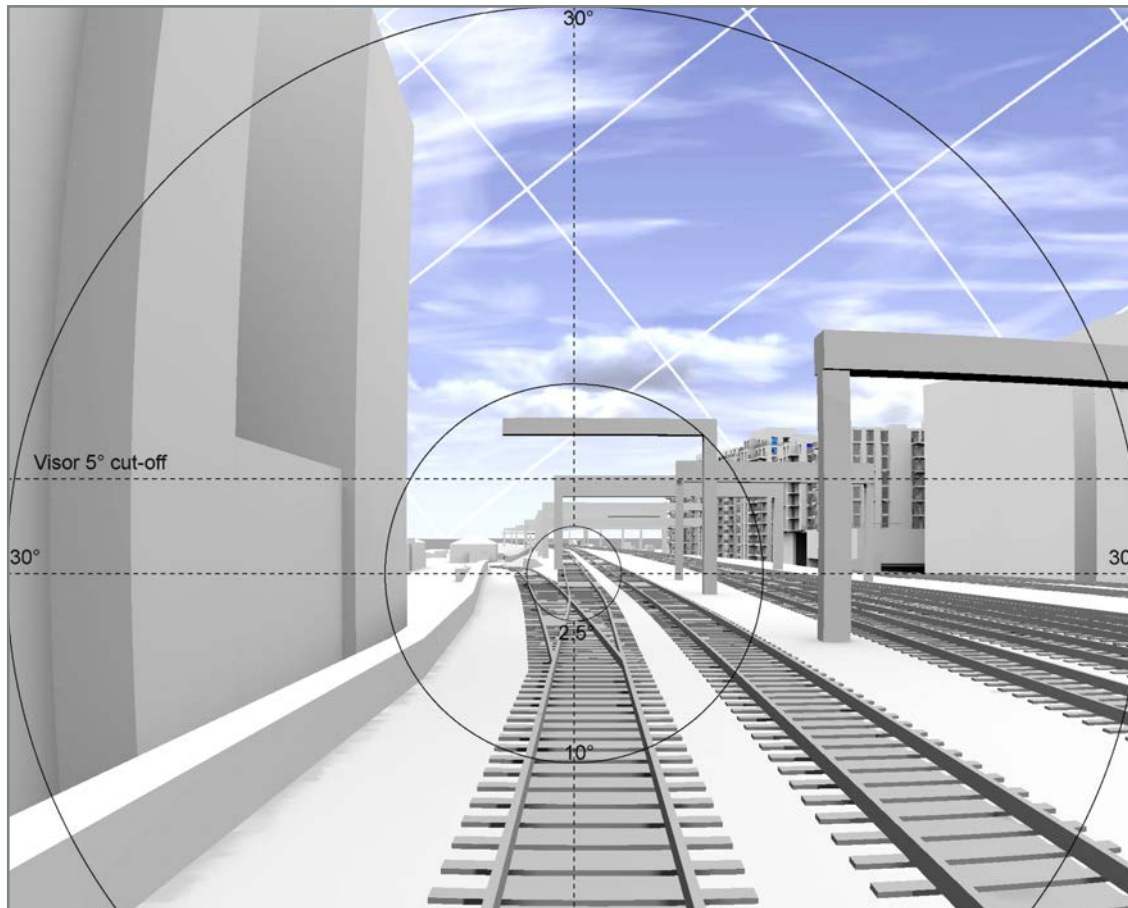


Fig. 62: Solar Glare - HOURS - Close-up

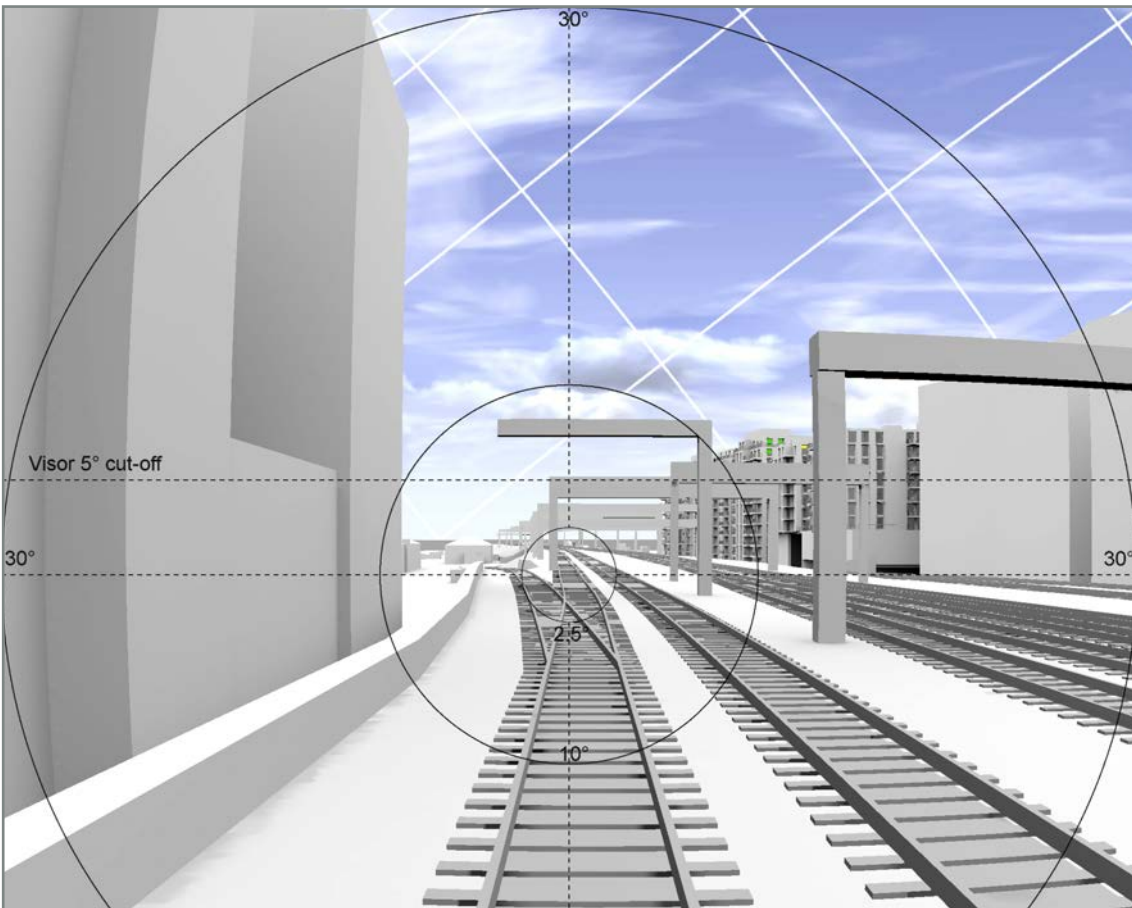


Fig. 63: Solar Glare - MONTHS - Close-up

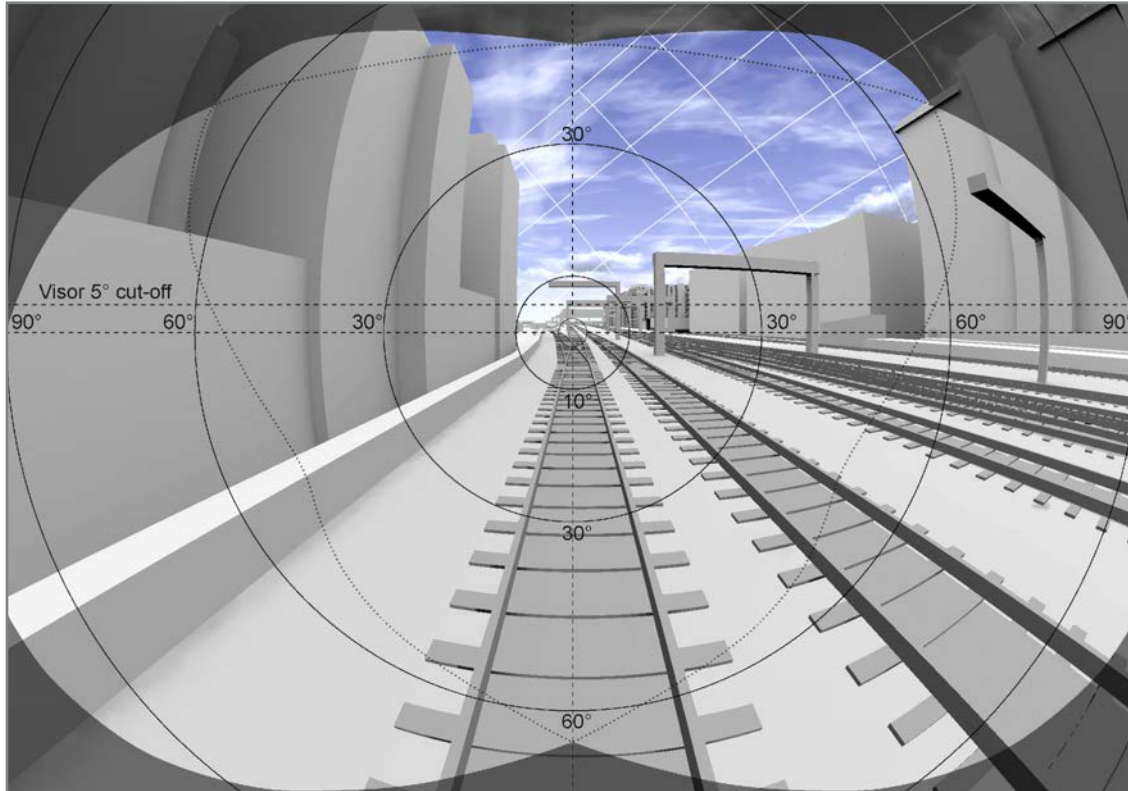


Fig. 64: Solar Glare - HOURS - 180 degrees view

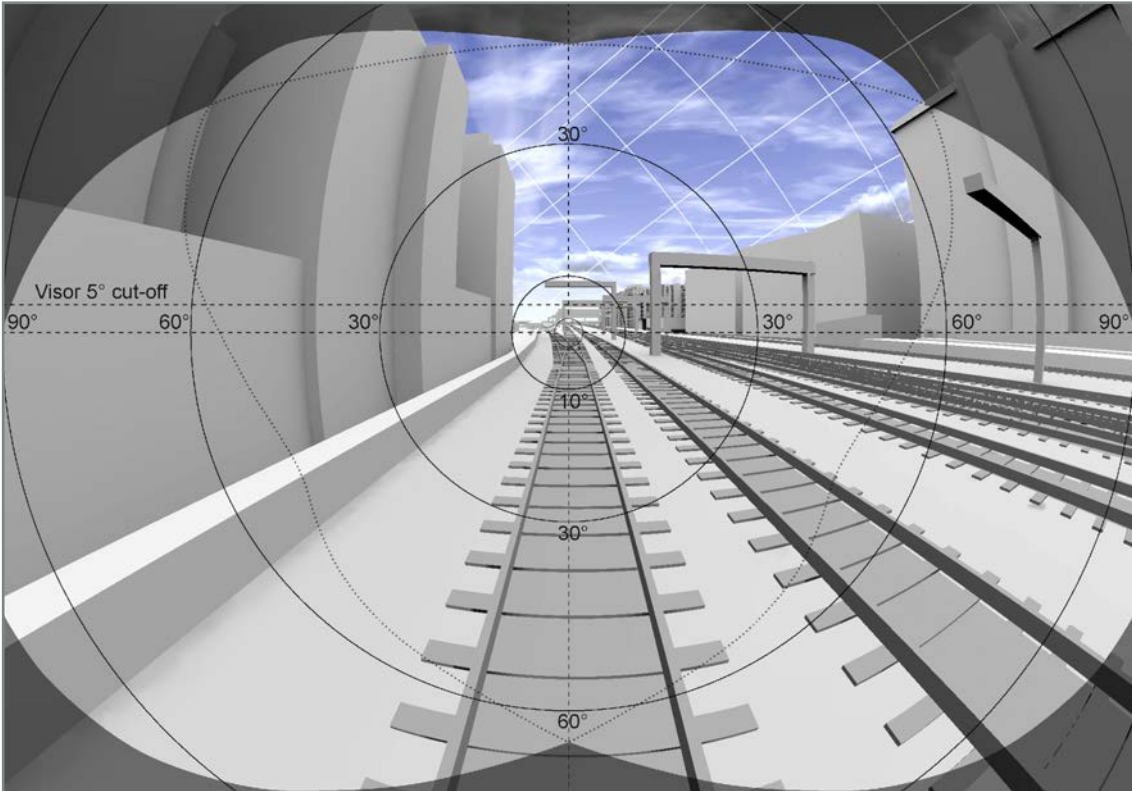
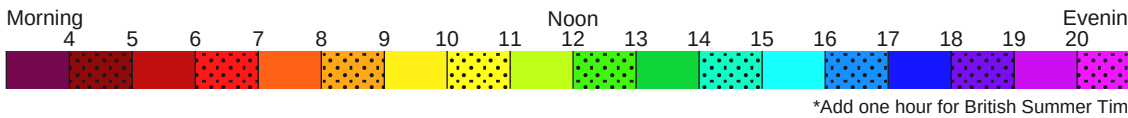
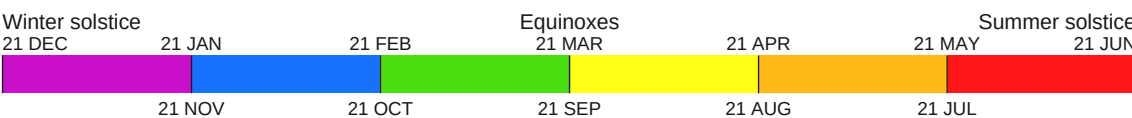


Fig. 65: Solar Glare - MONTHS - 180 degrees view



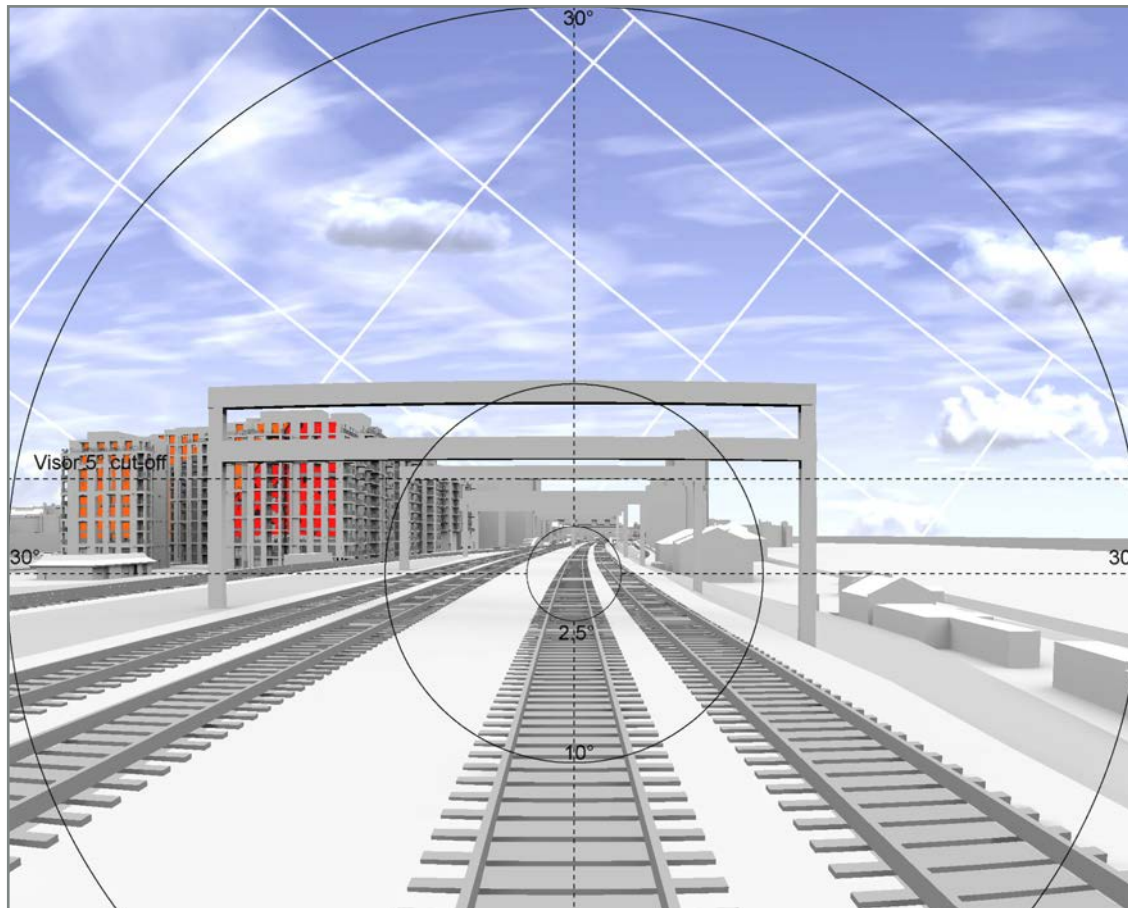


Fig. 66: Solar Glare - HOURS - Close-up

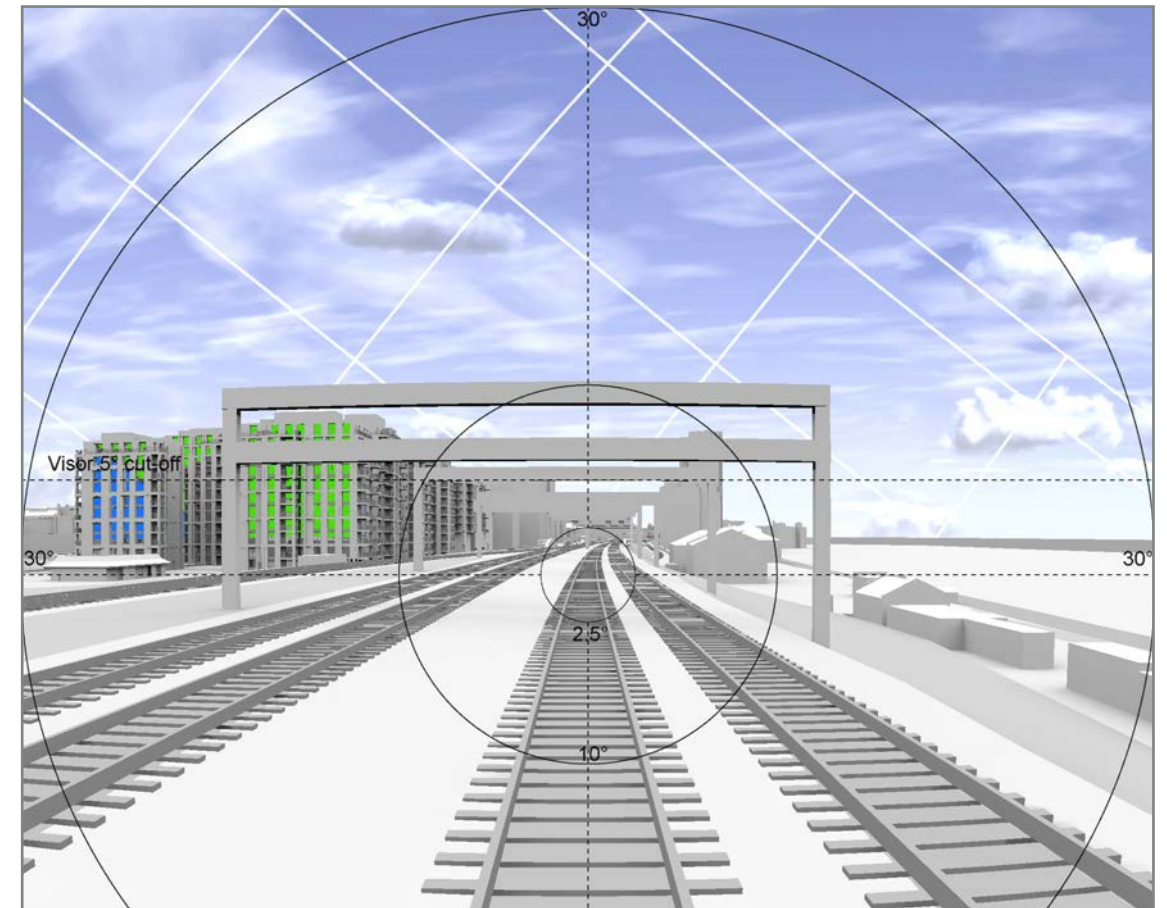


Fig. 67: Solar Glare - MONTHS - Close-up

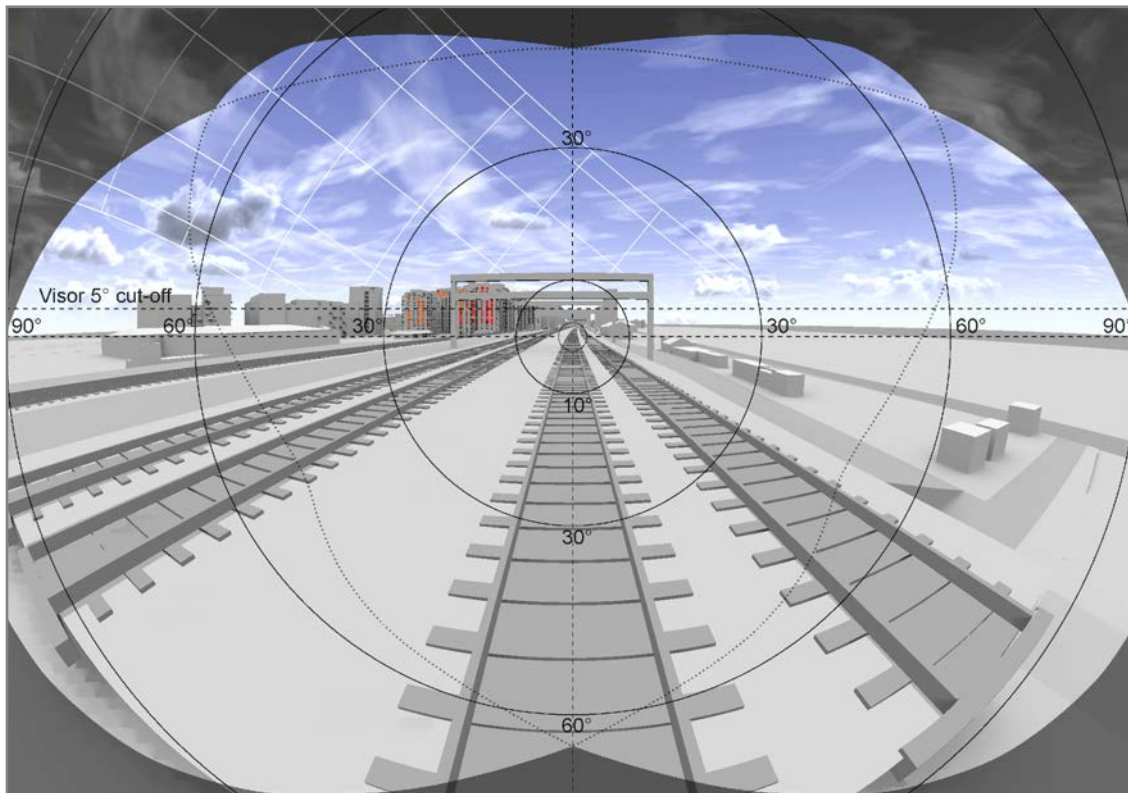


Fig. 68: Solar Glare - HOURS - 180 degrees view

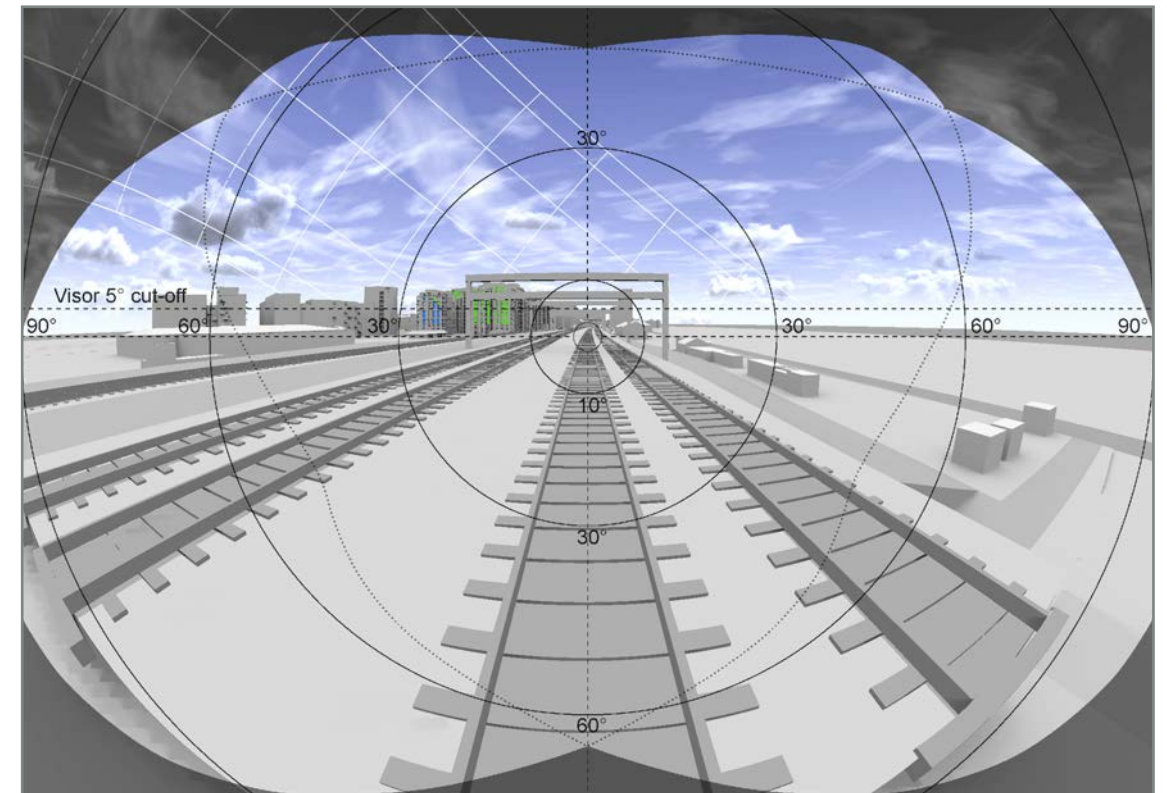
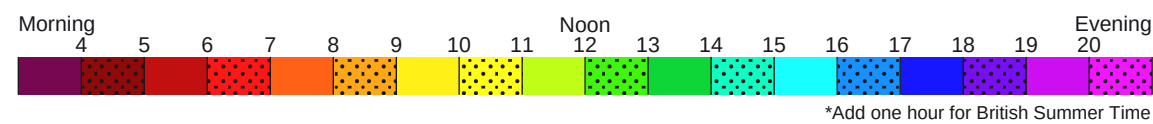
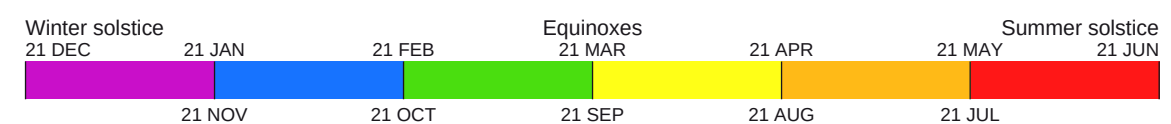


Fig. 69: Solar Glare - MONTHS - 180 degrees view



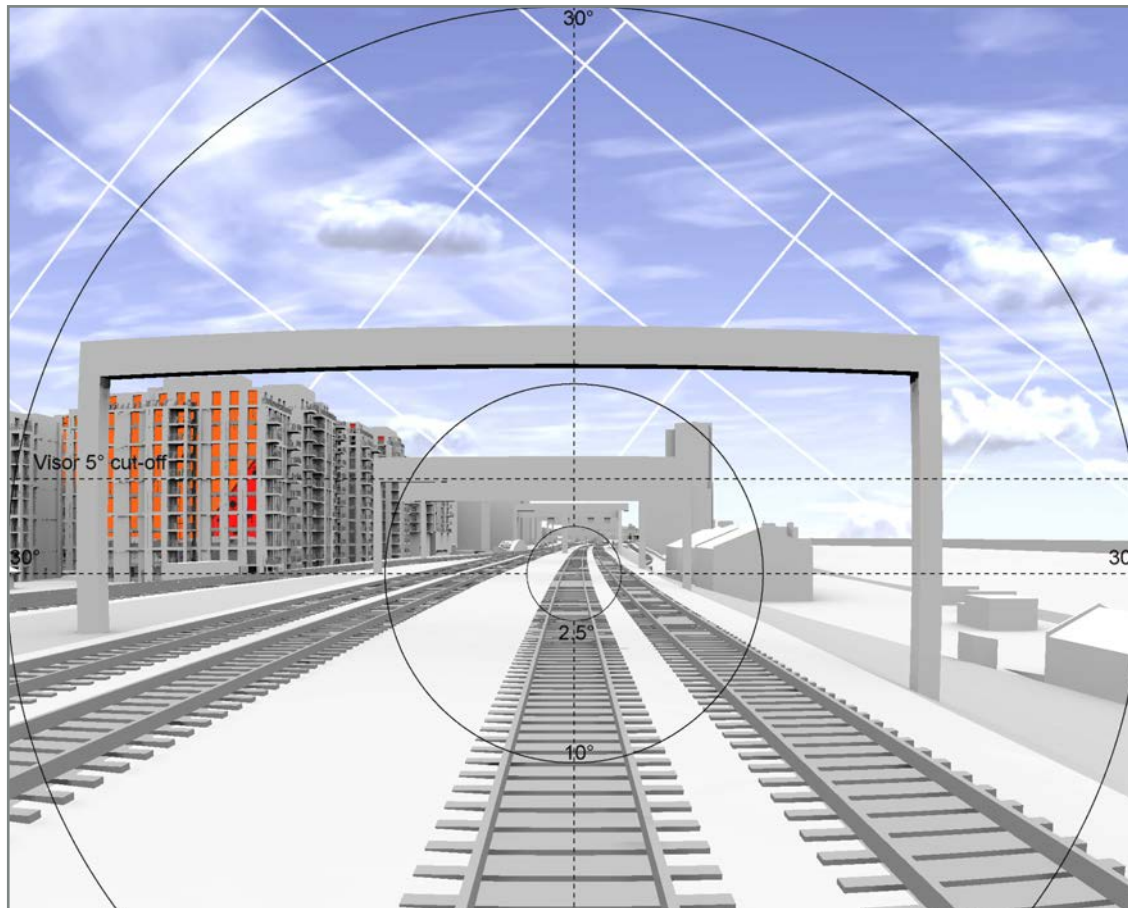


Fig. 70: Solar Glare - HOURS - Close-up

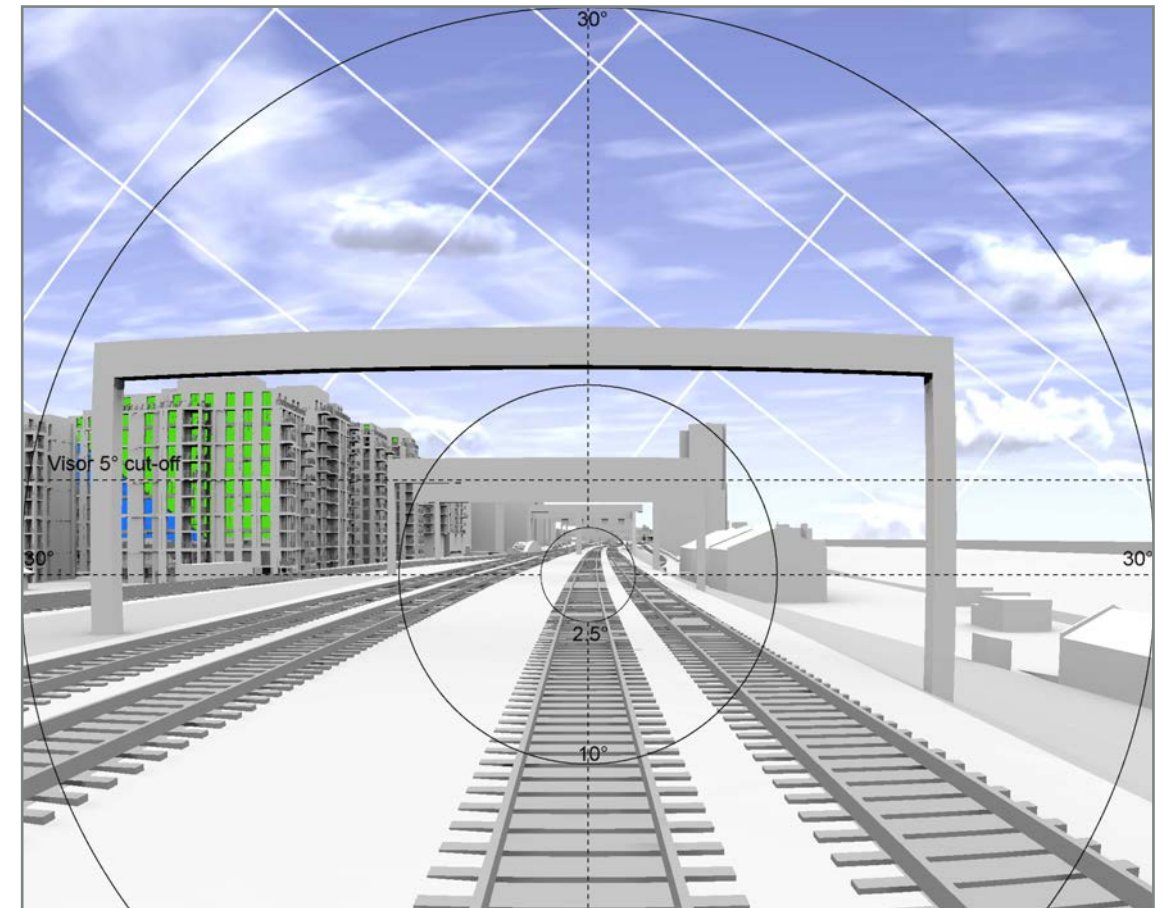


Fig. 71: Solar Glare - MONTHS - Close-up

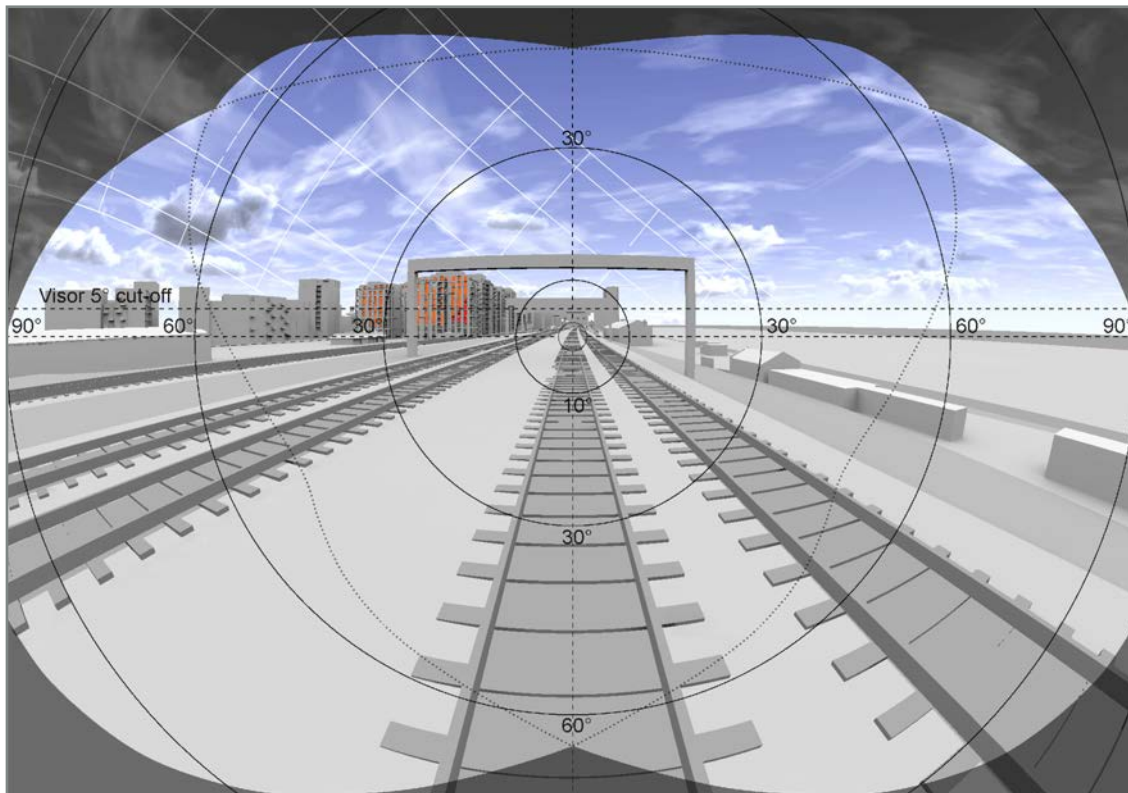


Fig. 72: Solar Glare - HOURS - 180 degrees view

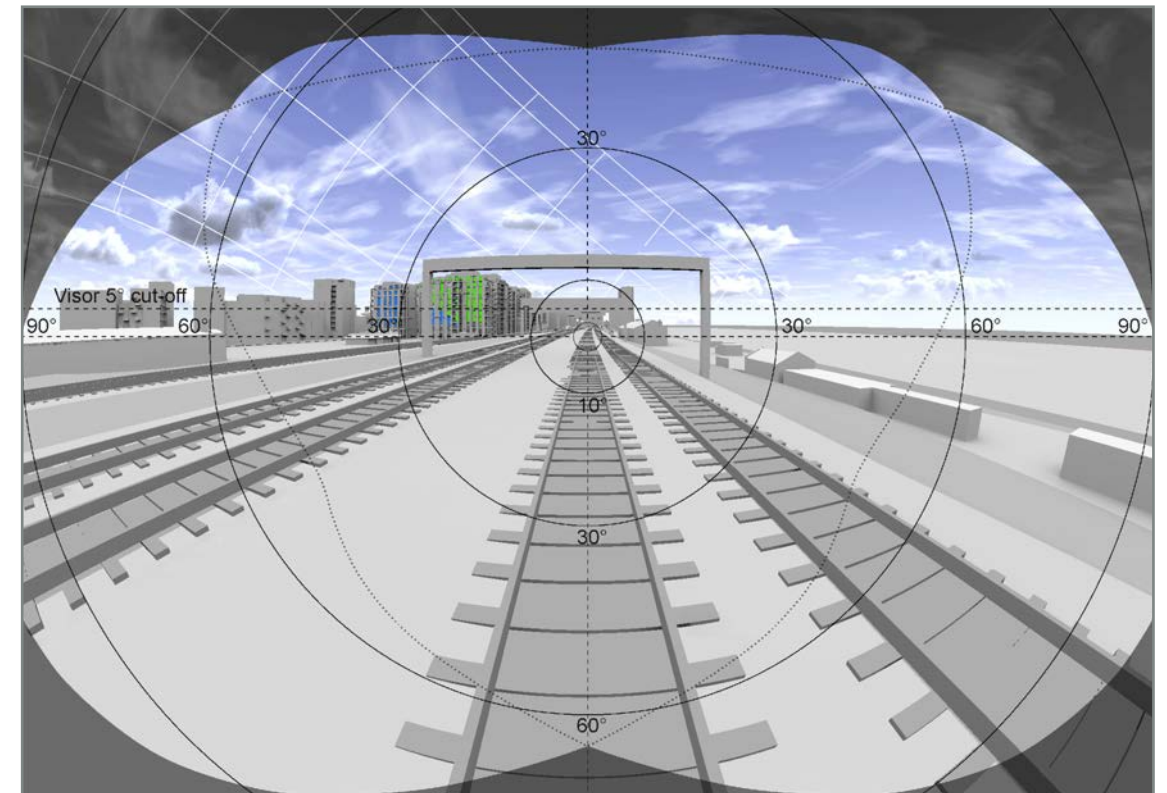
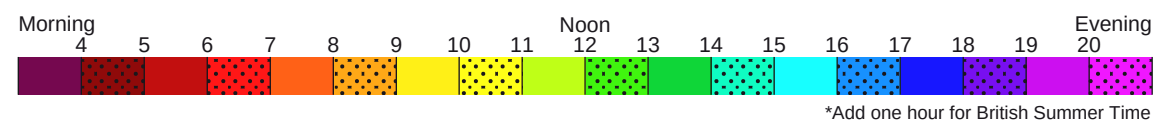
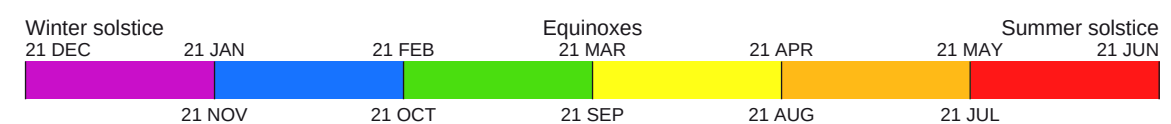


Fig. 73: Solar Glare - MONTHS - 180 degrees view



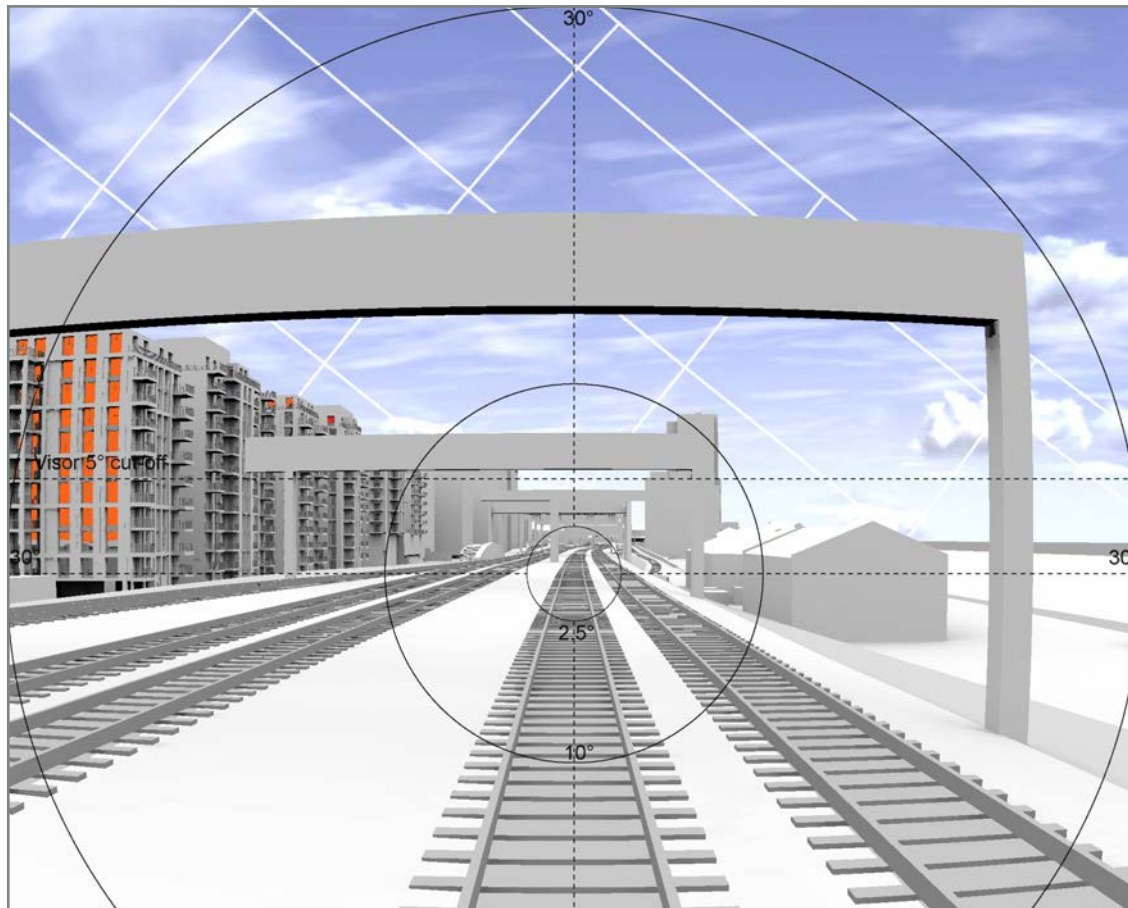


Fig. 74: Solar Glare - HOURS - Close-up

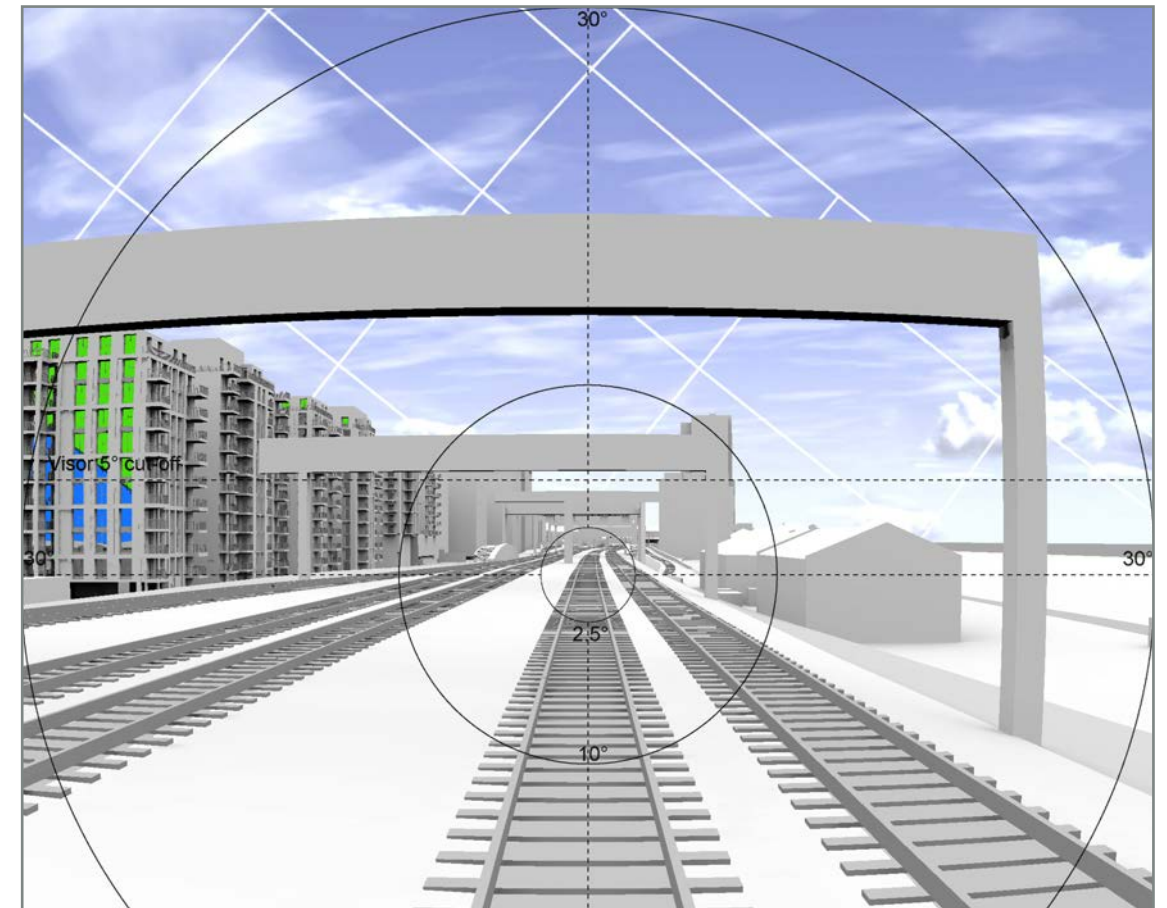


Fig. 75: Solar Glare - MONTHS - Close-up

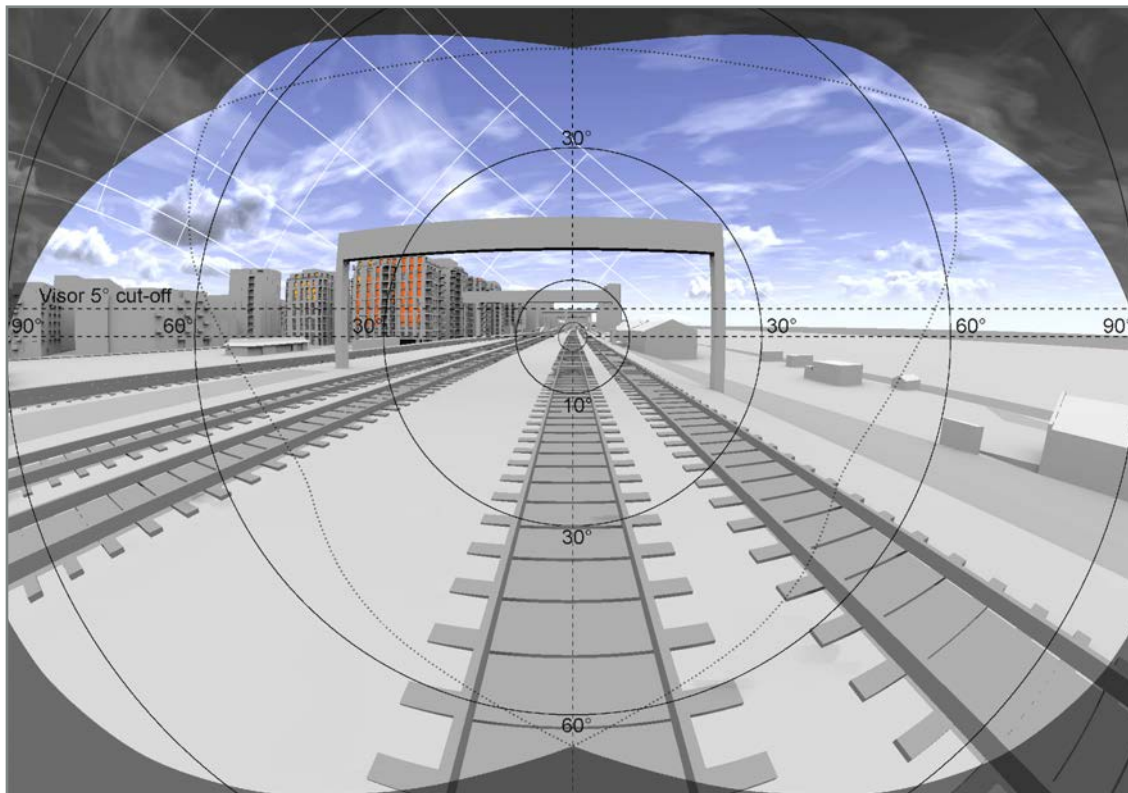


Fig. 76: Solar Glare - HOURS - 180 degrees view

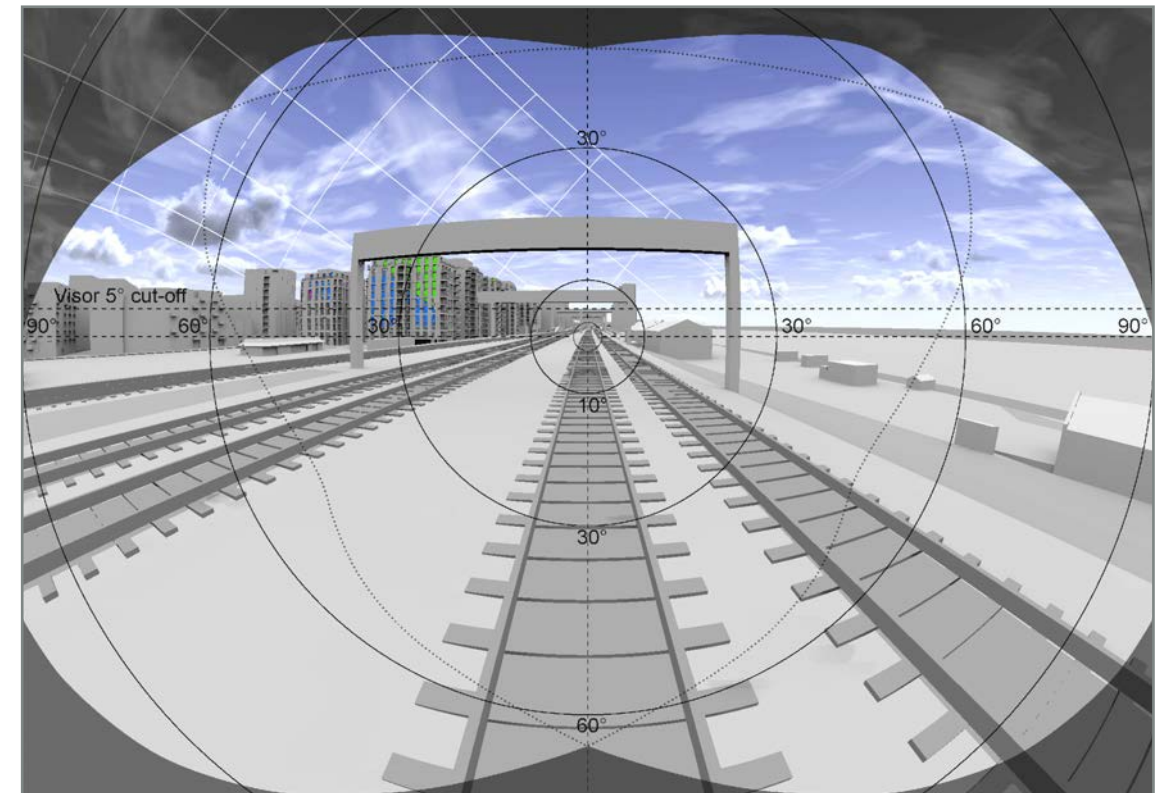
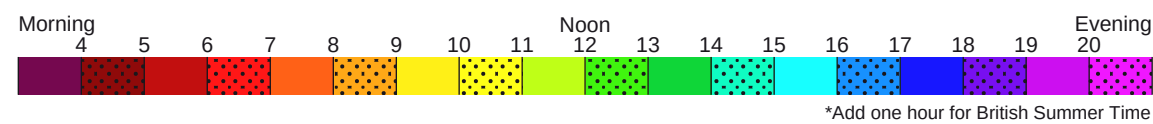


Fig. 77: Solar Glare - MONTHS - 180 degrees view

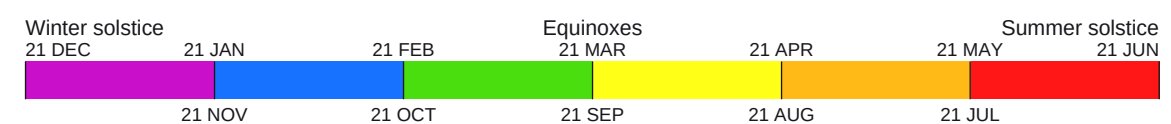




Fig. 78: Solar Glare - HOURS - Close-up

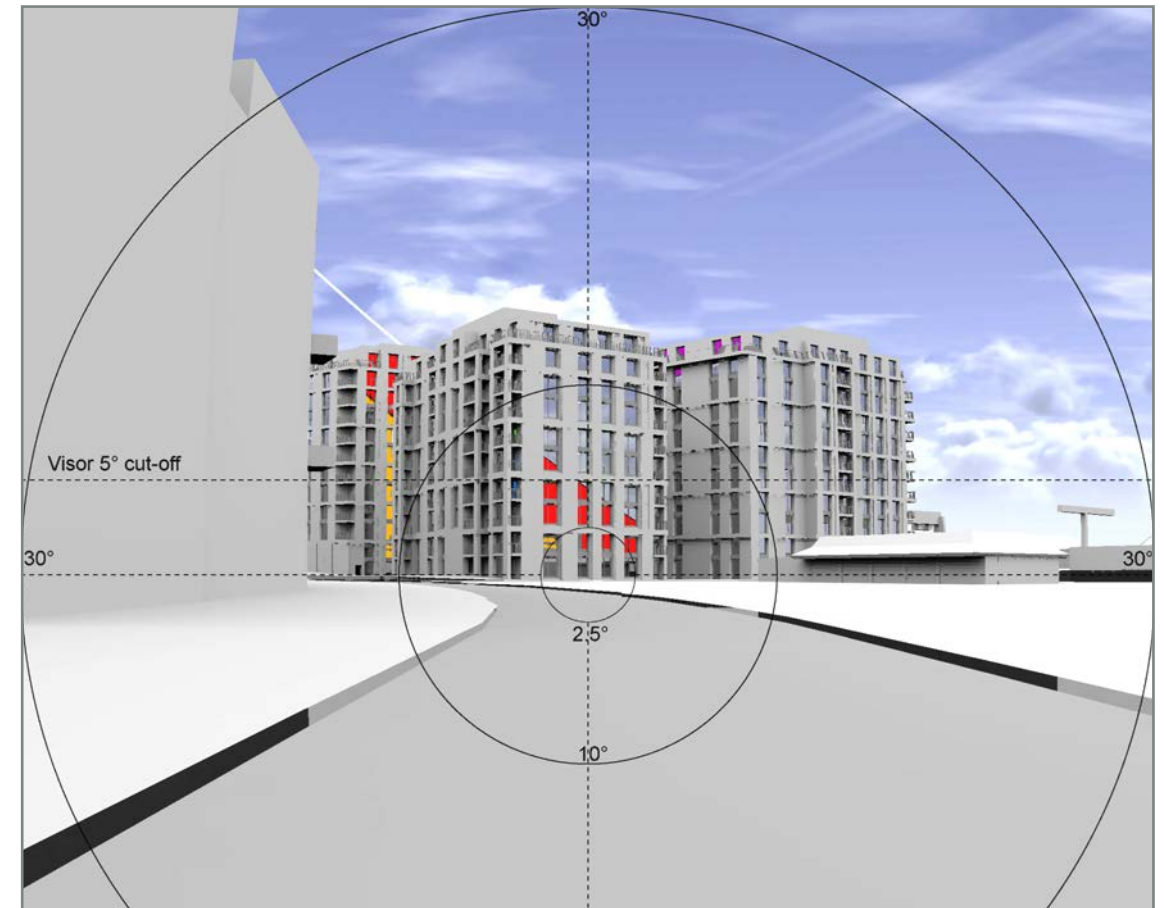


Fig. 79: Solar Glare - MONTHS - Close-up

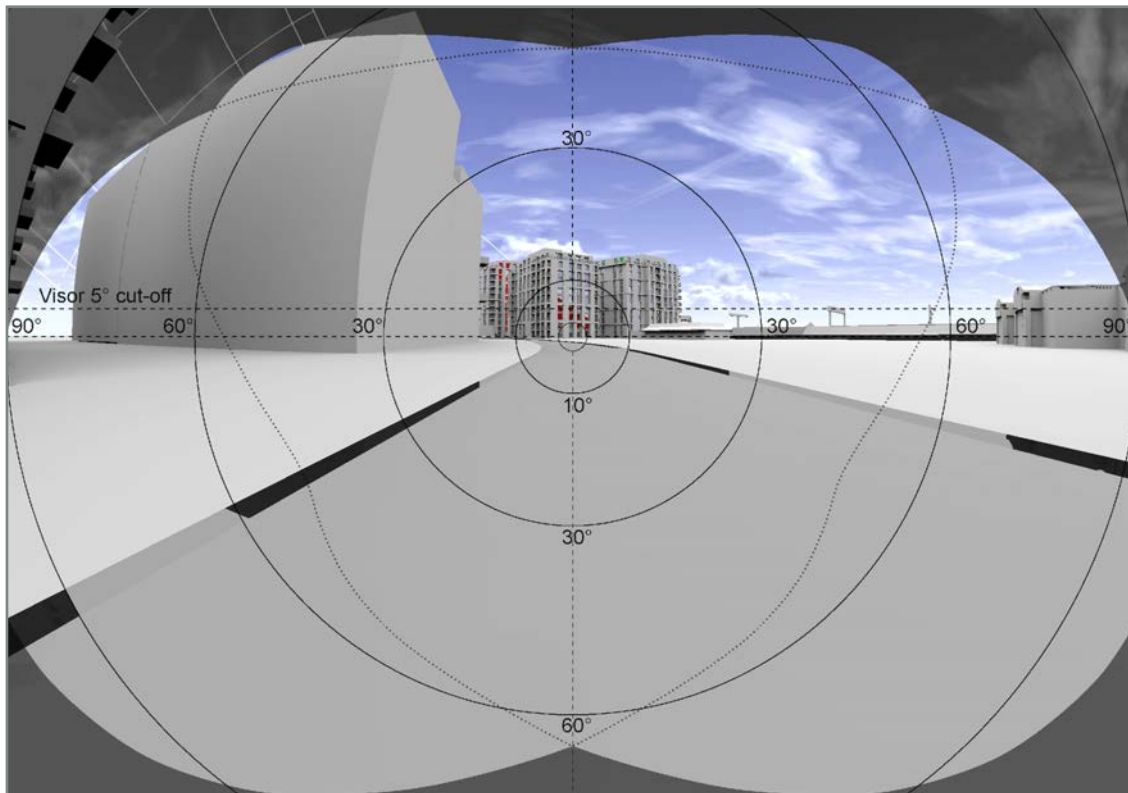


Fig. 80: Solar Glare - HOURS - 180 degrees view

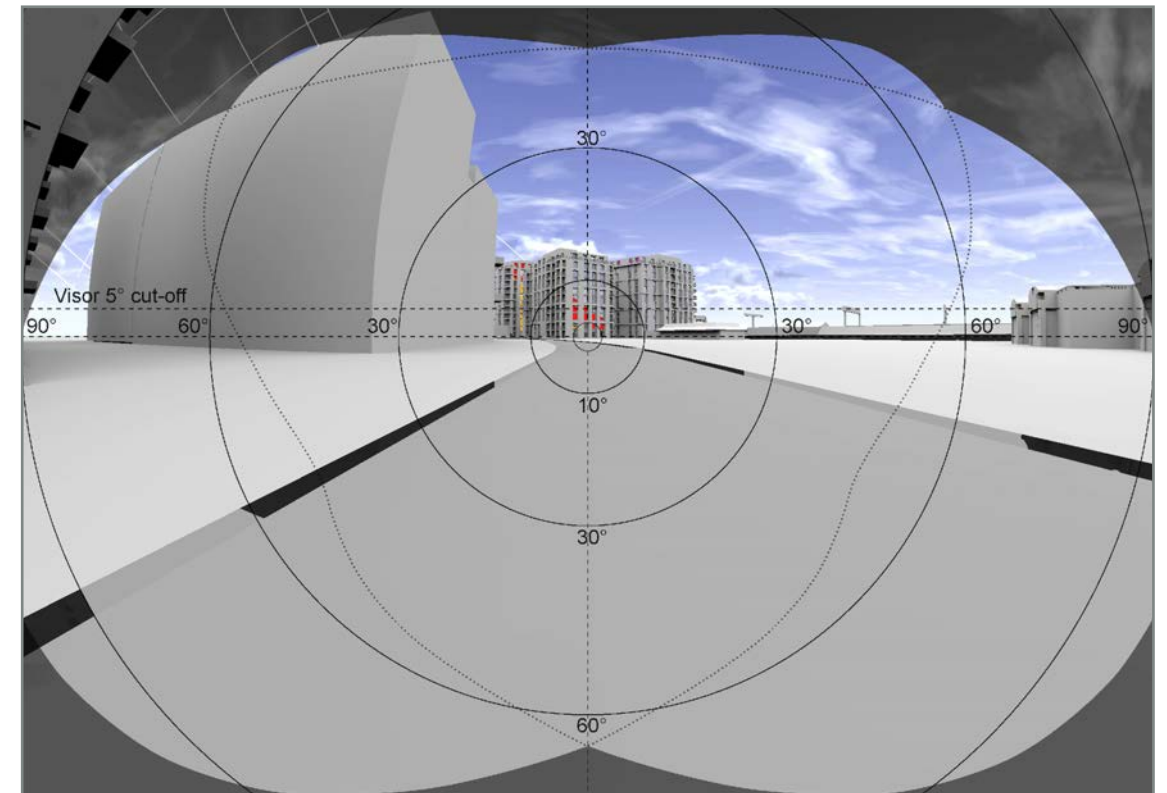
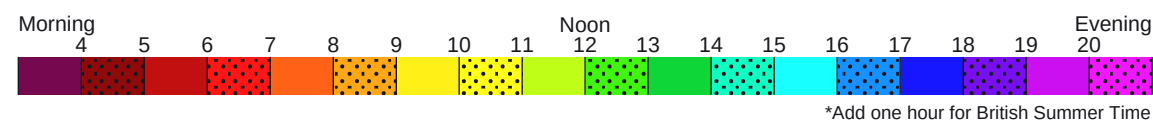
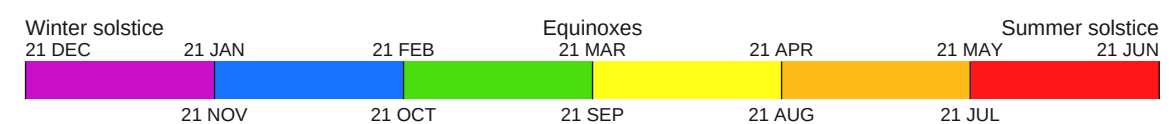


Fig. 81: Solar Glare - MONTHS - 180 degrees view



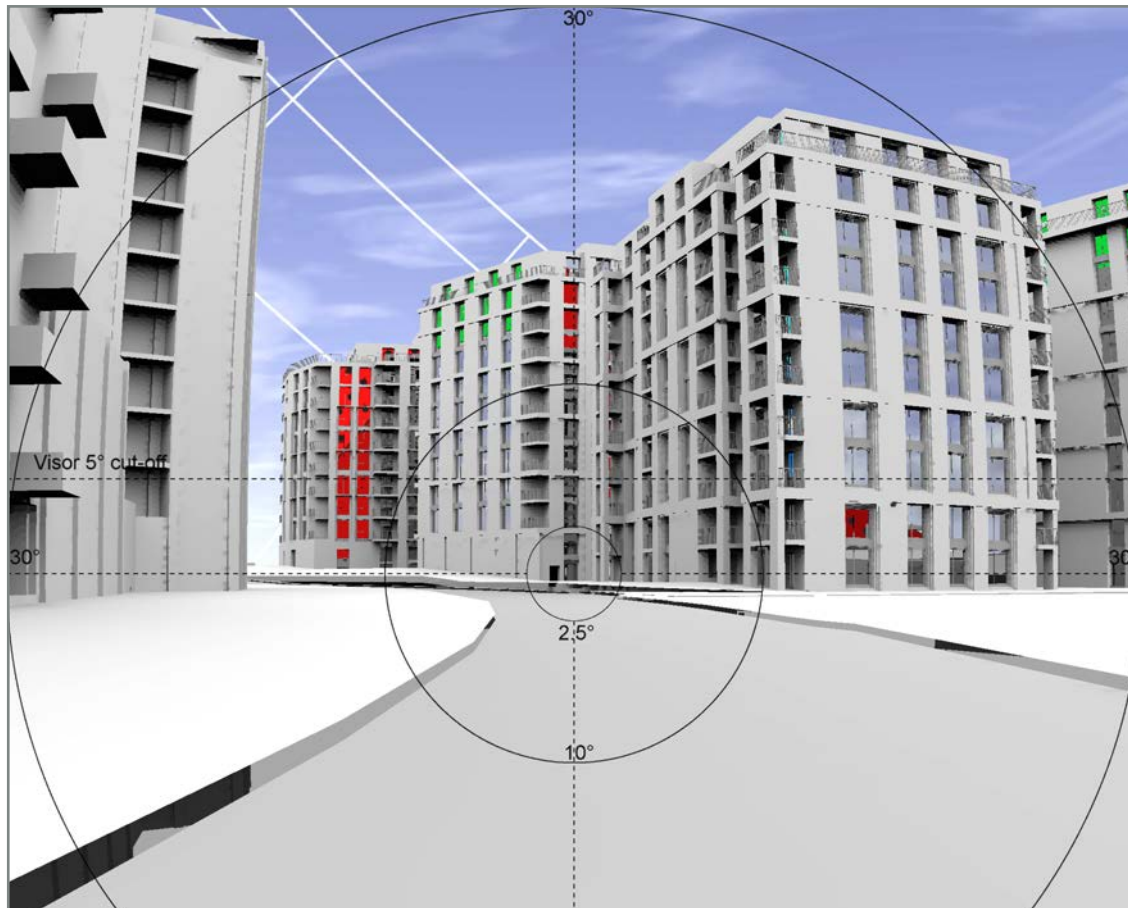


Fig. 82: Solar Glare - HOURS - Close-up



Fig. 83: Solar Glare - MONTHS - Close-up

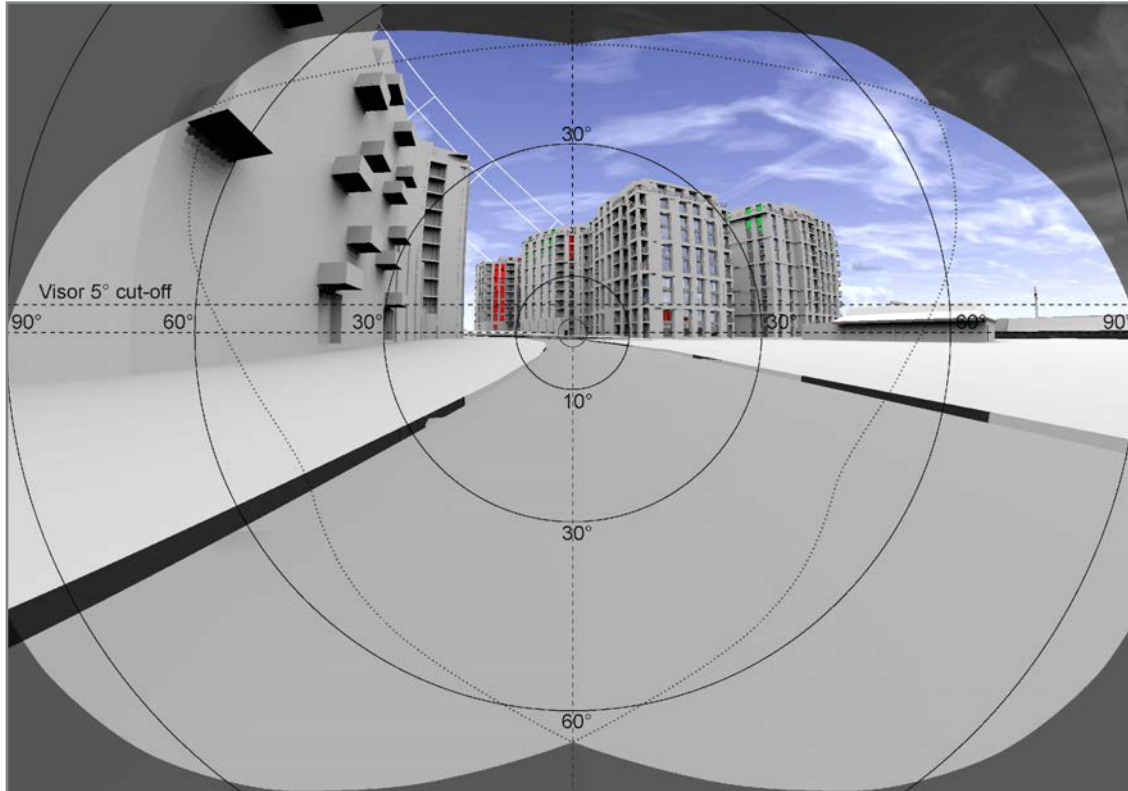


Fig. 84: Solar Glare - HOURS - 180 degrees view

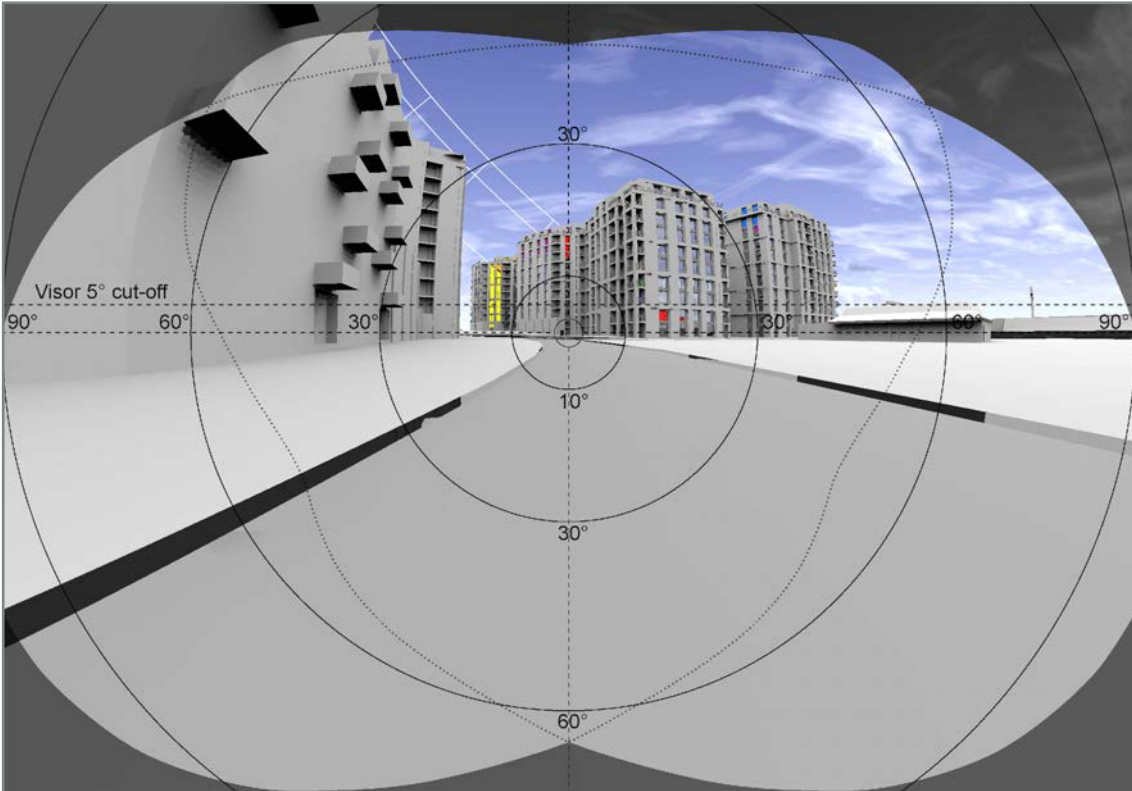
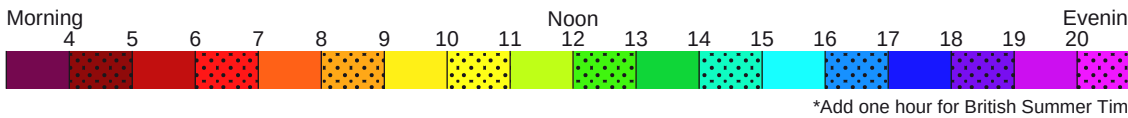
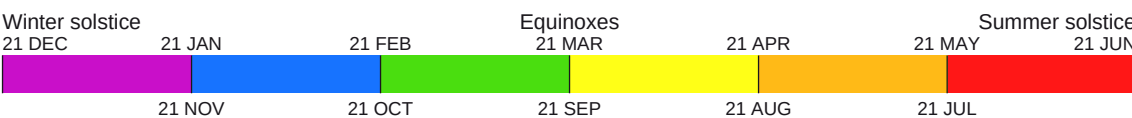


Fig. 85: Solar Glare - MONTHS - 180 degrees view



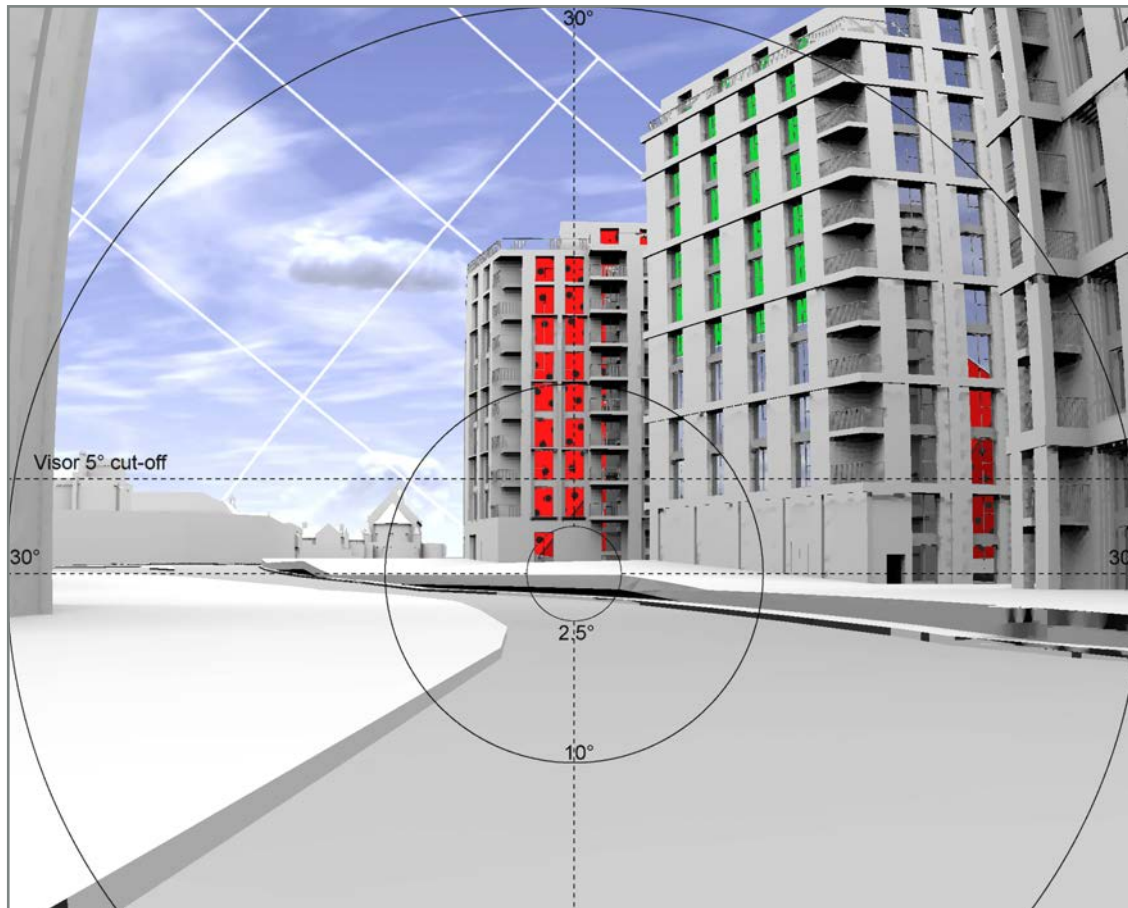


Fig. 86: Solar Glare - HOURS - Close-up



Fig. 87: Solar Glare - MONTHS - Close-up

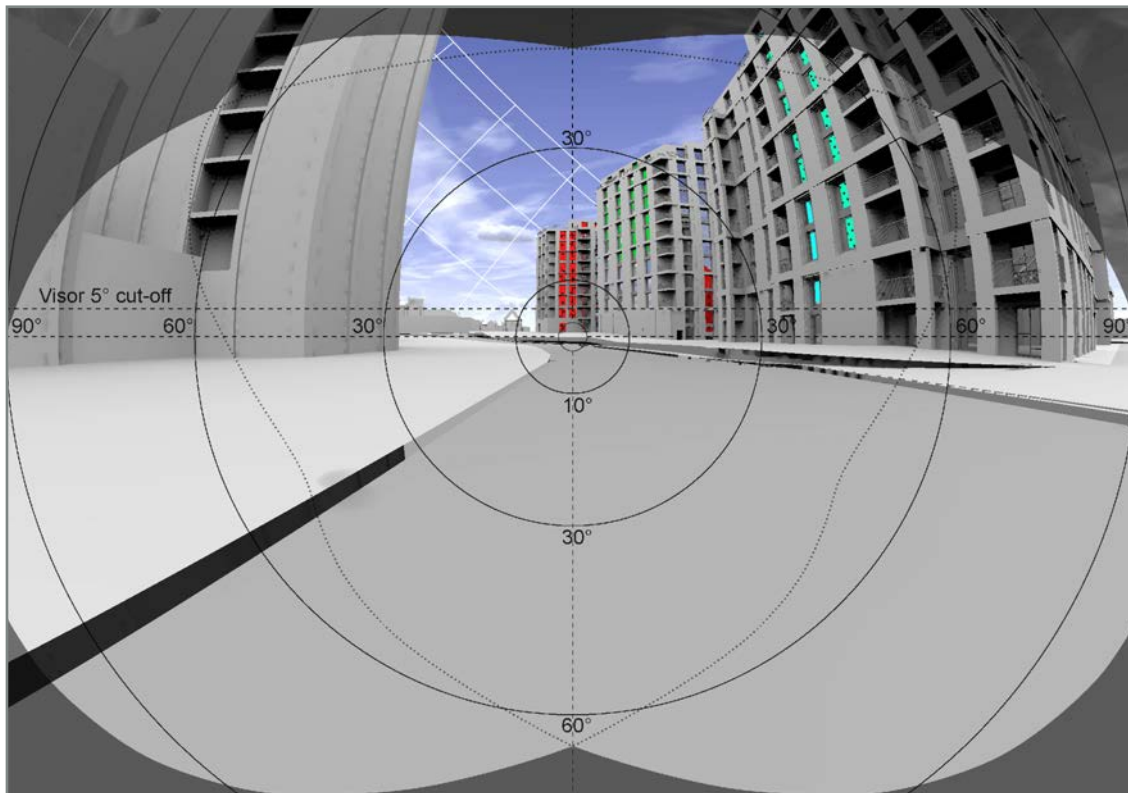


Fig. 88: Solar Glare - HOURS - 180 degrees view

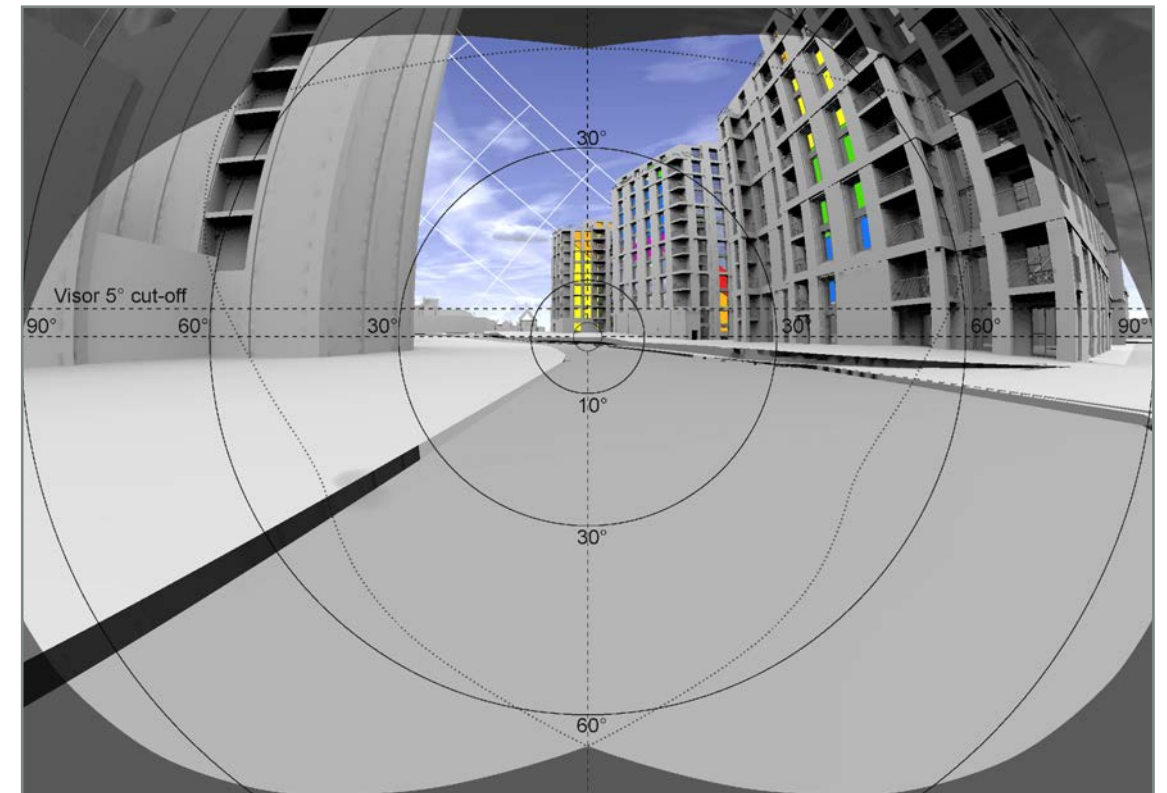
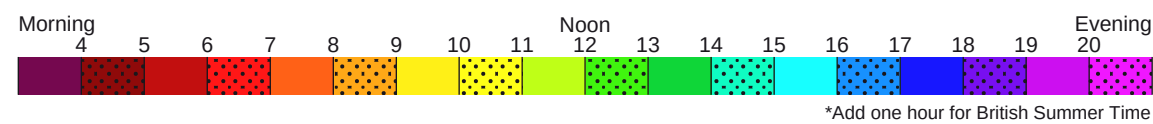


Fig. 89: Solar Glare - MONTHS - 180 degrees view

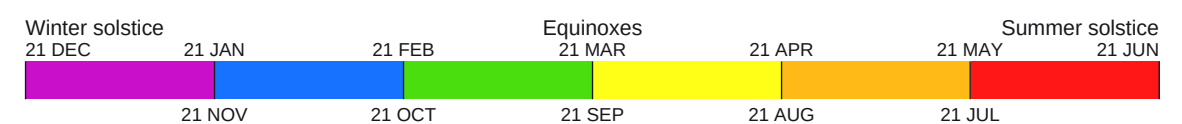




Fig. 90: Solar Glare - HOURS - Close-up



Fig. 91: Solar Glare - MONTHS - Close-up

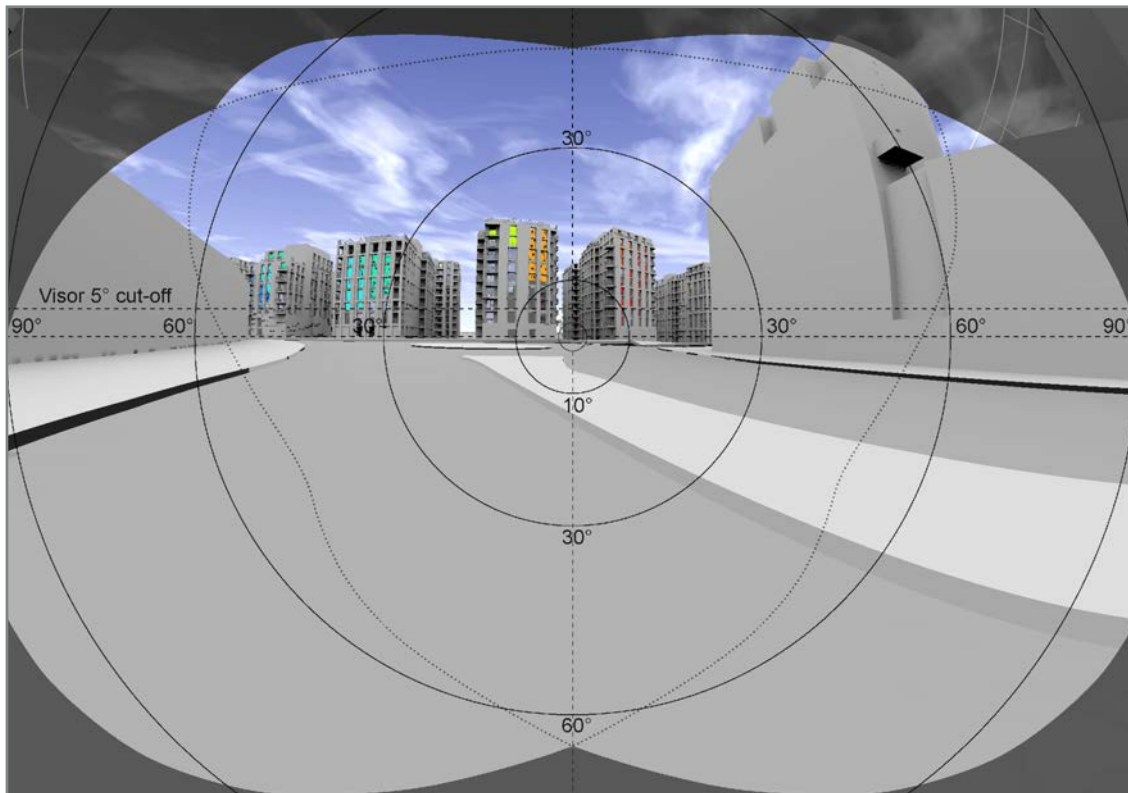


Fig. 92: Solar Glare - HOURS - 180 degrees view

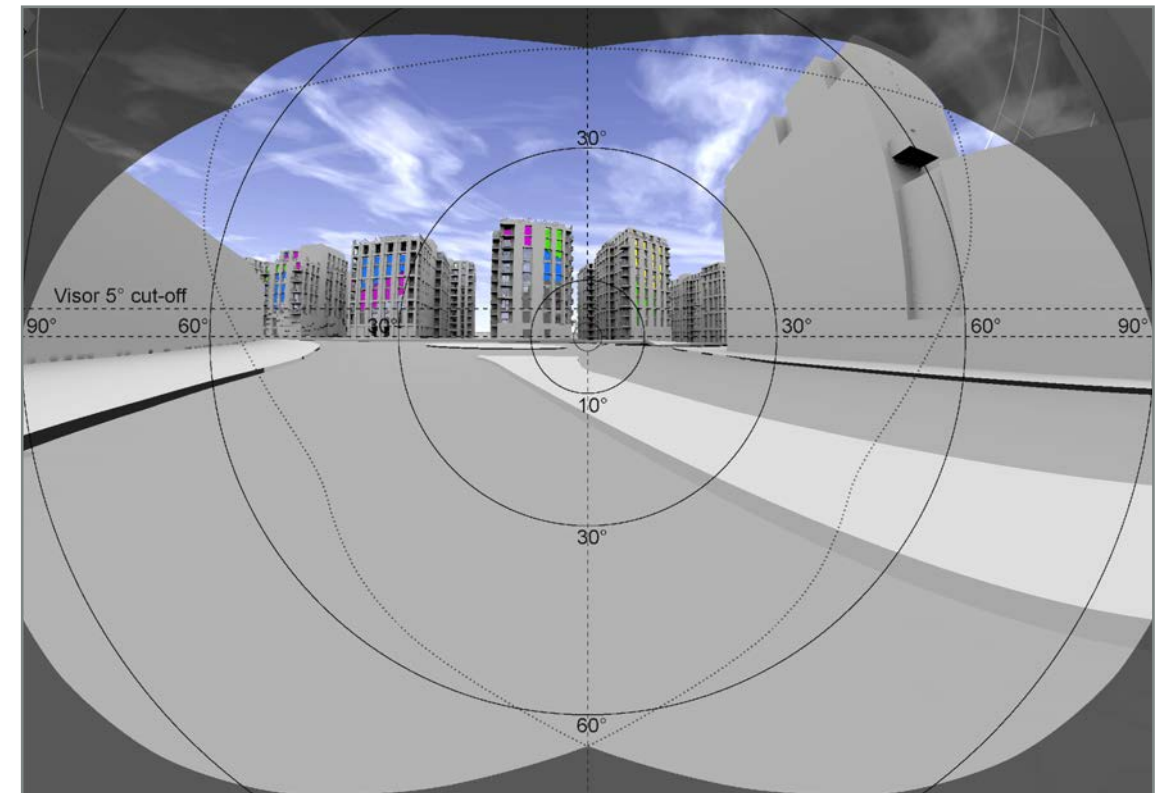
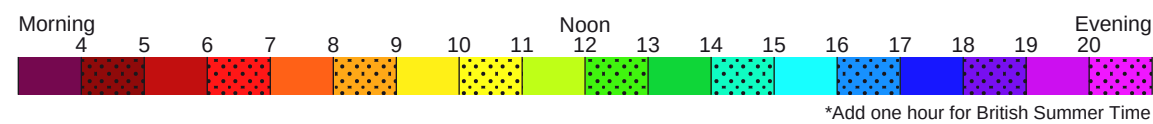


Fig. 93: Solar Glare - MONTHS - 180 degrees view

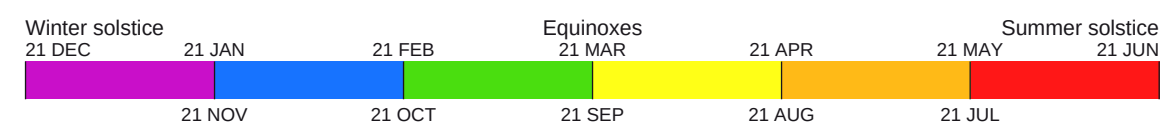




Fig. 94: Solar Glare - HOURS - Close-up



Fig. 95: Solar Glare - MONTHS - Close-up

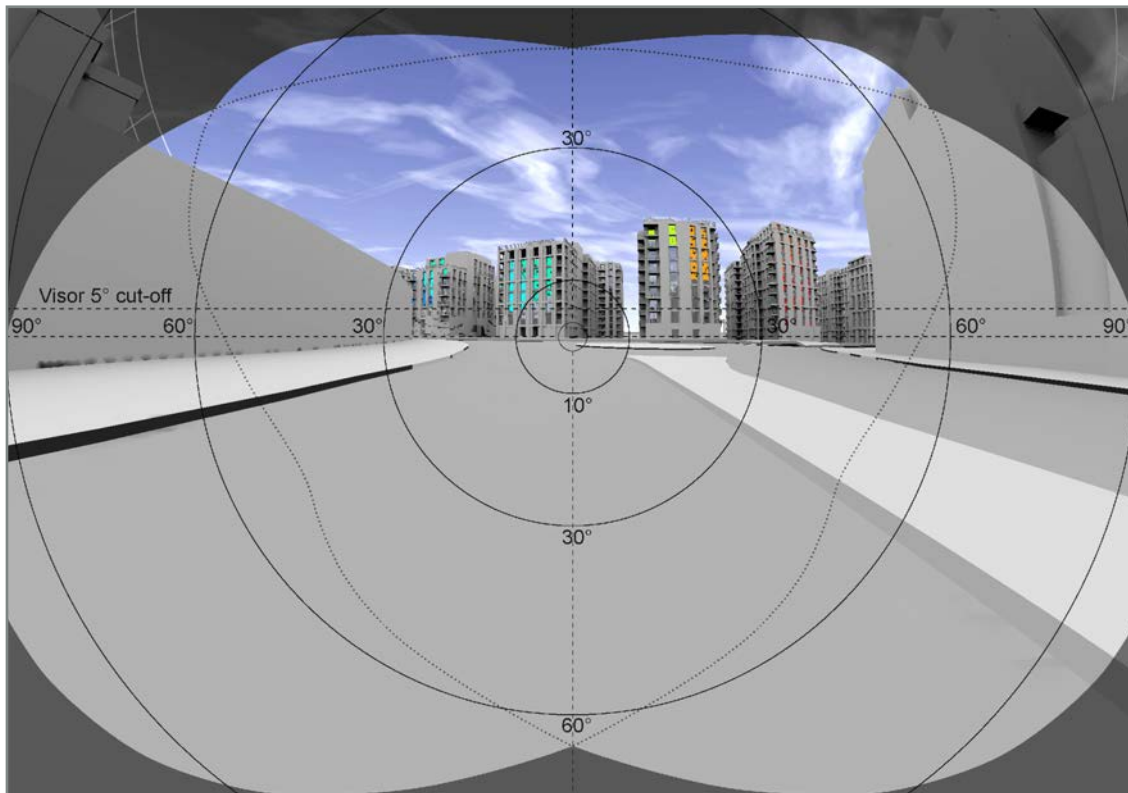


Fig. 96: Solar Glare - HOURS - 180 degrees view

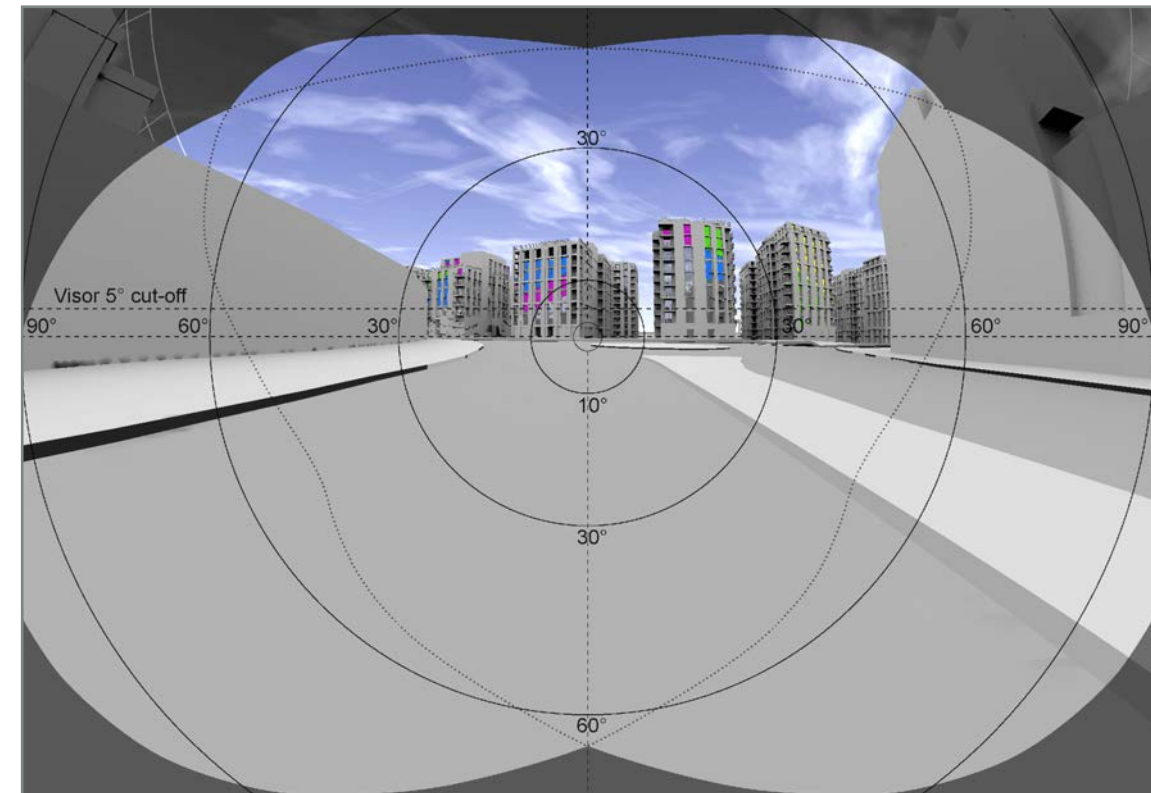
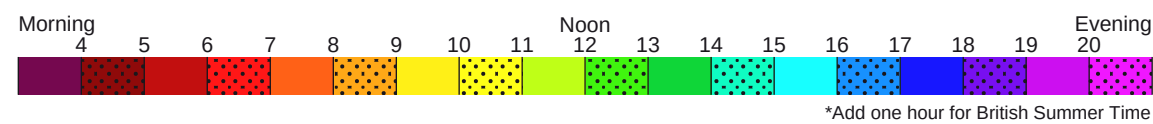


Fig. 97: Solar Glare - MONTHS - 180 degrees view

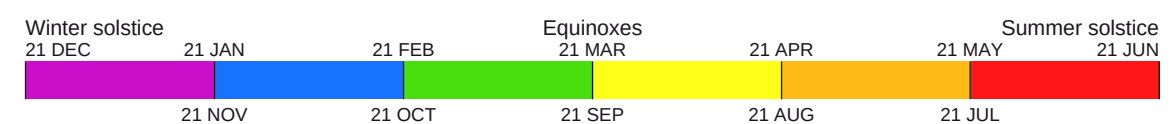




Fig. 98: Solar Glare - HOURS - Close-up



Fig. 99: Solar Glare - MONTHS - Close-up

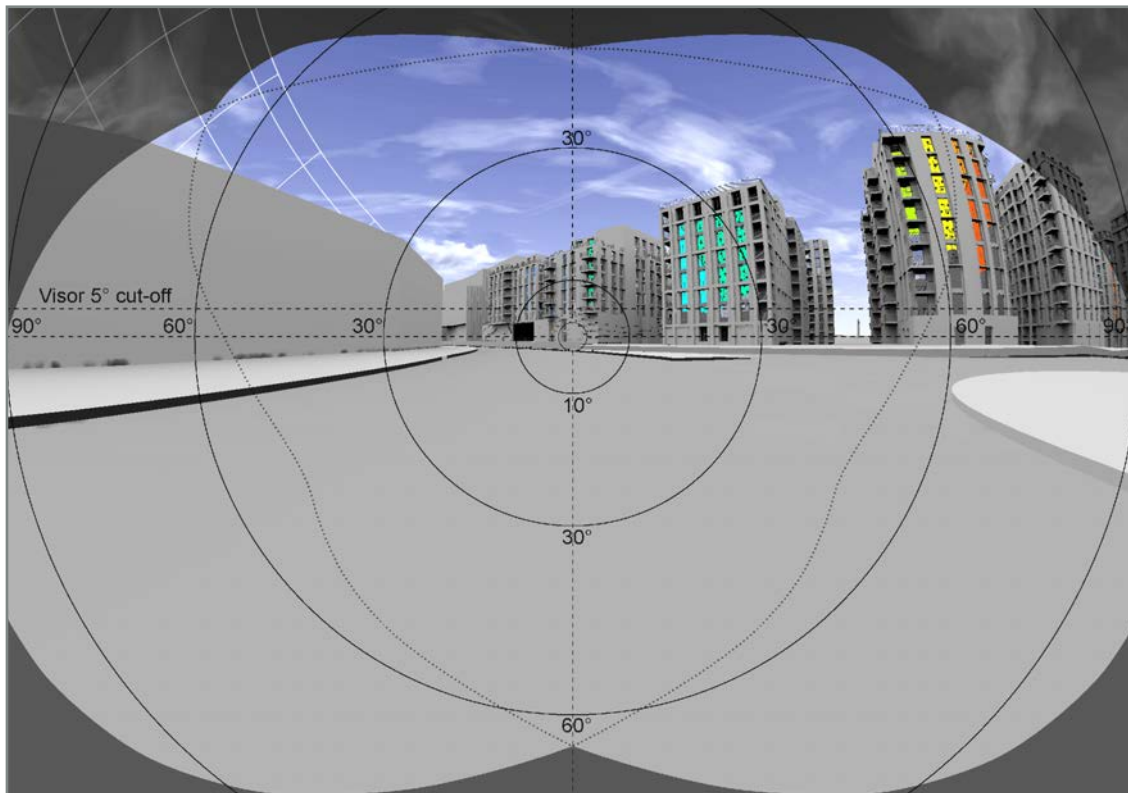


Fig. 100: Solar Glare - HOURS - 180 degrees view

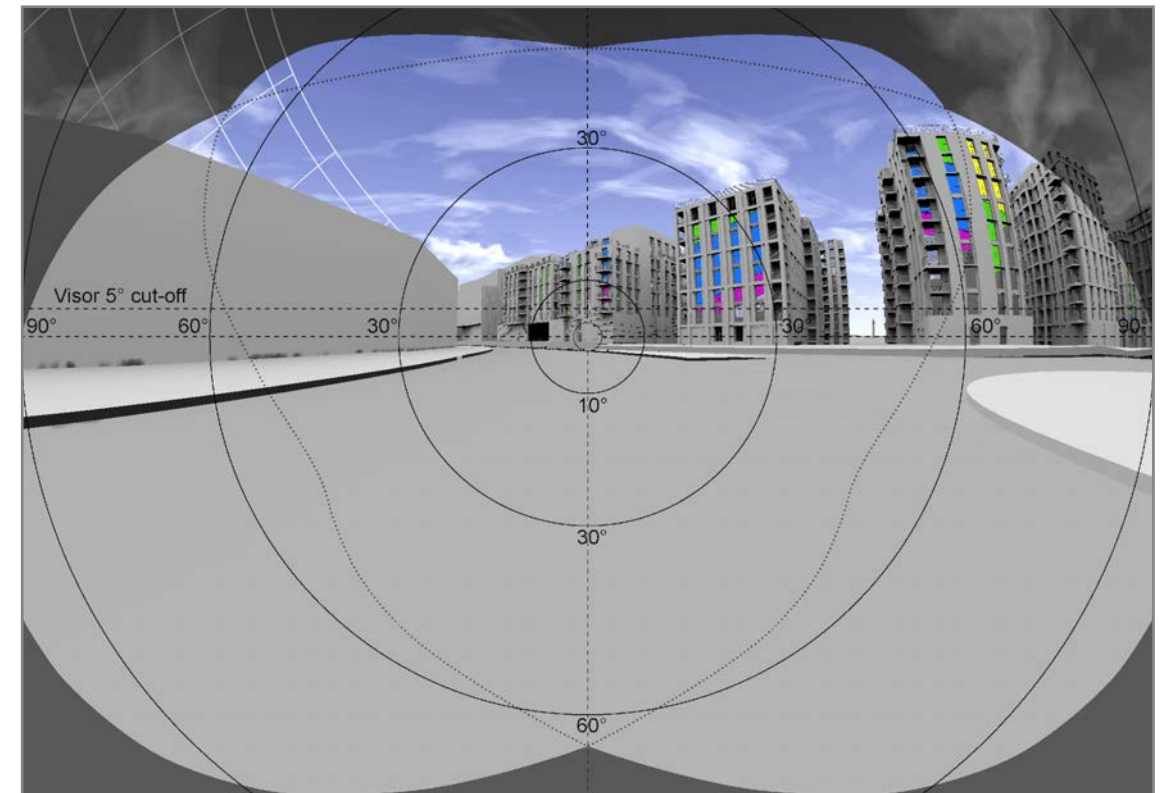
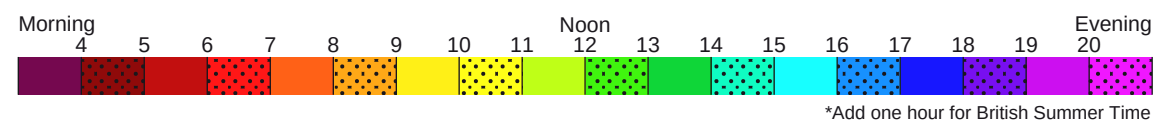
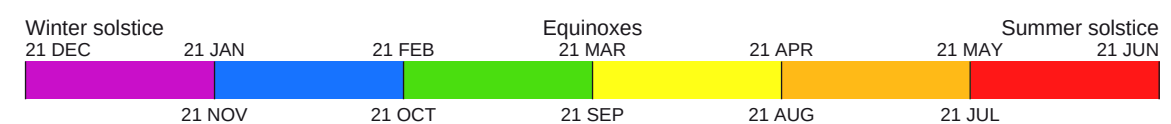


Fig. 101: Solar Glare - MONTHS - 180 degrees view



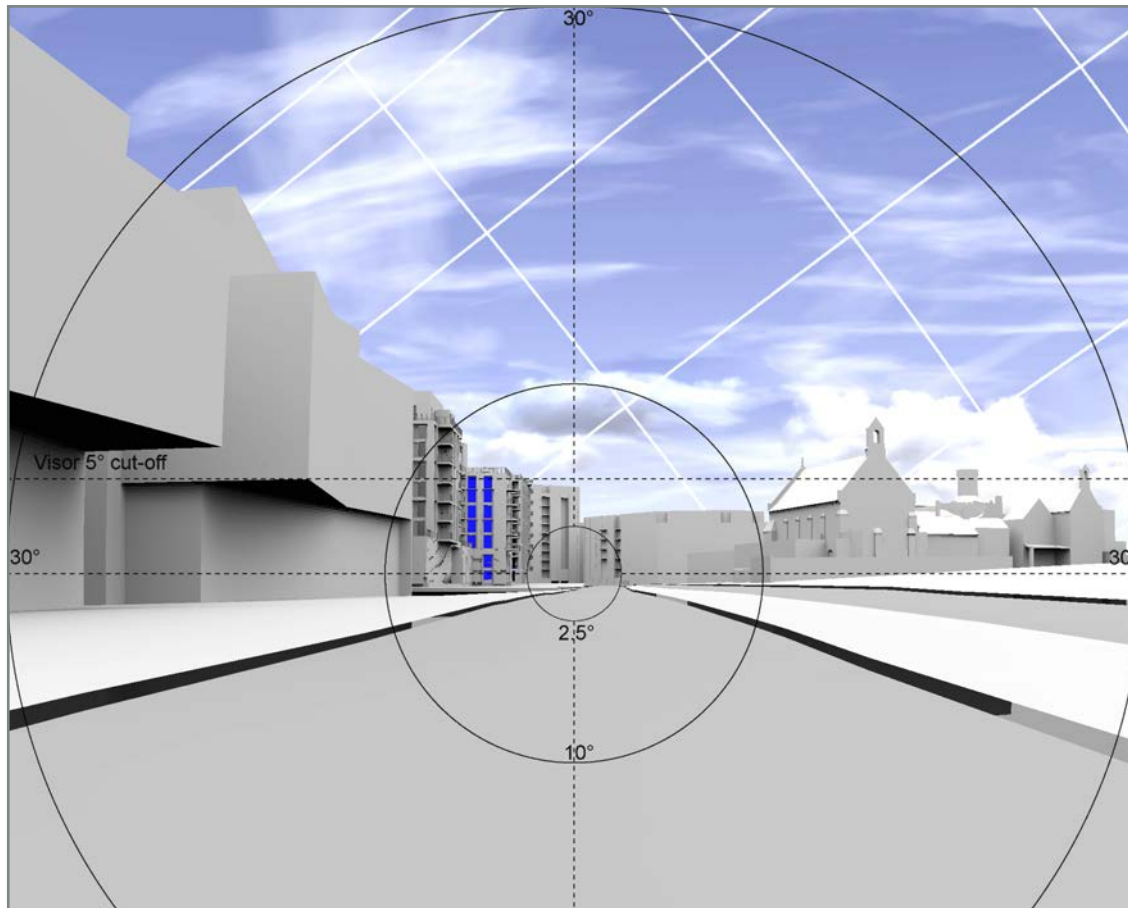


Fig. 102: Solar Glare - HOURS - Close-up

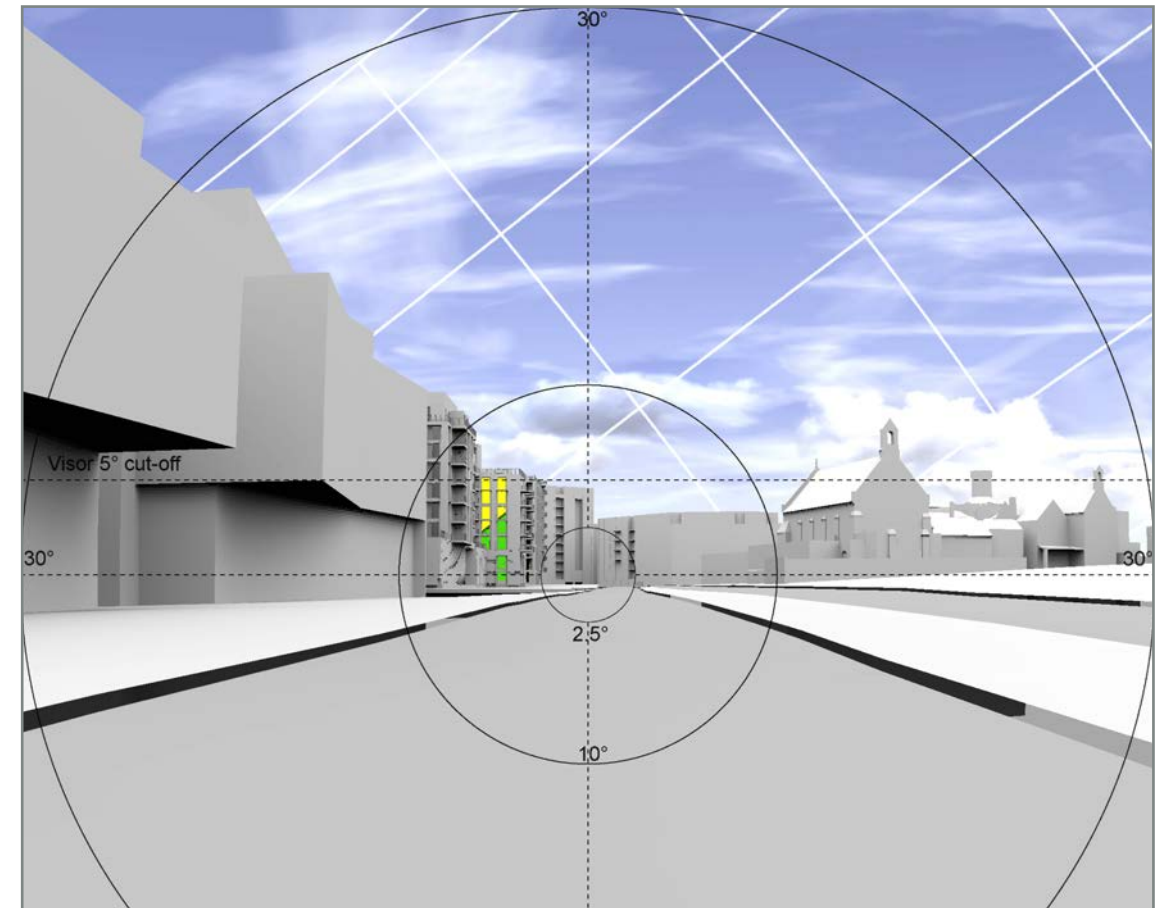


Fig. 103: Solar Glare - MONTHS - Close-up

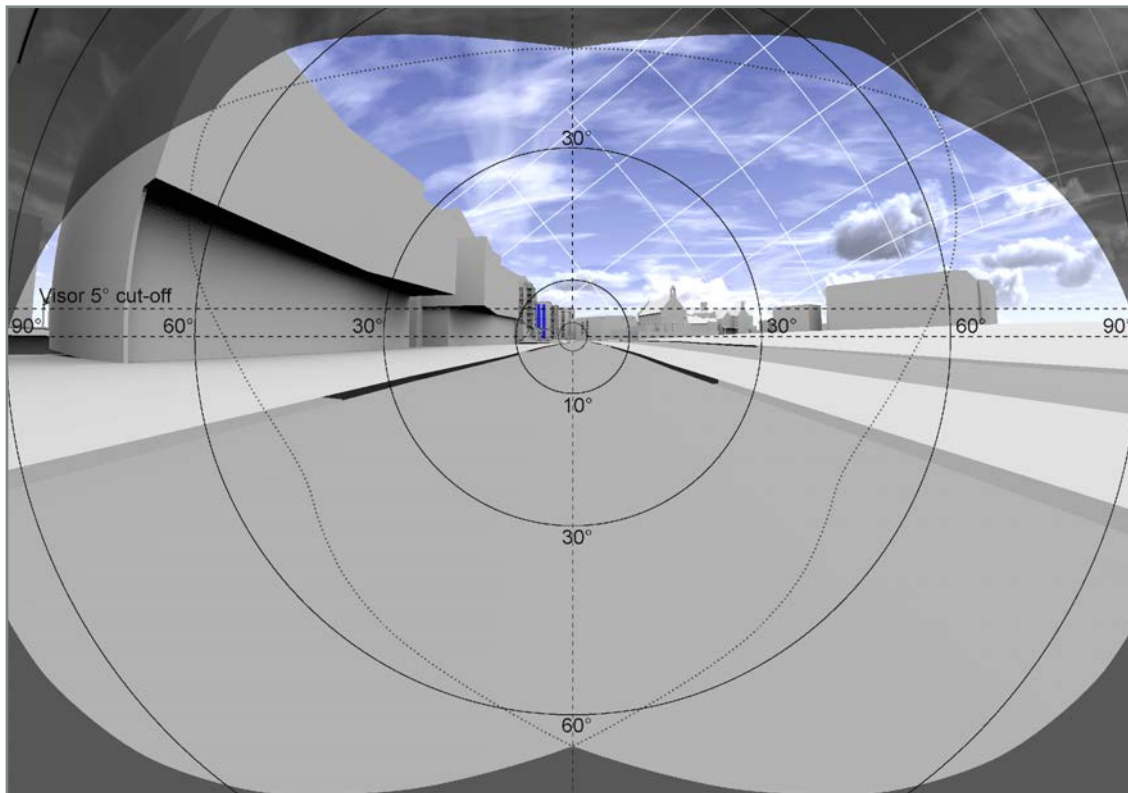


Fig. 104: Solar Glare - HOURS - 180 degrees view

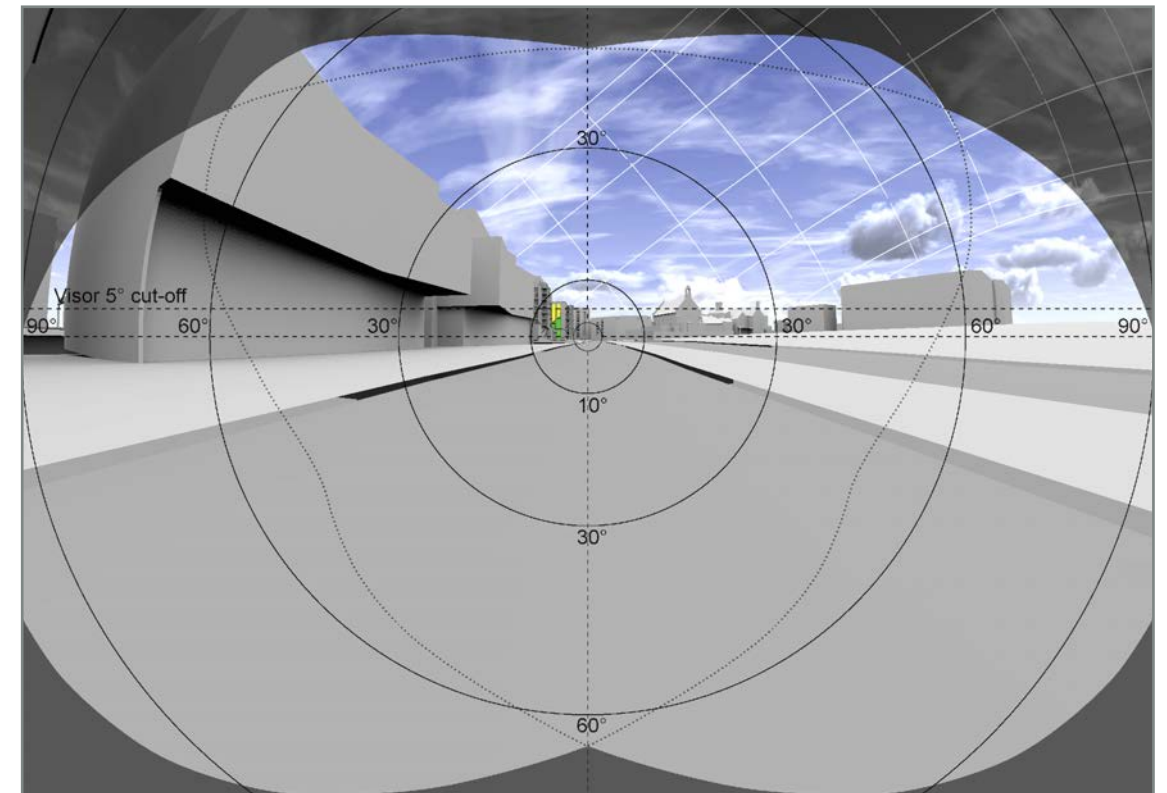
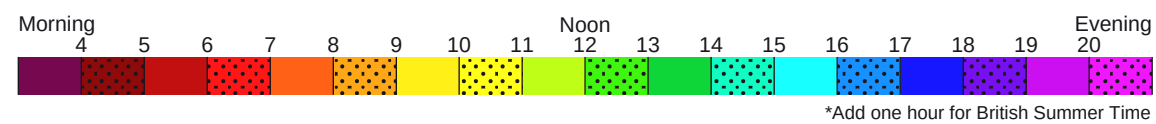
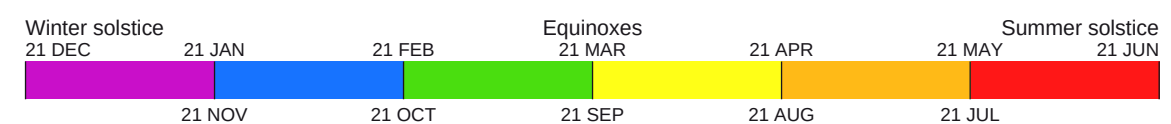


Fig. 105: Solar Glare - MONTHS - 180 degrees view



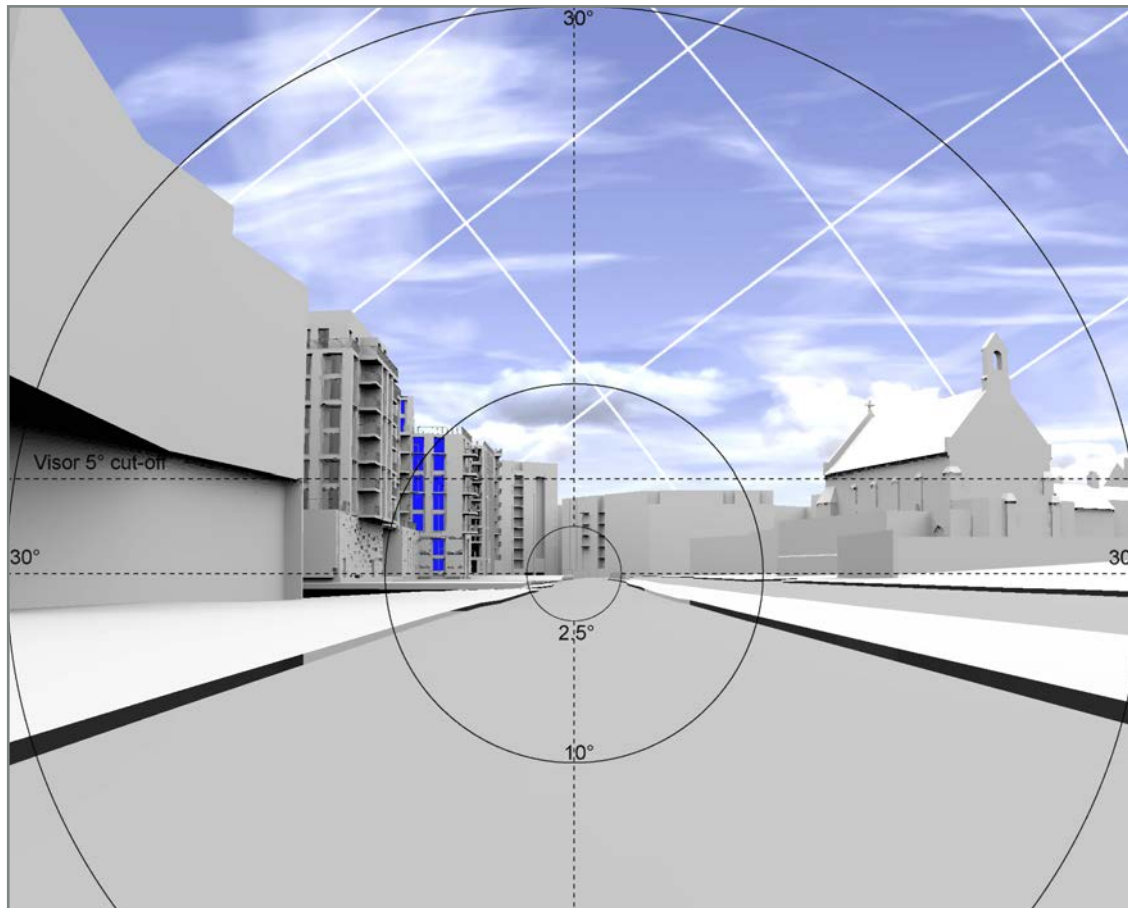


Fig. 106: Solar Glare - HOURS - Close-up

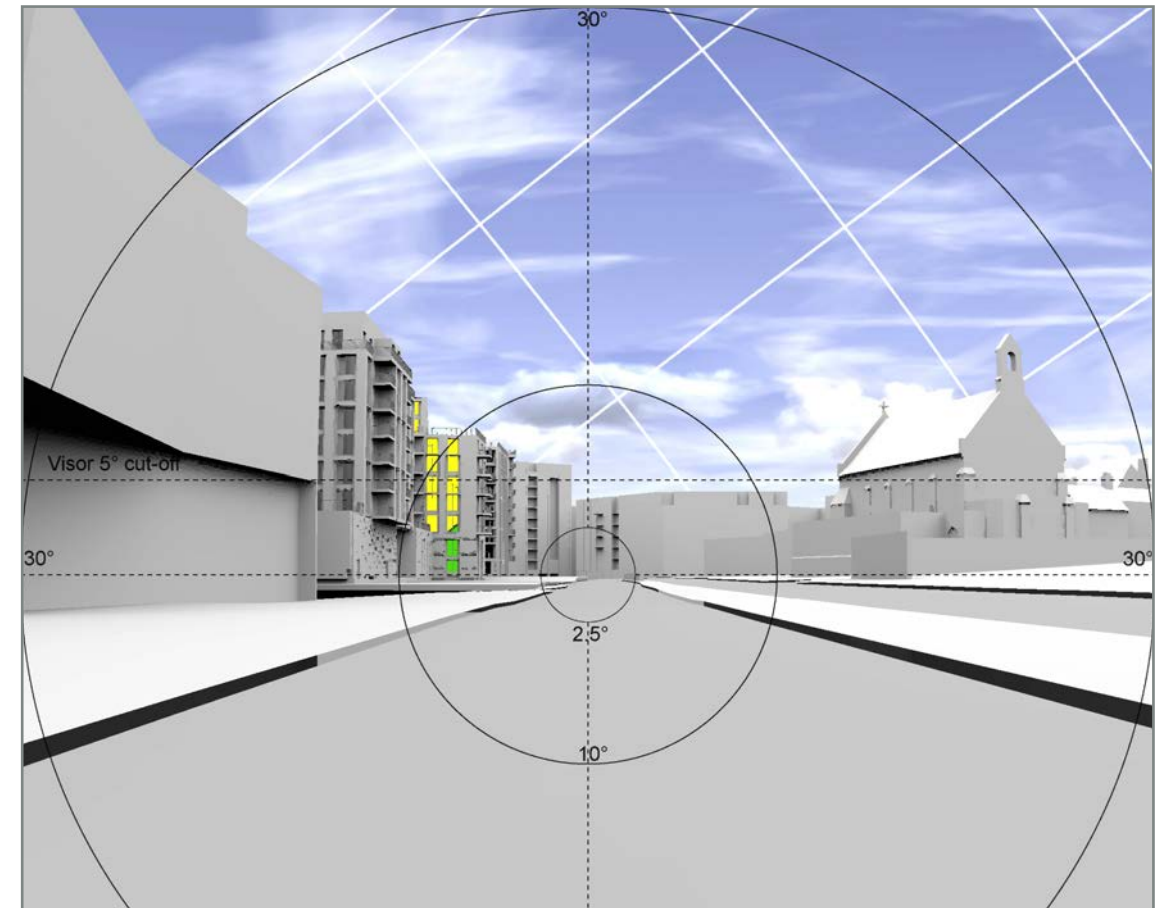


Fig. 107: Solar Glare - MONTHS - Close-up

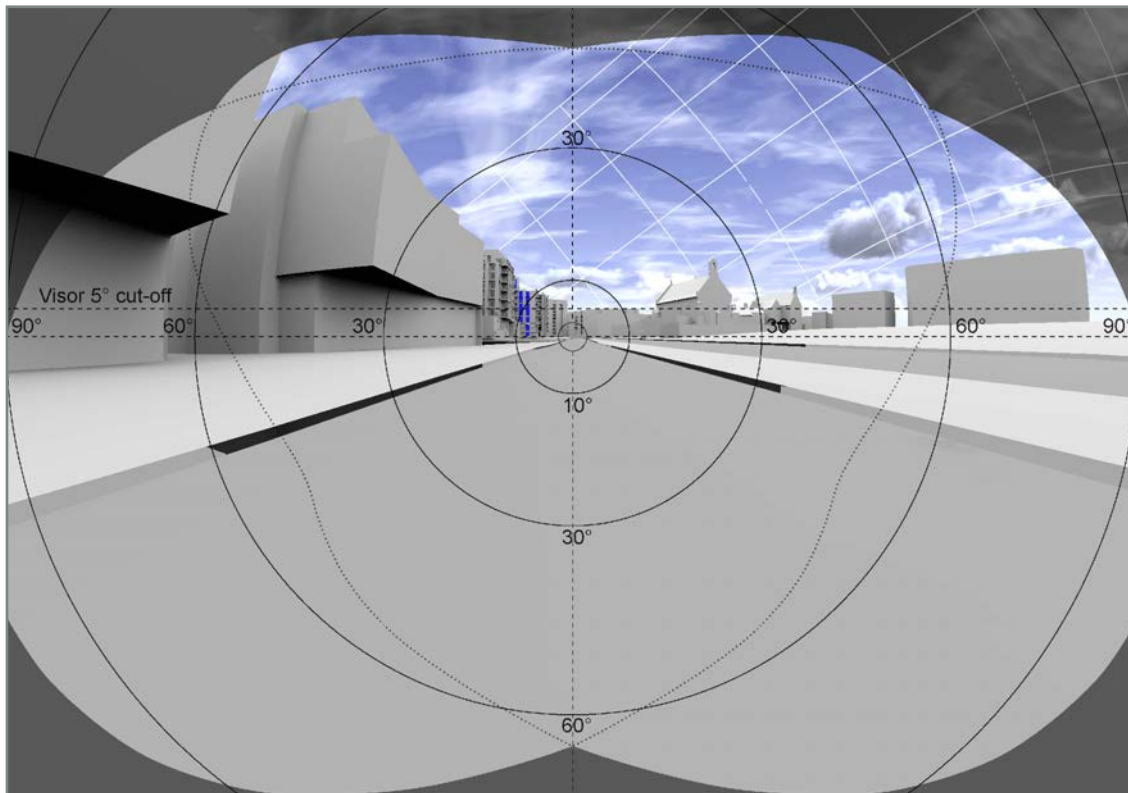


Fig. 108: Solar Glare - HOURS - 180 degrees view

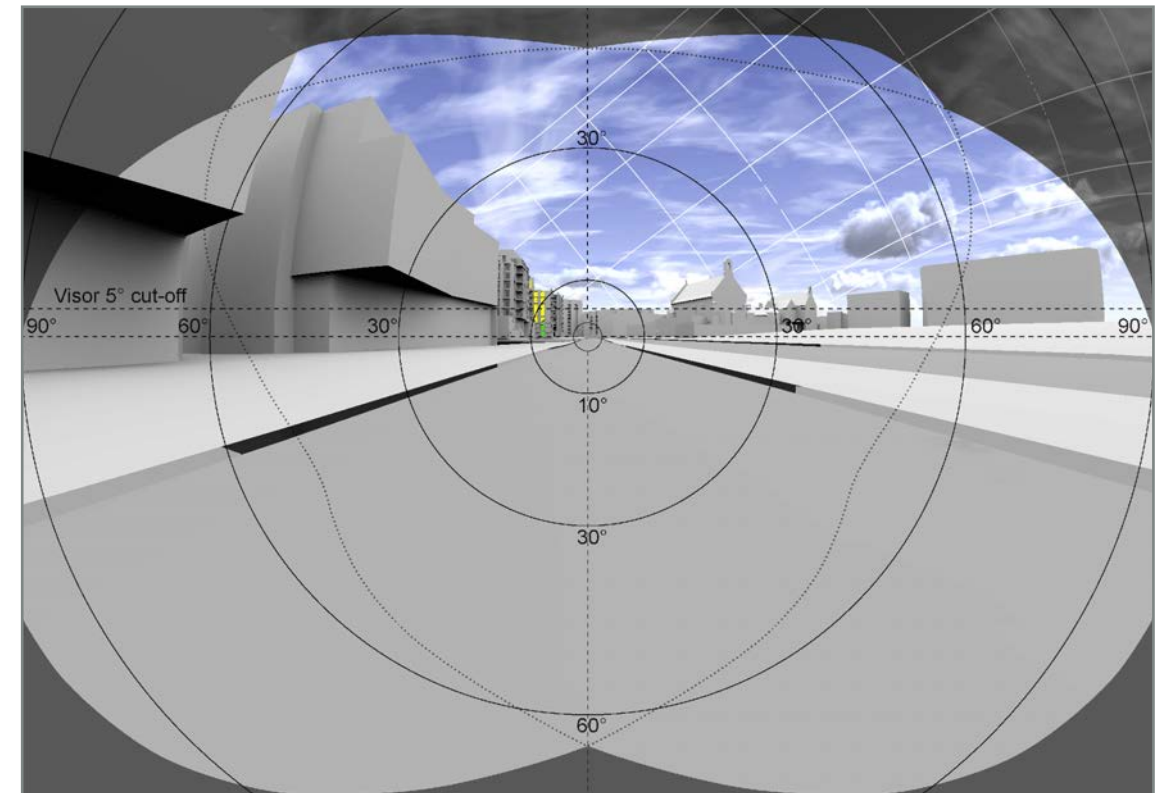
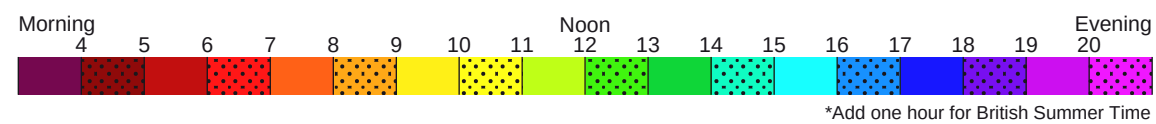
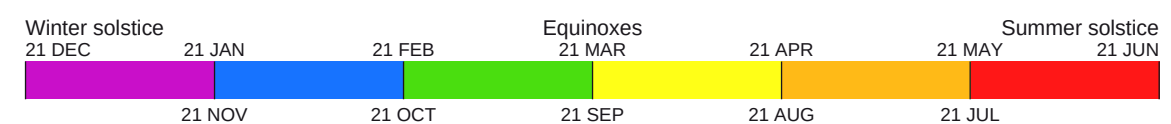


Fig. 109: Solar Glare - MONTHS - 180 degrees view



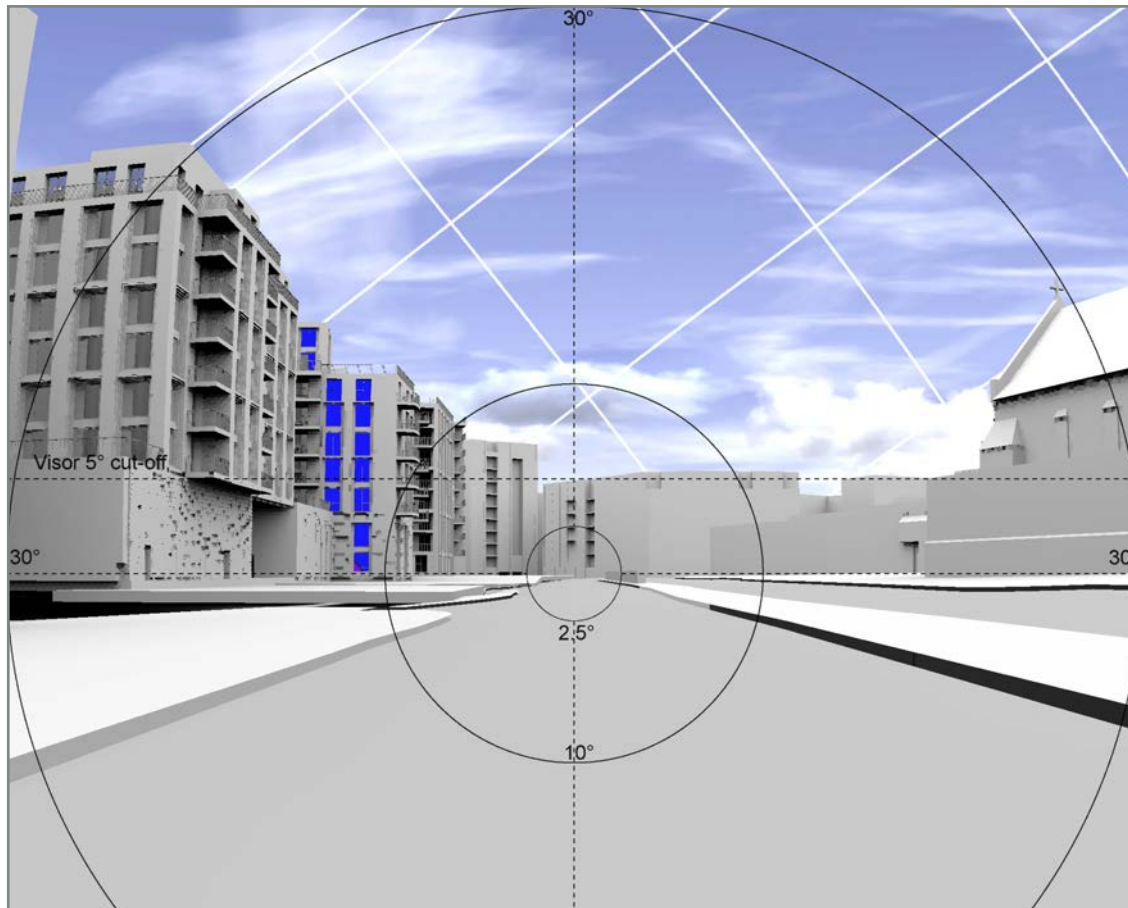


Fig. 110: Solar Glare - HOURS - Close-up

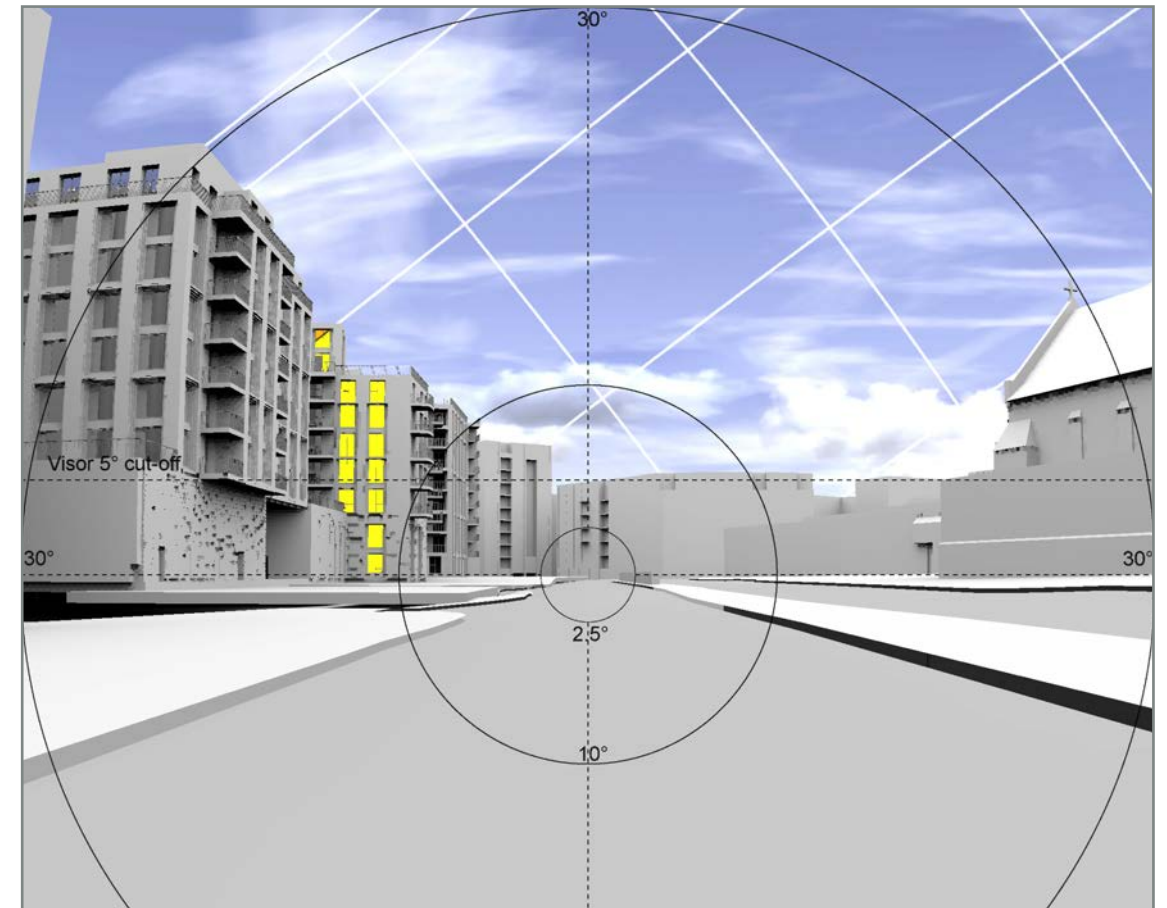


Fig. 111: Solar Glare - MONTHS - Close-up

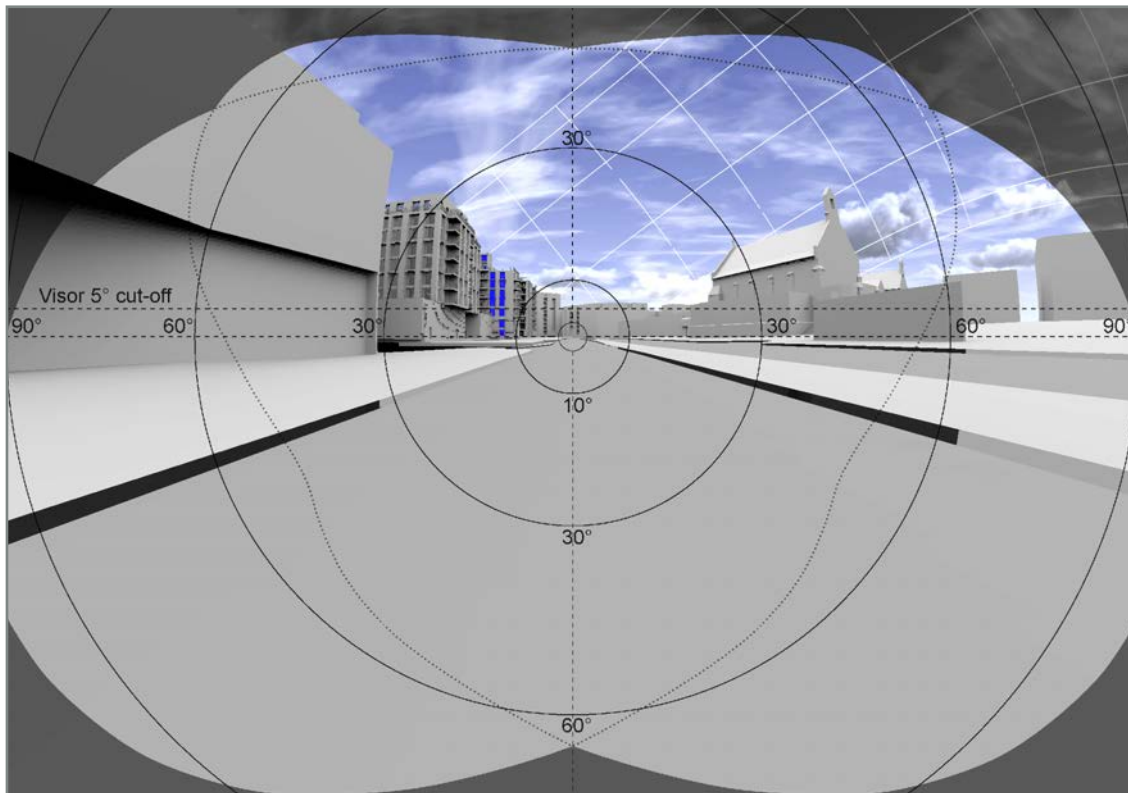


Fig. 112: Solar Glare - HOURS - 180 degrees view

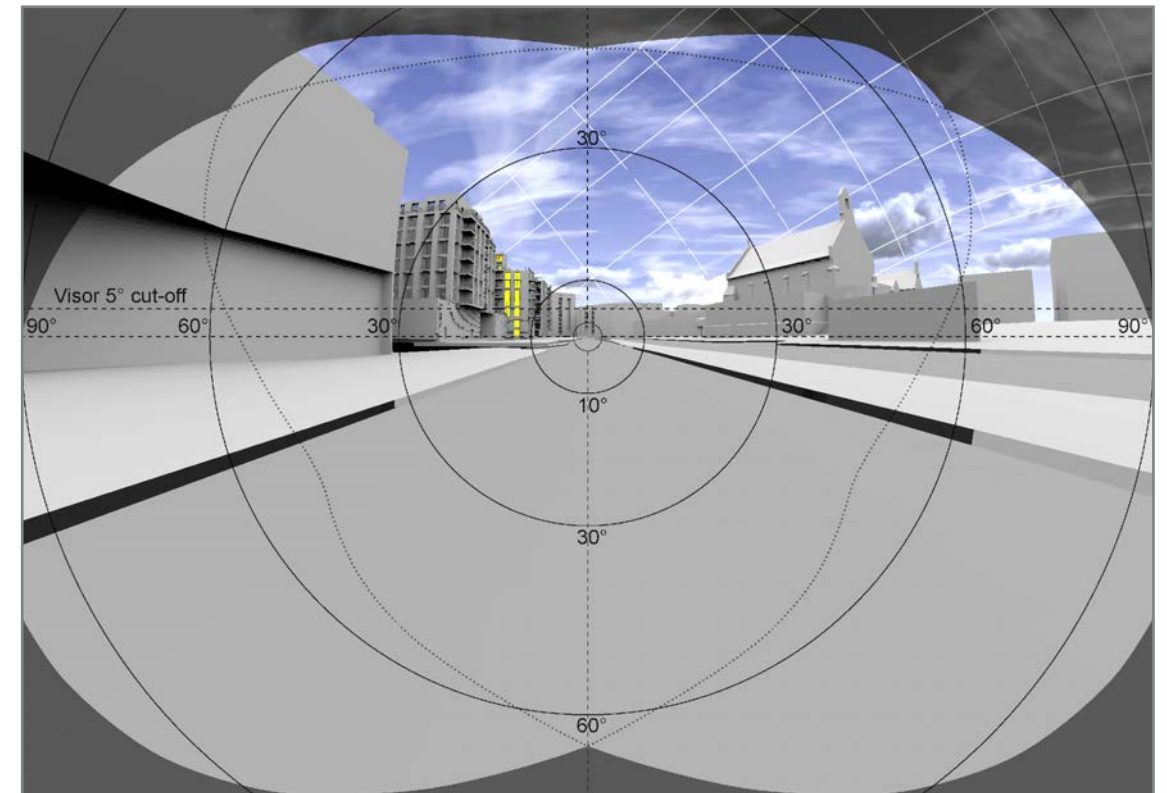
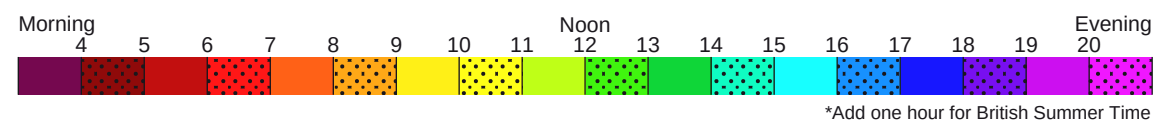
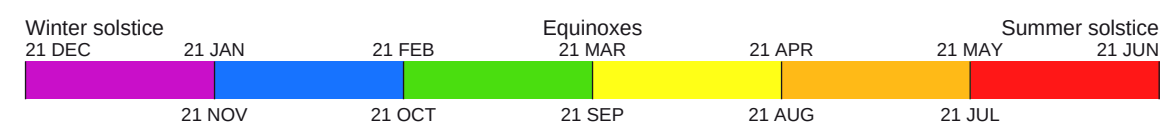


Fig. 113: Solar Glare - MONTHS - 180 degrees view



Appendix L.1 Wind Microclimate Technical Report

KINGS MEADOW VIEW

READING, UK

PEDESTRIAN LEVEL WIND MICROCLIMATE TECHNICAL APPENDIX

RWDI #2200544

APRIL 6TH, 2023

SUBMITTED TO

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VERSION HISTORY

RWDI Project #2200544 Kings Meadow View Reading, UK		
Report	Releases	Dated
Reports	Rev A	April 6 th , 2023
Project Team	Zain Khan Andrew Proud Joseph Symes	Project Engineer Senior Project Engineer Project Manager

1. INTRODUCTION

RWDI was retained to conduct a pedestrian level wind microclimate (PLW) assessment for the proposed Kings Meadow View development (referred to as the “Proposed Development” in this report) in Reading, UK. This report presents a description of the methodology used by RWDI.

Computational Fluid Dynamics (CFD) simulations were conducted on the Proposed Development. The assessment quantifies the wind conditions within and around the Site, by comparing the measured wind speed and frequency of occurrence with the Lawson Comfort Criteria¹. Meteorological data for Reading, UK has been analysed and adjusted to the Site conditions by modelling the effect of upstream terrain roughness on the wind velocities approaching the Site.

The analysis allows wind comfort conditions to be obtained at ground level areas along the building façades and at corners, near entrances, and on pedestrian routes within and around the Site, as well as at potential terrace areas within the Site. The analysis was conducted on a seasonal basis, however, the report focuses primarily on the windiest season (i.e. winter) and the summer season results, when pedestrian activity generally requires calmer conditions.

The following two configurations were assessed:

- Configuration 1: Existing Site with Existing Surrounding Buildings; and
- Configuration 2: Proposed Development with Existing Surrounding Buildings.

Appendix A of this report contains images of the 3D model used in the simulations.

¹ Lawson T.V. (April 2001), Building Aerodynamics, Imperial College Press

2. METHODOLOGY AND ASSESSMENT CRITERIA

The computational model of the Proposed Development in the context of the existing surrounding buildings and wider masterplan used for the CFD simulations is shown in Figure 1. Additional images of the 3D model are presented in Appendix A. In the assessed scenarios surrounding buildings within a 400m radius of the centre of the Site were included.

CFD is a computer modelling technique for numerically simulating wind flow in complex environments. For this study, computational modelling was undertaken using Orbital Stack, an in-house computational fluid dynamics (CFD) tool. 18 wind angles were tested for each scenario, equally spaced out around the compass (equal 20 degrees intervals). Although the strongest winds originate from the south-westerly sector, this quantity of wind angles will provide sufficient coverage of all aerodynamic interactions from winds from all angles.

The individual cases of the Proposed Development were solved using RANS approach with an RNG k- ϵ turbulence model. The steady state RANS type model with the RNG k- ϵ turbulence model is chosen over other turbulence models or transient type schemes for wind microclimate studies by RWDI for its ability to approximate highly complex flows within urban environments to a high level of accuracy within a practical computational timeframe.

RANS simulations yield statistically steady solutions which are, in the standard approach, unable to inform on the gusty nature of the flow. RWDI has, based on our extensive wind tunnel database of results, created a computational approach using RANS which estimates this gustiness. This allows RWDI to better integrate the impact of gusts on wind comfort conditions when compared to a standard RANS output.

The potential for strong winds leading to potential safety issues is assessed using informed engineering judgement.

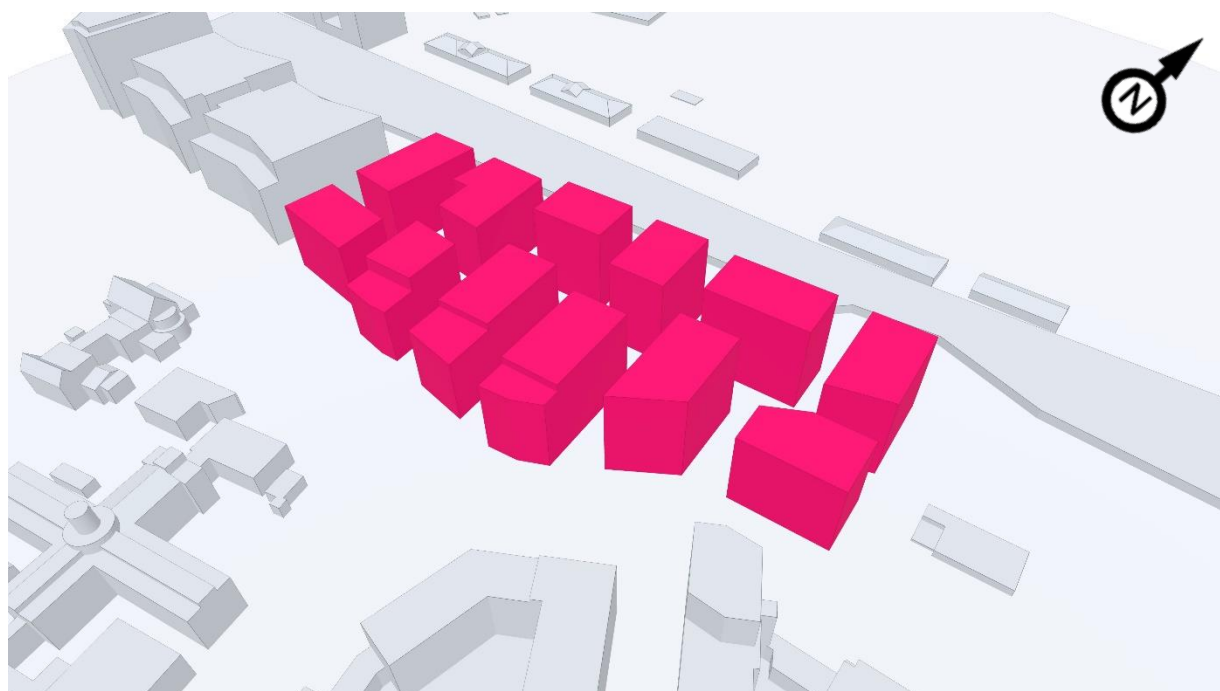


Figure 1: View of the 3D model of the Proposed Development with existing surrounding buildings from the south-east

2.4 Meteorological Data

Figure 2 shows the seasonal wind roses (meteorological data) for the Reading area which are based on data obtained from the meteorological station at London Heathrow airport. 0 Degrees represents wind blowing from the north and 90 degrees represents wind blowing from the east.

Approximately 30 years of meteorological data for London Heathrow was used in this report, presented in the seasonal wind roses with the wind speed divided into wind speed thresholds (Figure 2). The radial axis indicates the cumulative number of hours per season that the wind speed exceeds the wind speed threshold as a percentage. The seasons are defined as spring (March, April and May), summer (June, July and August), autumn (September, October and November) and winter (December, January and February).

The meteorological data indicate that the prevailing wind direction throughout the year is from the south-west. This is typical for many areas of southern England. There is a secondary peak from the north-westerly winds, especially during the spring.

The combination of meteorological data and velocity ratios permits the percentage of time that wind speeds are exceeded on the site to be evaluated. The locations can then be assessed using 'comfort criteria', as described below.

2.5 Pedestrian Comfort

The assessment of the wind conditions requires a standard against which the measurements can be compared. This report uses the Lawson Comfort Criteria that have been established for over thirty years and have been widely used on building developments across the United Kingdom. The comfort criteria seek to define the reaction of an average pedestrian to the wind as described in Table 1. If the measured wind conditions exceed the threshold wind velocity for more than 5% of the time, then they are deemed unacceptable for the intended pedestrian activity. The expectation is that there may be complaints of nuisance or people will not use the area for its intended purpose.

The Criteria sets out four pedestrian activities and reflect the fact that less active pursuits require more benign wind conditions. The categories are sitting, standing, strolling and walking, in ascending order of activity level, with a fifth category for conditions that are uncomfortable for all pedestrian uses. In other words, the wind conditions in an area for sitting need to be calmer than a location that people merely walk past.

The distinction between strolling and walking is that in the strolling scenario pedestrians are more likely to take on a leisurely pace, with the intention of taking time to move through the area, whereas in the walking scenario pedestrians are intending to move through the area quickly and are therefore expected to be more tolerant of stronger winds.

The Criteria are derived for open air conditions and assume that pedestrians will be suitably dressed for the season.

The coloured key in Table 1 corresponds to the presentation of wind tunnel test results described in the results section of this report.

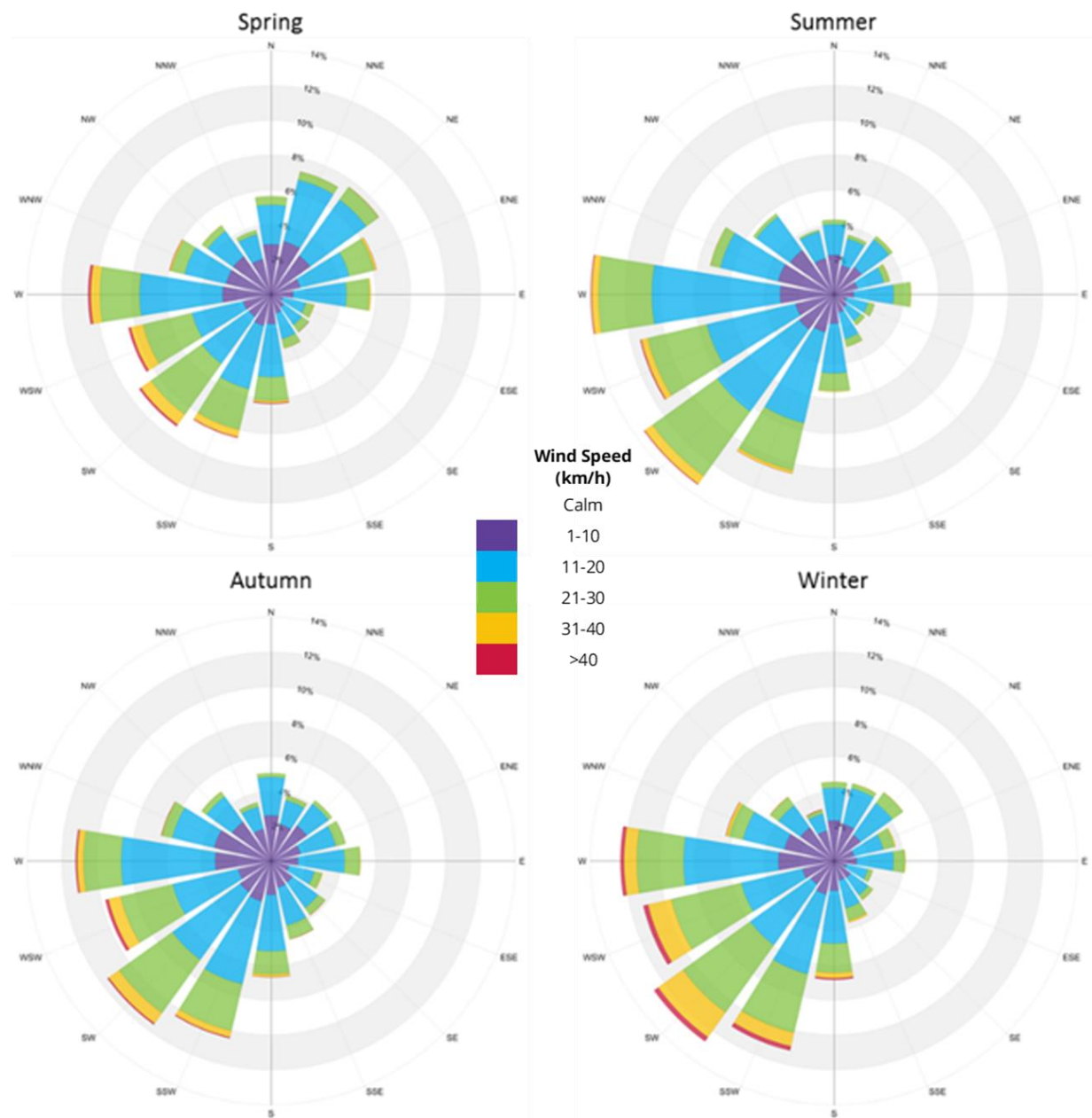


Figure 2: Seasonal Wind Roses for London Heathrow airport (in m/s) (Radial axis indicated the percentage time for which the stated wind speed threshold is exceeded)

2.6 Desired Pedestrian Activity around the Development

Generally, for a mixed-use development, the target conditions are:

- Strolling during the windiest season on pedestrian thoroughfares;
- Standing/entrance conditions at main entrances, drop off areas or taxi ranks, and bus stops throughout the year;
- Sitting conditions at outdoor seating during the summer season when these areas are more likely to be frequently used by pedestrians;
- Standing conditions in large public amenity spaces during the summer season, provided that all designated seating locations have sitting use conditions; and

- Sitting or standing use conditions during the summer season on terraces and private amenity spaces.

The walking and uncomfortable classifications are usually avoided because of their association with occasional strong winds, unless they are on a minor pedestrian route or a route where pedestrian access could be controlled in the event of strong winds.

Achieving a sitting classification in the summer usually means that the same measurement location would be suitable for standing in the windiest season because winds are stronger during this period. This is considered an acceptable occurrence for the majority of external amenity spaces because other factors such as air temperature and precipitation influence people's perceptions about the 'need' to use seating in the middle of winter.

Table 2: Lawson Comfort Criteria

Key	Comfort Category	Threshold	Description
	Sitting	0-4 m/s	Light breezes desired for outdoor restaurants and seating areas where one can read a paper or comfortably sit for long periods
	Standing	4-6 m/s	Gentle breezes acceptable for main building entrances, pick-up/drop-off points and bus stops
	Strolling	6-8 m/s	Moderate breezes that would be appropriate for strolling along a city/town street, plaza or park
	Walking	8-10 m/s	Relatively high speeds that can be tolerated if one's objective is to walk, run or cycle without lingering
	Uncomfortable	>10 m/s	Winds of this magnitude are considered a nuisance for most activities, and wind mitigation is typically recommended

2.7 Strong Winds

In addition, the criteria stipulate two strong wind threshold limits; when winds exceed 15m/s or 20m/s for more than 0.025% of the time (approximately two hours of the year). The lower limit, 15m/s, if exceeded may require remedial measures depending on the sensitivity of the location i.e. is it reasonable to expect an elderly or very young pedestrian to be present at the location? Wind speeds that exceed the 20m/s threshold for more than approximately 2 hours per year would represent a safety risk for all members of the population and would therefore require mitigation to provide an appropriate wind environment.

Strong winds are generally associated with areas which would be classified as acceptable for walking or as uncomfortable. In a mixed-use urban development scheme, walking and uncomfortable conditions would not usually form part of the 'target' wind environment and would usually require mitigation due to pedestrian comfort considerations. This mitigation would also reduce the frequency of, or even eliminate, any strong winds.



It should be noted that the CFD simulations will provide an average expected wind speed for the windiest (typically the winter months - December to February) and summer season in regard to pedestrian comfort. Areas which would have wind conditions suitable for walking use would be likely to have instances of strong winds. As such, professional judgement incorporating RWDI's experience of a large number of similar projects both within the UK and internationally has been applied, informed by the CFD results to identify areas of the Proposed Development likely to have instances of strong winds.

STATEMENT OF LIMITATIONS

This report entitled Pedestrian Level Wind Microclimate Assessment dated April 6th, 2023, was prepared by RWDI for Ikon ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the development described herein ("Project"). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final design stage to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

The conclusions and recommendations contained in this report have also been made for the specific purpose(s) set out herein. Should the Client or any other third party utilise the report and/or implement the conclusions and recommendations contained therein for any other purpose or project without the involvement of RWDI, the Client or such third party assumes any and all risk of any and all consequences arising from such use and RWDI accepts no responsibility for any liability, loss, or damage of any kind suffered by Client or any other third party arising therefrom.

Finally, it is imperative that the Client and/or any party relying on the conclusions and recommendations in this report carefully review the stated assumptions contained herein and to understand the different factors which may impact the conclusions and recommendations provided.

ASSUMPTIONS AND LIMITATIONS

The findings included in this report are based on the following information ("Project Data") disclosed to RWDI:

- Scoping and cumulative list – received 30th September 2021;
- ES Briefing info – received 14th February 2023
- Final parameter plans – received 14th February 2023.

The recommendations and conclusions are based on the following assumptions:

- The Project Data is accurate and complete;
- The Proposed Development, when built, does not deviate substantially from the information listed above. "Substantially" in this case means any change to the exterior form of the buildings that would change the wind flow around it, in a way that would impact pedestrian comfort or safety.
- Sensitive areas of the Site (such as amenity spaces) are expected to be used in line with the temporal specifications set out in the report body.

Any change in the Project Data or Project Specific Conditions not reflected in this report can impact and/or alter the recommendations and conclusions in this report. Therefore, it is incumbent for the Client and/or any other third party relying on the recommendations and conclusions in this report to contact RWDI in the event of any change in the Project Data and Project Specific Conditions in order to determine whether any such change(s) may impact the assumptions upon which the recommendations and conclusions were made.



Finally, the recommendations and conclusions in this report are partially based on historical data and can be affected by a number of external factors, including but not limited to Project design, quality of materials and construction, site conditions, meteorological events, and climate change. As such, the conclusions and recommendations contained in this report do not list every possible outcome.

This report entitled Pedestrian Level Wind Microclimate Assessment dated April 6th, 2023, was prepared by RWDI for Ikon ("Client"). The findings and conclusions presented in this report have been prepared for the Client and are specific to the development described herein ("Project"). The conclusions and recommendations contained in this report are based on the information available to RWDI when this report was prepared. Because the contents of this report may not reflect the final design of the Project or subsequent changes made after the date of this report, RWDI recommends that it be retained by Client during the final design stage to verify that the results and recommendations provided in this report have been correctly interpreted in the final design of the Project.

APPENDIX A – COMPUTATIONAL MODEL

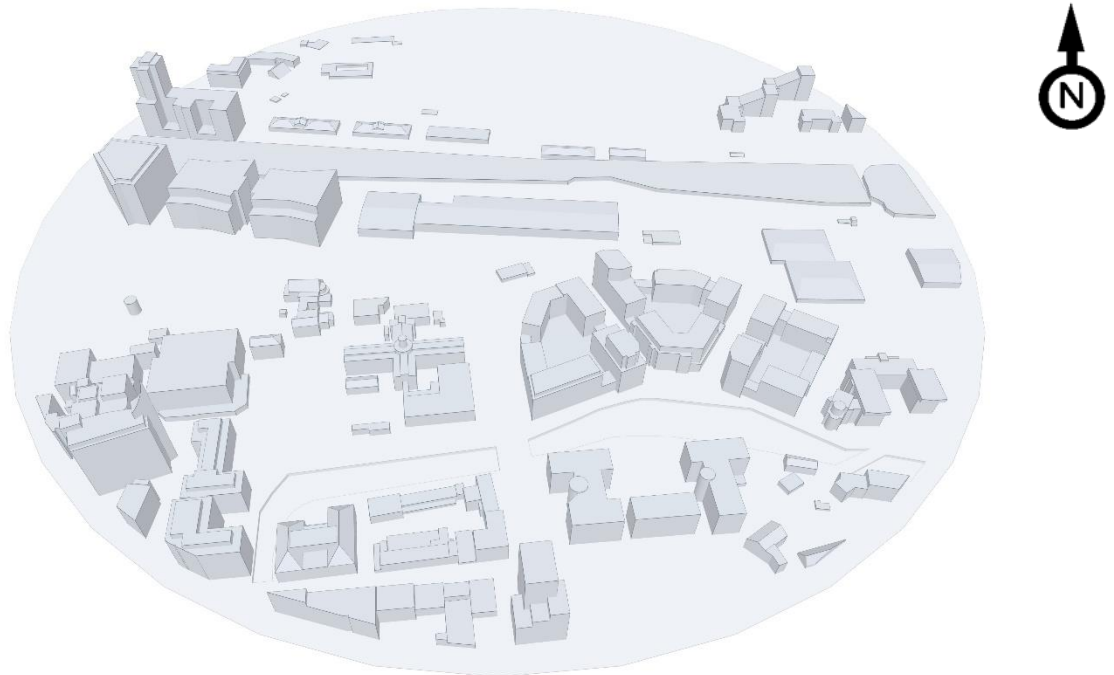


Figure 3: Existing Site with Existing Surrounding Buildings 3D model used for Computational Fluid Dynamic simulations (view from the south)

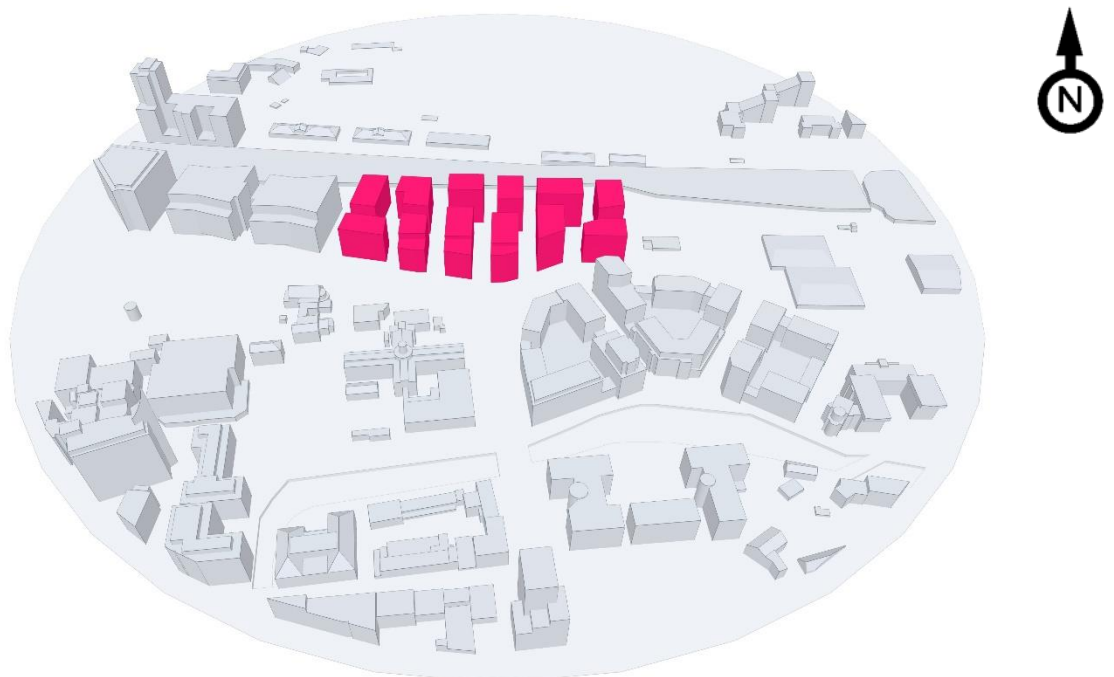


Figure 4: Proposed Development with Existing Surrounding Buildings 3D model used for Computational Fluid Dynamic simulations (view from the south)

Appendix M.1 TVIA Methodology

Kings Meadow View

Appendix M.1

Townscape and Visual Impact Assessment (TVIA) Methodology

On behalf of **Aberdeen Standard Investments**

Project Ref: 50582 | Rev: DRAFT V1 | Date: March 2023

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Document Control Sheet

Project Name: Kings Meadow View

Project Ref: 50582

Report Title: Townscape and Visual Impact Assessment (TVIA) Methodology

Date: March 2023

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	Natasha Jones	Director of Landscape Architecture		March 2023
Reviewed by:				
Approved by:				
For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved

This report has been prepared by Stantec UK Limited ("Stantec") on behalf of its client to whom this report is addressed ("Client") in connection with the project described in this report and takes into account the Client's particular instructions and requirements. This report was prepared in accordance with Stantec's Fee Proposal and Terms and Conditions addressed to the Client ("Appointment"). This report is not intended for and should not be relied on by any third party (i.e. parties other than the Client). Stantec accepts no duty or responsibility (including in negligence) to any party other than the Client and disclaims all liability of any nature whatsoever to any such party in respect of this report.

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1 Introduction

1.1 Definition of Townscape

- 1.1.1 **Townscape** is defined by the Landscape Institute in paragraph 1.2 of the Landscape Institute Technical Information Note 05/2017: Townscape Character Assessment, as:

‘...the landscape within the built-up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces.

- 1.1.2 **Townscape** is also defined in Transport Analysis Guidance (WebTAG) Unit A3, chapter 7: Impacts on Townscape (Department for Transport, May 2022), paragraphs 7.1.1 and 7.1.2:

‘Townscape is the physical and social characteristics of the built and unbuilt urban environment and the way in which we perceive those characteristics. It is this mix of characteristics and perceptions that make up and contribute to townscape character and give a ‘sense of place’ or identity.

The physical characteristics of a townscape are expressed by the development form of buildings, structures and spaces. The development form influences the pattern of uses, activity and movement in a place and the experience of those who visit, work and live there.’

1.2 Professional Standards and Guidance

- 1.2.1 The Townscape and Visual Impact Assessment (TVIA) has been carried out by a chartered landscape architect at Stantec UK Limited (Stantec), a Registered Practice of the Landscape Institute (LI) and a corporate member of the Institute of Environmental Management and Assessment (IEMA).
- 1.2.2 Stantec’s methodology for TVIA is based on professional experience of townscape assessment and tall building studies, the **Guidelines for Landscape and Visual Impact Assessment** (Landscape Institute / Institute of Environmental Management and Assessment, 3rd Edition, 2013) and, where appropriate, the **Transport Analysis Guidance (WebTAG) Chapter 7: Impacts on Townscape**, TAG Unit A3 Environmental Impact Appraisal (May 2019). In addition, the TVIA methodology considers the principles set out in the following Landscape Institute technical notes and guidance:

- LI Technical Information Note 05/2017: **Townscape Character Assessment** (LI, revised April 2018) <https://www.landscapeinstitute.org/wp-content/uploads/2018/04/tin-05-2017-townscape.pdf>, and
- LI Technical Guidance Note 06/19 **Visual Representation of Development Proposals** (LI, September 2019) https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf and the supporting Technical Information Notes: TIN 07/19 Visual Representation Glossary, TIN 08/19 Camera Auto Settings, and TIN 09/19 Earth Curvature.

1.3 Approach to the Assessment

- 1.3.1 The **Guidelines for Landscape and Visual Impact Assessment**, (Landscape Institute / Institute of Environmental Management and Assessment, 3rd Edition, 2013) (**GLVIA3**) notes in paragraph 1.17, page 9, in reference to the European Union Directive 2011/92/EU (now as amended by 2014/52/EU):

*“The Directive is clear that the emphasis is on the identification of **likely significant** environmental effects. This should embrace all types of effect and includes, for example,*

those that are positive/beneficial and negative/adverse, direct and indirect, and long and short term, as well as cumulative effects. Identifying significant effects stresses the need for an approach that is in proportion to the scale of the project that is being assessed and the nature of its likely effects. Judgement needs to be exercised at all stages in terms of the scale of investigation that is appropriate and proportional. This does not mean that effects should be ignored or their importance minimised but that the assessment should be tailored to the particular circumstances in each case.'

- 1.3.2 The assessment of landscape or townscape and visual effects aims to be as objective as possible; however, professional judgements are required to be made, as **GLVIA3** explains in paragraph 2.23, page 21:

'Professional judgement is a very important part of LVIA. Whilst there is some scope for quantitative measurement of some relatively objective matters, for example the number of trees lost to construction... much of the assessment must rely on qualitative judgements, for example about what effect the introduction of a new development of land use change may have on visual amenity, or about the significance of change in the character in the landscape and whether it is positive or negative.'

- 1.3.3 In accordance with guidance, the TVIA considers the effects on townscape, including townscape character (townscape receptors) and people's views / visual amenity (visual receptors) as separate assessment components. The TVIA also identifies and assesses the negative and positive effects (type of effects) and significance of change arising from the proposed development on townscape and visual receptors.
- 1.3.4 The assessment of townscape and visual effects makes comparison with the **baseline year of 2023**, and the assessment periods comprise: i) during the demolition and construction period; and ii) at operation (on completion of the development).

The Context of Townscape and Visual Effects in the Urban Environment

- 1.3.5 Within urban locations, there is a general level of expectation for regeneration, redevelopment and renewal; the efficient use of land to adapt and change; and the anticipation of change to views within the townscape taking place over time. In other words, **an urban environment is not static**; change and renewal is an integral part of that urban environment. Accordingly, the expected changing nature of the urban environment is taken into account within the TVIA.
- 1.3.6 New buildings may create either beneficial or adverse effects upon the urban environment., and this is largely subjective. However, the evaluation of the quality of architectural design and appearance of buildings is a subjective issue, and one which does not form part of the TVIA process. Instead, it is assumed that the quality of the design of the proposals would be appropriate to the existing urban context, as set out in a separate Design and Access Statement for the proposed development. The TVIA is therefore informed by the **key design principles** of the Proposed Development and the consequential effects upon townscape elements and townscape character.
- 1.3.7 The assessment of townscape and visual effects in the TVIA has regard to the level of anticipated change and renewal of the urban environment, for example through the planned regeneration and development for an area, as set out in adopted local planning policies.

2 Scope of Assessment

2.1 Scoping Report

- 2.1.1 A Scoping Report was submitted to Reading Borough Council, which included an outline of the proposed scope and methodology for the TVIA. The Scoping Opinion received from Reading Borough Council was dated 18th April 2023, and comments relevant to the TVIA and the TVIA assessor's responses are set out in the TVIA Chapter of the ES at Paragraph 13.3.2.

2.2 Potential Townscape and Visual Effects

- 2.2.1 Potential townscape and visual effects arising from the proposed development are those upon the following receptors:
- a. Townscape features;
 - b. Townscape character; and
 - c. People's views and visual amenity.

2.3 Study Area

- 2.3.1 The **initial study area** for the TVIA was based upon, and informed by, a computer-generated **Zone of Theoretical Visibility (ZTV)** prepared for **up to 2km** from the site, and which establishes the theoretical 'worst-case' extent to which the proposed development would be visible. In reality, other built form and features, such as street trees, would provide additional filtering or reduction of views.
- 2.3.2 As a result, the **detailed study area** for the TVIA was reduced to **1km radius** from the Site for townscape designations and landscape/townscape character, with a **0.5km radius** from the Site as the detailed study area for Listed Buildings, Conservation Areas and Registered Parklands and Gardens of Special Historic Interest.

2.4 Selection of Townscape Receptors for Townscape Effects Assessment

- 2.4.1 Townscape receptors assessed in the TVIA are set out in Section 13.5 of the TVIA. Examples of townscape receptors include:
- National Landscape Character Area;
 - Local townscape character areas;
 - Conservation Areas, in terms of described townscape character and defining characteristics;
 - Scale and massing of the Site within the townscape;
 - Urban grain of the Site within the townscape;
 - Appearance of the Site in the townscape;
 - Legibility of the Site in the townscape;
 - Public realm and open spaces of the Site;
 - Green infrastructure provision of the Site, including street trees and other areas of tree or habitat planting; and

- Other features, if applicable, such as watercourses.

2.5 Selection of Visual Receptors for Visual Effects Assessment

Key Views

- 2.5.1 Key Views are those strategic views, panoramas or contained views which are identified as being important views across the townscape or landscape; these being views from parks and other public spaces, or streets, that take in important or defining landmark features to urban landscapes, and which help to define key characteristics of that townscape or landscape location. Key Views may be protected and designated through local planning policy.
- 2.5.2 Alternatively, a town or city may have identified or published Key Views through local Townscape Assessment studies, Conservation Area appraisals or Tall Building design guidance. These types of Key Views are reviewed through the TVIA baseline data collection and review process.
- 2.5.3 Where there are no published Key Views, a local planning authority may identify local Key Views relevant to a Site or proposed development through the scoping process; for example, views of landmarks within an historic town core which is visible in long distance views from outside of the town / city or which is a notable local landmark in the urban area. Where this occurs, the nature and source of the Key View is set out in the TVIA.
- 2.5.4 Key Views are included in the visual assessment of the TVIA, usually identified through the scoping process.

Visual Receptors and View Locations

- 2.5.5 Visual receptors are always people and their views at particular places, and will for example comprise: people using public rights of way, public open spaces, public realm areas or other outdoor recreational facilities; people who may be visiting, living or working within the study area; and people travelling by roads and rail.
- 2.5.6 View locations for the purpose of the TVIA, which are selected to represent typical visual receptor's views (i.e. to be characteristic, or be representative, examples of people's views), and which are likely to be subject to significant visual effects of a proposed development, are agreed with the local planning authority through the usual scoping process.
- 2.5.7 The selected view locations will typically include the following types of views, from publicly accessible locations:
- **Representative views** (for example representing views of users of a particular footpath);
 - **Specific views** (for example a Key View, or an important view from a specific visitor attraction);
 - **Illustrative views** (chosen to demonstrate a particular effect/specific issue); and
 - **Sequential views** (for example, transient views which occur when travelling along key routes or designated Scenic Routes).
- 2.5.8 The view locations and visual receptors selected for the visual assessment, are set out in Section 13.5 of the TVIA. A plan showing the agreed view locations is presented in **Figure 13.4, Appendix M.2** of the TVIA.

3 Methodology and Definitions

3.1 Baseline Data Collection and Review

Desktop Study

- 3.1.1 The initial step in TVIA, is to establish the baseline townscape and visual conditions. Background data is collected and reviewed to establish the baseline townscape and townscape/landscape character receptors and potential visual receptors. The data may include: the nature of the topography, townscape planning designations and published sources of townscape character or, where relevant, landscape character.
- 3.1.2 Typical information sources include:
- Ordnance Survey OpenData for mapping;
 - 1:25,000 OS Explorer, for example via Bing Maps, for a general map overview of the Site and surrounding area, as well as to review the Public Rights of Way network (bridleways, footpaths, byways, other routes), including names and locations of Long Distance Route or National Trails, and for Open Access Land area locations and boundaries;
 - Google Earth Pro for aerial photography and Google Street View;
 - www.magic.defra.gov.uk for an initial review of statutory and non-statutory designations;
 - <https://www.sustrans.org.uk/> for routes on the National Cycle Network;
 - Historic England;
 - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf for the National Planning Policy Framework (2021);
 - Local authority websites for Local Plans and Development Frameworks, including Area Action Plans if relevant;
 - National Character Area Profiles (Natural England, 2014) <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making/national-character-area-profiles>;
 - Regional, borough, district or local townscape character assessments and relevant supplementary design or planning guidance (SPD or SPG); and
 - Relevant Conservation Area appraisals.

Photographic Record and Visual Survey

- 3.1.3 Where project timings make it possible, representative baseline photographs are taken during winter months. Views of the Site are likely to be greater during winter months, when intervening trees are without the screening benefit of leaves and full canopies. During summer months, views of the Site are typically reduced due to intervening trees being in full leaf, and therefore the late winter visual survey is considered to demonstrate the 'worst case' baseline of views.
- 3.1.4 The Site and surrounding area is visited to undertake a visual survey, and collect the photographic record of the visual baseline to represent people's views from the selected locations. This exercise also enables the TVIA assessor to:

- Determine the extent of visibility of existing built structures;
- Determine the likely visibility of the proposed development;
- Gain further understanding of the urban components which create the townscape character; and to
- Carry out the assessment of townscape and visual effects.

3.2 Duration of Effects - Definitions

3.2.1 Effects may be temporary, permanent or reversible over time. The following terminology is used in the TVIA, to describe the duration of townscape and visual effects which are anticipated to arise as a result of the development proposals:

- a. Short term: less than 2 years;
- b. Medium term: 2-5 years; and
- c. Long term: longer than 5 years.

3.3 Types of Effect - Definitions

3.3.1 The principal sources of change to townscape receptors and people's views and visual amenity, arise from the introduction of new built form, townscape elements and new, or changes to, townscape character.

3.3.2 The changes that occur can be separately identified as **temporary** (those which occur during the construction period) or **permanent** changes (those which occur on and after the completion of construction works and those associated with the final development form).

3.3.3 Changes may also be **beneficial** or **adverse**; and some changes may initially be adverse, but over time gradually improve. Beneficial effects have a **positive influence** on the receptor (enhancement); alternatively, adverse effects have a **negative influence** on the receptor (degradation). It is possible that the type of effect may be judged to be **neutral**, for example: where the development proposals result in a change to the receptor, but that change, on balance, is considered to be in keeping with the receptor; such that the baseline situation is maintained and does not lead to either enhancement or degradation of that baseline.

3.3.4 Changes may also be **direct**, or **indirect**. Direct effects are those which result directly from the development; whereas indirect, or secondary, effects may arise as a consequential change resulting from the development, for example: changes to offsite and downstream vegetation, as a result of alterations to a drainage regime.

3.4 Methodology for the Assessment of Townscape Effects

3.4.1 The assessment of townscape effects considers how the proposed development would affect the townscape features or components of the urban environment (the 'townscape fabric', for example: scale and massing, urban grain, legibility, appearance, public realm and open spaces, and green infrastructure features including street trees), and the key characteristics which contribute to its distinctive character (the 'townscape character').

3.4.2 A methodical consideration of each effect upon each identified townscape receptor is undertaken in the TVIA, in order to determine the significance of effects, in terms of:

- a. the **sensitivity** of the townscape receptor; and
- b. the **magnitude** of the townscape effect.

Sensitivity of Townscape Receptors

- 3.4.3 The assessment of **townscape receptor sensitivity** combines judgements on the **value** attributed to the townscape receptor and the '**susceptibility to change**' of the receptor to the specific type of development proposed.
- 3.4.4 For example, a townscape with consistent, intact and well-defined, distinctive attributes is generally considered to be of higher quality, value and sensitivity; than a townscape where the presence of inappropriate or discordant elements are detractors within its inherent character.

Value of Townscape Receptors

- 3.4.5 Townscapes may be valued at community, local, national or international levels. Existing townscape designations are taken as an initial indicator for value. **Table 3.1** sets out the relative value of generic townscape designations, accompanied with descriptions; and, in the second column, identifies which designations apply to the Site and/or surrounding area.

Table 3.1: Typical Townscape Designations and Values

Typical Designation, with Description	Typical Assigned Value
World Heritage Site: International Unique sites, features or areas of international importance with settings of very high quality.	Very High
National Park, AONB: National Sites, features or areas of national importance that have special qualities and intrinsic natural beauty, including their settings.	High
Conservation Area, curtilage of Grade I, II* and II Listed Buildings, Registered Parks and Gardens of Special Historic Interest (RHPG), Scheduled Monuments: National Sites, features or areas of national cultural heritage importance with landscapes and/or settings of high quality.	High
Long distance paths, National Cycle Routes: Regional Sites, features or areas of regional importance with intact character.	High or Medium
Areas of Local Landscape Importance, Designated Public Open Space, Tree Preservation Orders (TPO): District Sites, features or areas of district or local importance.	Medium or Low
No designation, local public right of way: Local General townscape area valued at the local level.	Medium or Low

- 3.4.6 Other factors which may influence townscape receptor value are set out in **Table 3.2**. The value of townscapes or townscape receptors without designation are considered through reference to these other factors.

Table 3.2: Other Factors Which May Influence Townscape Value

Attribute	Criteria
Townscape Quality	Intactness or physical condition of the urban environment or of the individual elements which contribute to townscape character.

Attribute	Criteria
Sense of Place	Aesthetic and perceptual qualities which create distinctiveness.
Scenic Quality	General appeal of the urban environment to the senses.
Rarity	Rarity of townscape character areas, types or features.
Representativeness	Particular characteristic/feature/element considered an important example.
Cultural Interest	The presence of wildlife or cultural heritage interest which contributes positively to the townscape.
Recreation Value	Evidence that the townscape experience forms an important part of recreational activity, e.g. as established in guidebooks.
Associations	Relevant associations with notable figures, such as writers or artists, or events in history that contribute to townscape value.

- 3.4.7 Where appropriate, key individual components of the townscape, including particular townscape features, notable aesthetic and perceptual qualities, are considered in the TVIA in terms of importance in their own right; including whether or not they can realistically be replaced. They may also be judged on their contribution to the overall character and value of the wider townscape. For example, a Georgian terrace may have high value in its own right, but also be important because it forms part of a vista which contributes significantly to the townscape character.

Susceptibility to Change – Townscape Receptors

- 3.4.8 The assessment of susceptibility of townscape receptors to change, which is anticipated to arise from the type of development which is being proposed, is based upon the criteria in **Table 3.3**. Note that these are provided for guidance, and are not intended to be absolute.

Table 3.3: Townscape Receptor Susceptibility to Change – Guidance Criteria

Susceptibility	Criteria
High	Little ability to accommodate the proposed development without undue consequences for the maintenance of the baseline townscape and/or the achievement of townscape planning policies and strategies.
Medium	Some ability to accommodate the proposed development without undue consequences for the maintenance of the baseline townscape and/or the achievement of townscape planning policies and strategies.
Low	Substantial ability to accommodate the proposed development without undue consequences for the maintenance of the baseline townscape and/or the achievement of townscape planning policies and strategies.

Scales of Sensitivity of Townscape Receptors

- 3.4.9 By judging the combination of the townscape receptor's value and susceptibility to change, and with reference to the following typical scales set out in **Table 3.4**, the TVIA assessor makes an overall assessment of sensitivity of each townscape receptor.

Table 3.4: Scales of Townscape Receptor Sensitivity

Townscape Sensitivity	Description
High	An area possessing a particularly distinctive sense of place and character, and / or attributes which make a particular contribution to the townscape or townscape character, for example: • in good condition; • highly valued for its scenic quality; • highly valued for its townscape character; • an area with a low tolerance to change of the type proposed; • an area with high quality materials in the public realm; • cultural heritage features or walks with cultural associations; • valued for contribution to recreational activity; • important cultural or historic associations; • irreplaceable features or character; • part of a long distance footpath.
Medium	An area with a clearly defined sense of place and character, and / or attributes which contribute to the townscape or townscape character, such as: • in moderate condition; • some scenic quality valued at a local or regional level; • townscape character intact and valued at a local or regional level; • an area with partial tolerance to change of the type proposed; • may be undesignated townscape.
Low	An area with a weak sense of place or poorly defined character, and / or attributes which make a contribution to the townscape or townscape character, such as: • in poor condition; • no particular scenic qualities; • disjointed townscape character; • contains a high level of discordant features; • no cultural interest; • an area that is tolerant of substantial change of the type proposed; • undesignated townscape; • a degraded townscape; • strongly influenced by detracting land uses and buildings.

Magnitude of Townscape Effects

3.4.10 The **magnitude** of a townscape effect is assessed in terms of its **size or scale**, the **geographical extent** of the area influenced and its **duration** and **degree of reversibility**.

3.4.11 The size or scale of change in the townscape relates to the loss or addition of features in the townscape, which are likely to result from the proposed development, and which takes into account:

- a. The extent/proportion of townscape elements that are lost or added;

- b. The contribution of those elements to townscape character and the degree to which aesthetic/perceptual aspects are altered; and
- c. Whether the effect is likely to change the key characteristics of the townscape, which are critical to its distinctive character.

3.4.12 The criteria in **Table 3.5** are used to determine the **magnitude of change** of townscape effects, based on the degree of change that will occur as a result of the proposed development and in relation to the **type of the effect**:

Table 3.5: Townscape Effects: Criteria for Magnitude of Change and Type of Effect

Category	Criteria
Major adverse townscape effect	The proposals will result in a total change in the key characteristics of townscape character; will introduce elements totally uncharacteristic to the attributes of the receiving townscape such as its massing, scale, pattern and features; and/or will destroy or permanently degrade the integrity of townscape character; or is in total conflict with established planning objectives for townscape and visual elements of regeneration and enhancement of the urban environment; and/or result in a substantial or total loss, or alteration of key elements/features/characteristics.
Moderate adverse townscape effect	The proposals will result in a partial change in the key characteristics of townscape character; will introduce elements uncharacteristic to, out of scale or at odds with the attributes of the receiving townscape, such as its massing, scale, pattern and features; and/or will result in partial loss, or alteration of key elements/features/characteristics; or is in conflict with established planning objectives for townscape and visual elements of regeneration and enhancement of the urban environment.
Slight adverse townscape effect	The proposals will result in little change in the key characteristics of townscape character and will introduce elements that do not quite fit with the attributes of the receiving townscape such as its massing, scale, pattern and features; and/or will result in a minor loss or alteration of elements/features/characteristics; and/or contribute to degrading the townscape character.
Negligible adverse townscape effect	The proposals will result in a just discernible change to townscape character/elements/features/characteristics, which is not quite in keeping with the existing townscape and townscape character.
No change	The proposals will not cause any change to the townscape character/elements/features/characteristics.
Neutral effect	As a result of the proposals, there will be a change to the townscape elements/features/characteristics, but the change will be entirely in keeping with the existing townscape character or townscape features such that the existing character or features are maintained ; and that change does not cause degradation or enhancement of the character.
Negligible townscape benefit	The proposals will result in a just discernible improvement to the townscape character/elements/characteristics, such as massing, scale, pattern or features.
Slight townscape benefit	The proposals will achieve a degree of fit with the townscape character/elements/features/characteristics and provides some enhancement to the condition or character of the townscape.
Moderate townscape benefit	The proposals will achieve a good fit with the townscape character/elements/features/characteristics, such as massing, scale, and pattern; or would noticeably improve the condition or character of the townscape and enhance characteristic features through the use of local materials; and/or support established planning objectives for townscape and visual elements of regeneration and enhancement of the urban environment.
Major townscape benefit	The proposals will totally accord with the townscape character/elements/features/characteristics, including scale, pattern, massing; or would restore, recreate or permanently enhance the condition or character of the townscape and enhance characteristic features through the use of local materials; and/or delivers established planning objectives for townscape and visual elements of regeneration and enhancement of the urban environment.

3.5 Methodology for the Assessment of Effects on People's Views and Visual Amenities

- 3.5.1 The assessment of visual effects considers how the proposed development would affect people's views and their visual amenity.
- 3.5.2 A methodical consideration of each visual effect upon each identified visual receptor is undertaken in the TVIA, to determine the significance of effects, in terms of:
- sensitivity** of the visual receptor; and
 - magnitude** of the visual effect.
- 3.5.3 The following terminology is used to describe the approximate distance between the visual receptor's location and the proposed development:
- Local: under 0.5km;
 - Medium distance: 0.5km – 2km;
 - Long distance: beyond 2km.
- 3.5.4 The type of view, and the number of viewers likely to experience the view, is described in TVIA using the following terms. Definitions of these terms are set out in the **Glossary**, at the end of this document.
- Glimpsed (i.e. in passing) / Filtered / Oblique / Framed / Open Views; and
 - Few / Moderate / Many Viewers.
- 3.5.5 No private views or view locations are assessed in the TVIA. However, where appropriate, view locations for the TVIA will be selected from publicly accessible locations within or at the edge of main settlements, property groupings or other buildings, which are likely to be significantly affected by the proposed development.

Sensitivity of Visual Receptors

- 3.5.6 The assessment of visual receptor **sensitivity** combines judgements on the **value** attributed to the visual receptor and the '**susceptibility to change**' of the visual receptor to the specific type of development proposed.

Value of People's Views

- 3.5.7 The value assigned to people's views will have regard to a number of factors, which may include:
- Recognition of the Key View, the view or view location through planning designations or heritage asset designations; and
 - The popularity of the viewpoint, its appearance in guidebooks, literature or art, on tourist maps, and/or the facilities provided to enable the enjoyment of the view.
- 3.5.8 The criteria used for the assessment of the value of views is summarised in **Table 3.6**. Note that these are provided for guidance and are not intended to be absolute.

Table 3.6: Value of Views – Guidance Criteria

Value	Criteria
High	Published or identified Key Views or views from townscapes or locations of national importance, or views from highly popular visitor attractions where the view forms an important part of the experience, or views with important cultural associations.
Medium	Published or identified Key Views or views from townscapes or locations of regional/district importance or views from moderately popular visitor attractions where the view forms part of the experience, or views with local cultural associations.
Low	Typical views from townscapes or locations with no designations, which are not particularly popular as a view location and with minimal or no cultural associations.

Visual Receptors' Susceptibility to Change

3.5.9 People's susceptibility to a change in their views is a function of:

- The **occupation or activity** of the viewer at a given location; and
- The **extent** to which a person's **attention or interest may therefore be focussed** on a particular view and the **visual amenity** experienced.

3.5.10 The typical range of visual receptors' susceptibility to change which is used for the TVIA is set out in **Table 3.7**.

Table 3.7: Typical Range of Visual Receptors' Susceptibility to Change

Susceptibility	Type and Activity of Visual Receptor
High	- Residents; - People engaged in outdoor recreation, including users of public rights of way, whose attention is likely to be focussed on the visual environment of the townscape and on particular views; - Visitors to heritage assets, landmarks or other attractions where views of the surroundings are an important part of the experience; - Communities where Key Views contribute to the townscape setting enjoyed by residents; and - Travellers on scenic routes.
Medium	- Travellers on road, rail or other transport routes, where the view is moderately important to the quality of the journey; - People using local parks, open spaces, public realm, or walking on streets or local public rights of way, with moderate interest in their visual environment.
Low	- People engaged in outdoor sport or recreation, which does not involve appreciation of, or focus upon, views; - People at their place of work, where the townscape setting is not important to the quality of working life; and - Travellers, where the view is fleeting and incidental to the journey, for example on motorways or on high-speed railway lines.

Scale of Sensitivity of Visual Receptors

3.5.11 By judging the combination of the value of the view and the visual receptor's susceptibility to change, and with reference to the typical scales set out in **Table 3.8**, the TVIA assessor makes an overall assessment of sensitivity of each visual receptor.

Table 3.8: Scales of Visual Receptor Sensitivity

Visual Sensitivity	Description
Very high or High	The view is likely to be an internationally important or protected view (Key View) (Very High Sensitivity), nationally or regionally important or protected view (Key View) (High Sensitivity) or be a valued view of designated features. The view or its composition may: • Include landmark features; • Have high amenity value; • Be of an attractive composition and contain elements of notable visual interest; • Be enjoyed by a large number of recreational users and visitors; • Be experienced by residents; • Include views of important heritage assets, such as World Heritage Sites or Listed Buildings or Registered Historic Parks and Gardens; • Be a publicised view in guidebooks; • Be a 'designed' view, such as a designed vista in an historic townscape.
Medium	The view is likely to be a locally designated view or may be undesignated but considered to be locally important. The view or its composition may: • Include some features of value or interest; • Be incidental or intentional to the viewer, with some amenity value; • Be of a generally attractive composition with little sign of neglect or degradation; • Provide views of heritage assets, but which are not best represented by the particular view; • Be from within local parks or open space, the public realm, streets or on local public rights of way.
Low	The view is likely to be undesignated. The view or its composition may also: • Not include any landmark features; • Have low amenity value; • Have few or no elements which are visually attractive, and have a weak or poor composition with discordant or incongruous features that may contribute to a sense of degradation or poor quality; • Be incidental to the viewer, with little or no amenity value; • Be fleeting to a viewer in motion.

Type of Visual Effects in the Urban Environment

3.5.12 Indicators of the **type** of visual effect in the urban environment include the dominance of new built form in the view and the effects of the new scale and mass in the view, how the visual composition will change, and whether there would be new skyline features or focal interest. Whether a visual effect in the urban environment is beneficial or adverse is a subjective judgement, and therefore to assist the TVIA assessor in making their judgement of the type of visual effect, the TVIA is based upon identified criteria, as follows.

3.5.13 The TVIA considers that **beneficial** visual changes which would be likely to arise as a result of proposed development may include, but are not limited to, the following visual changes:

- Creation of a new focal point and interest to the view, composition, built skyline and / or linear built form, e.g. a varied and dynamic roof-scape;

- The proposed development appropriately leads the eye along the street, or away from existing visual detractors or features which provide poor visual composition at the baseline;
- Opens up views (which provides an enhancement to the view);
- Provision of a new distinctive landmark or gateway and visual orientation, particularly where the baseline view lacks distinguishing built form on the skyline;
- Respects the existing townscape / streetscape / historic nature of views, e.g. views along arcing streets;
- Provides positive variation to elevational built form;
- Respects existing adjacent built form, e.g. by the use of stepped rooflines and/or elevations;
- Provision of positive variation to scale and form in the composition of the view, which may be in accordance with local regeneration and development policies;
- Creation of views of new public realm areas;
- Creation of a strong visual identity to the townscape; and
- Creation of vistas and new key views towards new or existing focal points or landmarks.

3.5.14 Visual changes which are considered to be **adverse**, may include, but are not limited to, the following factors:

- Amplification of existing adverse visual effects;
- Creation of visual complexity and discordant elements;
- The development proposals create contrast, which results in a confusing image or which distracts from the existing focus of the view in a situation where the baseline focus is attractive and pleasant;
- The development proposals are completely out of scale or mass with adjacent built form such that they dominate the adjacent area and do not relate to or address the issue of scale and are not in keeping with local regeneration and development policies;
- The development proposals are of a much greater scale than adjacent built form, however the design seeks to address the adjacent built form, context and scale;
- The resulting change to the view is such that the appreciation of the existing built form is diminished or lost;
- Leading to the loss of views or vistas;
- Development proposals negatively draw attention to the proposals, and away from the baseline view of visually attractive features or composition.

3.5.15 Professional experience has shown that, in most cases, proposed development in urban environments is likely to result in a combination of beneficial and adverse visual effects within the same view composition. Therefore, this TVIA takes the approach of detailing the specific beneficial and adverse visual changes which are predicted to occur, in the Visual Effects

Table; with a balanced view being taken by the TVIA assessor to determine whether the overall type of effect is **adverse** or **beneficial**.

Magnitude of Visual Effects

- 3.5.16 The **magnitude** of a visual effect is assessed in terms of its **size or scale**, the **geographical extent** of the area influenced and its **duration** and **degree of reversibility**. The size or scale of change in the view relates to the degree of contrast to, or integration with, the visual composition, which is likely to result from the proposed development; and is influenced by the relative time over which a view is experienced, and whether it is a full, partial or glimpsed view.
- 3.5.17 The typical criteria which are used to assess the type and magnitude of visual effects, based on the degree of change to the view or composition, are set out in **Table 3.9**.

Table 3.9: Visual Effects – Magnitude and Type of Change – Typical Criteria

Magnitude and Type of Change	Criteria
Major adverse or beneficial visual effect	The proposals will cause a dominant or complete change or contrast to the view, resulting from the loss or addition of features in the view and will substantially alter (degrade or enhance) the appreciation or composition of the view.
Moderate adverse or beneficial visual effect	The proposals will cause a clearly noticeable change or contrast to the view, which would have some effect on the composition, resulting from the loss or addition of features in the view and will noticeably alter (degrade or enhance) the appreciation or composition of the view.
Slight adverse or beneficial visual effect	The proposals will cause a perceptible change or contrast to the view, but which would not materially affect the composition or the appreciation of the view.
Negligible adverse or beneficial visual effect	The proposals will cause a barely perceptible change or contrast to the view, which would not affect the composition or the appreciation of the view.
No change	The proposals will maintain the existing view and cause no change to that view.
Neutral	There will be a change to the composition of the view, but the change will be entirely in keeping with the existing elements of the view and maintain the composition and quality of the existing baseline view and does not enhance or degrade the baseline view.

3.6 Methodology for the Assessment of Cumulative Townscape and Visual Effects

- 3.6.1 Definition of cumulative landscape and visual effects was first set out in the 2002 edition of the Guidelines for Landscape and Visual Impact Assessment, and since then has been further refined, in terms of windfarm development, by guidance produced in Scotland, which is used more widely than windfarms, and not only in Scotland. The current definitions, as set out in 'Assessing the Cumulative Impact of Onshore Wind Energy Developments', Scottish Natural Heritage (SNH), 2012, are referred to in paragraph 7.3 of **GLVIA3** and for the purpose of the TVIA are interpreted and defined as follows:

- **Cumulative effects** - 'the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together';
- **Cumulative townscape effects** - effects that 'can impact on either the physical fabric or character of the townscape, or any special values attached to it'
- **Cumulative visual effects** - effects caused by combined visibility, which 'occurs where the observer is able to see two or more developments from one viewpoint' and/or

sequential effects which 'occur when the observer has to move to another viewpoint to see different developments'.

- 3.6.2 In accordance with the emphasis in EIA, the cumulative assessment is required to focus on cumulative townscape and visual effects which are **likely to be significant**, rather than providing a comprehensive listing of every conceivable cumulative townscape and visual effect that might occur. The approach must be reasonable and proportional to the proposed development.
- 3.6.3 Paragraph 7.18 of GLVIA3 refers to different focuses of a cumulative effects assessment: '...the **additional** effects of the main project under consideration, or on the **combined** effects of all the past, present and future proposals together with the new project.' GLVIA3 recognises some of the limitations of assessing combined cumulative effects, noting that '...the assessor will not have assessed the other schemes and cannot make a fully informed judgement.'
- 3.6.4 The cumulative townscape and visual effects assessment (CTVEA) in the TVIA is informed by reference to the baseline photographs and any verified views which have been prepared for the Proposed Development, contained in **Appendix M.4** of the TVIA, as well as the TVIA assessor's knowledge from the visual survey. Where cumulative verified views are available, these would also be used to inform the CTVEA.
- 3.6.5 The CTVEA considers the effects of the proposed development in terms of:
- an extension or intensification of the townscape and/or visual effects of other similar developments;
 - 'filling' an area over time with similar development, such that the townscape resource, views and visual amenity are judged to be substantially altered; and
 - incremental change arising from the proposal, as a result of successive individual developments.
- 3.6.1 The CTVEA also seeks to provide understanding of cumulative townscape and visual effects in terms of how the proposed development would both **interact** and **combine** with effects of the committed developments which the ES considers. Accordingly, the CTVEA is formed by assessment of **incremental cumulative effects** and **combined cumulative effects**. These are defined as follows.

Incremental Cumulative Effects

- 3.6.2 Incremental cumulative effects are the **additional** effects of the proposed development in the context of all the committed developments being taken into account. So, the assessment essentially looks at the contribution of the Proposed Development to the overall effect of the committed developments. For example, Project X results in 0.25ha of townscape regeneration, and Project Y results in 9ha of townscape regeneration – whilst the combined cumulative effects (see below) would be 9.25ha of townscape regeneration and therefore potentially quite significant, the incremental cumulative effect of Project X is 0.25ha of townscape regeneration which is likely to be an effect which is not significant.

Combined Cumulative Effects

- 3.6.3 Combined cumulative effects are those which result from the **combination** of the Proposed Development and committed developments. Where appropriate, these may be further identified as **additive effects** (a total effect produced by the Proposed Development and committed developments in combination; being the sum of the parts or the overall consequence. For example, in simplest terms, Project X results in 1ha of woodland removed, Project Y results in 2ha of woodland removed, resulting in a combined additive cumulative effect of 3ha of woodland removed); or **synergistic effects** (where the combined effect is greater than the sum of the separate effects of the cumulative developments, and which wouldn't have occurred from the Proposed Development or any of the committed

developments in isolation. For example, the losses of woodland from Project X and Project Y combine to have a new effect on a species that is not affected by the loss of woodland from either Project X or Project Y in isolation). Where combined effects are assessed, the assessment is made against the 2018 baseline year (i.e. all developments, combined, assessed against baseline).

Limitations to the Cumulative Townscape and Visual Effects Assessment

3.6.4 It is acknowledged that there will be limitations to the assessment of combined cumulative effects in the CTVEA. Typical limitations include:

- Limited information that is available. In some cases, committed development proposals or permissions may not be accompanied by a TVIA due to their scale of development or local authority requirements;
- Stantec did not prepare the TVIAs for the committed developments. A different assessor will have a different professional judgement of townscape and visual effects, and use different assessment methodologies in TVIAs;
- Different baseline dates between the TVIAs for the proposed development and the committed developments;
- Assessments of different townscape and visual receptors, that are not comparable; and
- The absence of verified views for the committed developments.

3.7 Definitions of Townscape and Visual Mitigation Measures

3.7.1 **Primary mitigation measures** are defined as those which have been developed through the iterative design process, and which have become integrated or **embedded into the scheme design**.

3.7.2 **Standard construction and operational management practices** are defined as those which would be required to be adopted for the avoidance of, and reduction of, adverse environmental effects as part of the standard construction process, such as the implementation of tree protection fencing around retained trees. These standard practices for construction are therefore **not** considered to form part of the embedded mitigation; and instead are expected to be detailed in a Construction and Environmental Management Plan (CEMP), to be prepared at a relevant time.

3.7.3 Embedded (primary) mitigation measures are described in detail in a separate chapter of the ES and are only briefly referred to in the TVIA.

3.7.4 **Secondary, or further mitigation and enhancement** measures are those which would be proposed in order to address adverse effects which remain after the embedded (primary) mitigation has been incorporated into the scheme.

3.7.5 In cases where the maximum achievable mitigation within the Site boundaries has already been included in the embedded (primary) mitigation measures, there may be no further (secondary) townscape mitigation measures proposed in the TVIA. This can occur where the Site is located within a dense urban environment, and it is considered that off-site further townscape mitigation would not be feasible, and therefore could not provide certainty of further reduction of adverse effects.

3.8 Levels of Significance of Townscape and Visual Effects

- 3.8.1 The **levels of significance** of townscape and visual residual effects, including cumulative effects, vary with location, townscape context and the type of development that is proposed.
- 3.8.2 A three-stage assessment process is adopted for the TVIA, in accordance with **GLVIA3** (see Box 3.1 EIA Significance Terminology, and paragraph 3.24, pages 37-38, **GLVIA3**). Firstly, the nature of receptors (the receptor's **sensitivity**) which is likely to be affected is assessed. Secondly the nature of effects (**magnitude**) likely to result from the proposed development is assessed. Lastly, the **levels of significance** of the identified townscape and visual effects on receptors are determined, by combining judgements of sensitivity and magnitude, as required by the European Union Directive 2011/92/EU, and as amended by 2014/52/EU and UK Country Regulations. The TVIA assessor makes those judgements based upon the combinations set out in **Table 3.10**.
- 3.8.3 Effects that are identified in the TVIA to have a significance level of 'minor' or 'negligible' are determined as being '**not significant**'; and effects that are assessed as being of 'moderate', 'major' or 'substantial' levels of significance are determined to be '**significant**' in the context of the EIA Regulations.

Table 3.10: Levels of Significance of Townscape and Visual Effects

Sensitivity of Receptor	Magnitude of Effect				
	Major Effect	Moderate Effect	Slight Effect	Negligible Effect	Neutral Effect
High	Substantial or Major to Substantial	Major	Moderate	Minor (not significant)	Negligible (not significant)
Medium	Major	Moderate	Minor (not significant)	Negligible (not significant)	Negligible (not significant)
Low	Moderate	Minor (not significant)	Minor (not significant)	Negligible (not significant)	Negligible (not significant)

- 3.8.4 A substantial level of significance would typically be assigned where a townscape or visual effect or cumulative townscape or visual effect represents a **key factor in decision-making**. The 'substantial' level of significance of effect is generally, but not exclusively, associated with altering the integrity of sites and features of national or regional importance. A change at a district scale to a site or feature might also enter this category, though the assessment is **subject to professional judgement and will be proportional to the type and extent of development that is being assessed**. Where there is a combination of a receptor's high sensitivity and a major magnitude of effect, **professional judgement may be applied** to determine a 'major to substantial level of significance', where it is considered by the TVIA assessor that the effect either does not represent a key factor in the decision-making process, or where the development would have limited effects such that it would not alter the integrity of sites and features of national or regional importance.
- 3.8.5 The above table of significance has regard to guidance in **GLVIA3** at paragraphs 3.32-3.33, pages 40-41; paragraph 5.56, page 92 (significance of landscape effects) and paragraph 6.44, page 116 (significance of visual effects).

4 TVIA Standard Glossary and Abbreviations

4.1 Glossary

4.1.1 Standard terms used in the TVIA and this Methodology document are set out in **Table 4.1**.

Table 4.1: TVIA Glossary

Term	Standard Definition
Baseline Conditions	The environment as it appears (or would appear) at the Baseline year, prior to the implementation of the proposed development together with any known or foreseeable future changes that will take place before completion of the project.
Baseline Information	Collection of background information on the environmental setting of a proposed development.
Characteristics	Key elements, or combinations of elements, which contribute to distinctive landscape or townscape character
Committed Development	Development projects that are either under construction or which have valid planning permission/consents
Conservation Area	Land awarded protection status for an area with defined heritage assets and historic environment
Cumulative effects	Additional or combined changes caused by the Proposed Development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future.
Designated Townscape	Areas of townscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents
Data Collection or Desktop Studies	The gathering and analysis of existing data from the public domain, scientific and commercial databases, and available project sources, in order to identify environmental constraints and opportunities

Direct Effect	An effect that is directly attributable to the Proposed Development
Development	Any proposal that results in a change to the landscape/townscape and/or visual environment
Enhancement	Proposals that seek to improve the landscape or townscape resource and the visual composition and amenity of views, over and above the baseline conditions
Environmental Impact Assessment	Method for identifying and evaluating the likely significant environmental effects of a proposed development
Environmental Statement	Supporting document to Planning Application providing environmental information to the planners (in a form suitable for public consumption) reporting the outcome of the EIA
Heritage	The historic environment and including valued assets and qualities such as historic buildings and cultural traditions
Key Characteristics	Elements which are particularly important to the current character of the landscape or townscape, and which define an area's particular / distinctive sense of place.
Landscape	An area, as perceived by people, the character of which is the result of action and interaction of natural and/or human factors
Landscape or Townscape Character	A distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape or townscape and which makes one landscape or townscape different from another. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement, built form and layout, scale, mass and legibility. It creates the particular sense of place of different areas of the landscape or townscape

Landscape or Townscape Effects	Effects on the landscape or townscape as a resource in its own right
Landscape or Townscape Quality (condition)	A measure of the physical state of the landscape or townscape. It may include the extent to which typical character is represented in the individual areas, the intactness of the landscape or townscape and the condition of individual elements
Landscape or Townscape Receptors	Defined aspects of the landscape or townscape resource that have the potential to be affected by a proposal.
Landscape or Townscape Value	The relative value that is attached to different landscapes or townscapes by society. A landscape or townscape may be valued by different stakeholders for a variety of reasons.
Listed Buildings	A building with historic, artistic or architectural interest, which has been listed on the statutory list of buildings
Magnitude	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and the length of its duration. Includes consideration of whether the effect is reversible or irreversible. Magnitude is presented in terms of being major, moderate, slight or negligible. Magnitude is defined for TVIA in Appendix I.2
Mitigation Measures	Action taken to avoid reduce or offset adverse environmental impacts of a project
Indirect Effects	Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
Receptor	Physical resource or user group that would experience an effect, either negative or positive from the proposed development

Residual Effects	Effects that would remain following the implementation of the mitigation measures
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change of development proposed and the value related to that receptor
Scoping	Scoping is the process of determining what issues are to be addressed, and setting out a methodology in which to address them in a structured manner appropriate to the plan or programme. Scoping is carried out in consultation with the appropriate bodies.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic. This assessment considers the sensitivity of the receptor and the magnitude of change which is likely to occur in the receiving environment. The combined effect of these creates the significance level
Study Area	Area surrounding and including the proposed development, where there is reasonable potential for environmental impacts arising from the Proposed Development. Study areas are defined for each topic of the EIA
Susceptibility	The ability of a defined landscape or townscape or visual receptor to accommodate the specific Proposed Development without undue negative consequences
Townscape	The landscape within the built-up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces. Also defined as the character and composition of the built environment including the buildings and the relationships between them, the different types of urban open space, including green spaces, and the relationship between buildings and open spaces.
Verified Views	Accurate visual representations of the Proposed Development which are modelled into baseline photographs representing people's views of the Proposed Development from a given location. Verified

	Views are produced in accordance with specific methodology.
Views - Glimpsed	A view which is seen or perceived briefly or partially, for example when the viewer is moving.
Views - Filtered	A view which is partially obscured by another object, for example a view through a tree canopy.
Views - Oblique	A view which is not seen or experienced in a direct way or angle; for example a view which is at a different angle to the main direction of the viewer's travel and therefore requires the head to be turned to perceive the view, and is not the main focus for that person.
Views - Framed	A view that is restricted and bordered by objects located at the sides of the view; for example a view along a street which is bordered at both sides by buildings.
Views - Open	A view with no restrictions, not closed or blocked or framed.
Visual Amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting, or travelling through an area.
Visual Effects	Effects on specific views and on the general visual amenity experienced by people
Visual Receptor	Individuals and/or defined groups of people who have the potential to be affected by a proposal. Typically represented by a selected viewpoint location.
Zone of Theoretical Visibility (ZTV)	A map, digitally produced, identifying areas of land within which a development is theoretically visible (worst-case).

4.2 Abbreviations

4.2.1 Standard abbreviations typically used in the TVIA and this Methodology document include the following:

- AOD – Above Ordnance Datum
- BS – British Standard
- CA – Conservation Area
- CEMP - Construction Environmental Management Plan
- CTVEA – Cumulative Townscape and Visual Effects Assessment
- DAS – Design and Access Statement
- DEFRA - Department for Environment, Food and Rural Affairs
- DMRB - Design Manual for Roads and Bridges
- EA - Environment Agency
- EIA – Environmental Impact Assessment
- ES – Environmental Statement
- EU - European Union
- GI – Green Infrastructure
- GIS – Geographical Information Systems
- GLVIA3 – Guidelines for Landscape and Visual Impact Assessment, Landscape Institute (3rd edition, 2012)
- IEMA - Institute of Environmental Management & Assessment
- LCA – Landscape Character Area
- LCT – Landscape Character Type
- LI – Landscape Institute
- LPA – Local Planning Authority
- MAGIC – English Government's online mapping tool
- NCA – National Character Area
- NPPF – National Planning Policy Framework
- NTS – Non-Technical Summary
- PPG – Planning Practice Guidance
- PROW - Public Rights of Way

- RHPG – Register of Parks and Gardens of Special Historic Interest
- SM – Scheduled Monument
- SPG – Supplementary Planning Guidance
- SUDS - Sustainable urban drainage systems
- TCA – Townscape Character Area
- TPO – Tree Preservation Order
- TVIA – Townscape and Visual Impact Assessment
- VE – Visual Envelope
- ZTV – Zone of Theoretical Visibility

Appendix M.2 Figures