



SOLAR LIGHT REFLECTIVITY STUDY

19A EVANS AVENUE, EASTLAKES

WF277-04F02(REV0)- SR REPORT

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Prepared for:

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EXECUTIVE SUMMARY

This report presents the results of a detailed study for the effect of potential solar glare from the proposed development, located at 19A Evans Avenue, Eastlake. This study identifies any possible adverse reflected solar glare conditions affecting motorists, pedestrians, and to occupants of neighbouring buildings. If necessary, recommendations are made to mitigate any potentially adverse effects. This study assesses compliance with the controls for solar glare from the State Environmental Planning Policy (Housing) 2021 Chapter 4 Design, which contains the Apartment Design Guide (ADG), and the Bayside Council Botany Bay Development Control Plan 2013.

The results of the study indicate that, to avoid any adverse glare to motorists and pedestrians on the surrounding streets, occupants of neighbouring buildings, and to comply with the abovementioned planning control requirements, the following limitations to the maximum normal specular reflectance of visible light of the external façade glazing is recommended:

- Retention of the proposed densely foliating vegetation such as trees within and around the development site as indicated in the architectural drawings.
- Building A Western Aspect on Levels 9 and above:
 - The inclusion of one of the following treatment options:
 - a) The proposed external glazing is to have a maximum normal specular reflectance of visible light of 6%, or
 - b) The proposed external glazing is to be treated with dark fritting covering the glazing or with diffused glazing/coating, or
 - c) The inclusion of sunshade elements such as angled fins or screens to obstruct/overshadow the proposed external glazing along the western aspect of Building 1 on Levels 9 and above, or
 - d) The articulation of the façade by applying a small rotation to each individual panel (in the range of 1 to 2 degree per panel), where the design alternates between 2-4 panel orientations. It is also recommended to limit the maximum normal specular reflectance of the glazing to 11%.
- Building B Eastern Aspect on Levels 13 and above:
 - The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 15%.
- Building C Western Aspect on Levels 9 and above:
 - The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 9%.
 - The proposed external glazing along the southern half of the western aspect is to have a maximum normal specular reflectance of visible light of 13%.

- All other glazing on the external façade should have a maximum normal specular reflectance of visible light of 20%.

It should be noted that the most reflective surface on the façade of a building is the glazing. Reflected solar glare from concrete, brickwork, timber, etc. is negligible (i.e. less than 1% normal specular reflectance) and hence will not cause any adverse solar glare effects. Note also that, for any painted or powder-coated metallic surfaces on the exterior façade of the development, the maximum normal specular reflectance of visible light for those types of surfaces is in the range of 1% to 5%, which is well within the abovementioned limit.

Hence, with the incorporation of the abovementioned recommendations, the results of this study indicate that the subject development will not cause adverse solar glare to motorists or pedestrians in the surrounding area, or to occupants of neighbouring buildings, and will comply with the planning controls regarding reflectivity from the State Environmental Planning Policy (Housing) 2021 Chapter 4 Design, which contains the Apartment Design Guide (ADG).

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GLARE OBSERVED BY MOTORISTS

1.1 Methodology

The reflectivity analysis of the subject development has been carried out using the technique published by Hassall (1991). The limiting veiling luminance of 500 cd/m² for the comfort of motorists, as suggested in Hassall (1991), has been adopted as a basis of assessing the glare impact from the subject development.

The various critical glazed aspects of the development were determined and are shown in Figure 1. Critical study point locations are selected where the development is within view of the motorist. (within $\pm 16^\circ$ of the direct sight-line). These are shown in Figure 2, and summarised in Table

. Photographs have been taken from the viewpoint of motorists at each study point location using a calibrated camera, and a scaled glare protractor has been superimposed over each viewpoint image (these are presented in Appendix A).

The glare protractor is used to assess the amount of glare likely to be caused and to provide a direct comparison with the criterion of 500 cd/m². Alternatively, the glare protractor can be used to determine the maximum acceptable reflectivity index of the façade material of the development for the glare to be within the criterion of 500 cd/m², to ensure that solar glare will not cause discomfort or threaten the safety of motorists and hence to enable the subject development to comply with the relevant planning control requirements regarding solar light reflectivity.

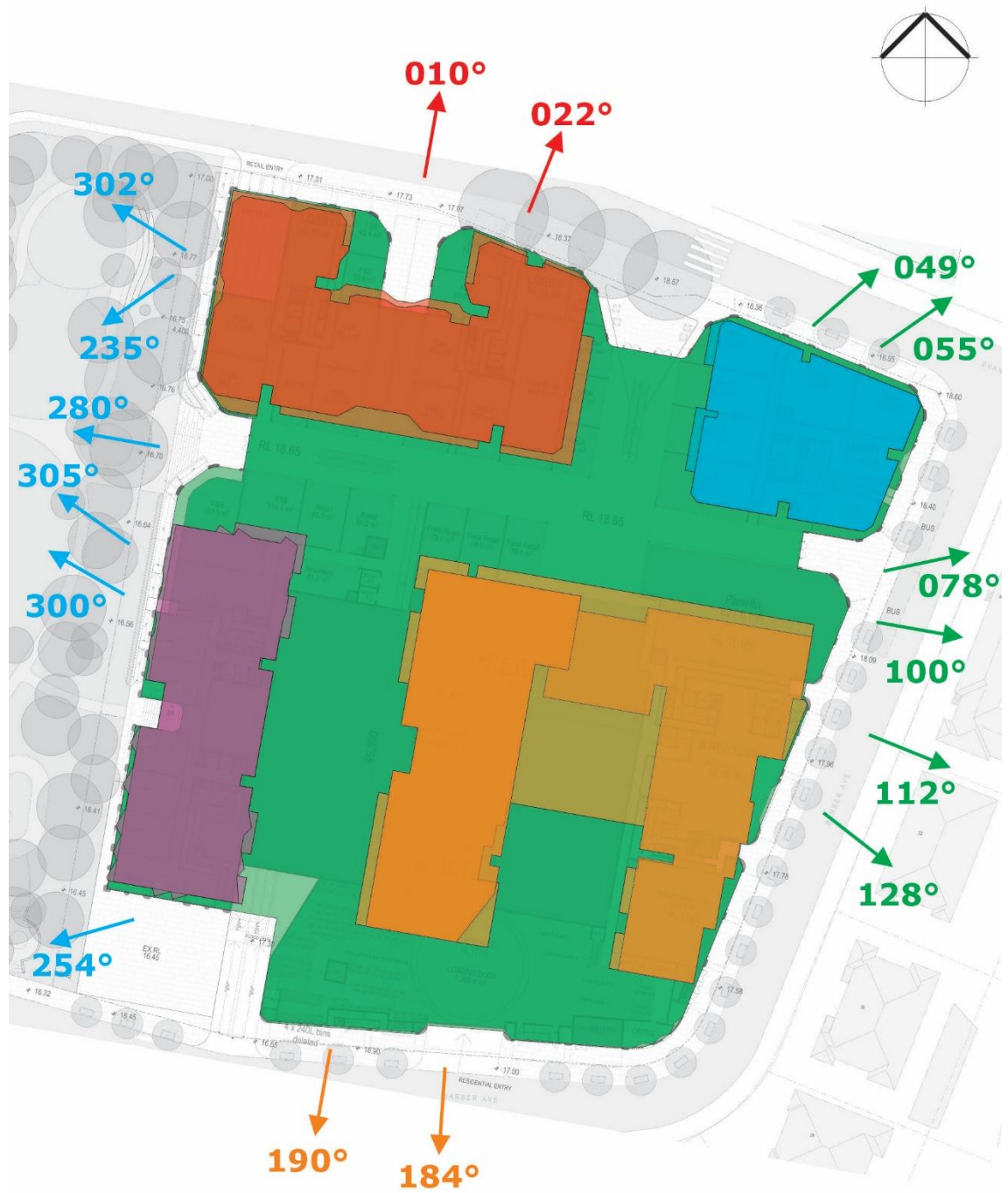


Figure 1: Critical Glazed Aspects of the Development (typical plan shown)

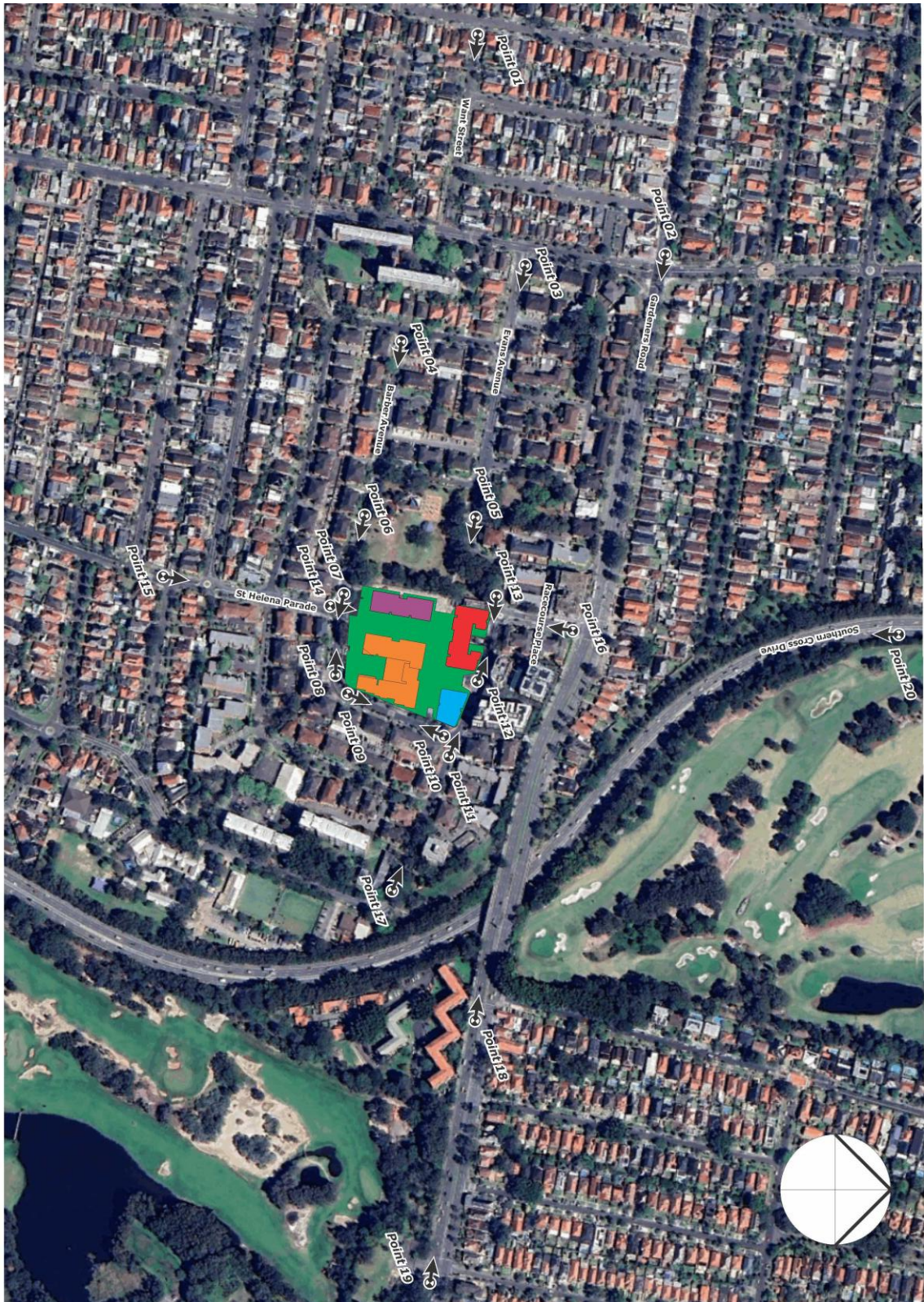


Figure 2: Check Zones and Study Point Locations
(the check zones are the areas where glare could potentially be observed)

1.2 Analysis and Discussion

As described in Section 1.1, critical study point locations are selected where the development is within view of the motorist. These are shown in Figure 2, and summarised in Table 1. Views from the study point locations are presented in Appendix A. The analysis of solar glare observed by motorists from the façade of the development at each study point location is presented in the following sub-sections. Treatment options are provided if excessive solar glare conditions are observed.

Table 1: Viewpoint Assessment from each Study Point

Study Point	Location and Viewpoint	Development Visibility
Point 01	Want Street, heading east	Not visible, no further assessment required.
Point 02	Gardeners Road, heading east	Not visible, no further assessment required.
Point 03	Evans Avenue, heading east	Visible, refer to the following sub-section for further analysis.
Point 04	Barber Avenue, heading east	Visible, refer to the following sub-section for further analysis.
Point 05	Evans Avenue, heading east	Visible, refer to the following sub-section for further analysis.
Point 06	Barber Avenue, heading east	Visible, refer to the following sub-section for further analysis.
Point 07	Barber Avenue, heading east	Visible, refer to the following sub-section for further analysis.
Point 08	Barber Avenue, heading west	Visible, refer to the following sub-section for further analysis.
Point 09	Barber Avenue, heading north-east	Visible, refer to the following sub-section for further analysis.
Point 10	Barber Avenue, heading south-west	Visible, refer to the following sub-section for further analysis.
Point 11	Evans Avenue, heading north	Visible, refer to the following sub-section for further analysis.
Point 12	Evans Avenue, heading north	Visible, refer to the following sub-section for further analysis.
Point 13	Evans Avenue, heading east	Visible, refer to the following sub-section for further analysis.
Point 14	St Helena Parade, heading north	Visible, refer to the following sub-section for further analysis.
Point 15	St Helena Parade, heading north	Visible, refer to the following sub-section for further analysis.
Point 16	Racecourse Place, heading south	Visible, refer to the following sub-section for further analysis.
Point 17	Evans Avenue, heading west	Visible, refer to the following sub-section for further analysis.
Point 18	Gardeners Road, heading west	Visible, refer to the following sub-section for further analysis.
Point 19	Gardeners Road, heading west	Not visible, no further assessment required.
Point 20	Southern Cross Drive, heading south	Visible, refer to the following sub-section for further analysis.

1.2.1 Motorists heading east along Evans Avenue – Points 03 and 05

An analysis of the glare meter overlaid onto the viewpoint at Point 03 indicates that portions of the northern and western aspects of the development will be visible within the zone of sensitive vision. The visible portions of the northern aspect cause only a very narrow vertical strip of the façade; with an angular width of less than 0.5° arc, to be capable of causing glare to be observed at this location. As the sun subtends an angular width of 0.5°, the possibility of the full intensity of the solar glare from being observed off the visible façade is minimised. Furthermore, the protruding solid vertical elements proposed along the northern aspect of the buildings as indicated in the architectural drawings are also expected to be effective in providing supplementary solar glare mitigation by obstructing/overshadowing the glare reflected off the glazed portions of the northern aspect.

With regards to the visible western aspect of Buildings A and C on Levels 9 and above, the following treatment strategies are suggested to be incorporated into the design to ensure the aspect does not cause adverse glare conditions:

Building A Western Aspect on Levels 9 and above:

- The inclusion of one of the following treatment options:
 - e) The proposed external glazing is to have a maximum normal specular reflectance of visible light of 6%, or
 - f) The proposed external glazing is to be treated with dark fritting covering the glazing or with diffused glazing/coating, or
 - g) The inclusion of sunshade elements such as angled fins or screens to obstruct/overshadow the proposed external glazing along the western aspect of Building 1 on Levels 9 and above, or
 - h) The articulation of the façade by applying a small rotation to each individual panel (in the range of 1 to 2 degree per panel), where the design alternates between 2-4 panel orientations. It is also recommended to limit the maximum normal specular reflectance of the glazing to 11%.

Building C Western Aspect on Levels 9 and above:

- The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 9%.
- The proposed external glazing along the southern half of the western aspect is to have a maximum normal specular reflectance of visible light of 13%.

An analysis of the glare meter overlaid onto the viewpoint at Point 05 indicates that the view of the development within the zone of sensitive vision will be obscured by the existing trees of the neighbouring Jack Munday Reserve. Hence, no adverse glare observed by motorists heading east at this location.

1.2.2 Motorists heading east along Barber Avenue – Points 04, 06 and 07

An analysis of the glare meter overlaid onto the viewpoint at Point 04 indicates that portions of the southern aspect of Building C will be visible within the zone of sensitive vision. The visible portions of the southern aspect cause only a very narrow vertical strip of the façade; with an angular width of less than 0.5° arc, to be capable of causing glare to be observed at this location. As the sun subtends an angular width of 0.5°, the possibility of the full intensity of the solar glare from being observed off the visible façade is minimised.

With regards to the visible western aspect of Building C on Levels 9 and above, the following treatment strategies are suggested to be incorporated into the design to ensure the aspect does not cause adverse glare conditions:

Building C Western Aspect on Levels 9 and above:

- The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 9%.
- The proposed external glazing along the southern half of the western aspect is to have a maximum normal specular reflectance of visible light of 13%.

An analysis of the glare meter overlaid onto the viewpoints at Points 06 and 07 indicates that portions of the southern aspect of Building D podium will be visible within the zone of sensitive vision. The proposed densely foliating trees along the street frontage; as indicated in the architectural drawings, are expected to be effective in overshadowing/obstructing the view of the visible southern aspect at times when solar glare could have otherwise been observed. Furthermore, the sun itself may be in the peripheral sight of the driver at the times when solar glare from the visible southern aspect can be observed. The intensity of glare from the view of the sun will be far more significant than any glare from the proposed development, and hence the glare observed from the sun would constitute a major hazard to the motorist's peripheral vision and the reflected glare off the façade the development during this time is not considered adverse.

1.2.3 Motorists heading west along Barber Avenue – Point 08

An analysis of the glare meter overlaid onto the viewpoint at Point 08 indicates that portions of the southern aspect of Building D podium will be visible within the zone of sensitive vision. A review of the architectural drawings indicate that the visible ground level portion of the southern façade is comprised of rendered cladding. Rendered cladding typically has a low specular reflectance (~1% to 5%) due to its powder coated or painted finish, as such the reflected solar glare from rendered cladding is not expected to have an adverse impact on motorists. Hence it is recommended that the rendered cladding is to have a powder coated or painted finish. Furthermore, the proposed densely foliating trees along the street frontage; as indicated in the architectural drawings, are expected to be effective in overshadowing/obstructing the view of the visible southern aspect at times when solar glare could have otherwise been observed.

1.2.4 Motorists heading north along Barber Avenue – Point 09

An analysis of the glare meter overlaid onto the viewpoint at Point 09 indicates that portions of the southern and eastern aspects of Buildings B and D will be visible within the zone of sensitive vision. A review of the sun chart for the Sydney region indicates that the sun will not operate at the angular position required for sunlight to be reflected off these aspects. Hence there will be no adverse solar glare observed by motorists heading north along Barber Avenue at this location.

1.2.5 Motorists heading south along Barber Avenue – Point 10

An analysis of the glare meter overlaid onto the viewpoint at Point 10 indicates that portions of the northern and eastern aspects of Buildings B and D will be visible within the zone of sensitive vision. A review of the sun chart for the Sydney region indicates that the sun will not operate at the angular position required for sunlight to be reflected off these aspects. Hence there will be no adverse solar glare observed by motorists heading south along Barber Avenue at this location.

1.2.6 Motorists heading west along Barber Avenue – Points 11 and 12

An analysis of the glare meter overlaid onto the viewpoint at Points 11 and 12 indicates that portions of the northern and western aspects of Buildings A and B will be visible within the zone of sensitive vision. The proposed densely foliating trees along the street frontage; as indicated in the architectural drawings, are expected to be effective in overshadowing/obstructing the view of the visible northern aspect at times when solar glare could have otherwise been observed. Furthermore, the sun itself may be in the peripheral sight of the driver at the times when solar glare from the visible southern aspect can be observed. The intensity of glare from the view of the sun will be far more significant than any glare from the proposed development, and hence the glare observed from the sun would constitute a major hazard to the motorist's peripheral vision and the reflected glare off the façade the development during this time is not considered adverse.

With regards to the visible eastern aspect, it is recommended that a maximum normal specular reflectance of visible light of 20% is applied to the materials and finishes used along this aspect.

1.2.7 Motorists heading east along Barber Avenue – Point 13

An analysis of the glare meter overlaid onto the viewpoint at Point 13 indicates that portions of the northern and eastern aspects of Building A will be visible within the zone of sensitive vision. The proposed densely foliating trees along the street frontage; as indicated in the architectural drawings, and existing buildings are expected to be effective in overshadowing/obstructing the view of the visible northern aspect at times when solar glare could have otherwise been observed.

With regards to the visible western aspect, it is recommended that a maximum normal specular reflectance of visible light of 20% is applied to the materials and finishes used along this aspect.

1.2.8 Motorists heading north along St Helena Parade – Points 14 and 15

An analysis of the glare meter overlaid onto the viewpoint at Points 14 and 15 indicates that portions of the southern and eastern aspects of Buildings B to D will be visible within the zone of sensitive vision. A review of the sun chart for the Sydney region indicates that the sun will not operate at the angular position required for sunlight to be reflected off these aspects. Hence there will be no adverse solar glare observed by motorists heading south along St Helena Parade at these locations.

1.2.9 Motorists heading south along Racecourse Place – Point 16

An analysis of the glare meter overlaid onto the viewpoint at Point 16 indicates that portions of the northern aspect of Building A will be visible within the zone of sensitive vision. A review of the sun chart for the Sydney region indicates that the sun will not operate at the angular position required for sunlight to be reflected off this aspect. Hence there will be no adverse solar glare observed by motorists heading south along Barber Avenue at this location.

1.2.10 Motorists heading west along Evans Avenue – Point 17

An analysis of the glare meter overlaid onto the viewpoint at Point 16 indicates that portions of the northern and eastern aspects of Building B will be visible within the zone of sensitive vision. The visible portions of the northern aspect cause only a very narrow vertical strip of the façade; with an angular width of less than 0.5° arc, to be capable of causing glare to be observed at this location. As the sun subtends an angular width of 0.5° , the possibility of the full intensity of the solar glare from being observed off the visible façade is minimised.

With regards to the visible northern half of the eastern aspect of Building B on Levels 13 and above, it is recommended that a maximum normal specular reflectance of visible light of 15% is applied to the materials and finishes used along this aspect.

1.2.11 Motorists heading west along Barber Avenue – Point 18

An analysis of the glare meter overlaid onto the viewpoint at Point 18 indicates that portions of the northern aspect of Building B will be visible within the zone of sensitive vision. The proposed full-height intertenancy blade walls between the various northern private balconies; as indicated in the architectural drawings, are expected to be effective in overshadowing/obstructing the view of the visible northern aspect at times when solar glare could have otherwise been observed. Furthermore, the sun itself may be in the peripheral sight of the driver at the times when solar glare from the visible southern aspect can be observed. The intensity of glare from the view of the sun will be far more significant than any glare from the proposed development, and hence the glare observed from the sun would constitute a major hazard to the motorist's peripheral vision and the reflected glare off the façade the development during this time is not considered adverse.

1.2.12 Motorists heading south along Southern Cross Drive – Point 20

An analysis of the glare meter overlaid onto the viewpoint at Point 20 indicates that portions of the northern and eastern aspects of Buildings A and B will be visible within the zone of sensitive vision. A review of the sun chart for the Sydney region indicates that the sun will not operate at the angular position required for sunlight to be reflected off these aspects. Hence there will be no adverse solar glare observed by motorists heading south along Southern Cross Drive at this location.

GLARE OBSERVED BY PEDESTRIANS AND OCCUPANTS OF NEIGHBOURING BUILDINGS

Our past experience involving more than 250 projects, and also research by Rofail and Dowdle (2004), tends to indicate that buildings which cause a nuisance to pedestrians and occupants of neighbouring buildings are those that have a normal specular reflectivity of visible light greater than 20%. This seems to justify the suggested limit of 20% reflectivity by many local government authorities and state planning bodies. Hence a general recommendation is made that all glazing and other reflective materials used on the façade of the subject development have a maximum normal specular reflectivity of visible light of 20% to avoid adverse solar glare to pedestrians and occupants of neighbouring buildings.

3 TYPICAL REFLECTANCES OF FAÇADE MATERIALS

It should be noted that the most reflective surface on the façade of a building is the glazing. Reflected solar glare from concrete, brickwork, timber, etc, is negligible (ie: less than 1% normal specular reflectance) and hence will not cause any adverse solar glare effects. The following sub-sections provide some general reflectance values of more reflective materials used on building facades.

3.1 Glazed Surfaces

A glazing supplier will be able to provide information on the maximum normal specular reflectance of visible light of different types of glazing. Some typical reflectivity values of different types of glazing are listed as follows:

- Low reflectance glazing, such as Guardian Clarity – less than 5%
- Clear float glass – typically 5% to 8%
- Low-e solar control glazing – typically 8% to 12%
- Other types of compliant performance glazing – up to 20%

3.2 Painted and/or Powder-Coated Metallic Surfaces

In the event that some portions of the external façade of the development feature powder-coated or painted metallic surfaces, it is not expected that adverse glare will be observed from those surfaces since the maximum normal specular reflectance of visible light of these types of façade materials range from 1% to 5%. This is well within the maximum limits specified in previous sections of this report.

4 SUGGESTED TREATMENTS

The suggested treatments described in this report for ensuring the development does not cause adverse glare conditions are summarised as follows:

- Retention of the proposed densely foliating vegetation such as trees within and around the development site as indicated in the architectural drawings.
- Building A Western Aspect on Levels 9 and above:
 - The inclusion of one of the following treatment options:
 - i) The proposed external glazing is to have a maximum normal specular reflectance of visible light of 6%, or
 - j) The proposed external glazing is to be treated with dark fritting covering the glazing or with diffused glazing/coating, or
 - k) The inclusion of sunshade elements such as angled fins or screens to obstruct/overshadow the proposed external glazing along the western aspect of Building 1 on Levels 9 and above, or
 - l) The articulation of the façade by applying a small rotation to each individual panel (in the range of 1 to 2 degree per panel), where the design alternates between 2-4 panel orientations. It is also recommended to limit the maximum normal specular reflectance of the glazing to 11%.
- Building B Eastern Aspect on Levels 13 and above:
 - The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 15%.
- Building C Western Aspect on Levels 9 and above:
 - The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 9%.
 - The proposed external glazing along the southern half of the western aspect is to have a maximum normal specular reflectance of visible light of 13%.
- All other glazing on the external façade should have a maximum normal specular reflectance of visible light of 20%.

Treatments Legend

- Recommend the maximum normal specular reflectance of visible light of the glazing used on the main building façade is limited to a value of 15%.

*Note: All other glazing on the external facade to have a maximum normal specular reflectance of visible light of 20%.



Figure 3a: Suggested Treatments – Eastern Elevation

Treatments Legend

- Recommend the maximum normal specular reflectance of visible light of the glazing used on the main building façade is limited to a value of 9%.
- Recommend the maximum normal specular reflectance of visible light of the glazing used on the main building façade is limited to a value of 13%.
- The inclusion of one of the following treatment options:
 - Recommend the maximum normal specular reflectance of visible light of the glazing used on the main building façade is limited to a value of 6%, OR
 - The proposed external glazing is to be treated with dark fritting covering the glazing or with diffused glazing/coating, OR
 - The inclusion of sunshade elements such as angled fins or screens, OR
 - The articulation of the facade by applying a small rotation to each individual panel.

*Note: All other glazing on the external facade to have a maximum normal specular reflectance of visible light of 20%.

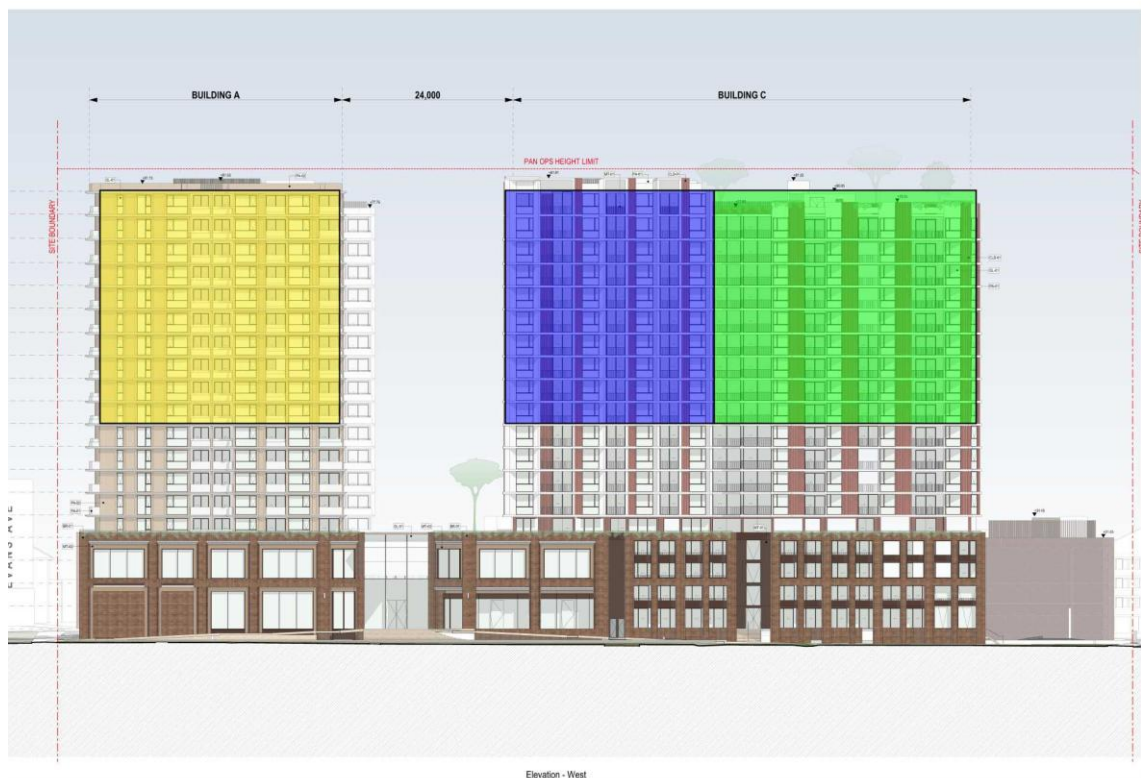


Figure 3b: Suggested Treatments – Western Elevation

A detailed study has been undertaken for the effect of potential solar glare from the proposed development, located at 19A Evans Avenue, Eastlake. This study identifies any possible adverse reflected solar glare conditions affecting motorists, pedestrians, and to occupants of neighbouring buildings. If necessary, recommendations are made to mitigate any potentially adverse effects. This study assesses compliance with the controls for solar glare from the State Environmental Planning Policy (Housing) 2021 Chapter 4 Design, which contains the Apartment Design Guide (ADG), and the Bayside Council Botany Bay Development Control Plan 2013.

The results of the study indicate that, to avoid any adverse glare to motorists and pedestrians on the surrounding streets, occupants of neighbouring buildings, and to comply with the abovementioned planning control requirements, the following limitations to the maximum normal specular reflectance of visible light of the external façade glazing is recommended:

- Retention of the proposed densely foliating vegetation such as trees within and around the development site as indicated in the architectural drawings.
- Building 1 Western Aspect on Levels 9 and above:
 - The inclusion of one of the following treatment options:
 - m) The proposed external glazing is to have a maximum normal specular reflectance of visible light of 6%, or
 - n) The proposed external glazing is to be treated with dark fritting covering the glazing or with diffused glazing/coating, or
 - o) The inclusion of sunshade elements such as angled fins or screens to obstruct/overshadow the proposed external glazing along the western aspect of Building 1 on Levels 9 and above, or
 - p) The articulation of the façade by applying a small rotation to each individual panel (in the range of 1 to 2 degree per panel), where the design alternates between 2-4 panel orientations. It is also recommended to limit the maximum normal specular reflectance of the glazing to 11%.
- Building 2 Eastern Aspect on Levels 13 and above:
 - The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 15%.
- Building 3 Western Aspect on Levels 9 and above:
 - The proposed external glazing along the northern half of the western aspect is to have a maximum normal specular reflectance of visible light of 9%.
 - The proposed external glazing along the southern half of the western aspect is to have a maximum normal specular reflectance of visible light of 13%.

- All other glazing on the external façade should have a maximum normal specular reflectance of visible light of 20%.

It should be noted that the most reflective surface on the façade of a building is the glazing. Reflected solar glare from concrete, brickwork, timber, etc. is negligible (i.e. less than 1% normal specular reflectance) and hence will not cause any adverse solar glare effects. Note also that, for any painted or powder-coated metallic surfaces on the exterior façade of the development, the maximum normal specular reflectance of visible light for those types of surfaces is in the range of 1% to 5%, which is well within the abovementioned limit.

Hence, with the incorporation of the abovementioned recommendations, the results of this study indicate that the subject development will not cause adverse solar glare to motorists or pedestrians in the surrounding area, or to occupants of neighbouring buildings, and will comply with the planning controls regarding reflectivity from the State Environmental Planning Policy (Housing) 2021 Chapter 4 Design, which contains the Apartment Design Guide (ADG).

Bayside Council, 2013 "Botany Bay Development Control Plan 2013".

Hassall, D.N., 1991, "Reflectivity, Dealing with Rogue Solar Reflections", (published by author).

Phillips, R.O., 1992, "Sunshine and Shade in Australasia", Sixth Edition, CSIRO Publishing.

Rofail, A.W., and Dowdle, B., 2004, "Reflectivity Impact on Occupants of Neighbouring Properties", International Conf. on Building Envelope Systems & Technologies, Sydney.

State Environmental Planning Policy (Housing) 2021 Chapter 4 Design, "Apartment Design Guide", NSW Department of Planning and Environment.

APPENDIX A SIGHT-LINES WITH GLARE OVERLAYS

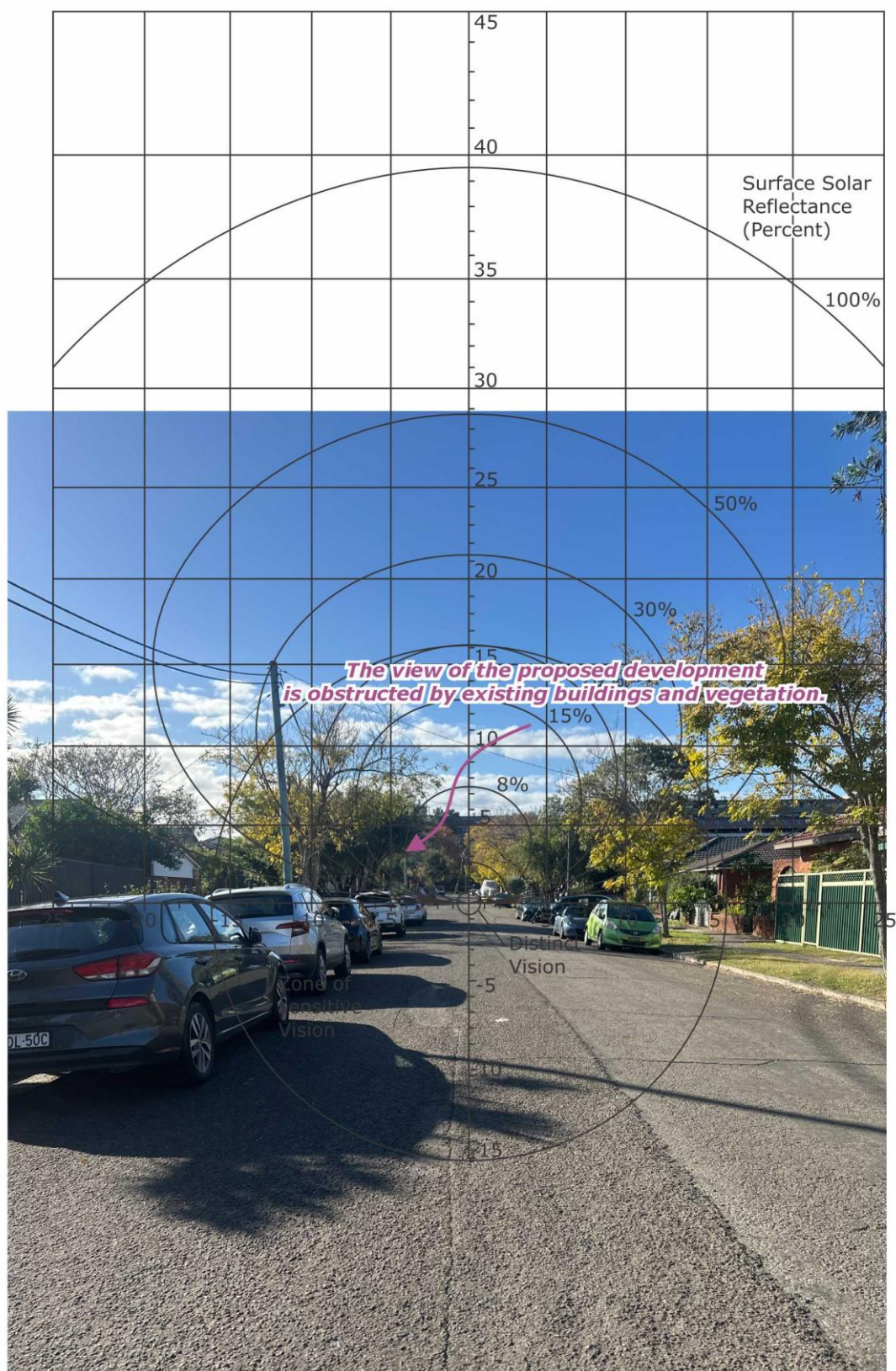


Figure A.1: Glare Overlay of the Viewpoint at Point 01

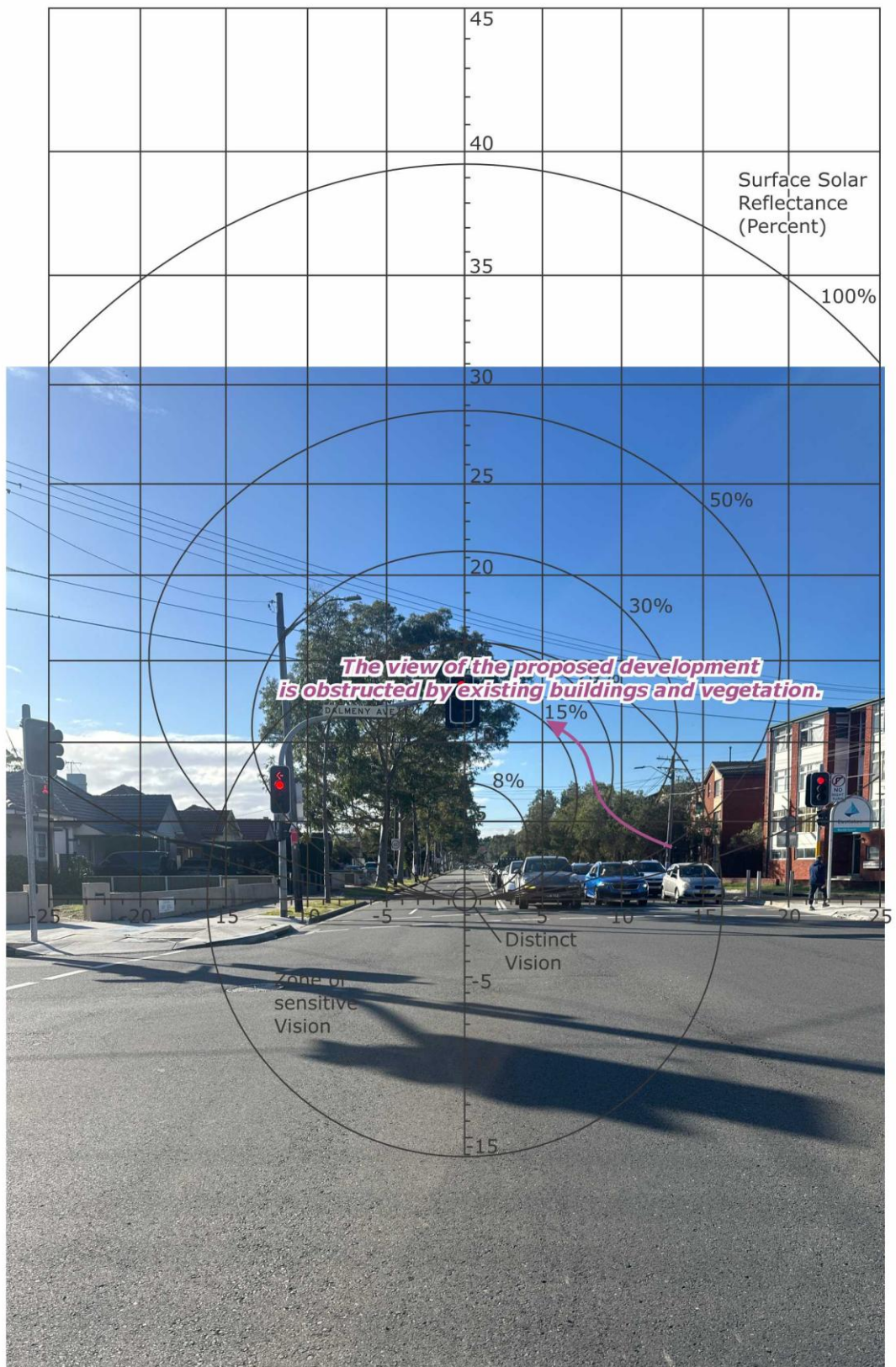


Figure A.2: Glare Overlay of the Viewpoint at Point 02

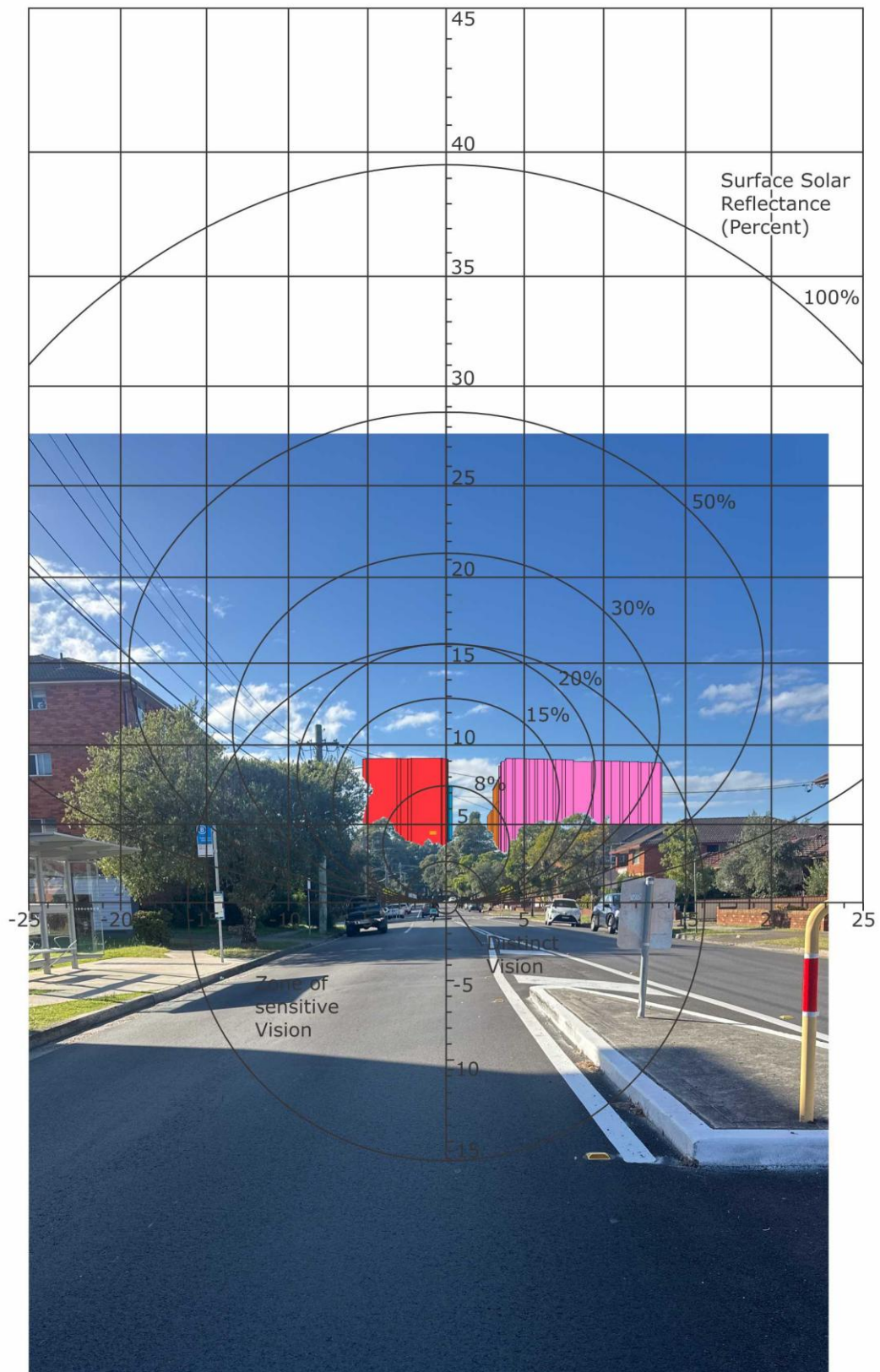


Figure A.3: Glare Overlay of the Viewpoint at Point 03

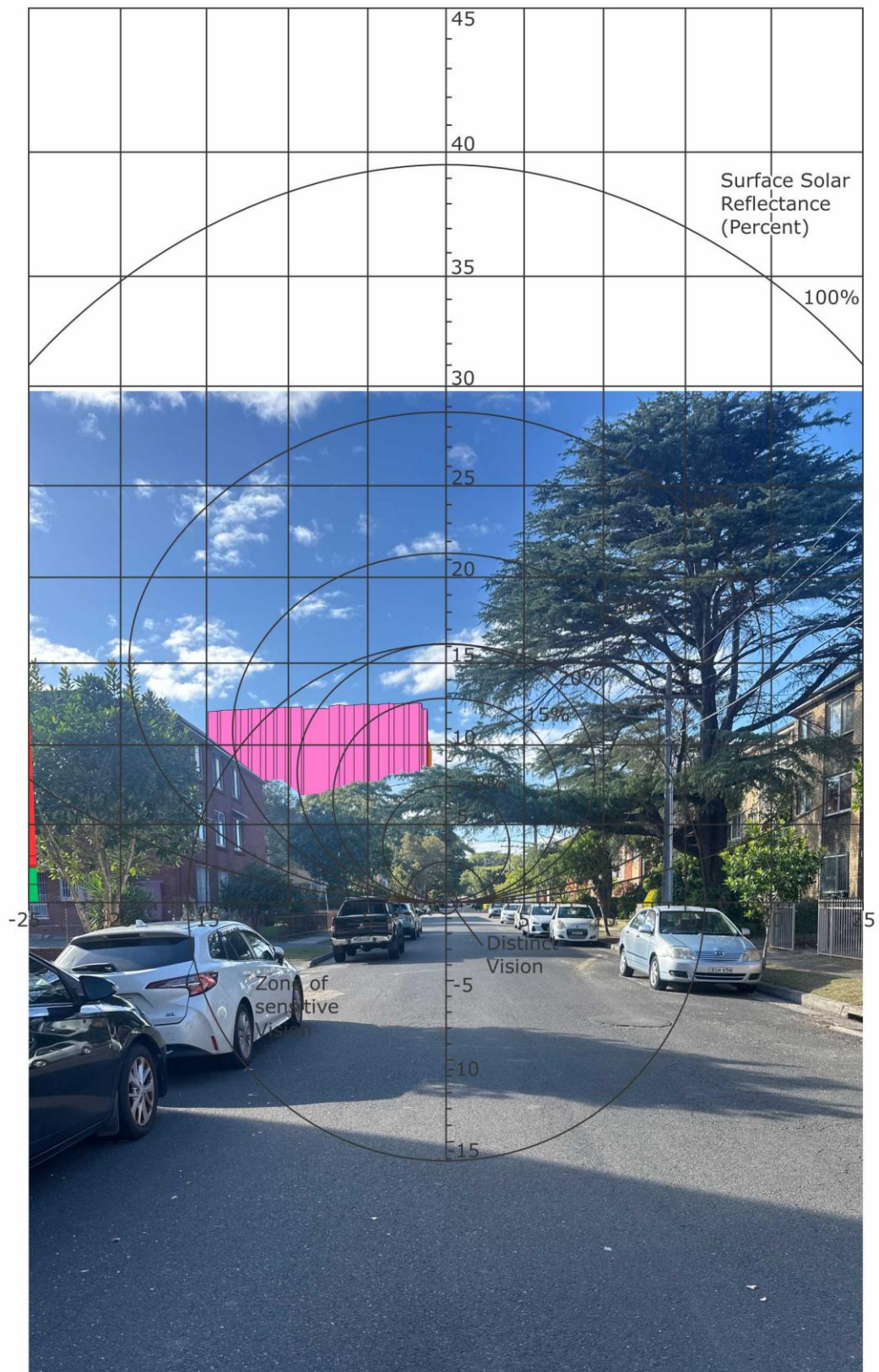


Figure A.4: Glare Overlay of the Viewpoint at Point 04

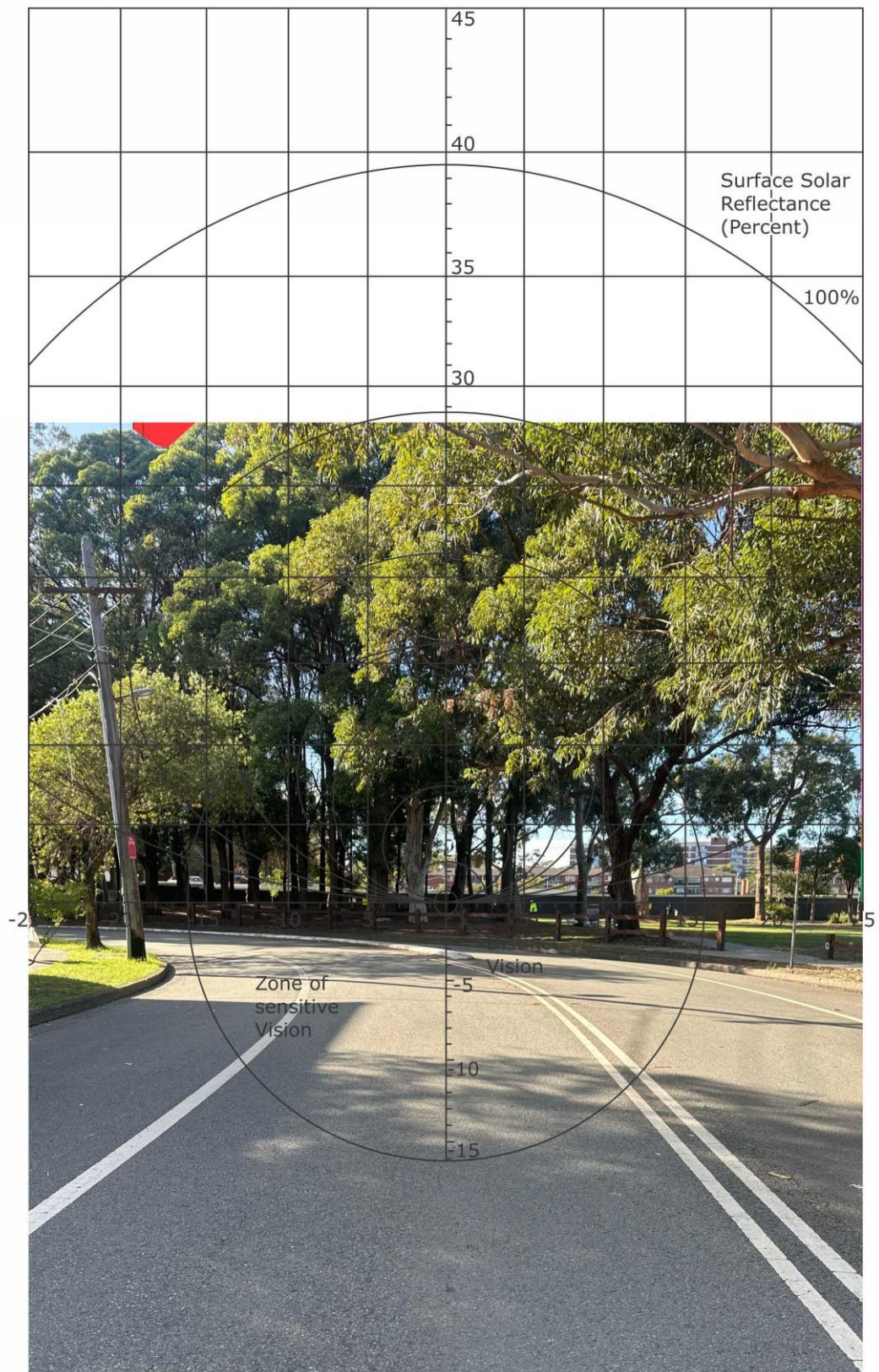


Figure A.5: Glare Overlay of the Viewpoint at Point 05

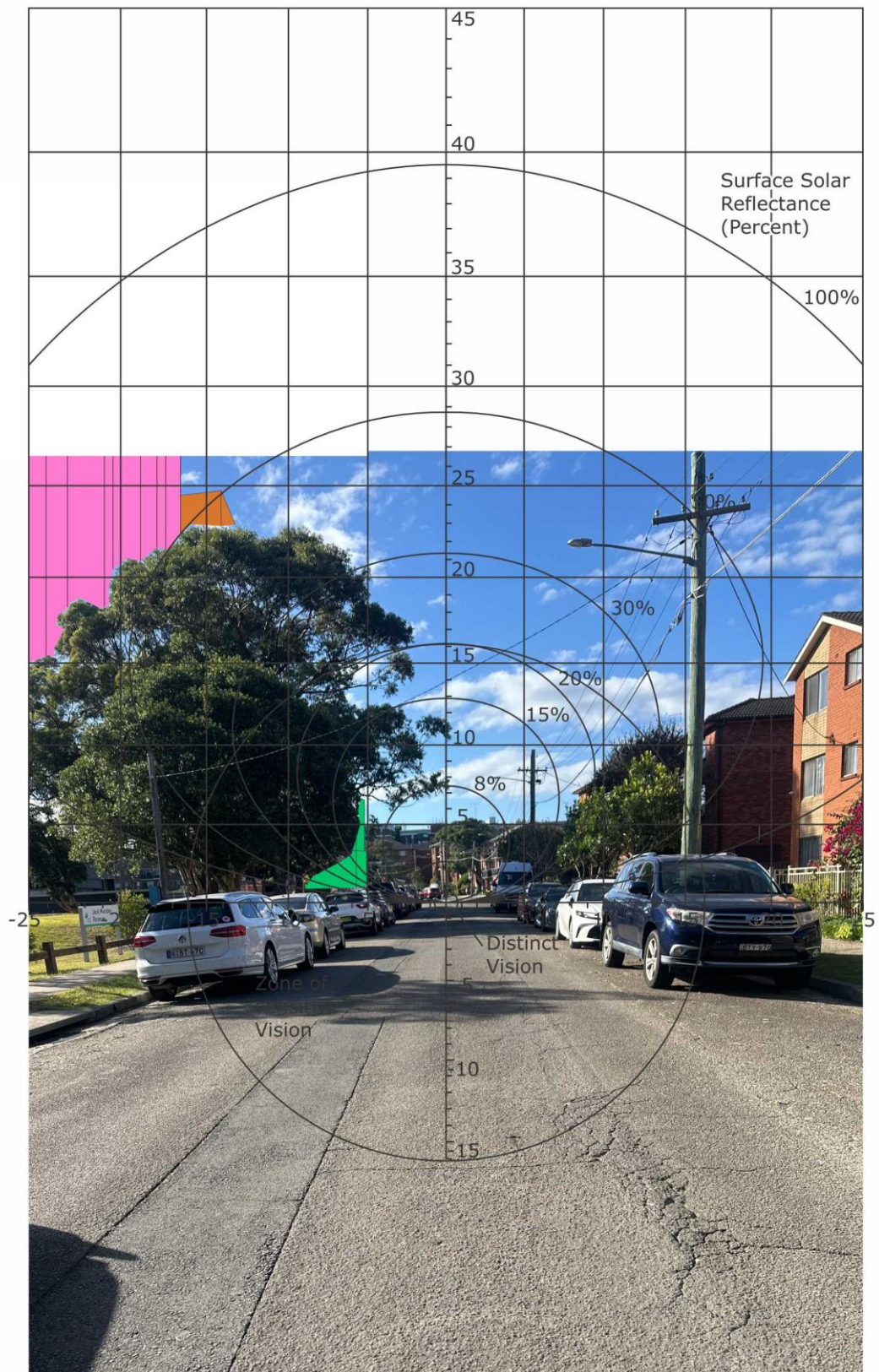


Figure A.6: Glare Overlay of the Viewpoint at Point 06

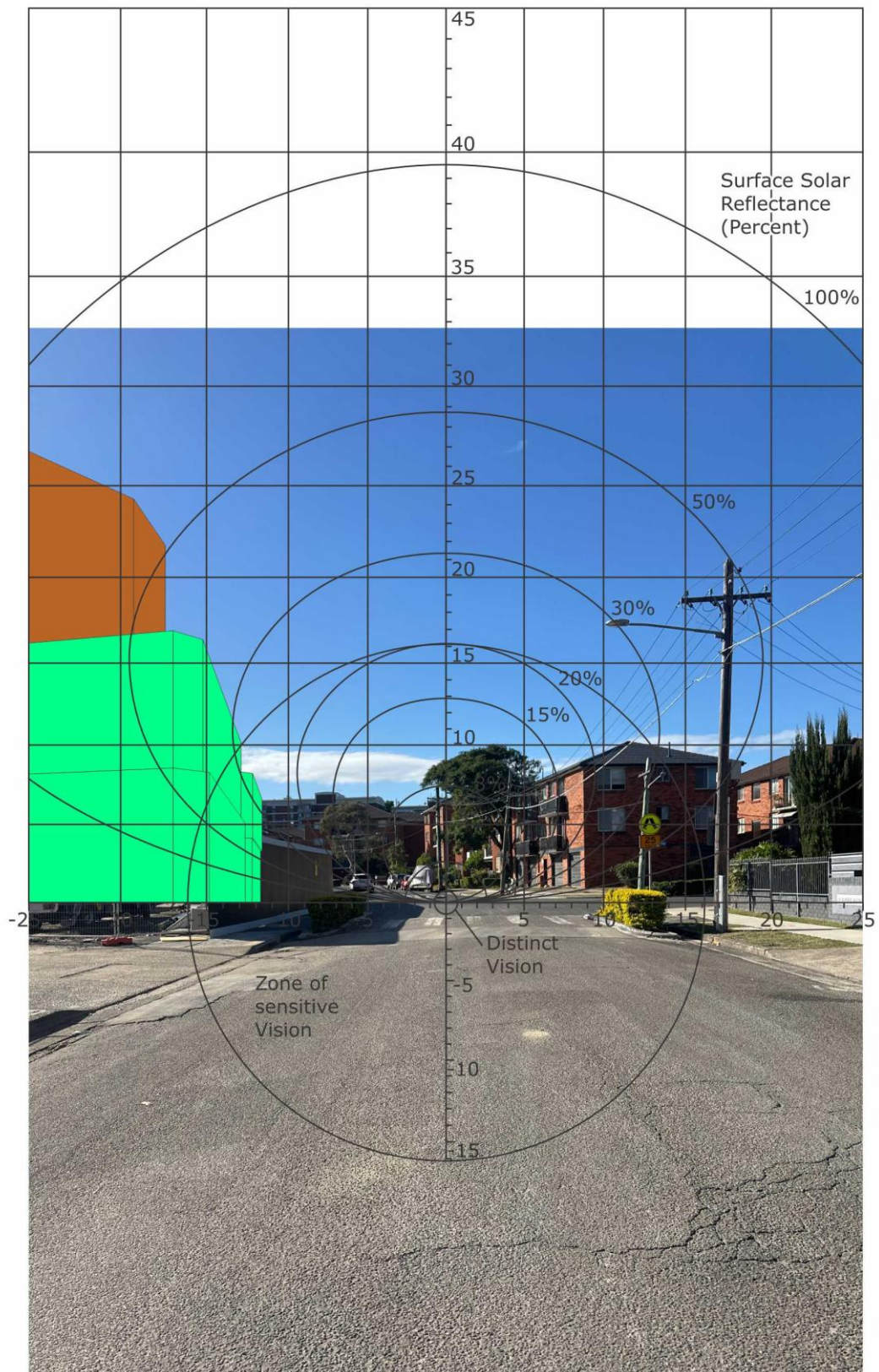


Figure A.7: Glare Overlay of the Viewpoint at Point 07

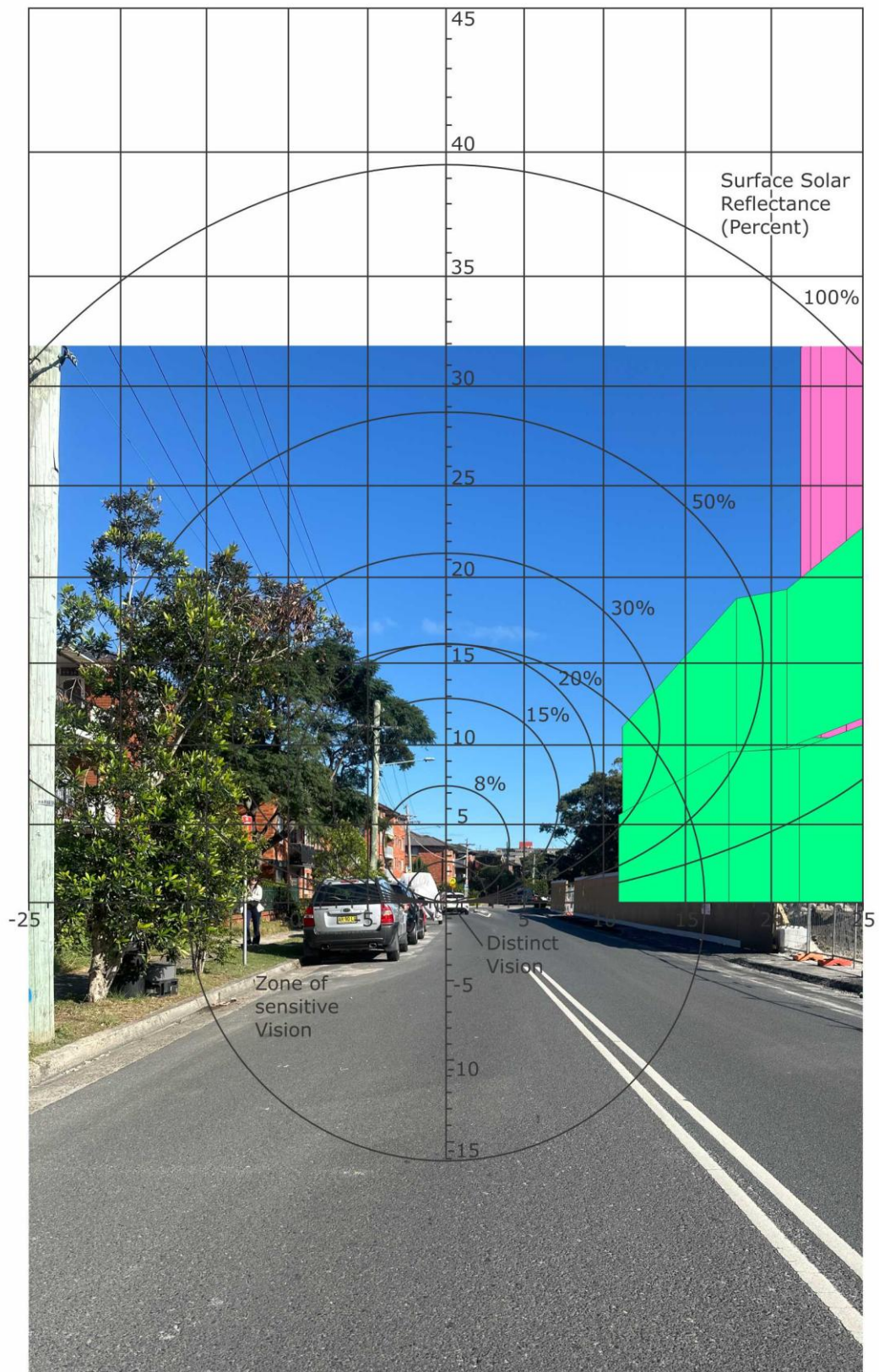


Figure A.8: Glare Overlay of the Viewpoint at Point 08

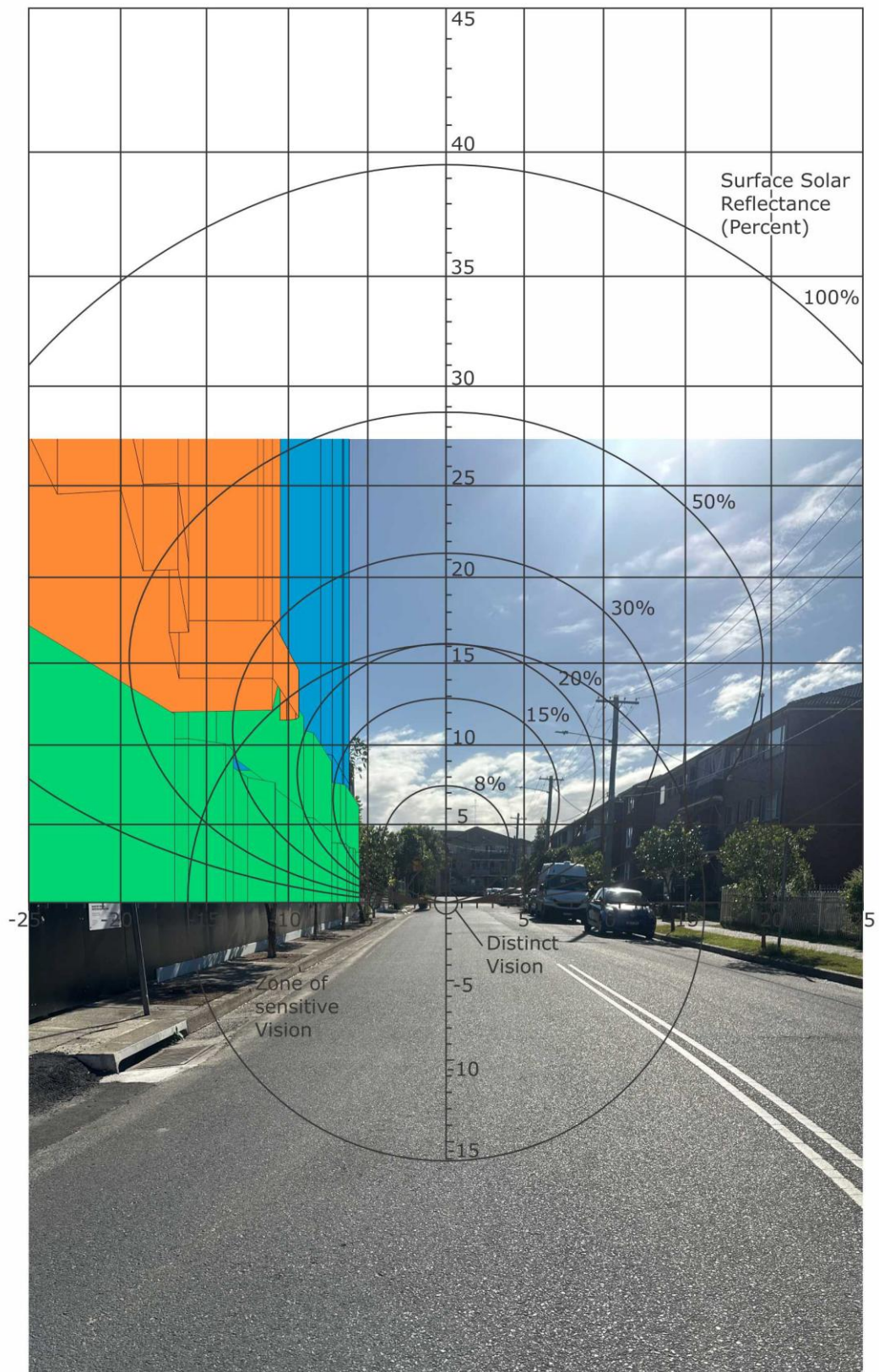


Figure A.9: Glare Overlay of the Viewpoint at Point 09

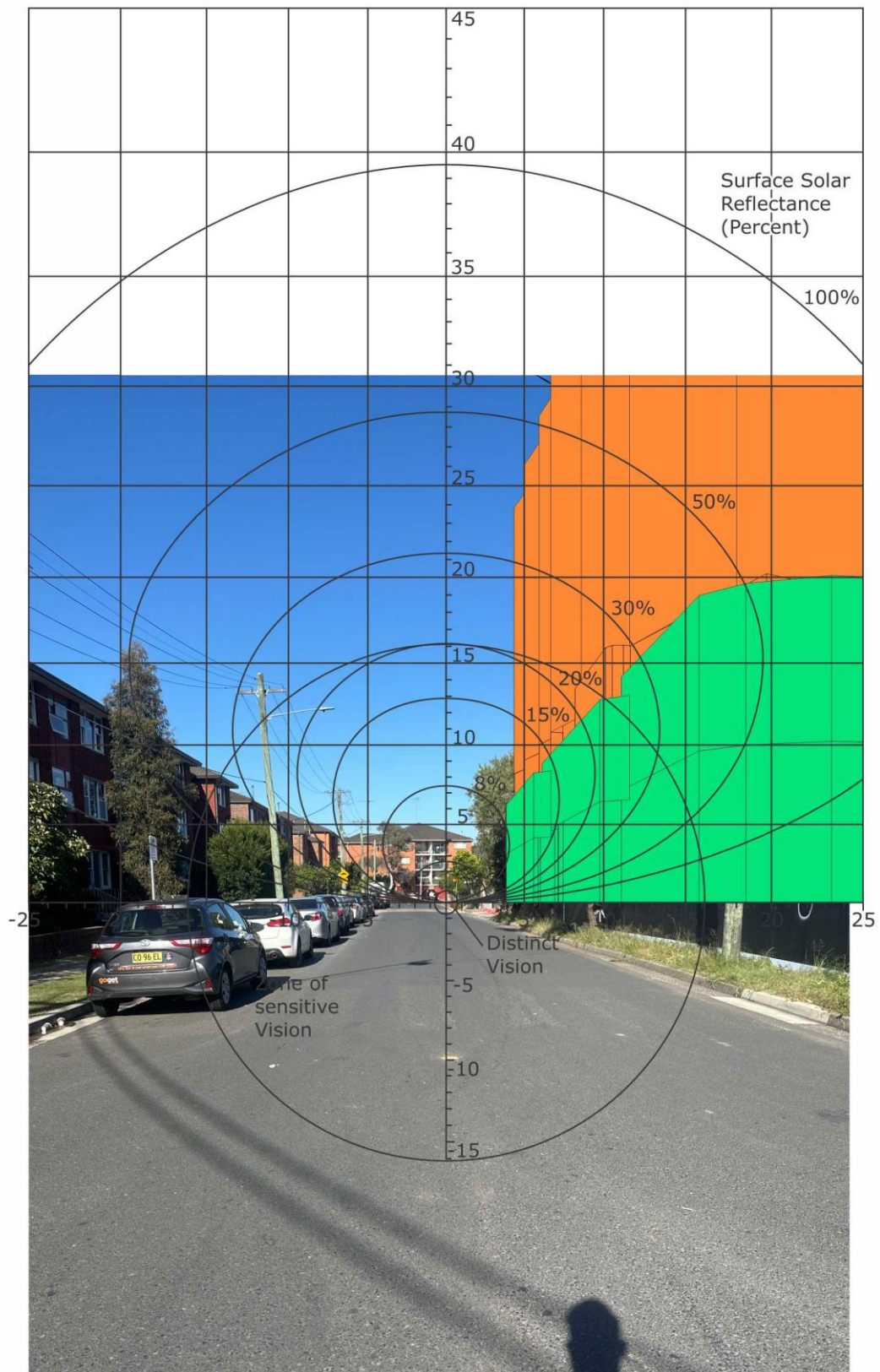


Figure A.10: Glare Overlay of the Viewpoint at Point 10

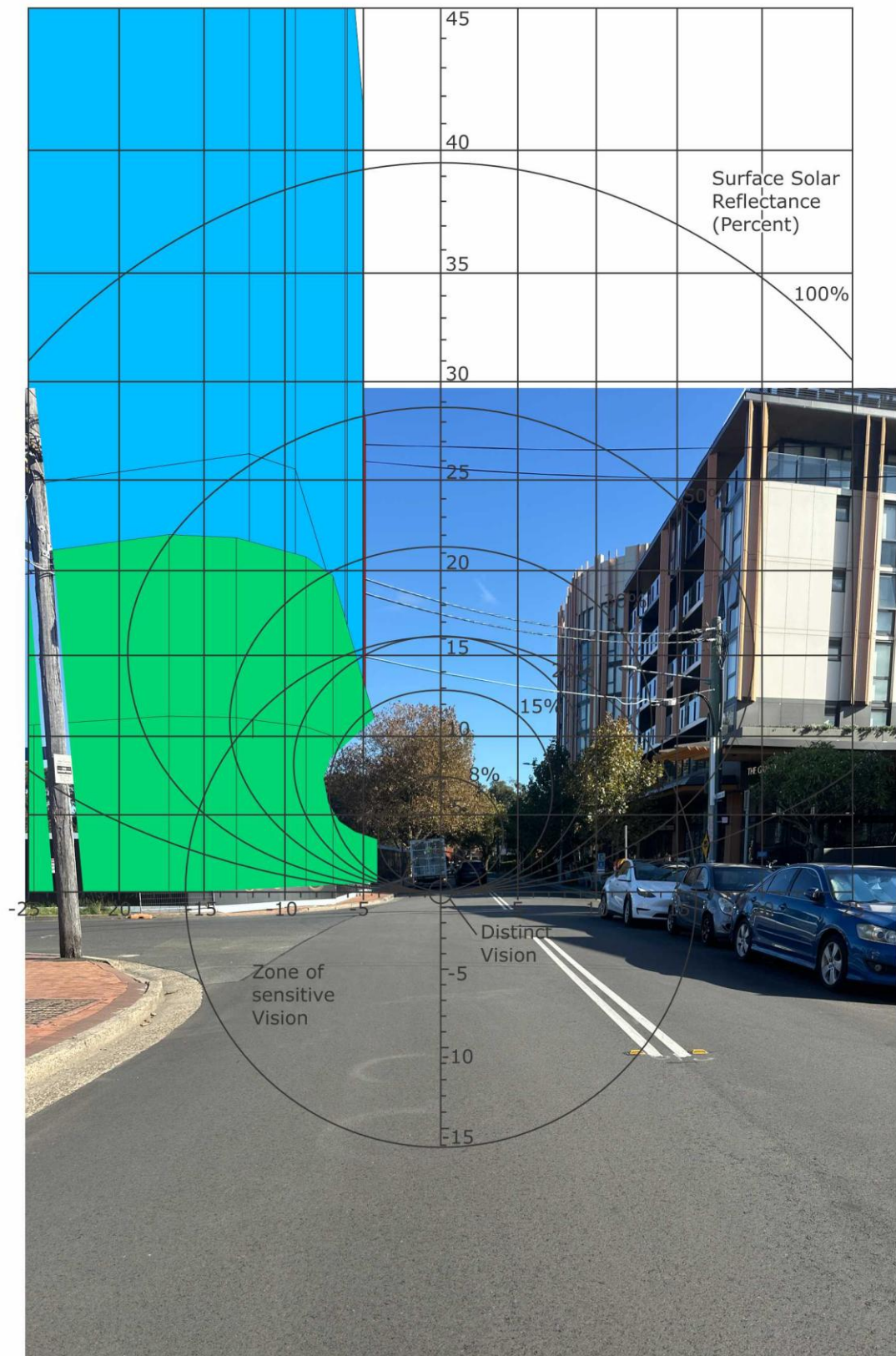


Figure A.11: Glare Overlay of the Viewpoint at Point 11

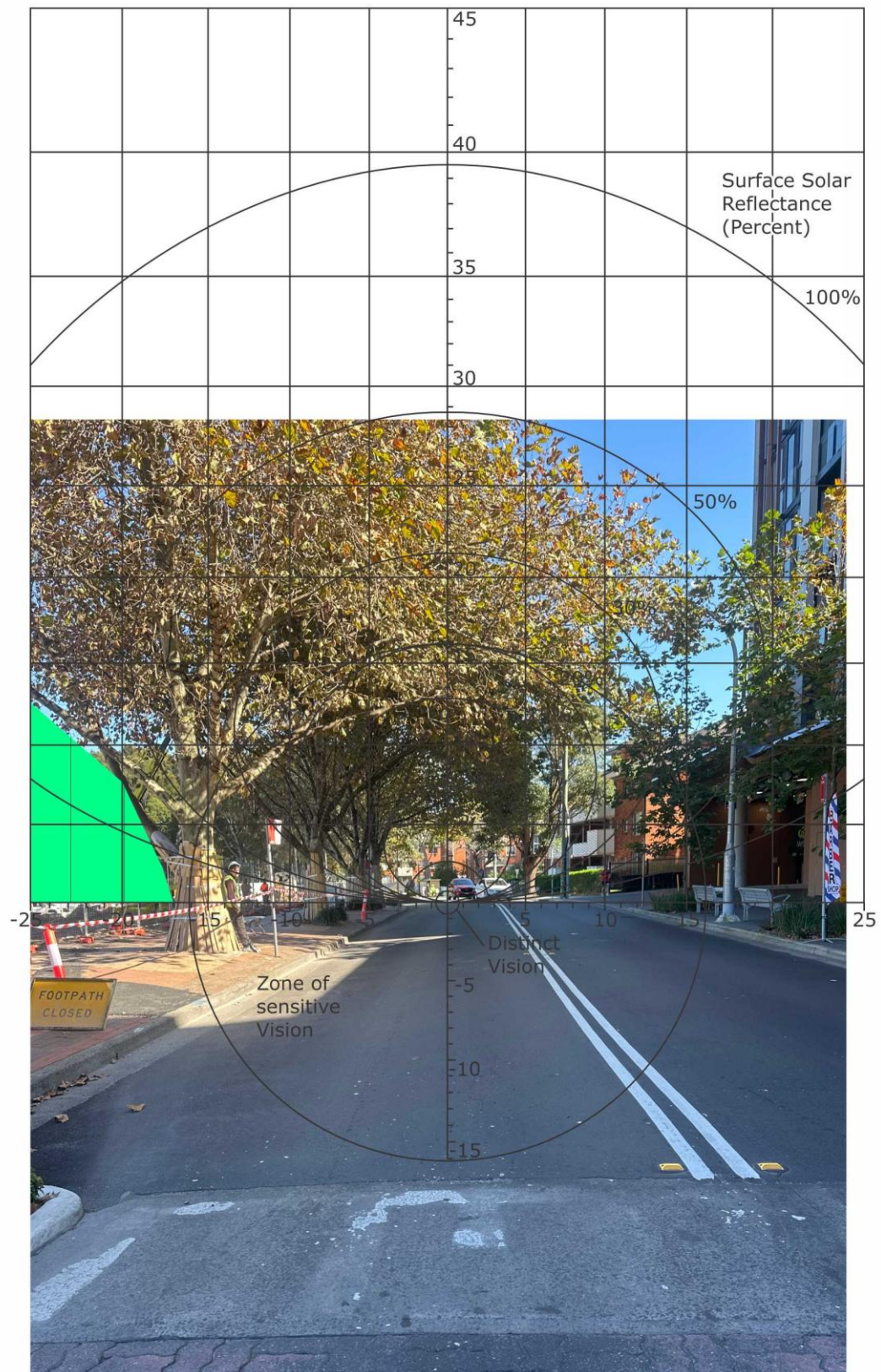


Figure A.12: Glare Overlay of the Viewpoint at Point 12

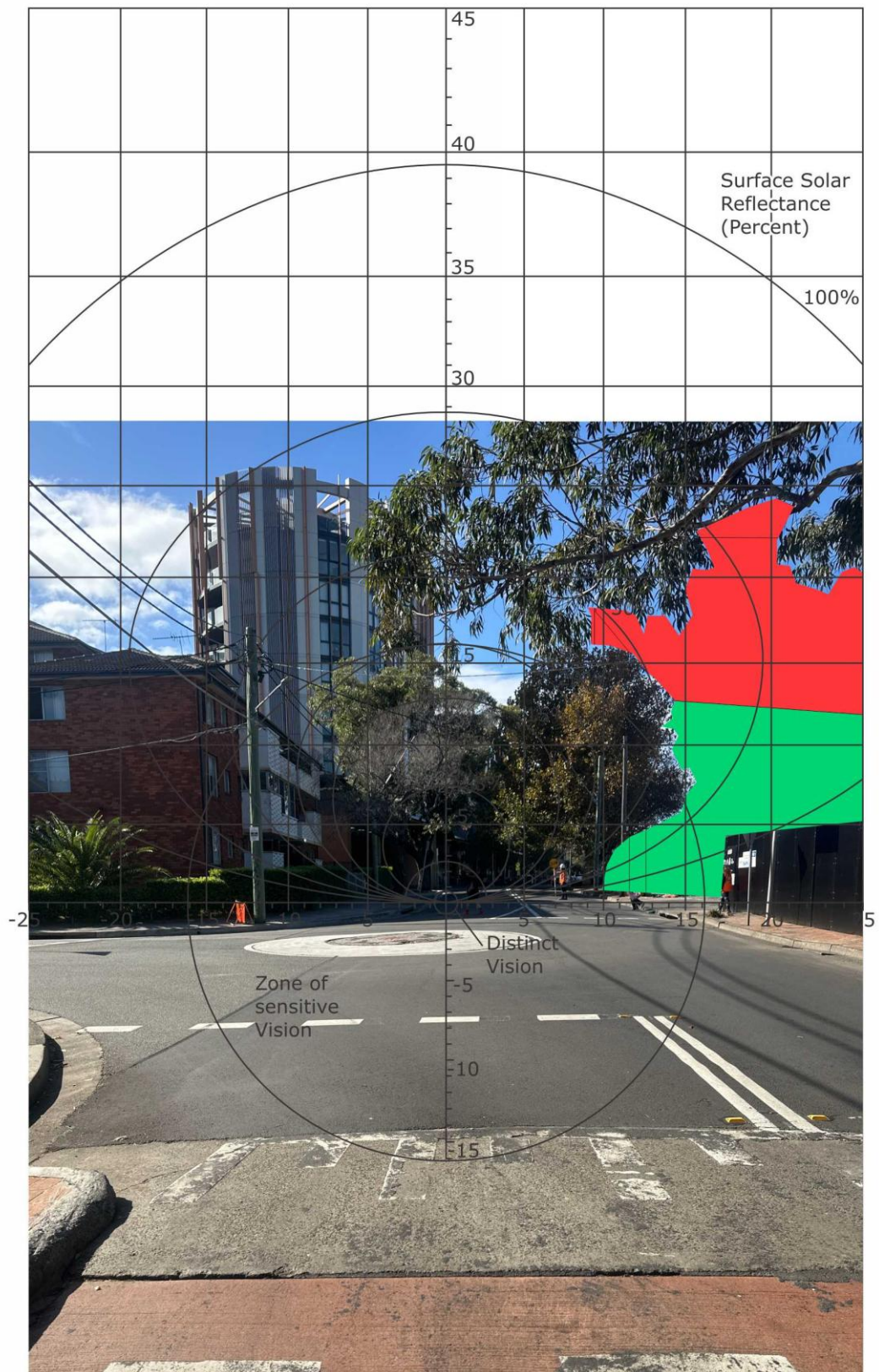


Figure A.13: Glare Overlay of the Viewpoint at Point 13

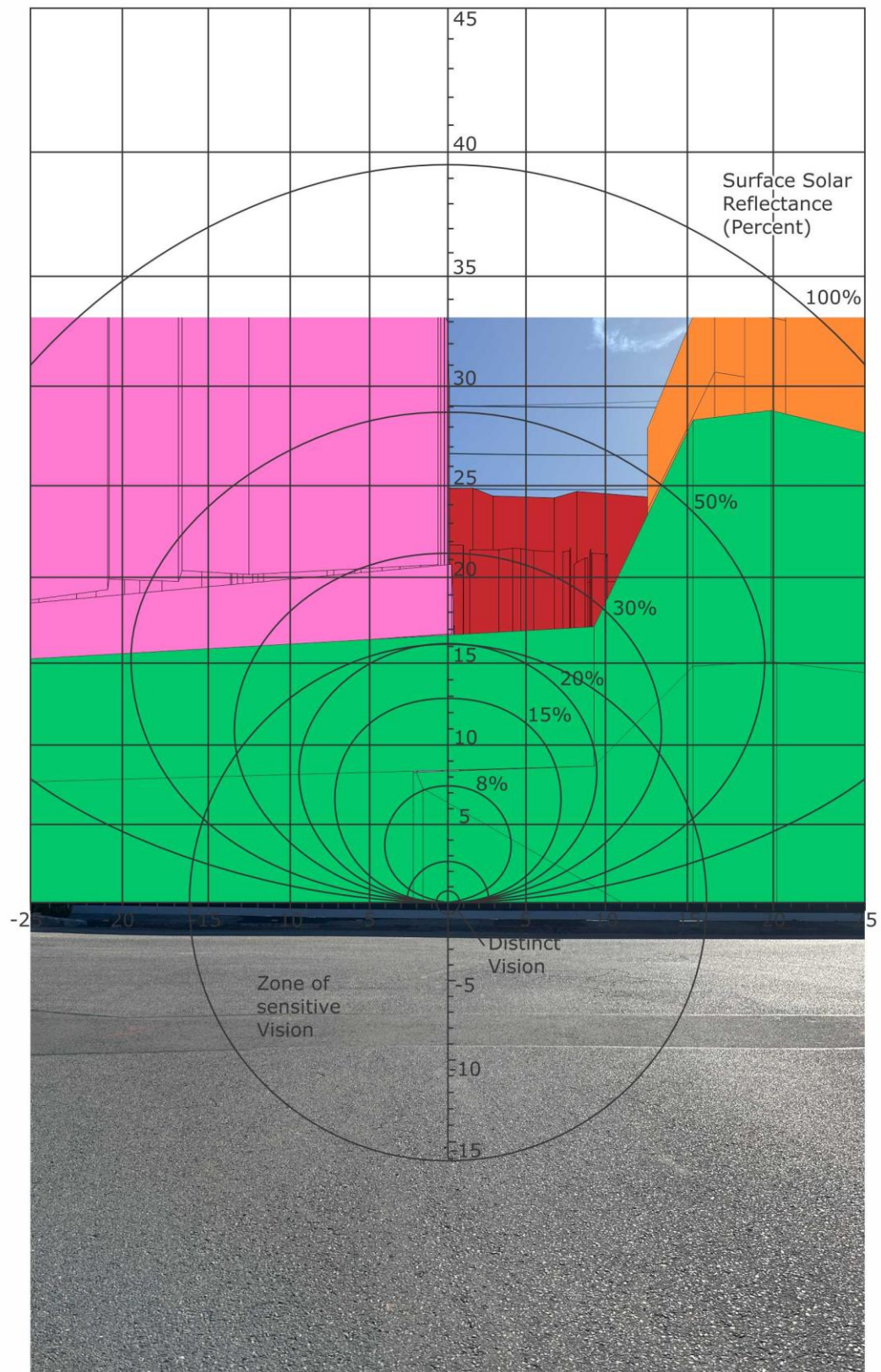


Figure A.14: Glare Overlay of the Viewpoint at Point 14

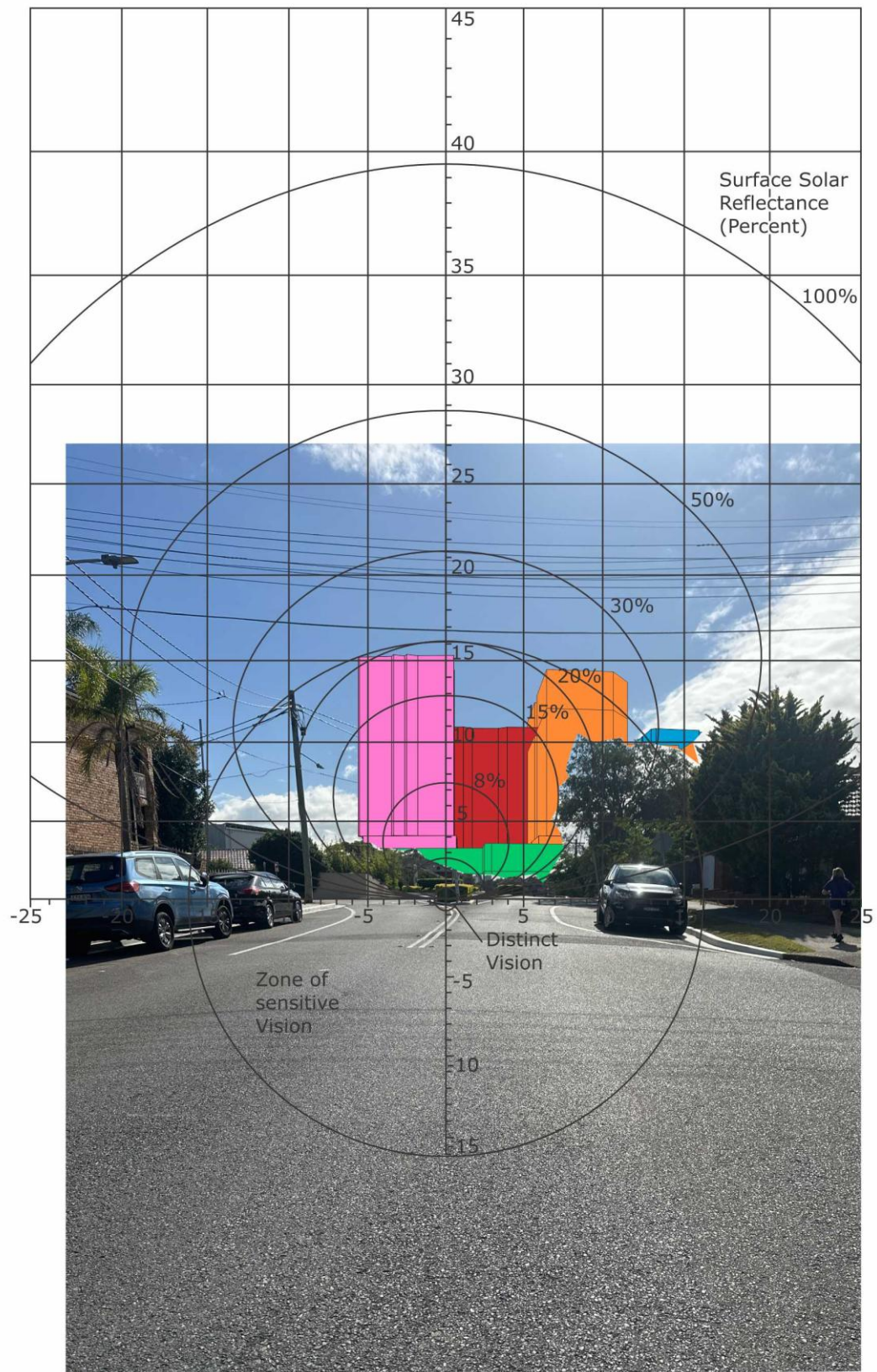


Figure A.15: Glare Overlay of the Viewpoint at Point 15

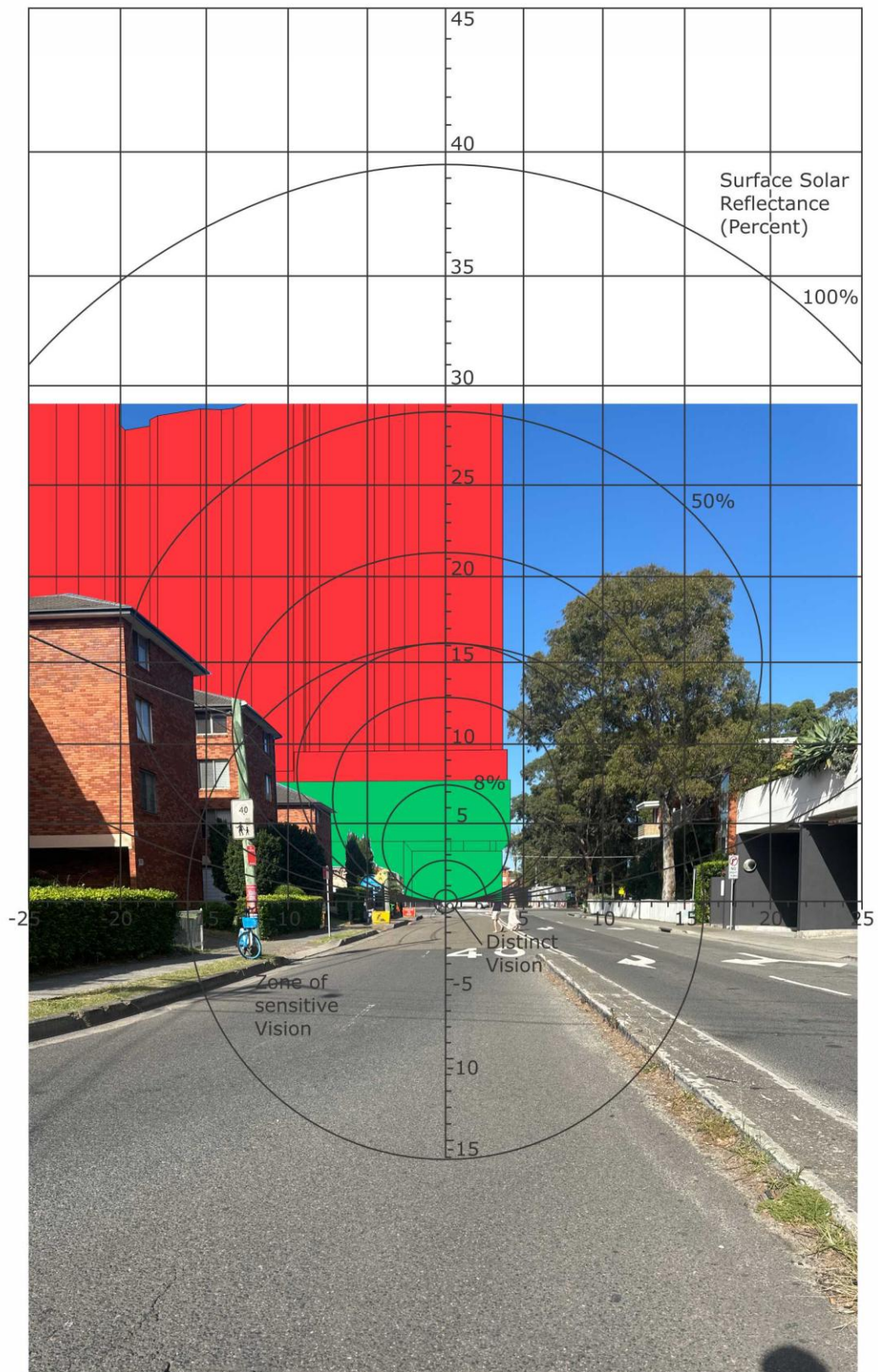


Figure A.16: Glare Overlay of the Viewpoint at Point 16



Figure A.17: Glare Overlay of the Viewpoint at Point 17

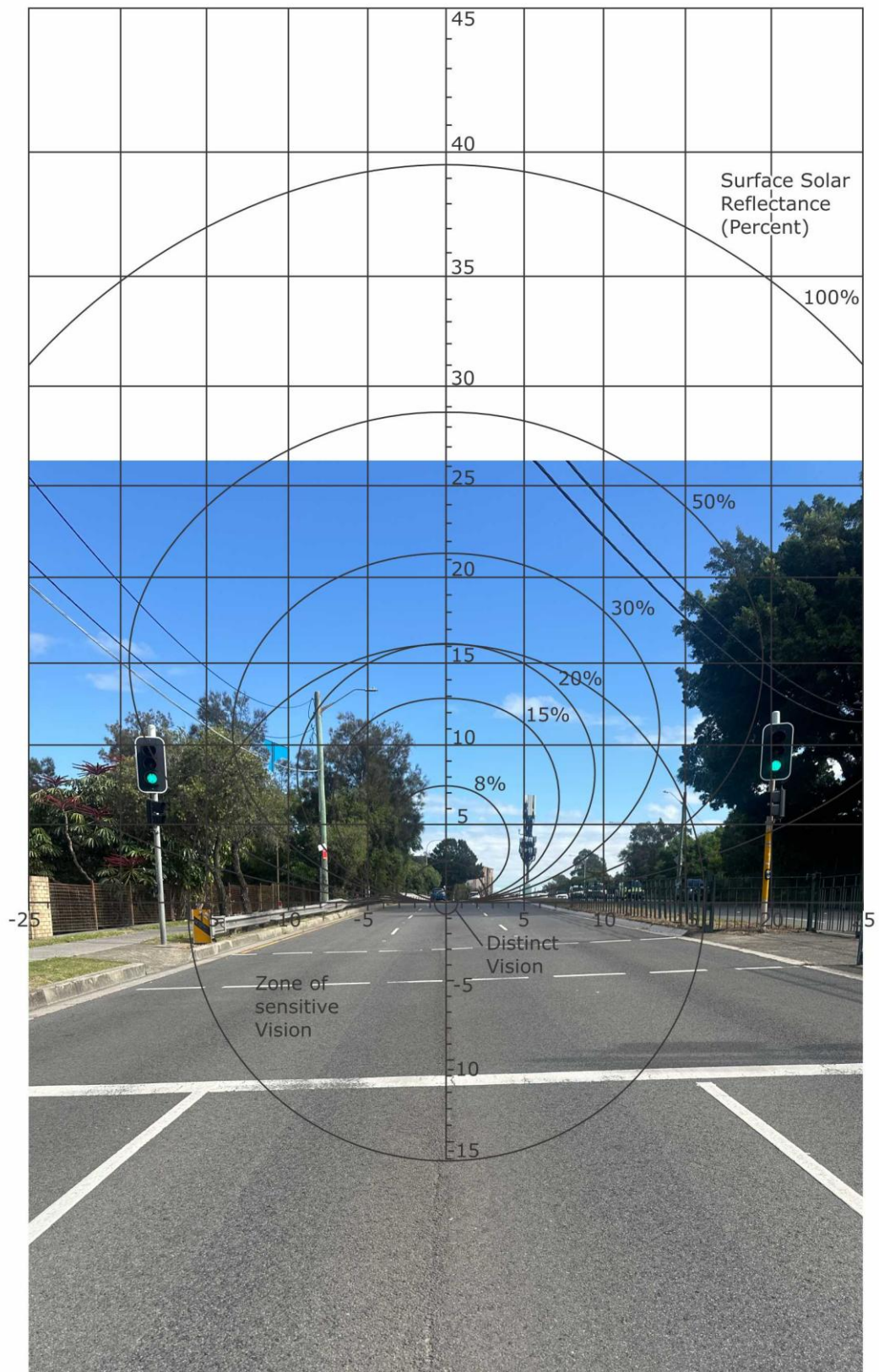


Figure A.18: Glare Overlay of the Viewpoint at Point 18

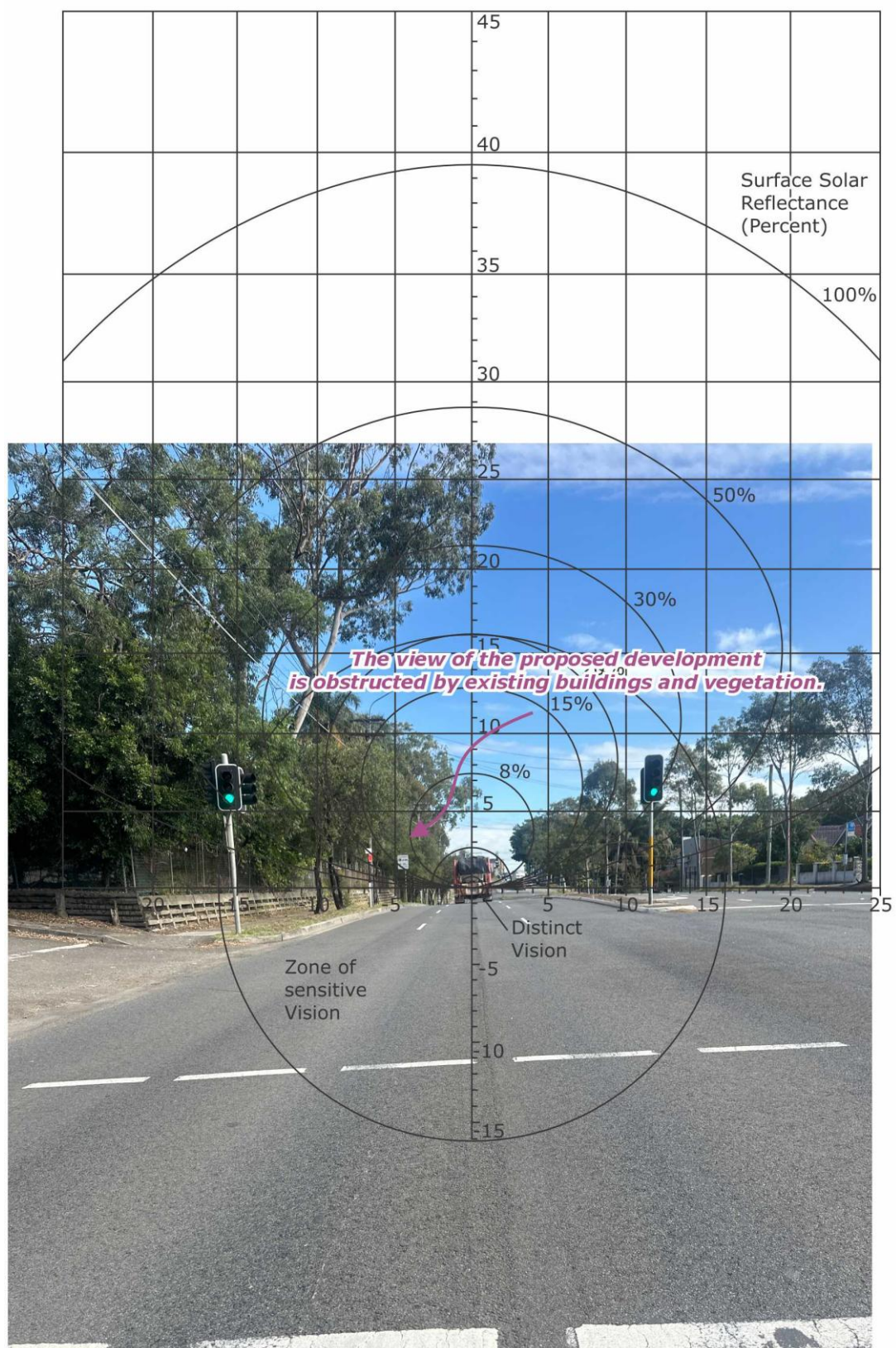


Figure A.19: Glare Overlay of the Viewpoint at Point 19

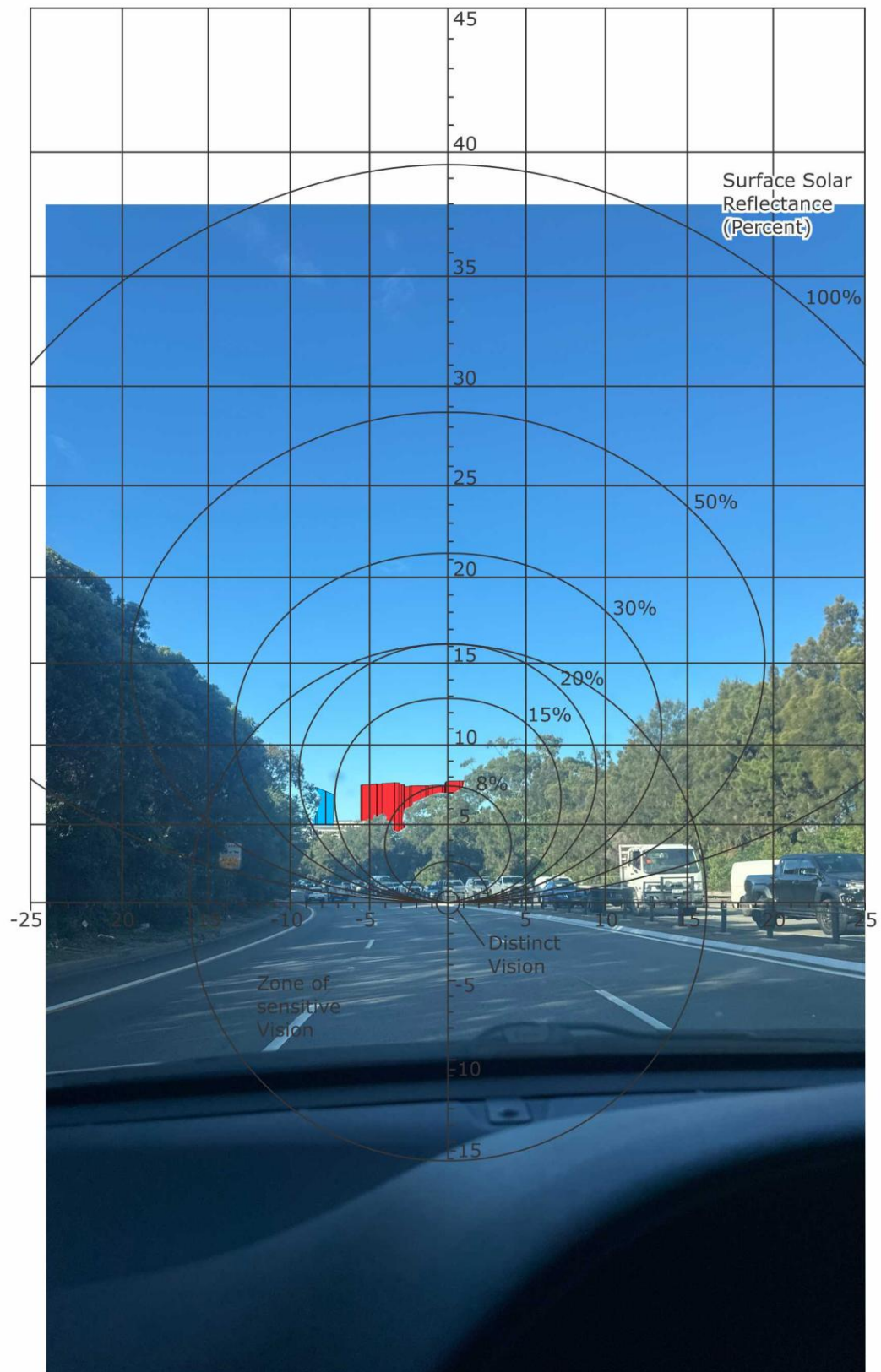


Figure A.20: Glare Overlay of the Viewpoint at Point 20

APPENDIX B STANDARD SUN CHART FOR THE REGION

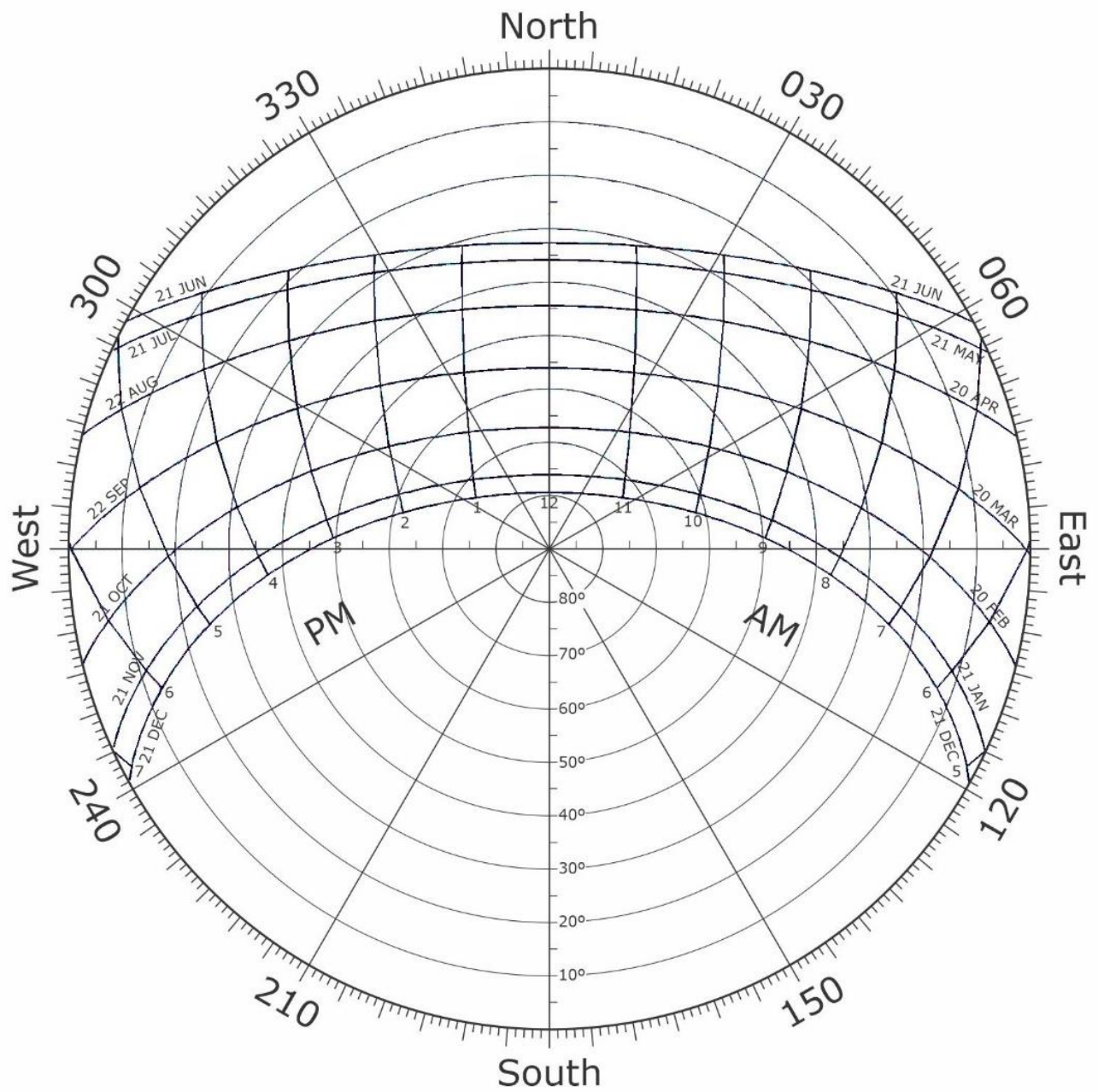


Figure B.1: Standard Sun Chart for the Sydney Region