



Appendix A – Reflectivity Analysis & Imageries

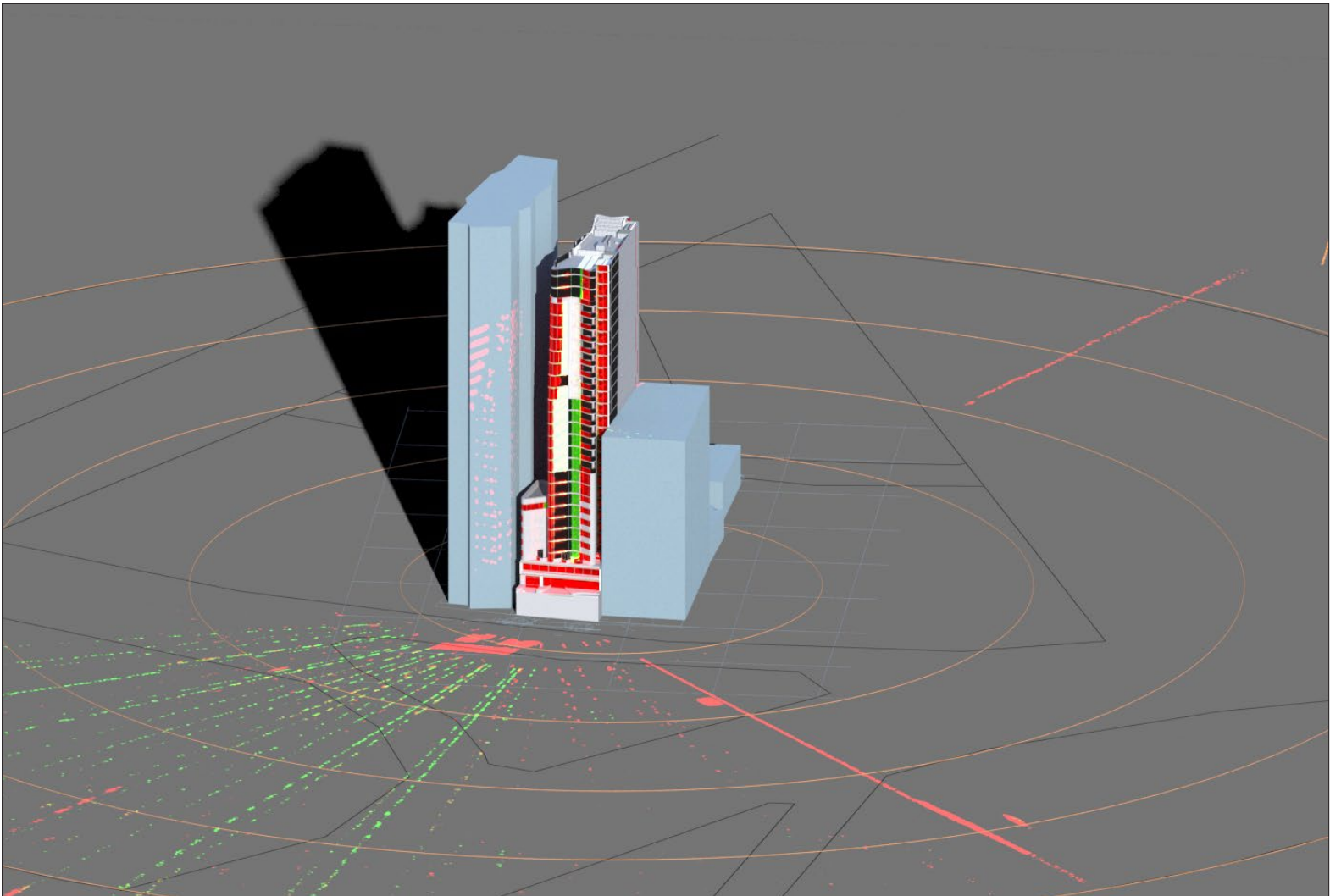
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PORT PHILLIP PLANNING SCHEME

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Date: 20/02/2024

REFLECTIVITY ANALYSIS

28 - 32 Albert Road
SOUTH MELBOURNE

ANNEXURE TO REFLECTIVITY REPORT



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CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

- Glass - MAIN
- Glass - CONCAVE SECTIONS

TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 01
DATE : 29.06.23
VERSION : 02
REF : 2049

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REFLECTIVITY ANALYSIS

28 - 32 Albert Road
SOUTH MELBOURNE

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STAGE 1 REFLECTIVITY ANALYSIS

MID WINTER	05 - 09
EQUINOX	10 - 15
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STAGE 2 GLARE ANALYSIS

Location FG - Albert Rd Intersection to south of site	25-30
Location G - Albert Rd South	31-33
Location F - Albert Rd (In Front)	34-37
Location B - Park and Rear	40-41

NOTES

1. Trees, landscape omitted from calculations
2. True north used as solar north.
3. Terrain is approximate outside of the site
4. Adjoining Neighbour Buildings modelled from survey to enable sun sheilding from immediate area. Further supported by Aerometrex Lidar modelling.
5. Limited survey information available on adjoining sites.
6. Time Zone - AEST unless noted (Aust. Eastern Standard Time - AEST)

DATA SOURCE [in order of precedence]

- FBX file provided by Elenberg Fraser Architecture, MAY2023
- Architectural Plans - Elenberg Fraser Architecture, MAY2023
- Aerometrex Urban 3D Model - Lidar Scan date May 2022. Used for neighbour overshadow projections.

CONTENTS and DATA

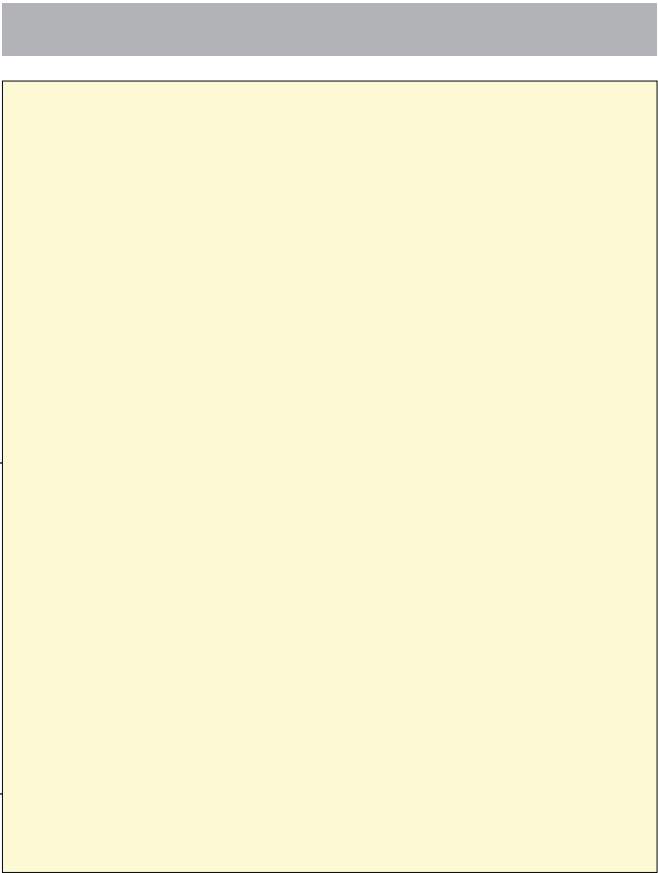
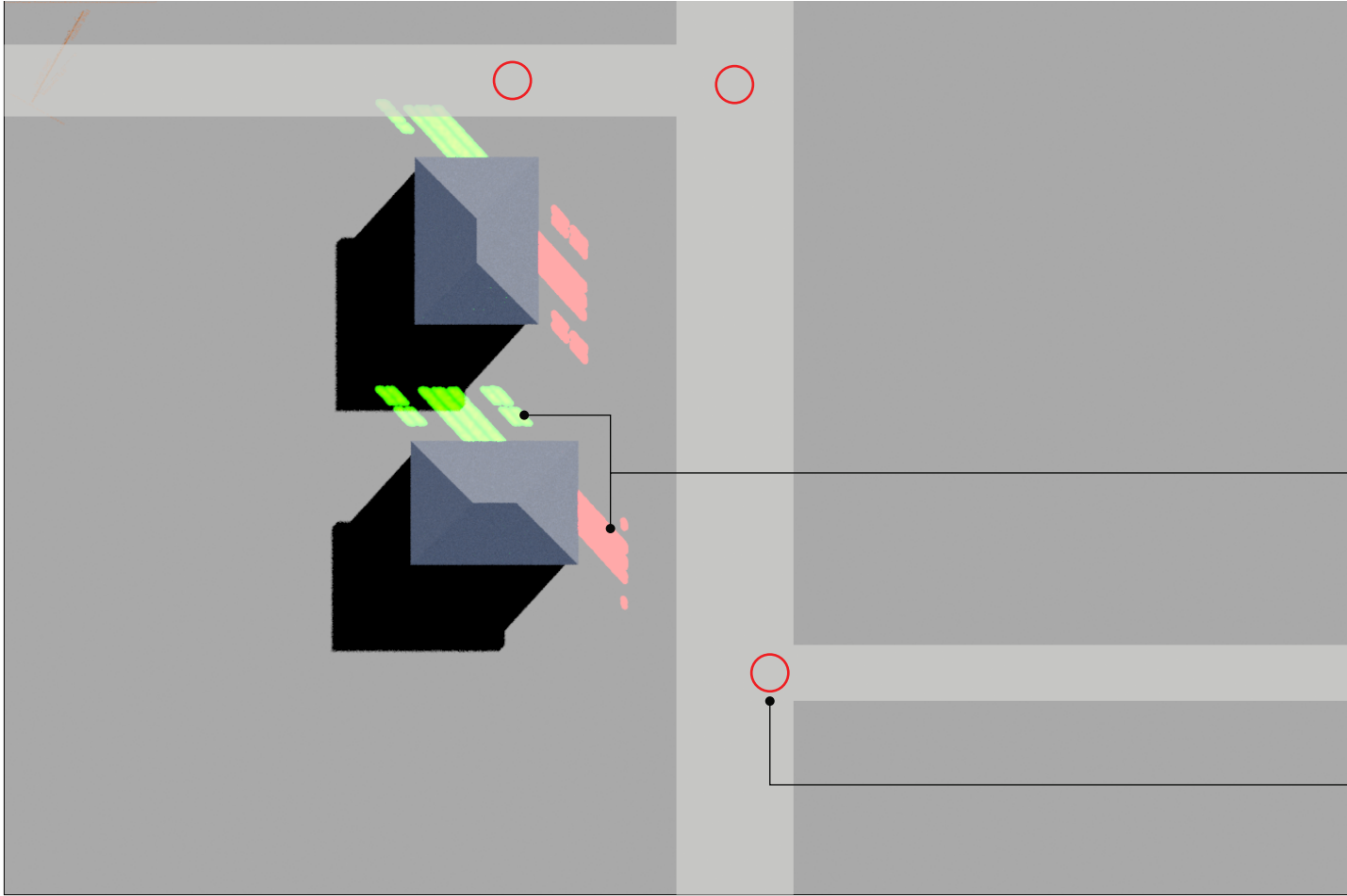
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COLOUR CODE KEY

- SAMPLE GLASS A
- SAMPLE GLASS B

HOW TO READ GUIDE

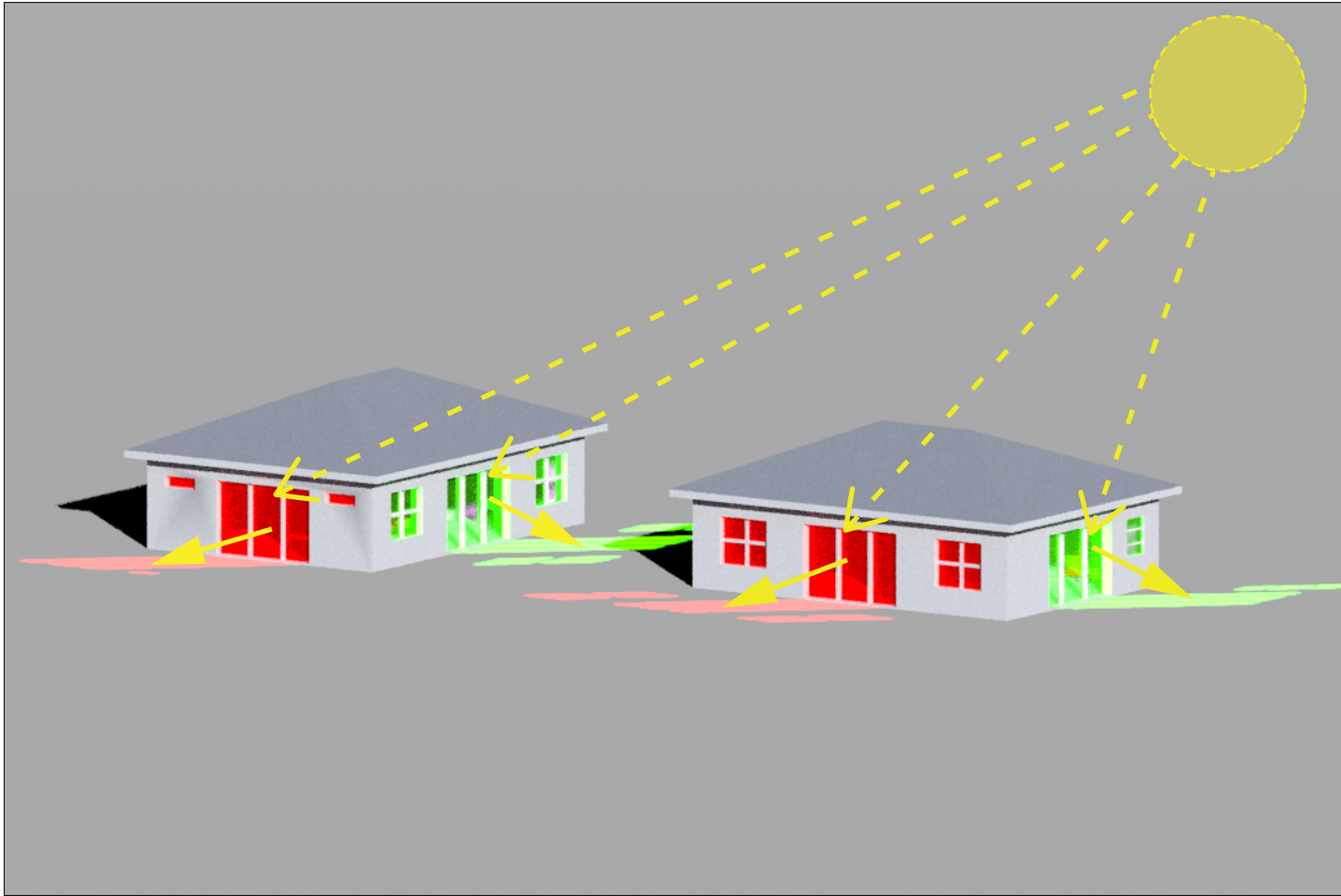
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- | | | | |
|-----|---------------------------------------|-----|---------------------|
| (A) | 250m Radius - Stage 1 | (F) | Albert Street North |
| (B) | Corner Park St & Palmerston Cres | (G) | Albert Street South |
| (C) | Park St | | |
| (D) | Park St & St Kilda Rd | | |
| (E) | Corner Albert St (Nrth) & St Kilda Rd | | |

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AREAS OF INTEREST

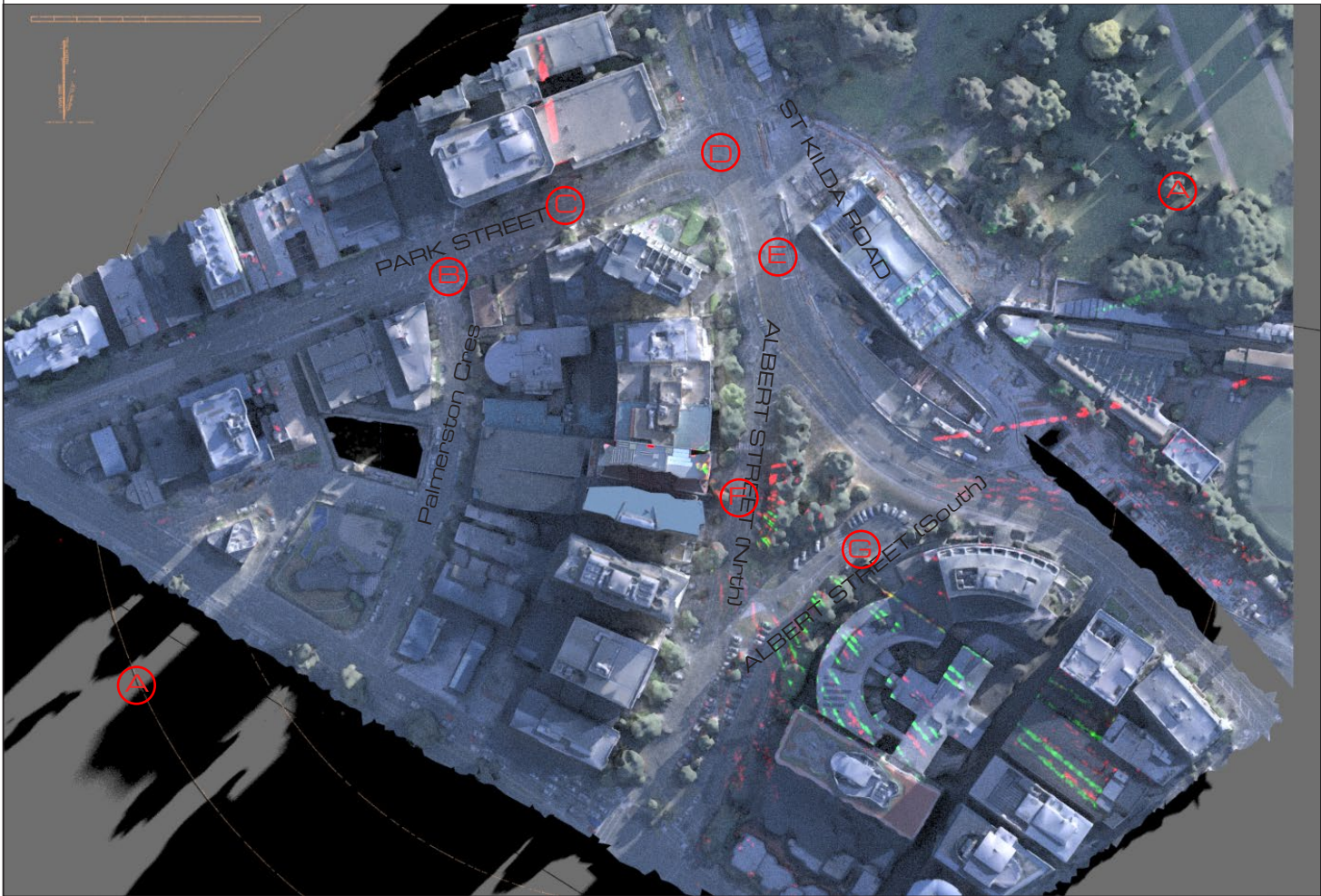
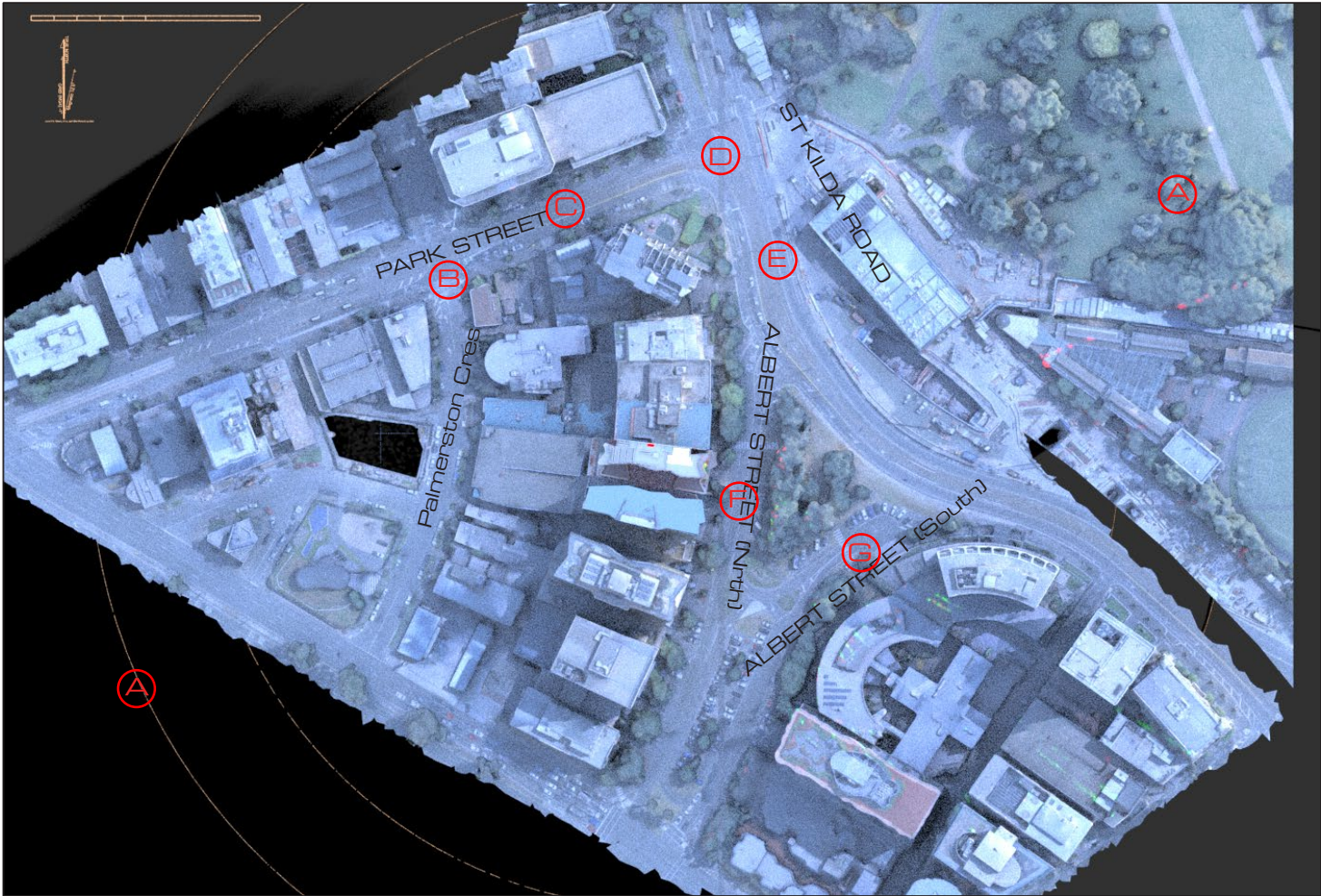
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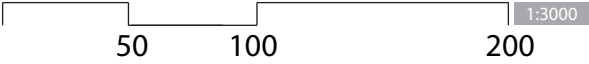
0800

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0900

F - In Front of building remains clear until height
above drivers line of vision - NO IMPACT





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COLOUR CODE KEY

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- Glass - CONCAVE SECTIONS



WINTER SOLSTICE 21 JUNE

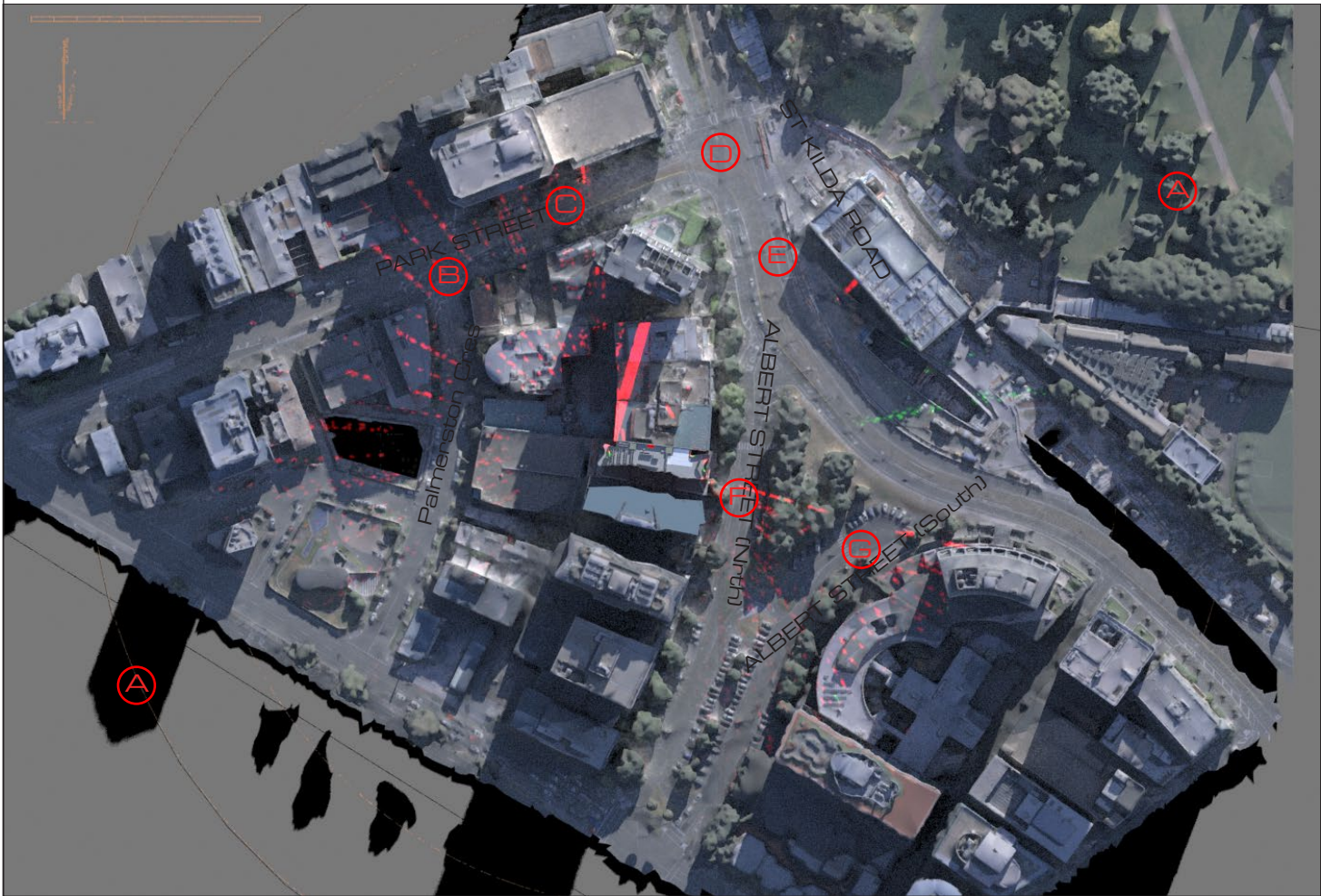
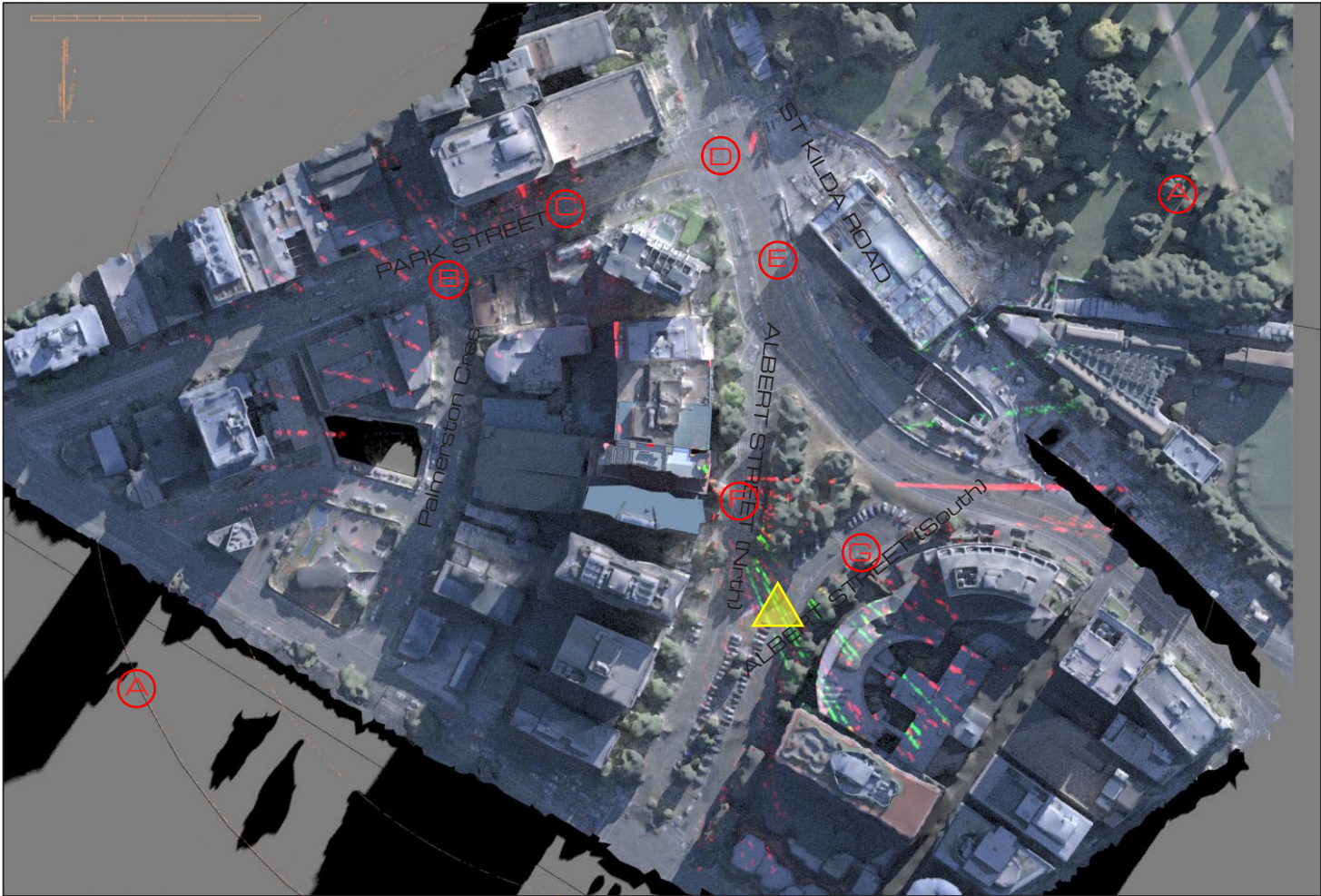
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F - G INTERSECTION - REFER TO
ADVANCED GLARE CALCULATION

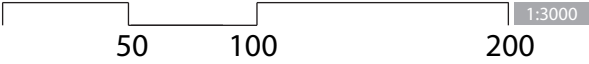
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1 1 0 0

F & G- In Front of building remains clear until
height above drivers line of vision - NO IMPACT

B & C - Park Street - minor reflectance likely
to dissapate. View Angle from the side and
not considered possible Glare Hazard. No
Calculation required. - NO IMPACT



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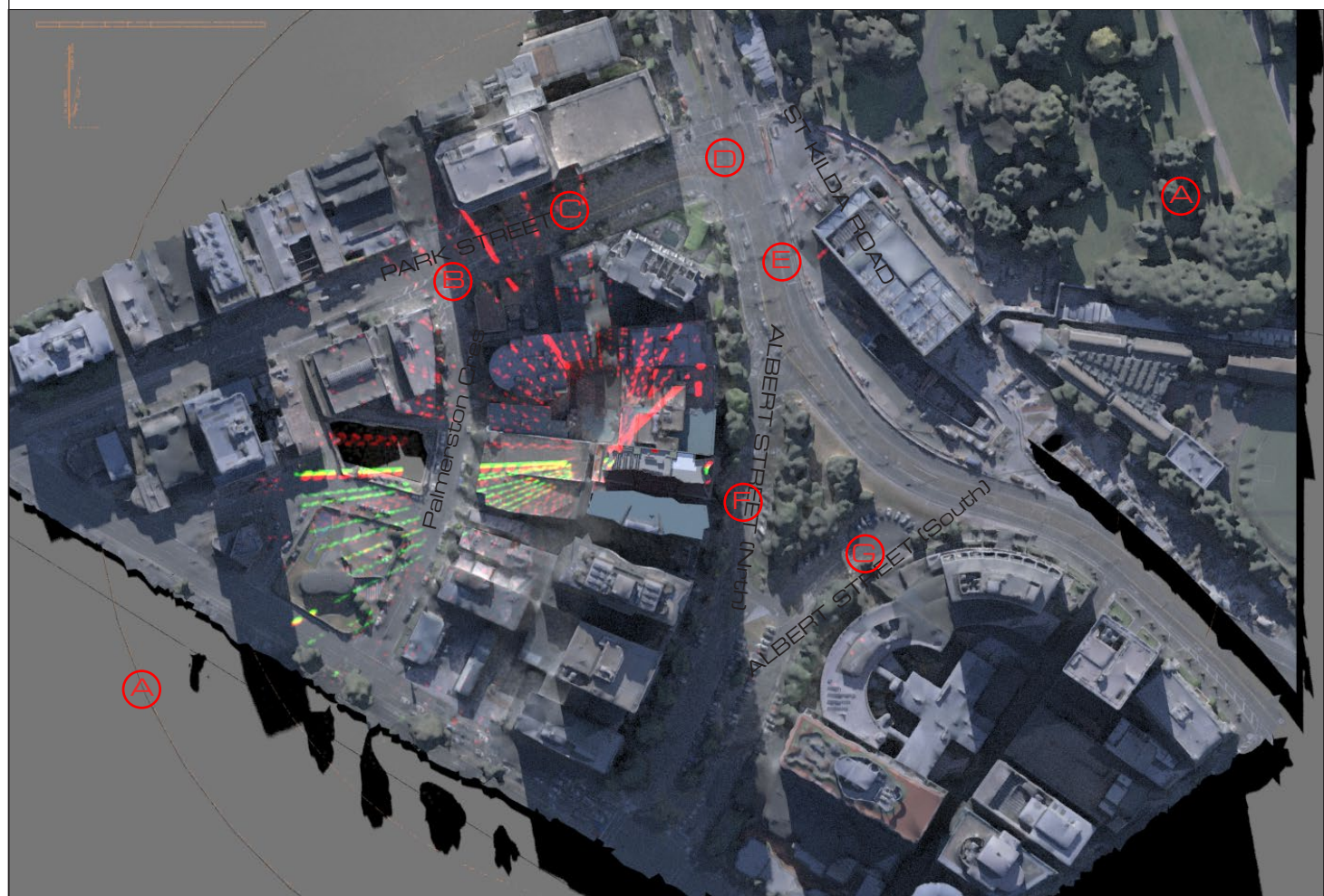
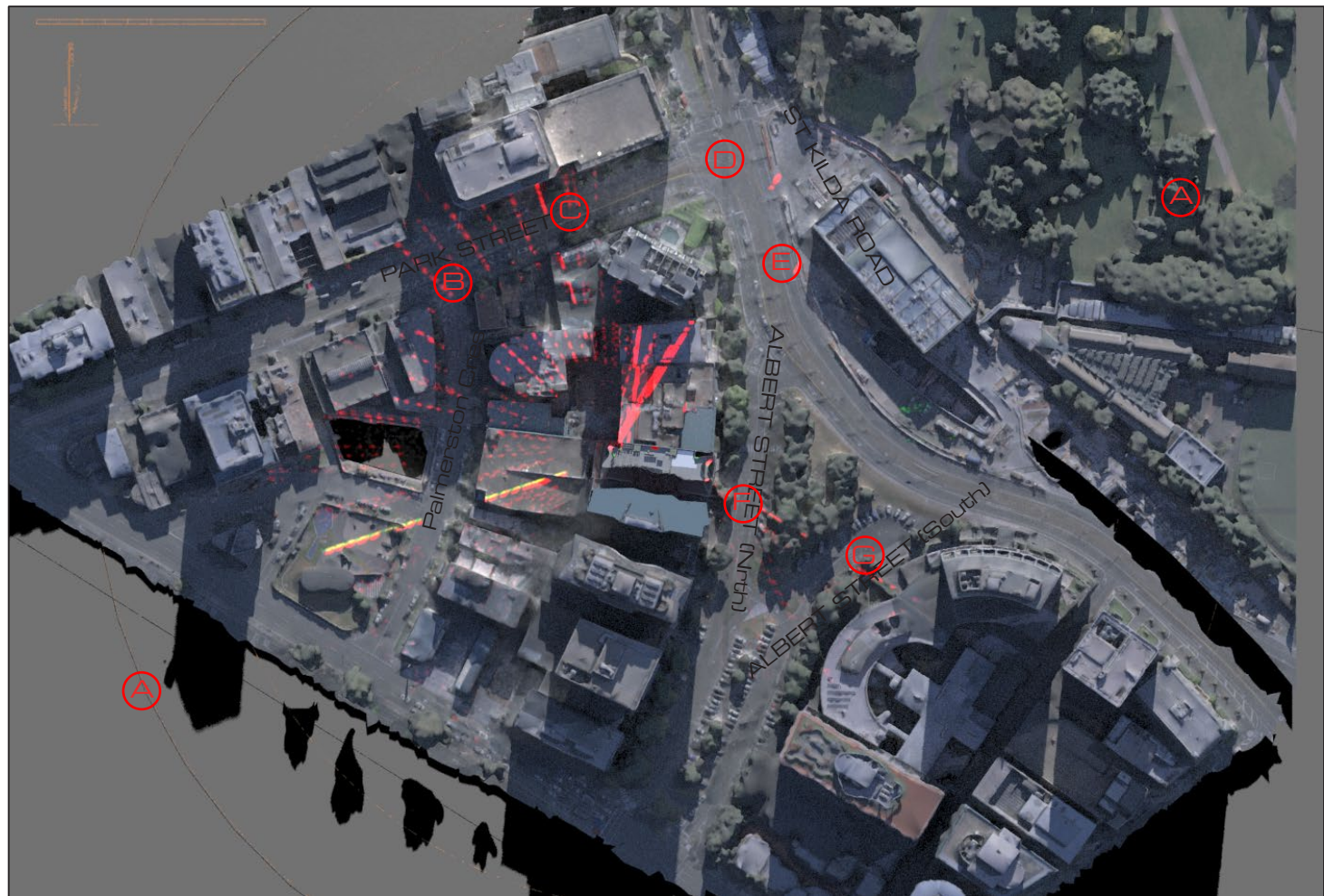
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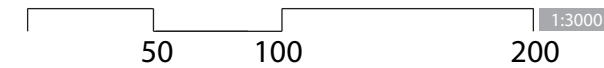
B & C - Park Street - minor reflectance likely to dissapate. View Angle from the side and not considered possible Glare Hazard. No Calculation required. - NO IMPACT

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1 300

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COLOUR CODE KEY

Glass - MAIN

Glass - CONCAVE SECTIONS



NORTH

WINTER SOLSTICE 21 JUNE

TITLE
REFLECTIVITY ANALYSIS

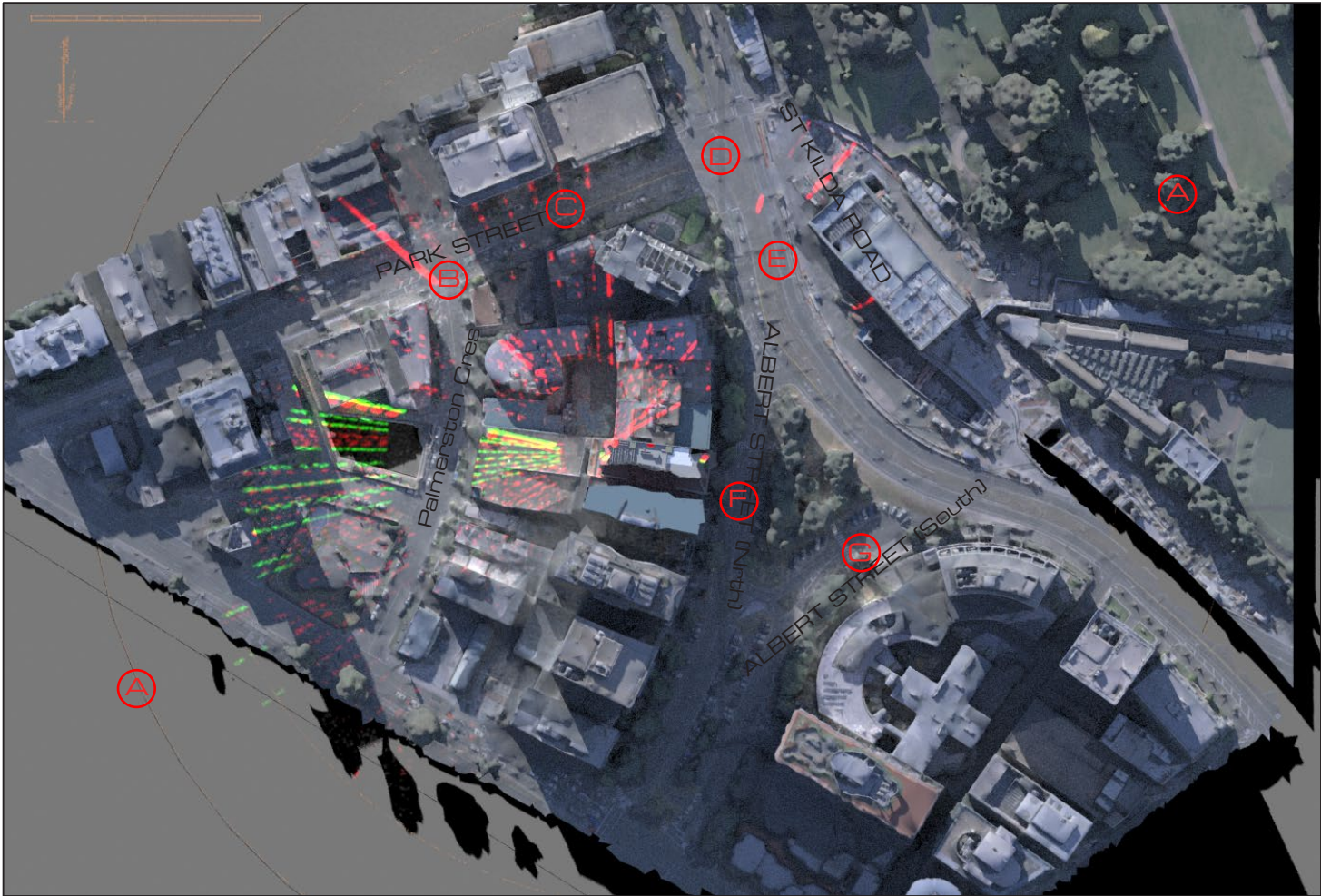
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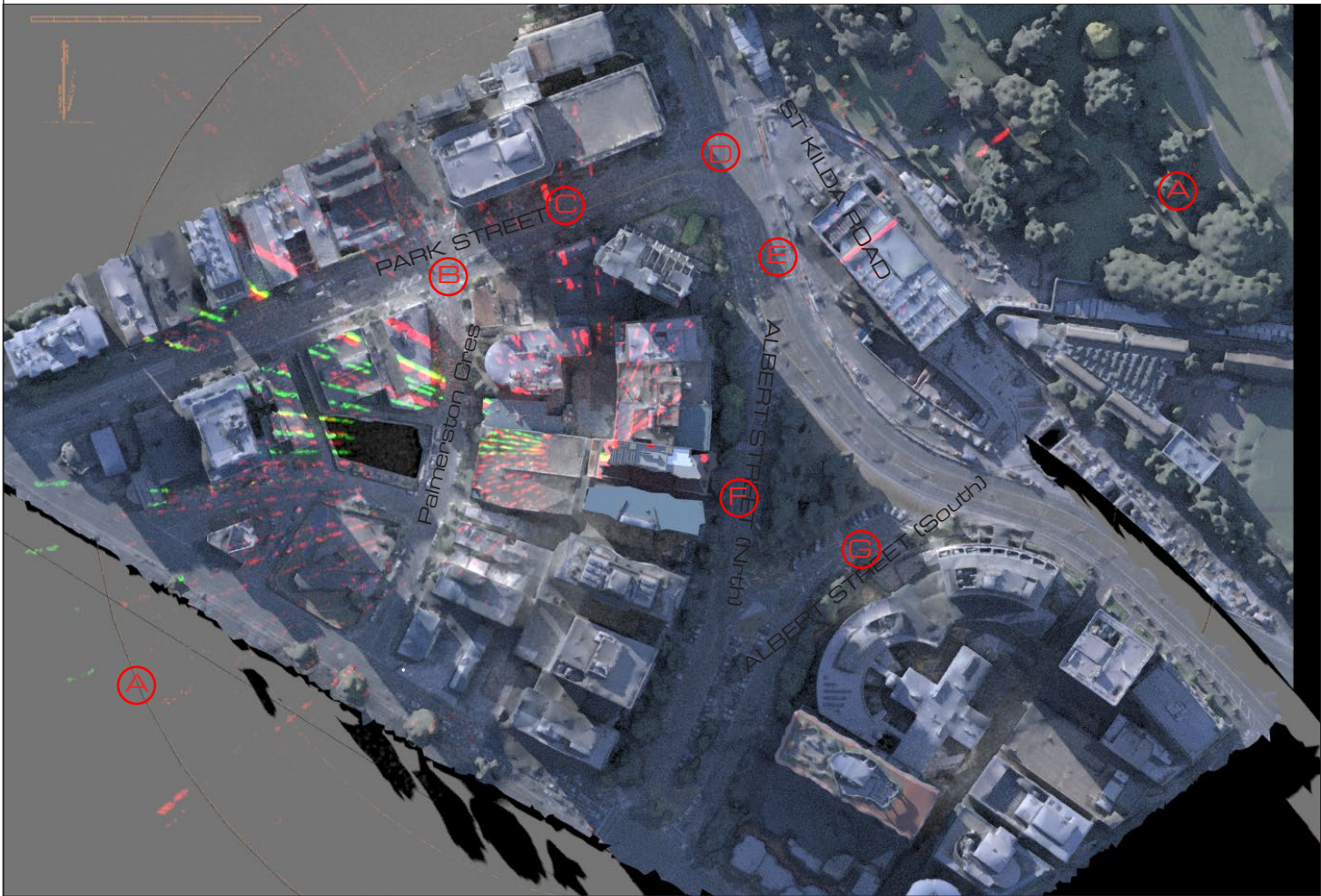


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WINTER SOLSTICE 21 JUNE

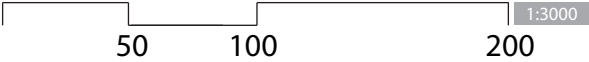
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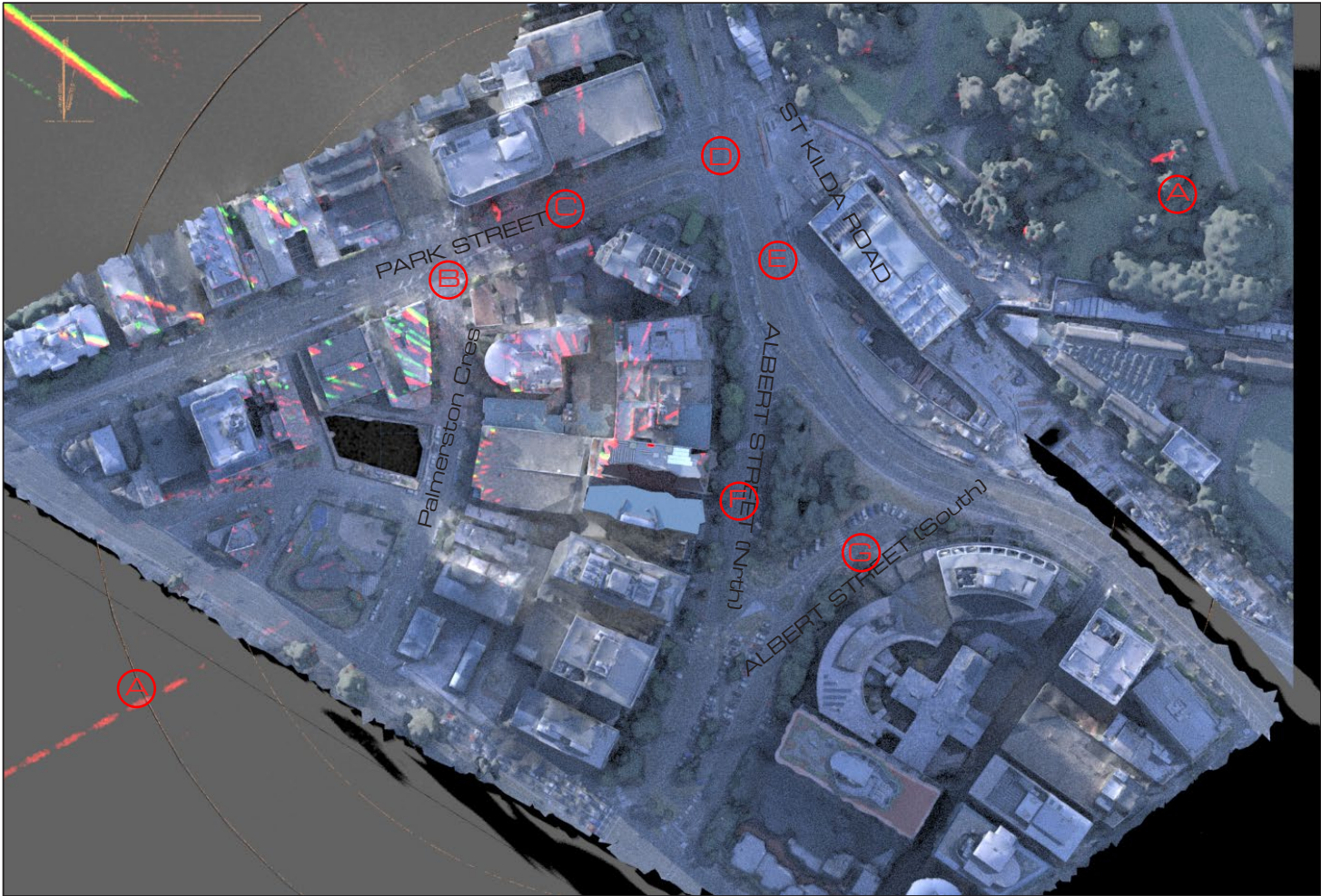
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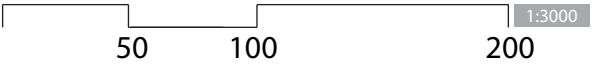
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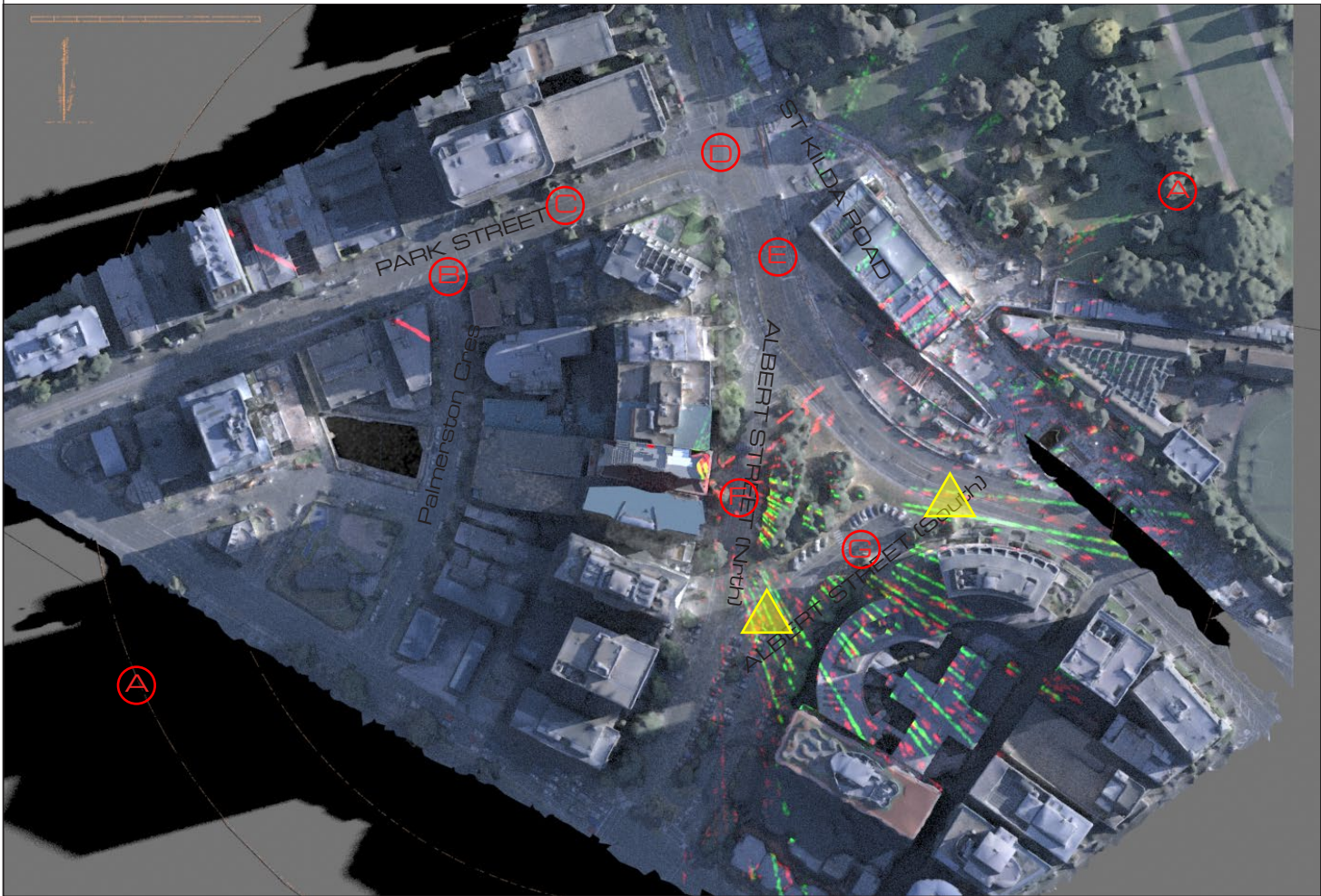
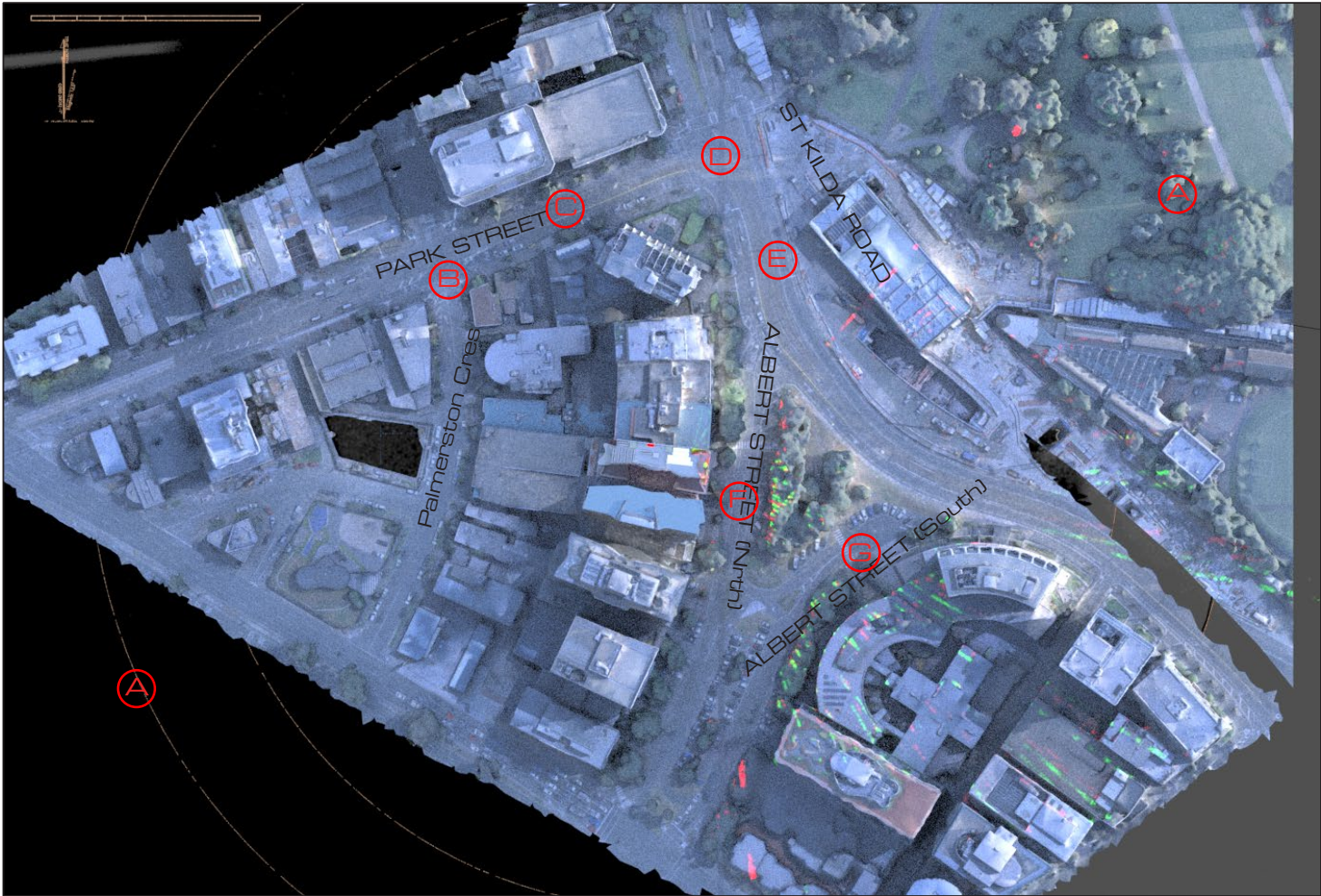
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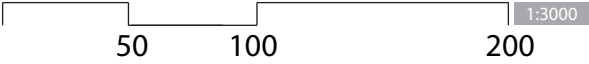
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0800

- ▲ F - G INTERSECTION - REFER TO
ADVANCED GLARE CALCULATION
- ▲ G INTERSECTION with StKilda Rd - REFER
TO ADVANCED GLARE CALCULATION



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COLOUR CODE KEY

- Glass - MAIN
- Glass - CONCAVE SECTIONS



EQUINOX 22 MARCH / SEPTEMBER

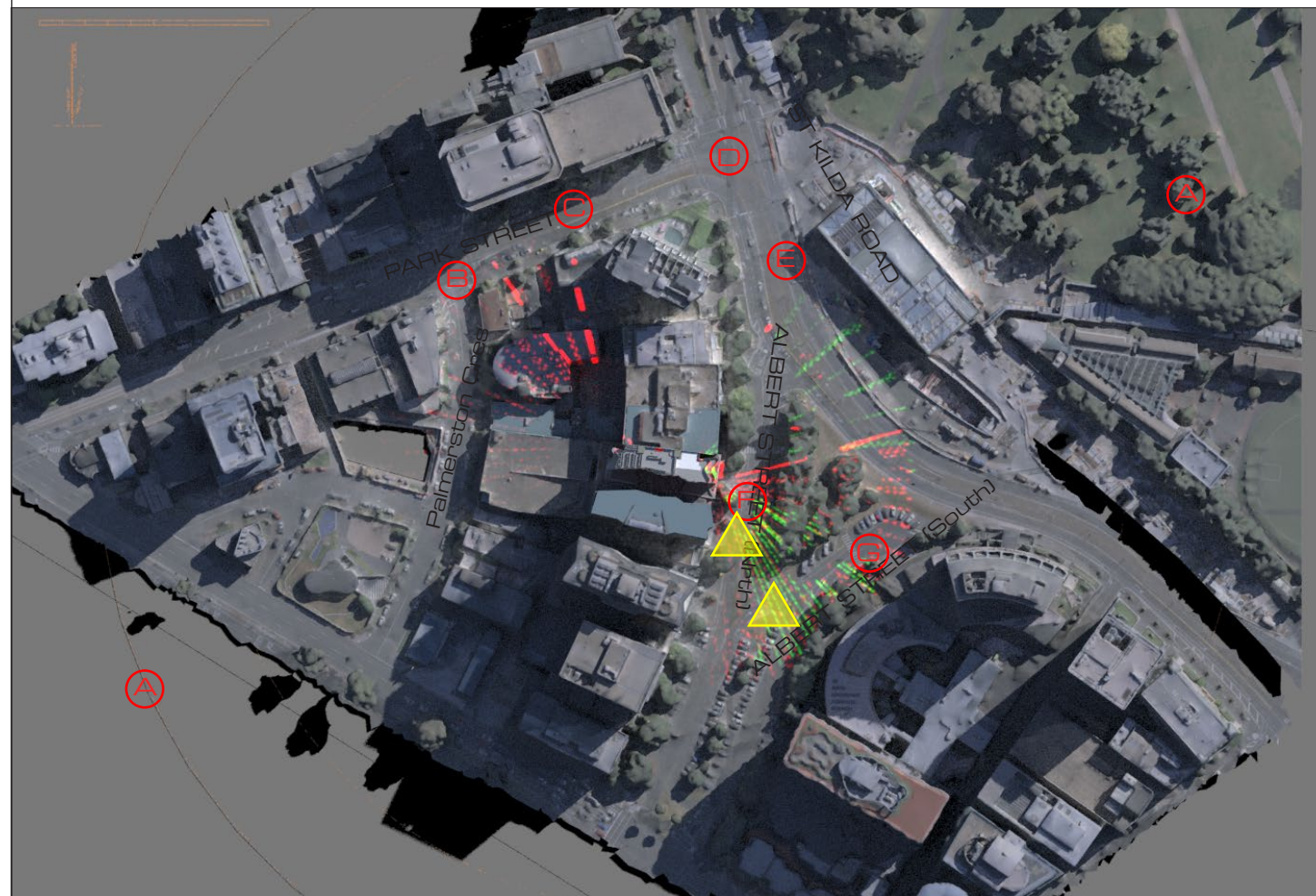
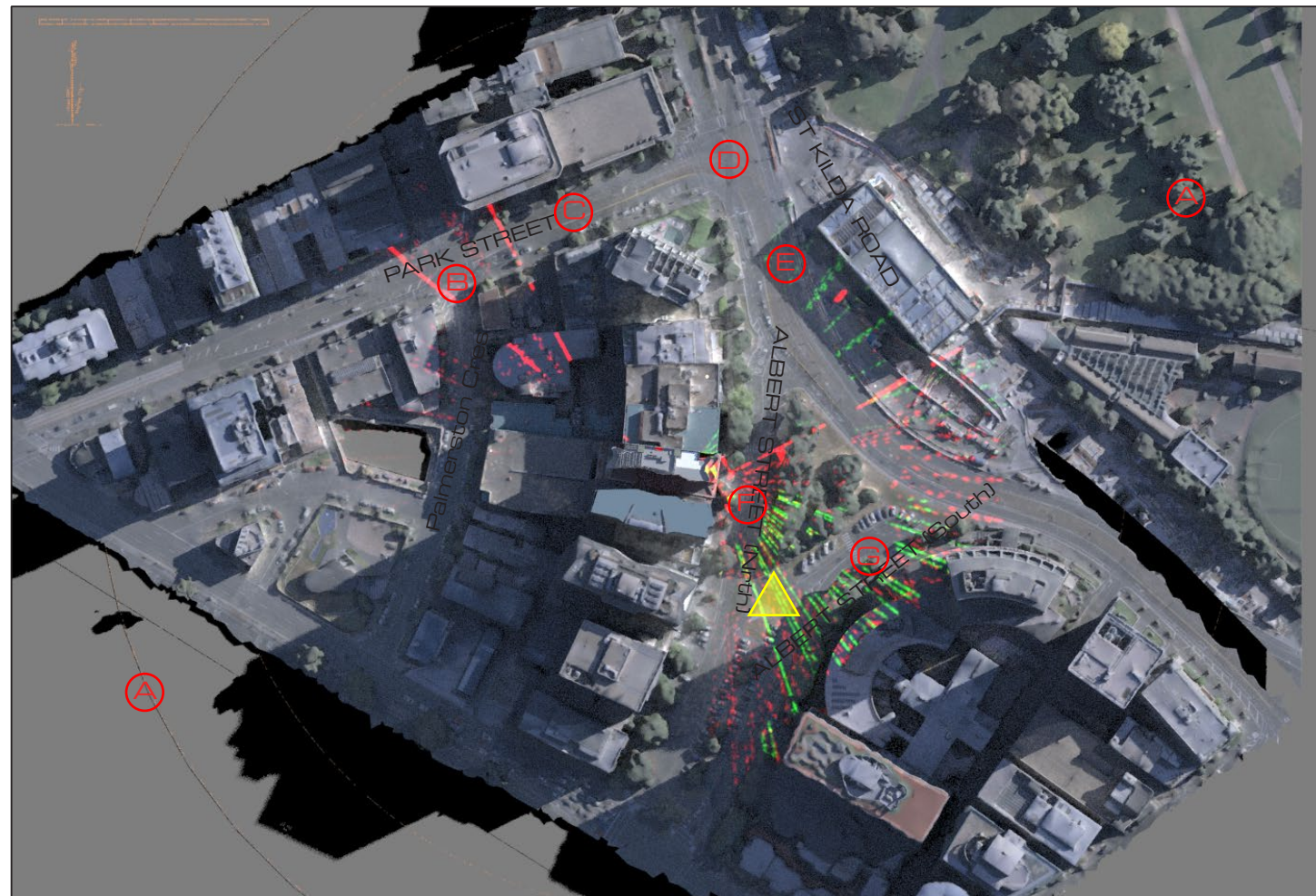
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0900

 F - G INTERSECTION - REFER TO ADVANCED GLARE CALCULATION

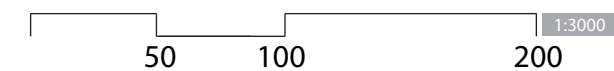
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COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS



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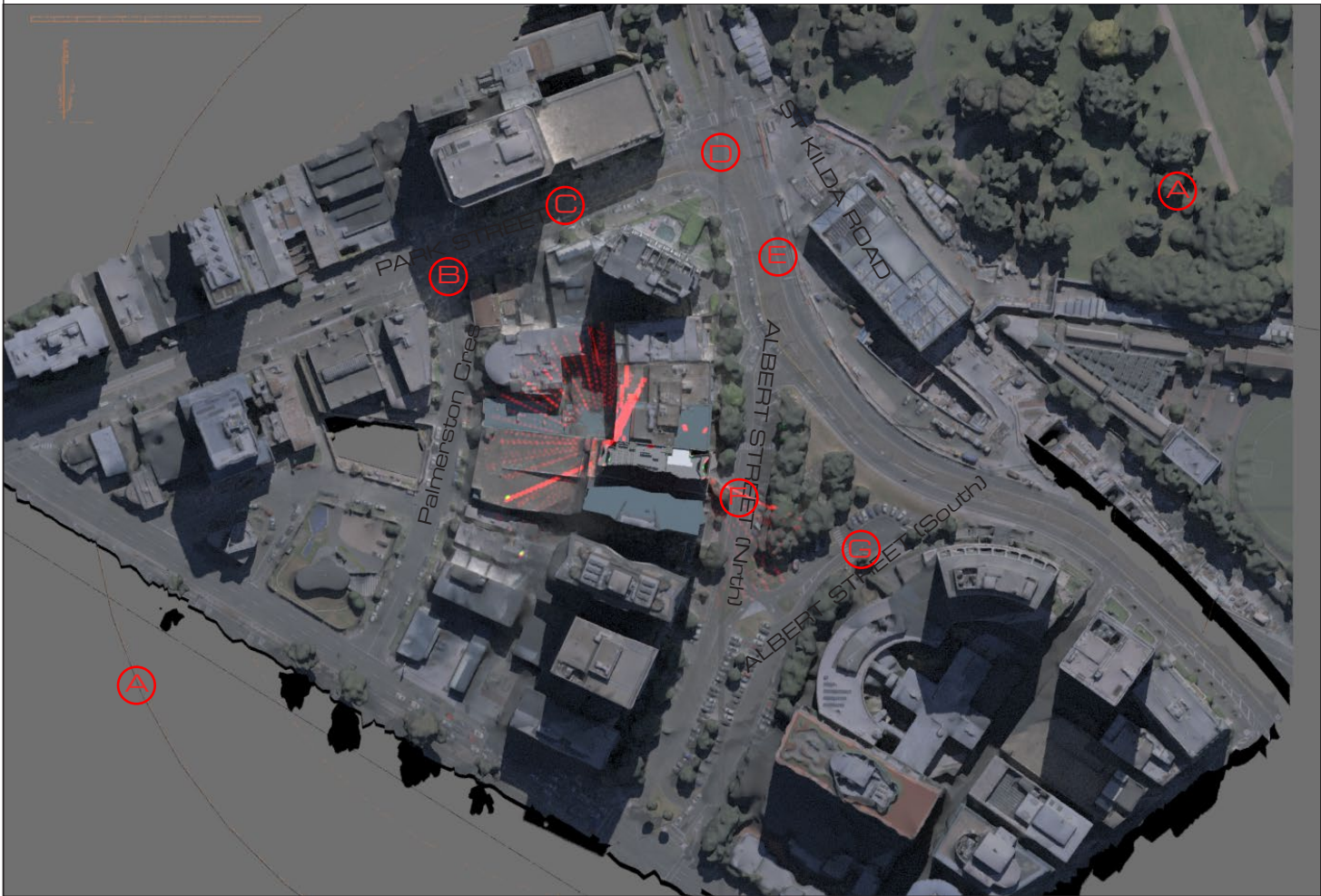
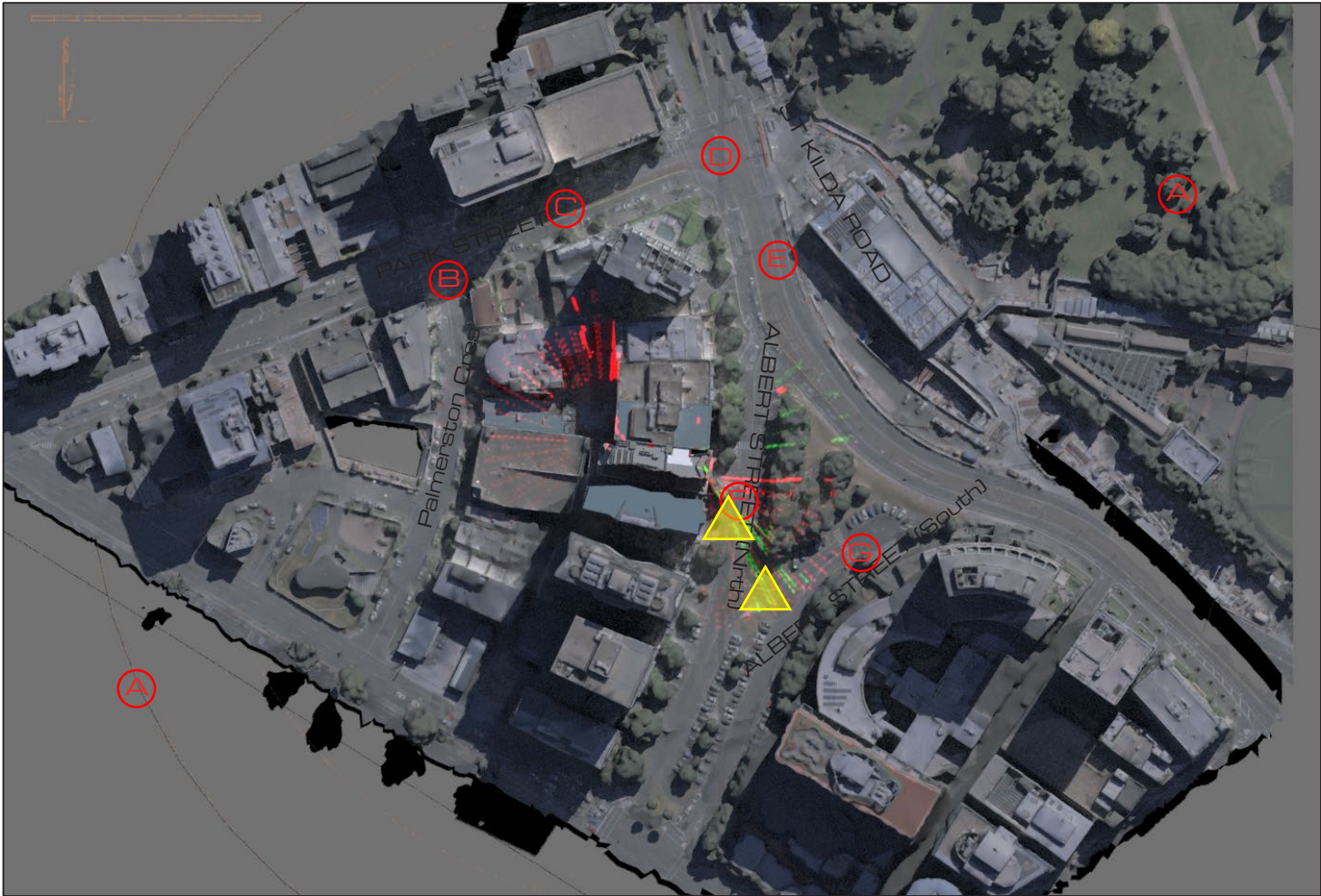
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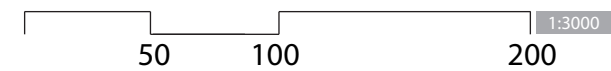
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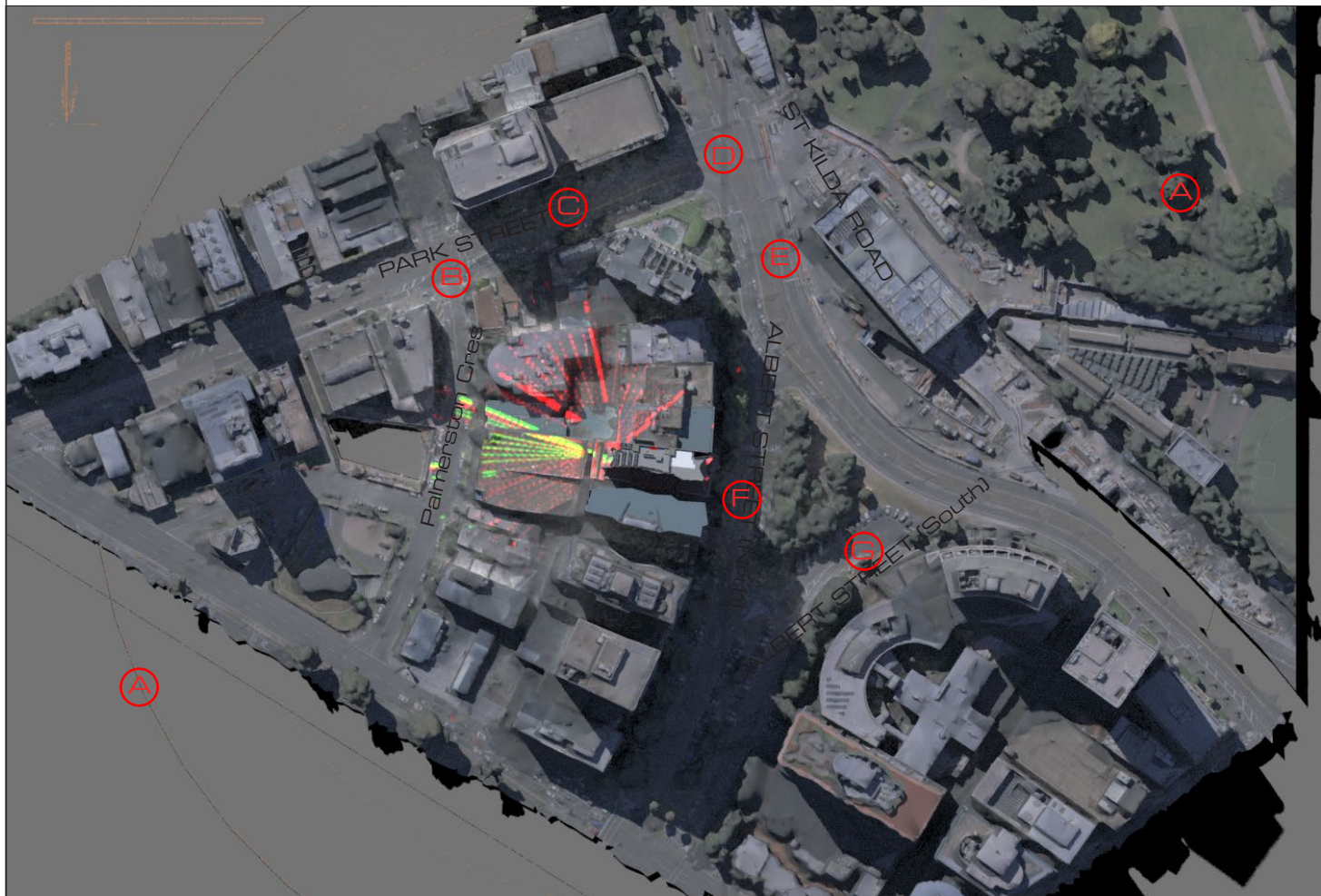
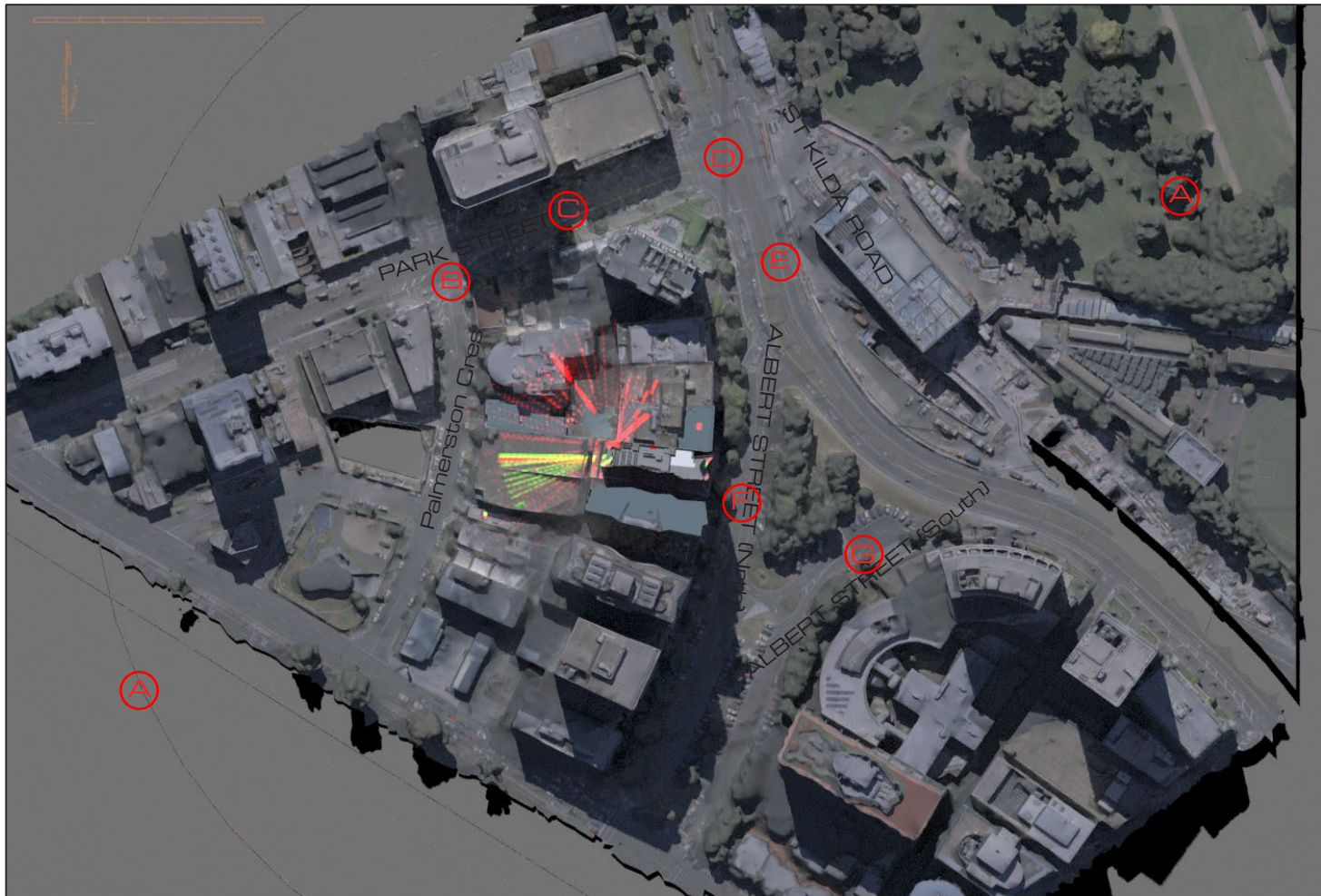
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1300

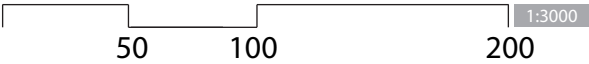
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1400

B - Palmerston St- View Angle from the side
and not considered possible Glare Hazard. No
Calculation required. Refer 1500 hour time for
calculation supporting assumption -
NO IMPACT



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COLOUR CODE KEY

Glass - MAIN
Glass - CONCAVE SECTIONS



EQUINOX 22 MARCH / SEPTEMBER

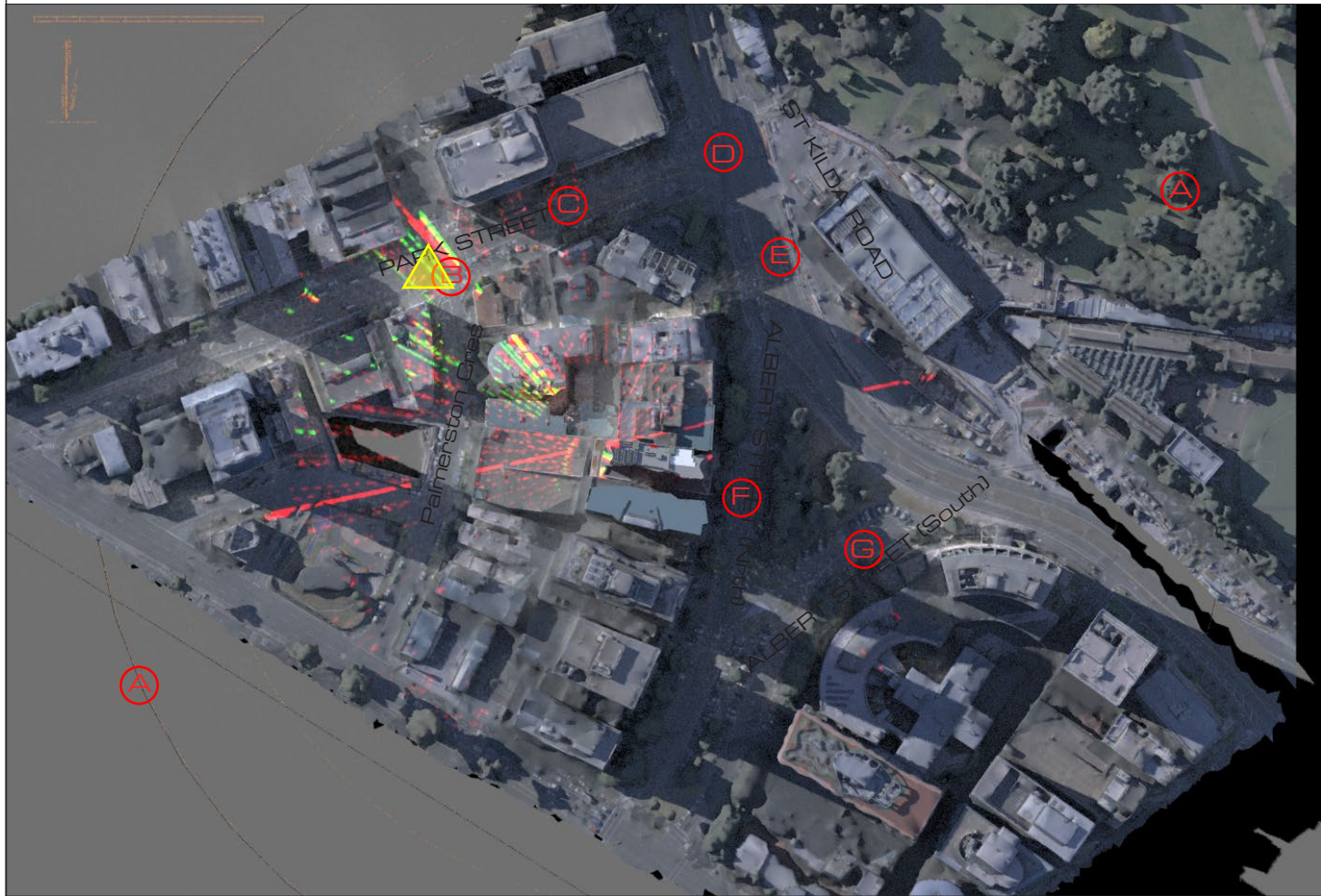
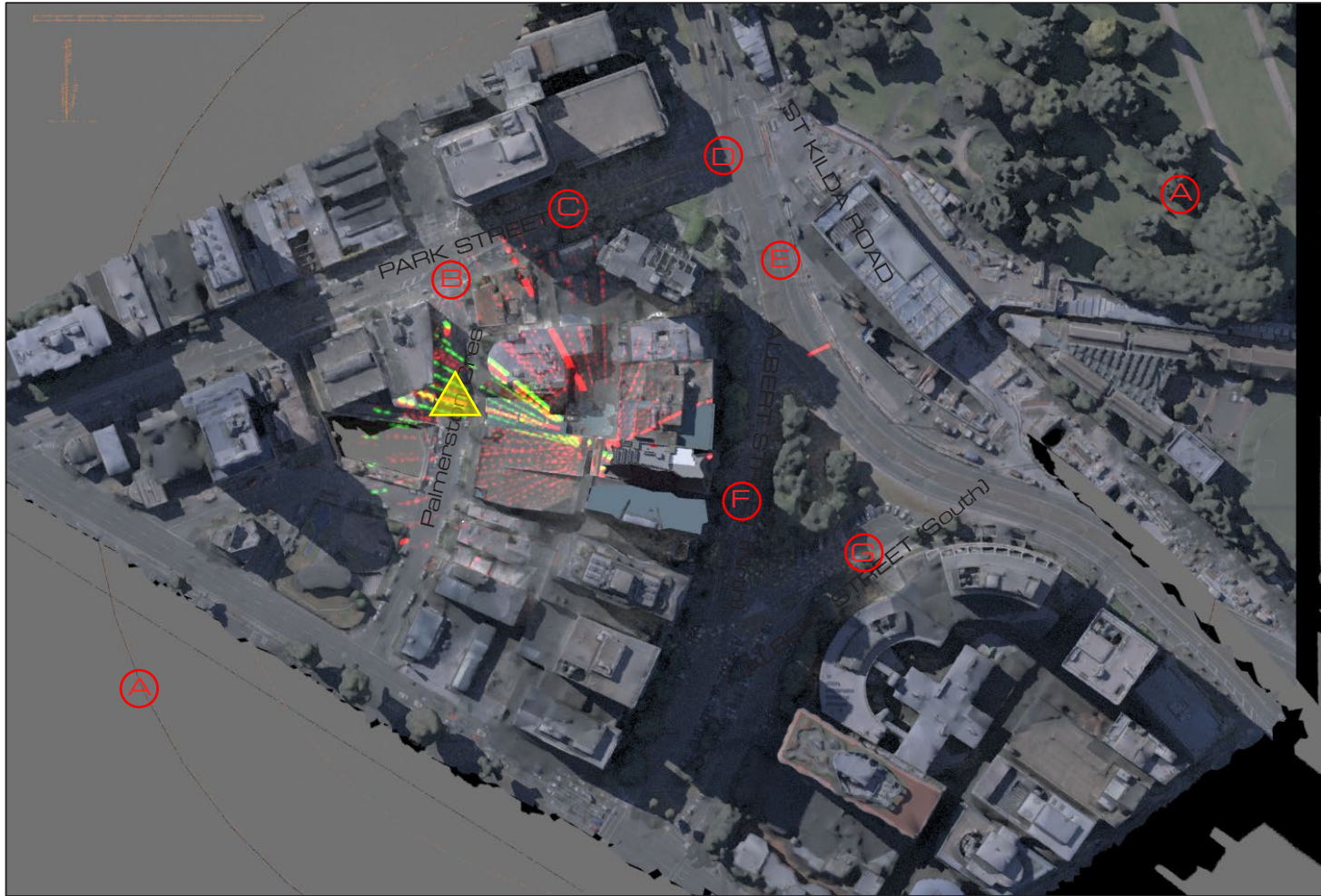
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1 500

△ B - REFER TO ADVANCED GLARE CALCULATION

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1 600

△ B - REFER TO ADVANCED GLARE CALCULATION

50 100 200 1:3000

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COLOUR CODE KEY

Red Glass - MAIN
Green Glass - CONCAVE SECTIONS



EQUINOX 22 MARCH / SEPTEMBER

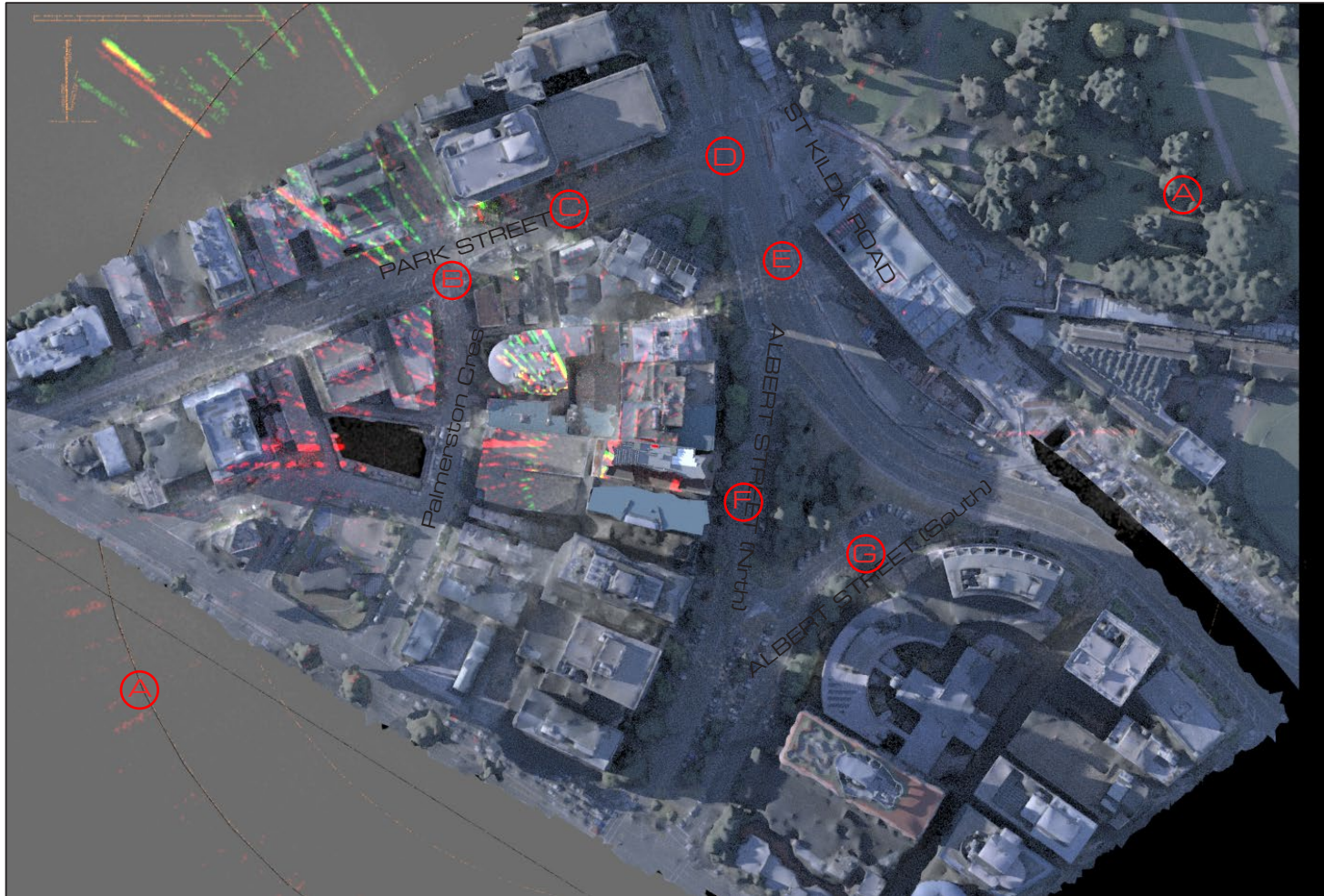
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1700

B & C - Park Street - minor reflectance likely to dissapate. View Angle from the side and not considered possible Glare Hazard. No Calculation required. - NO IMPACT



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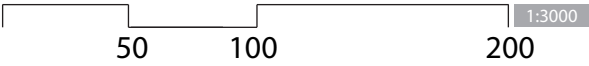
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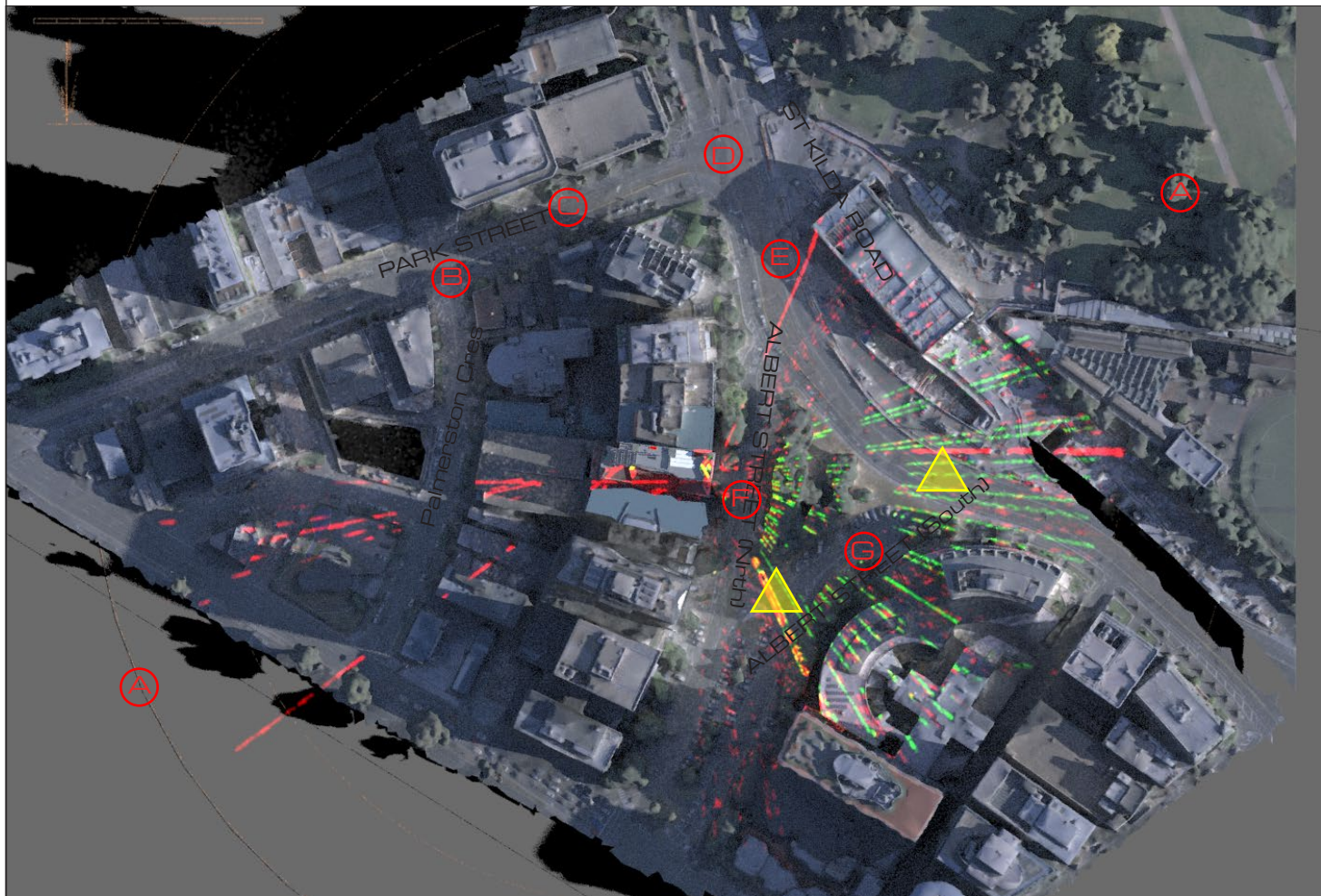
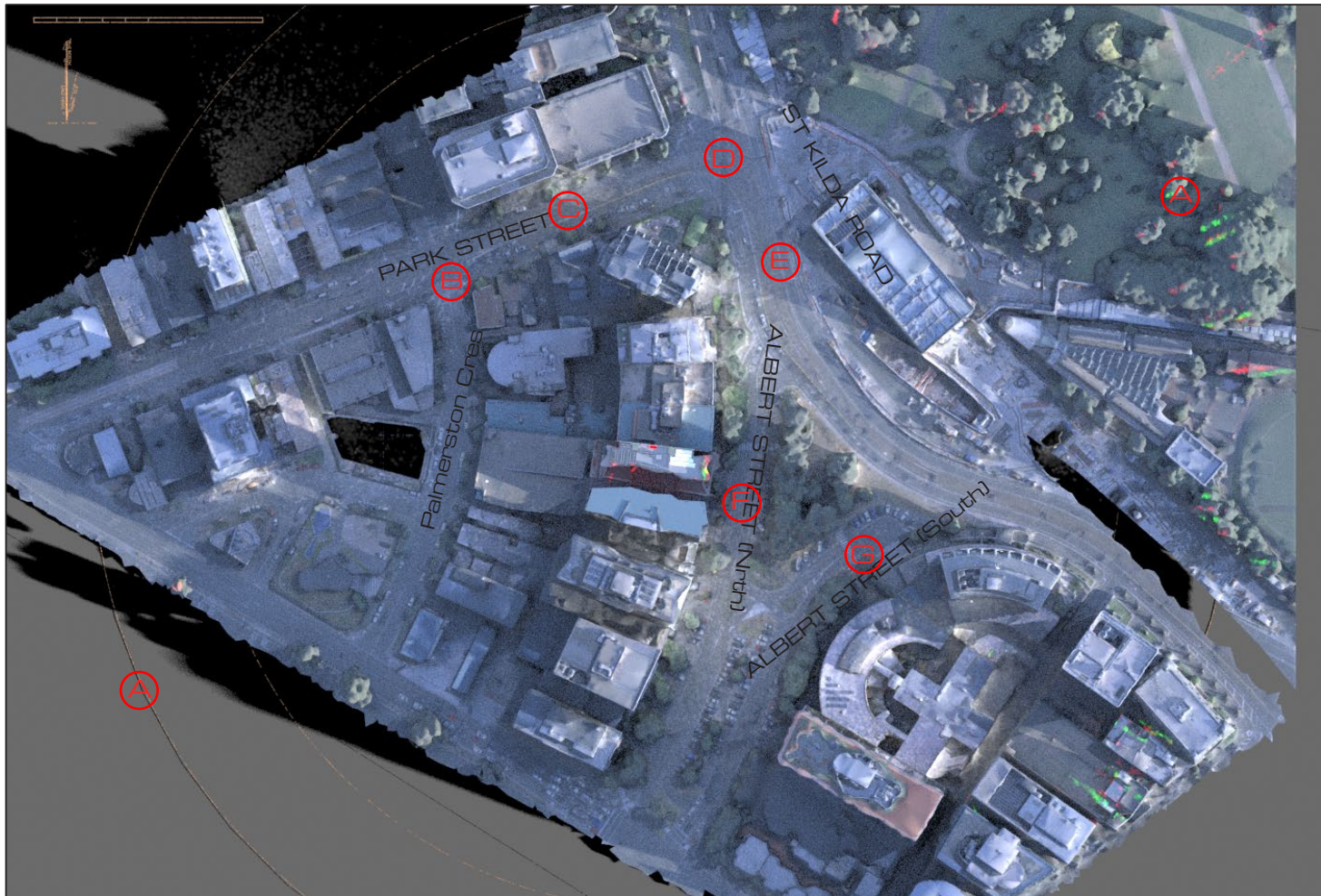
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REF : 2049

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024





0600

1.

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

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Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

0700

▲ F - G INTERSECTION - REFER TO
ADVANCED GLARE CALCULATION

▲ ST KILDA RD - REFER TO ADVANCED
GLARE CALCULATION

50 100 200 1:3000

CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

Red Glass - MAIN
Green Glass - CONCAVE SECTIONS



MID SUMMER 21 DECEMBER

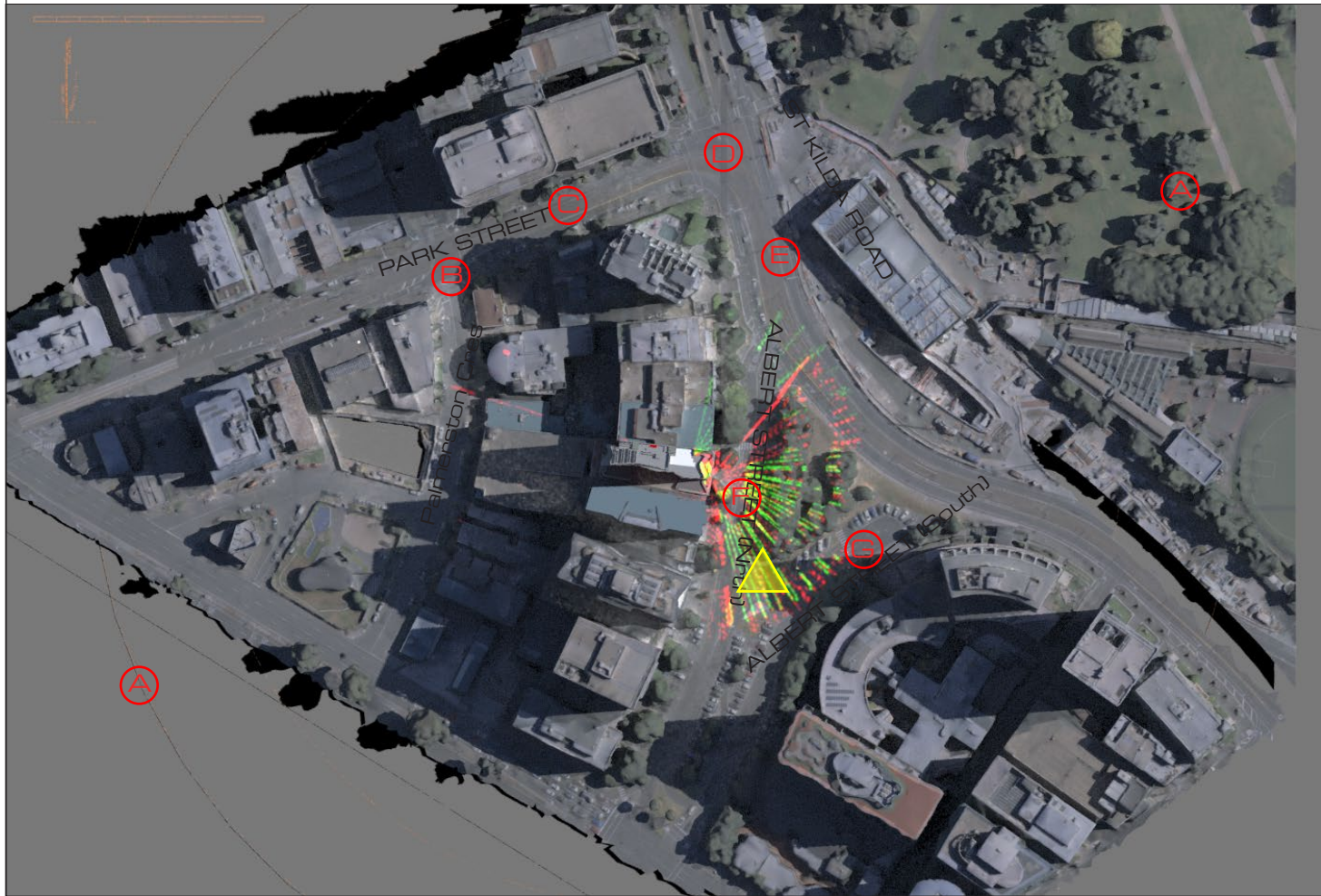
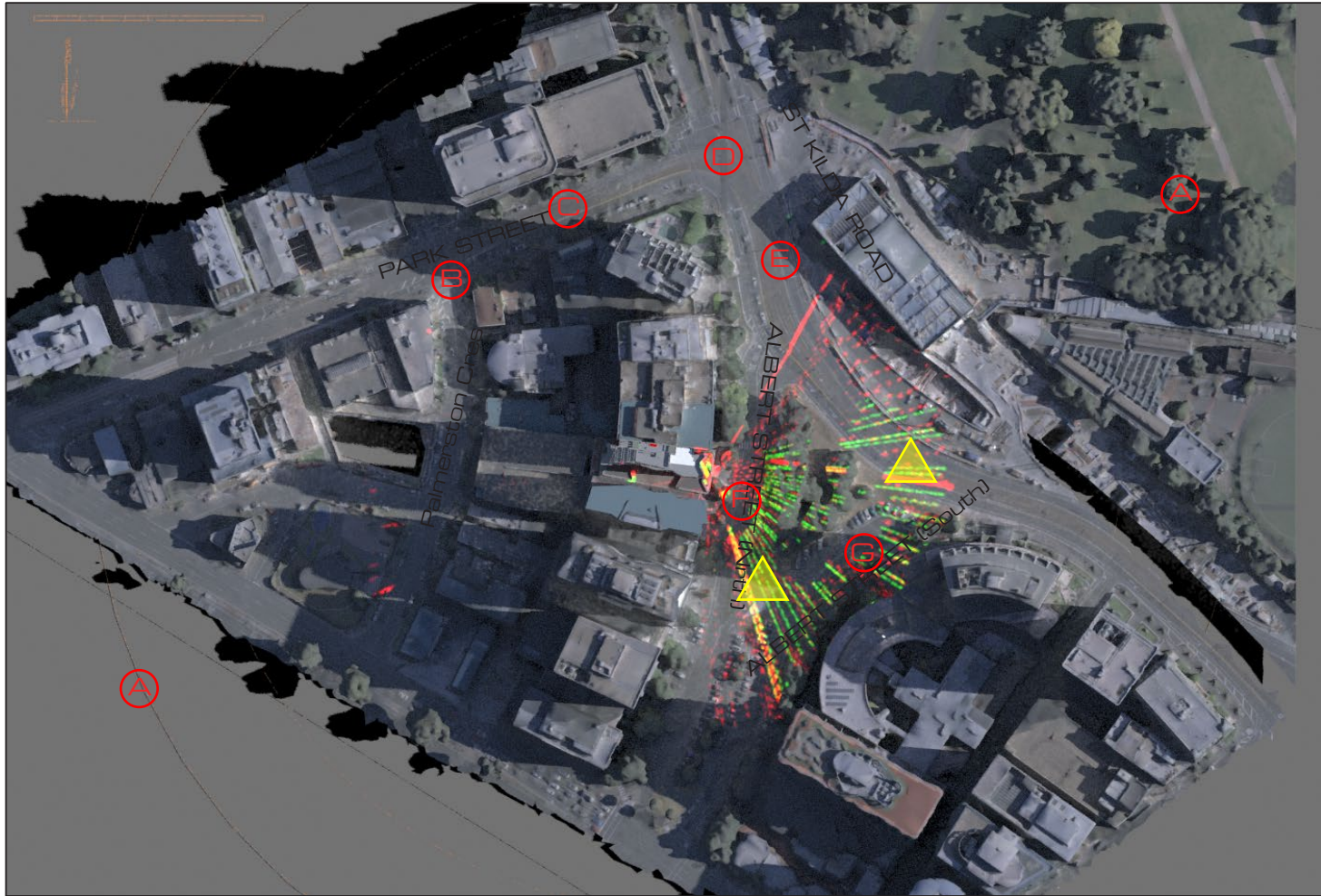
TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 016
DATE : 29.06.23
VERSION : 02
REF : 2049



0800

▲ F - G INTERSECTION - REFER TO
ADVANCED GLARE CALCULATION

▲ ST KILDA RD - REFER TO ADVANCED
GLARE CALCULATION

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

0900

▲ F - G INTERSECTION - REFER TO
ADVANCED GLARE CALCULATION

50 100 200 1:3000

CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

■ Glass - MAIN
■ Glass - CONCAVE SECTIONS



MID SUMMER 21 DECEMBER

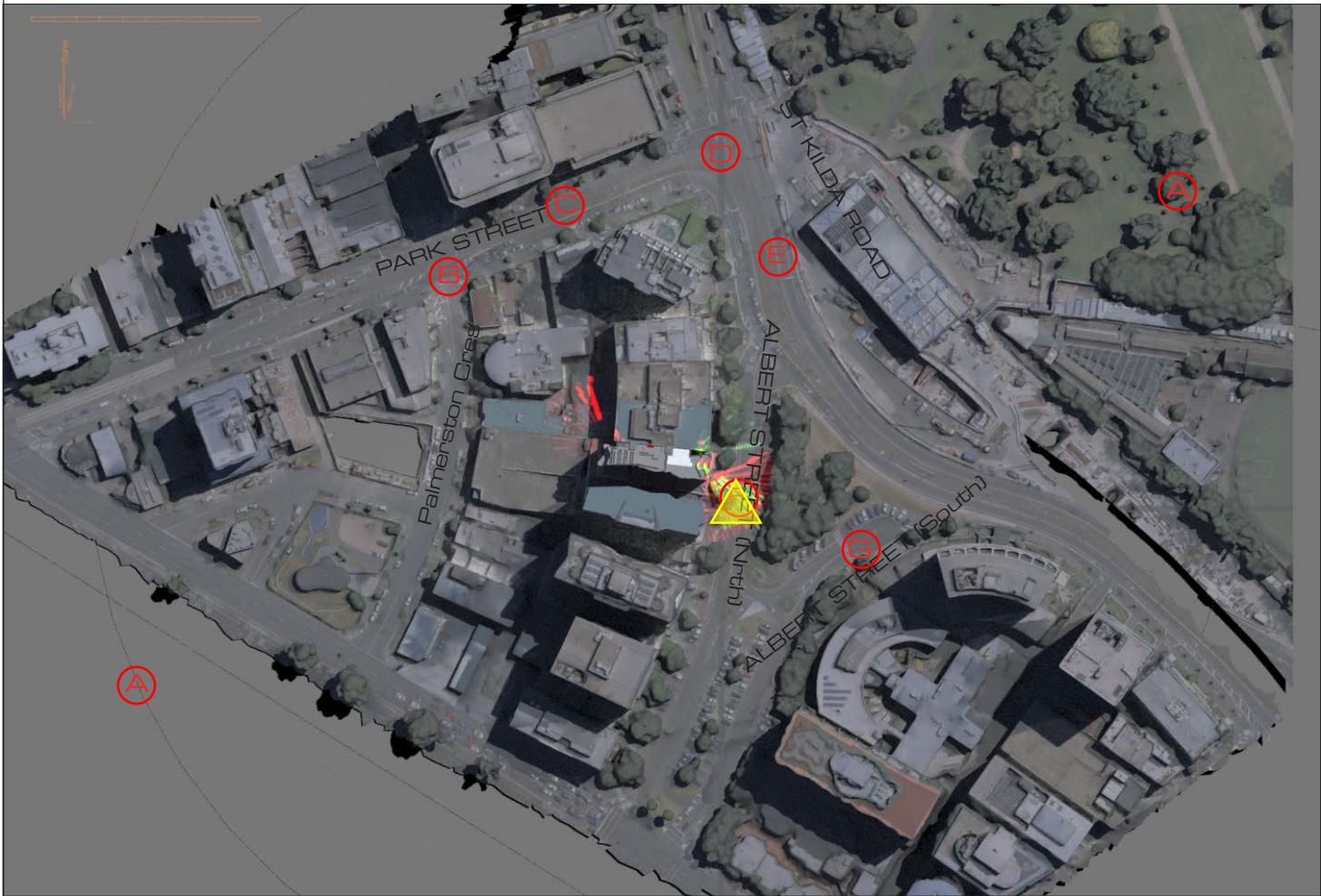
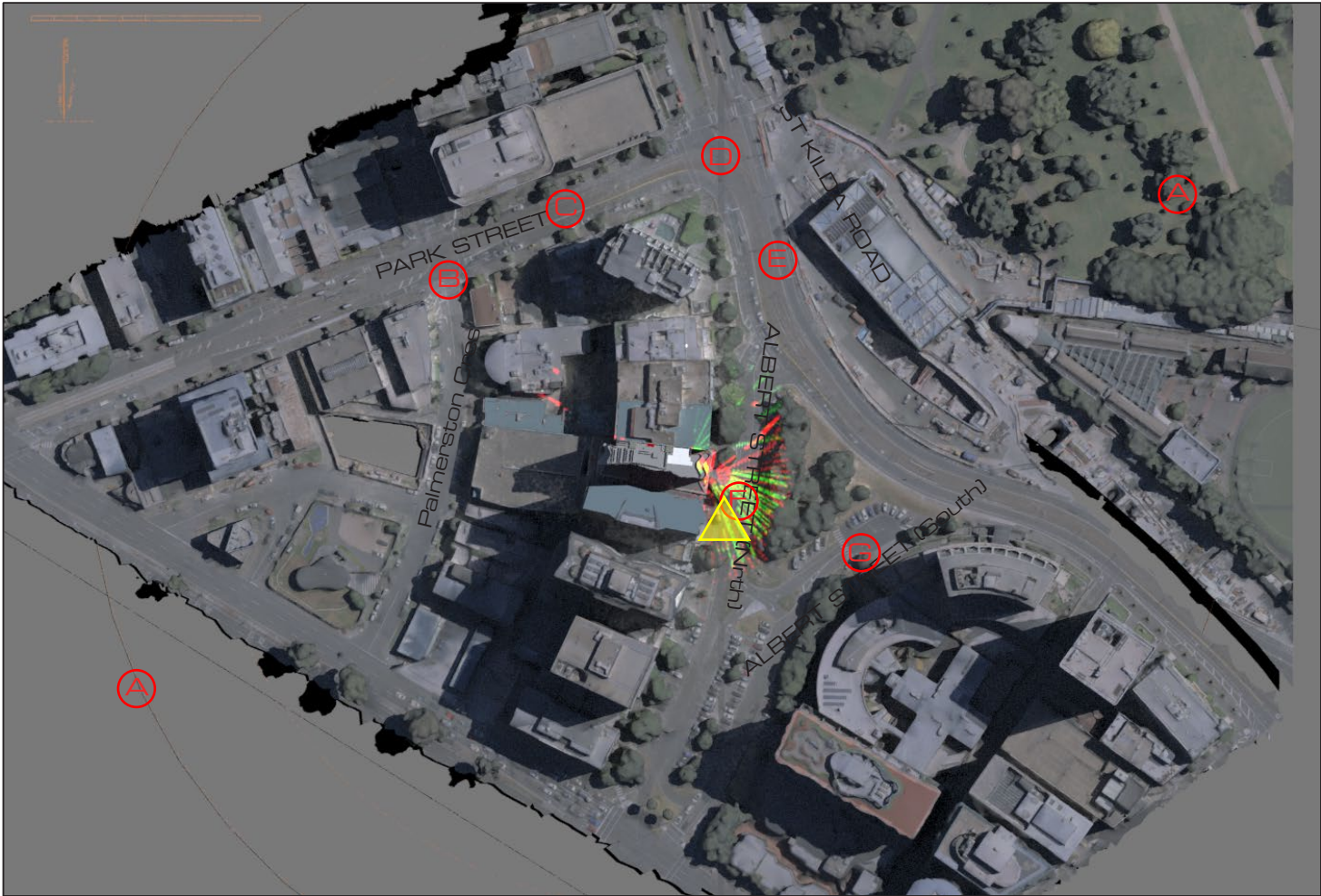
TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

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279 Normanby Rd, Port
Melbourne 3207
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VERSION : 02
REF : 2049



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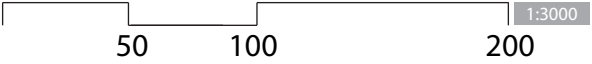
▲ F - IN FRONT - REFER TO ADVANCED
GLARE CALCULATION

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

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Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

1 1 0 0

▲ F - IN FRONT - REFER TO ADVANCED
GLARE CALCULATION



CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

Glass - MAIN
Glass - CONCAVE SECTIONS



MID SUMMER 21 DECEMBER

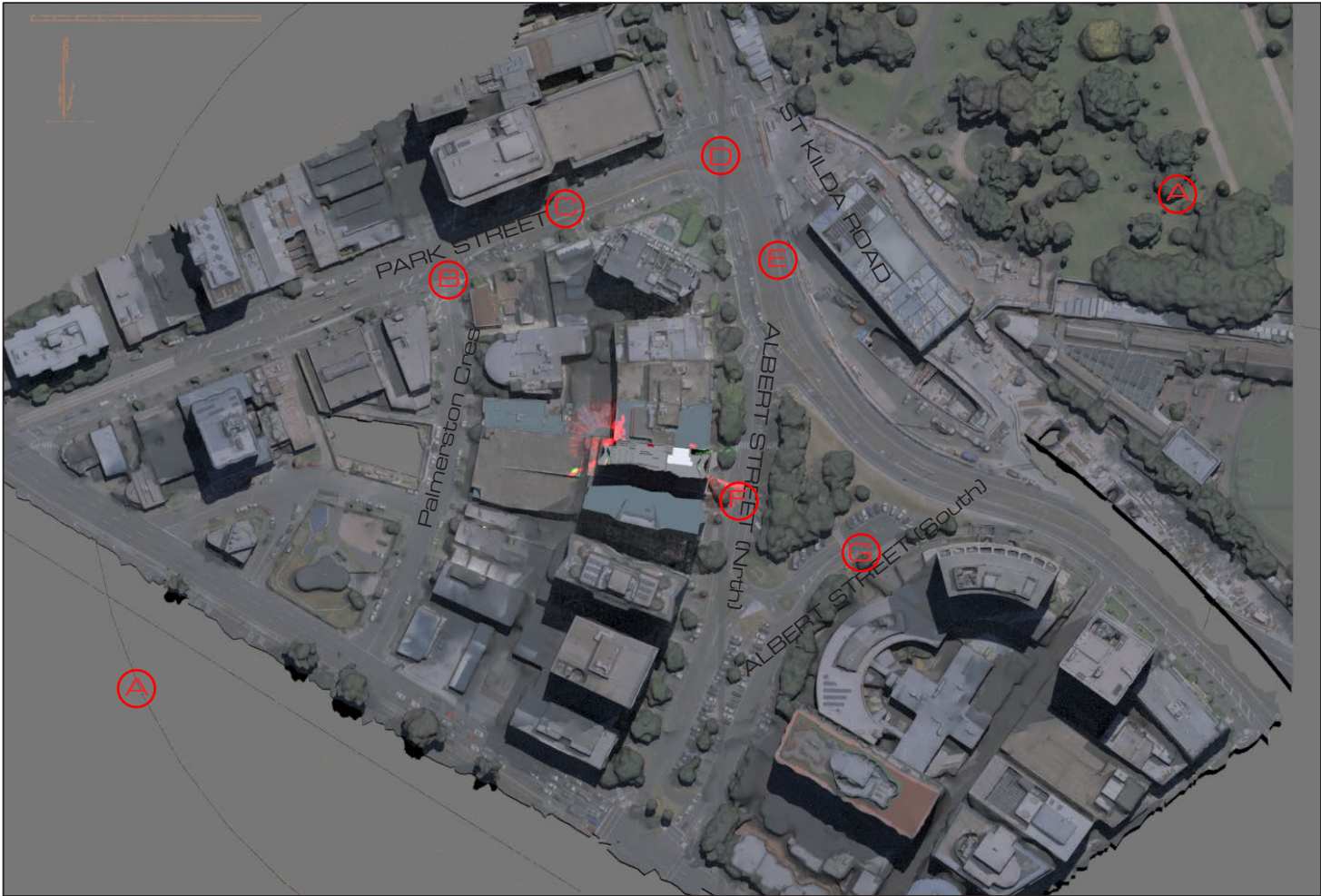
TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC
VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
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PAGE : RA 018
DATE : 29.06.23
VERSION : 02
REF : 2049



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1.

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

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Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

CERTIFIED SHADOW DIAGRAM
No : RA204902
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Member of IES
(The Illuminating Engineers Society of Australia)



COLOUR CODE KEY

- Glass - MAIN
- Glass - CONCAVE SECTIONS



MID SUMMER 21 DECEMBER

TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
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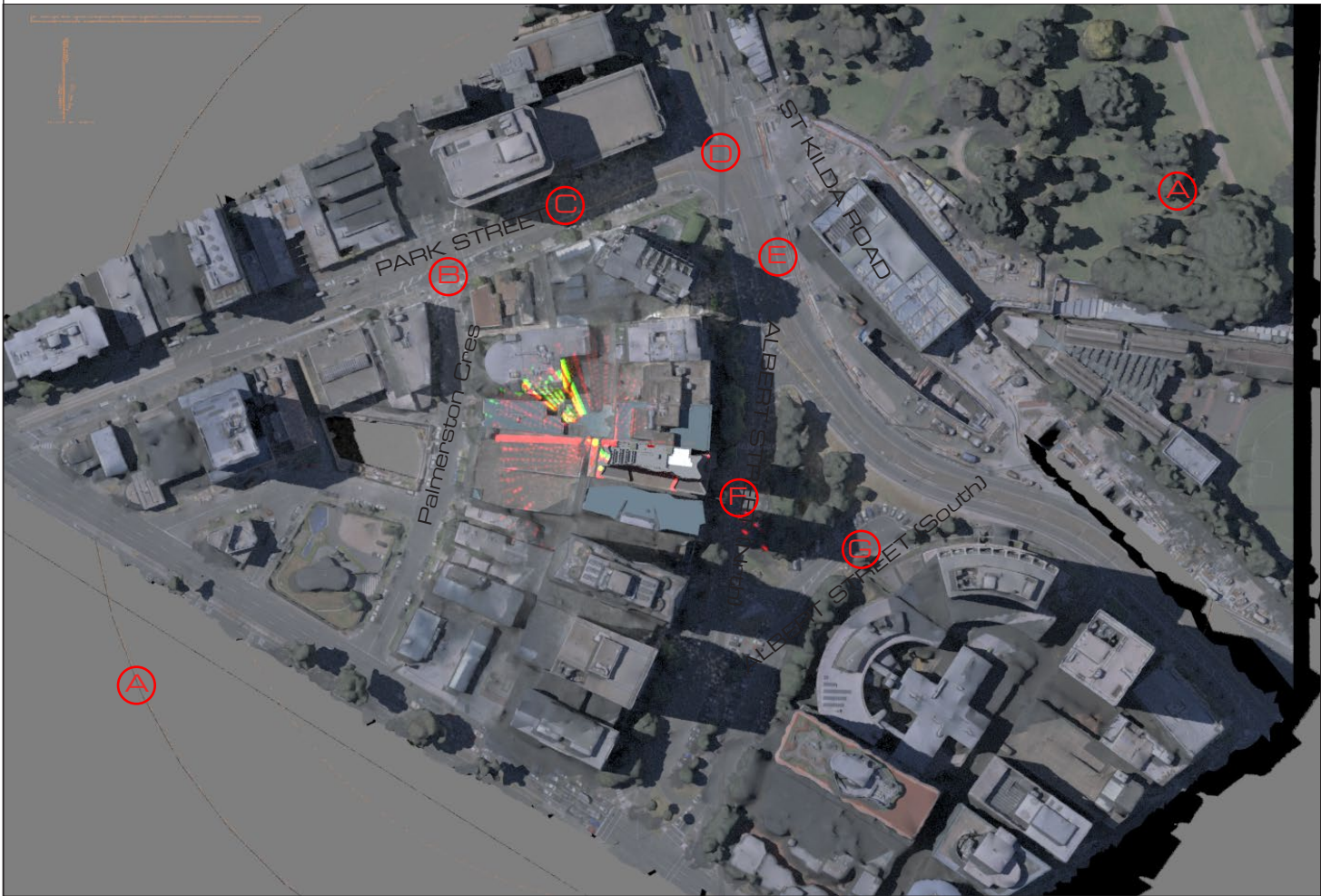
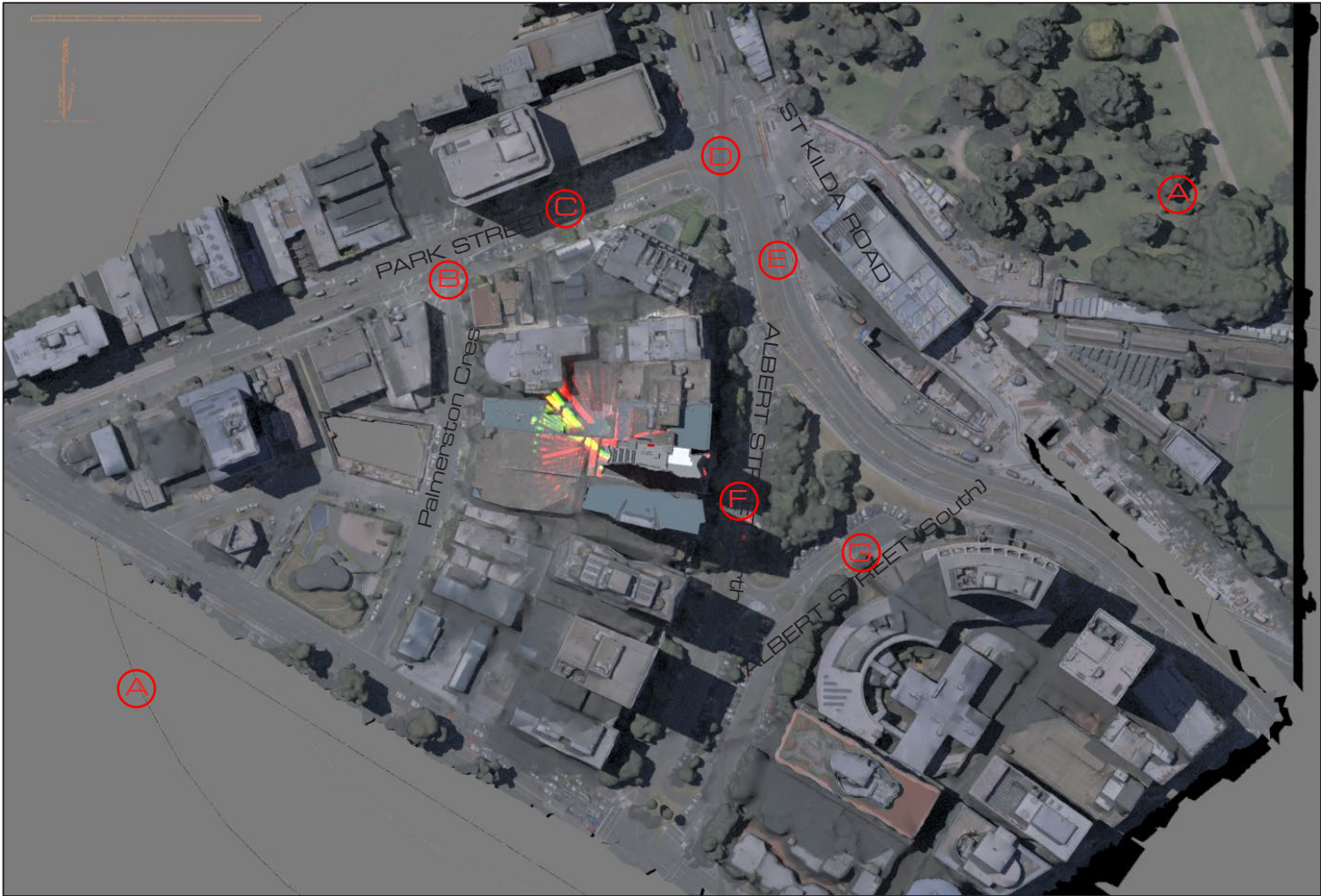
PAGE : RA 019
DATE : 29.06.23
VERSION : 02
REF : 2049

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1 3 0 0

1.



1 400

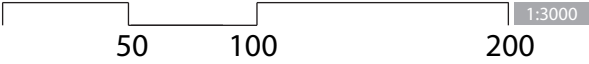
1.

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

1 500

1.



CERTIFIED SHADOW DIAGRAM
No : RA204902
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Certifier:
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B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)



COLOUR CODE KEY

Glass - MAIN
Glass - CONCAVE SECTIONS



MID SUMMER 21 DECEMBER

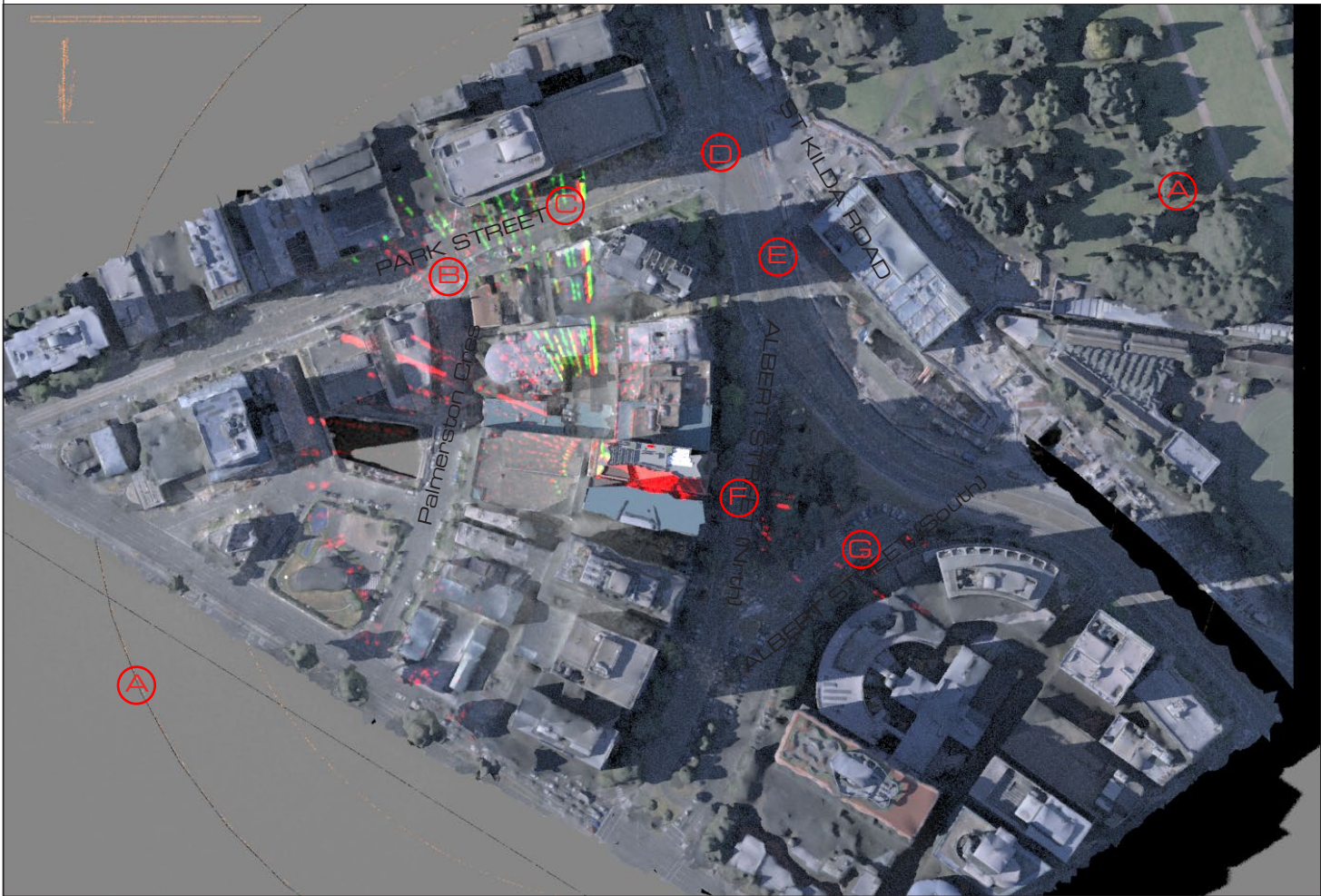
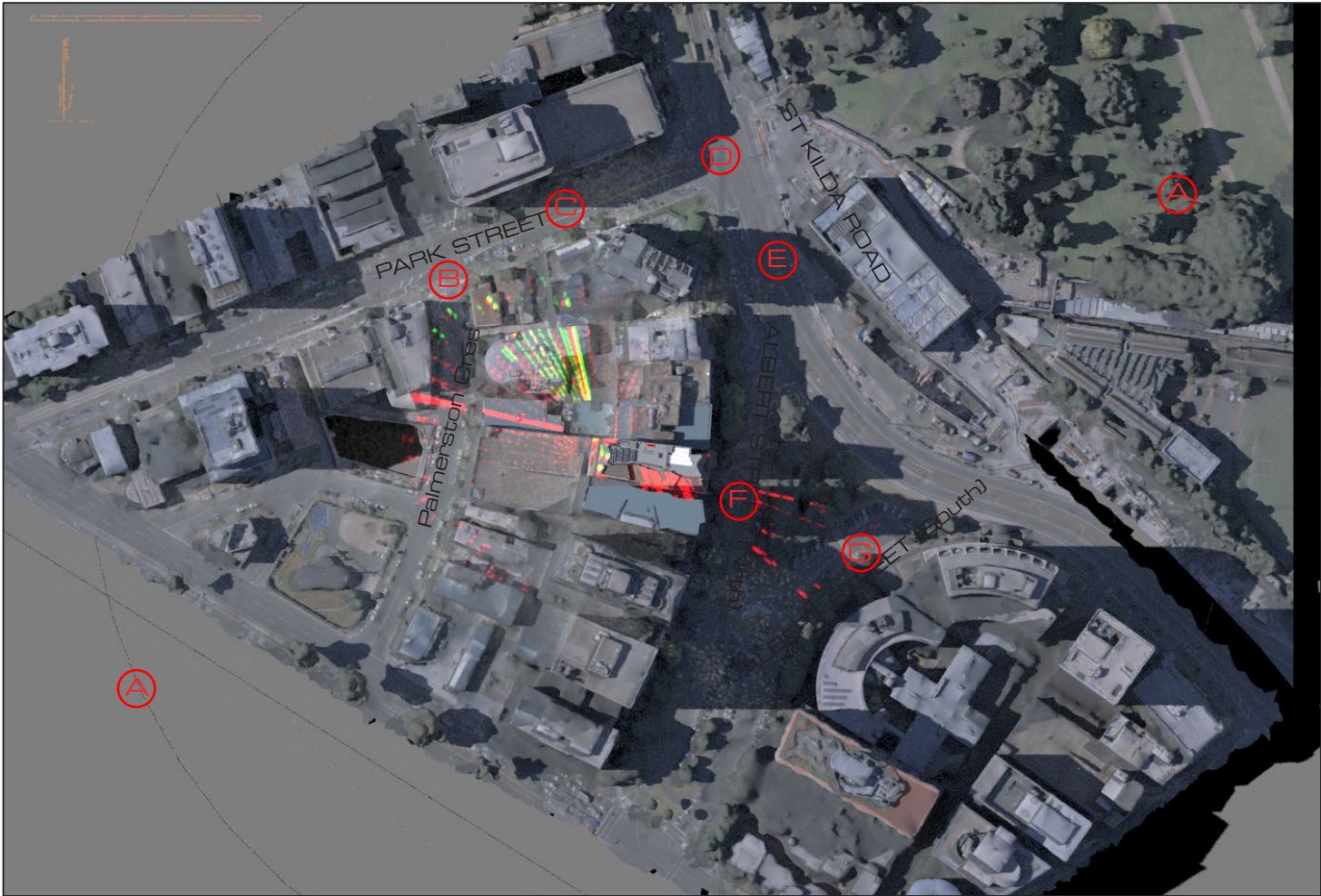
TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

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Architects - Elenberg Fraser

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Melbourne 3207
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PAGE : RA 020
DATE : 29.06.23
VERSION : 02
REF : 2049



1600

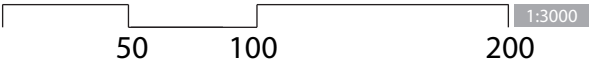
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CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

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121 pages
Date: 20/02/2024

1700

B & C - Park Street - minor reflectance likely
to dissapate. View Angle from the side and
not considered possible Glare Hazard. No
Calculation required. - NO IMPACT



CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)



COLOUR CODE KEY

Glass - MAIN
Glass - CONCAVE SECTIONS



MID SUMMER 21 DECEMBER

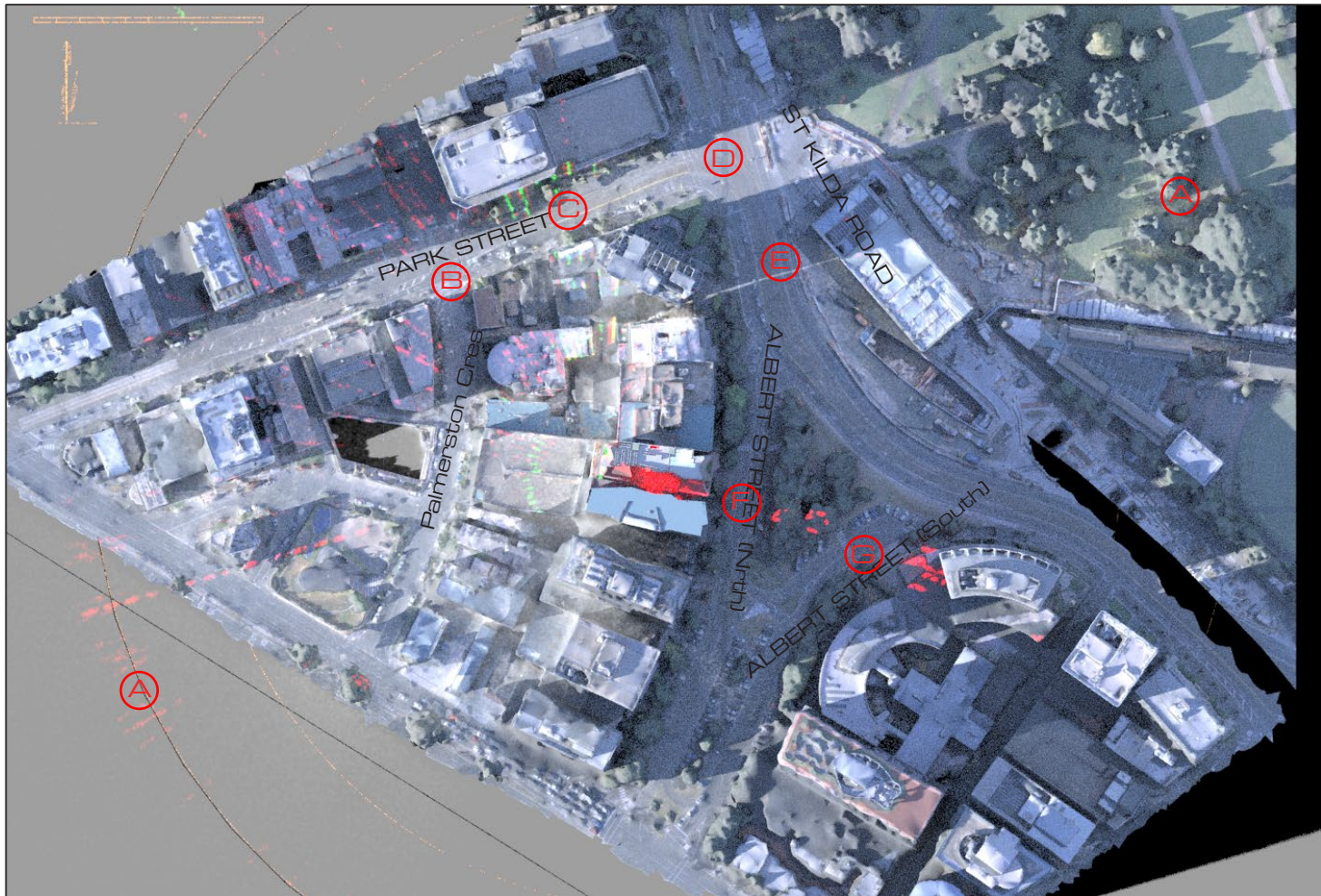
TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

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M PROPERTY
Architects - Elenberg Fraser

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279 Normanby Rd, Port
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PAGE : RA 021
DATE : 29.06.23
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1800

B & C - Park Street - minor reflectance likely to dissapate. View Angle from the side and not considered possible Glare Hazard. No Calculation required. - NO IMPACT



CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

- Glass - MAIN
- Glass - CONCAVE SECTIONS



MID SUMMER 21 DECEMBER

TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

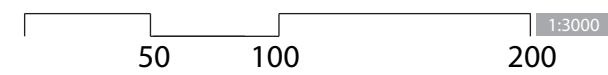
CLIENT
M PROPERTY
Architects - Elenberg Fraser

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DATE : 29.06.23
VERSION : 02
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CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

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121 pages
Date: 20/02/2024



RAY TRACING SETTINGS

VRa b CAOS Grou 2020.

Ra Tracing Engine: VRa(5) , using Brute Force (secondar as Light Cache). Caustics.

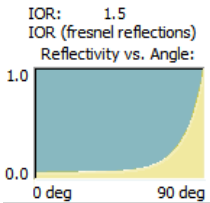
Resolution er image rame: 1900 1267
Light Source: (Sun - Vra , no sklight)
Sun Sstem:IES certied Dalight Sstem

Caustics Source: Photon Emmittance Radius 80m , Orbital Scale 200m ,
Caustics Cature: Search Distance Radius 1.0m , Subdiision 3000

Eosure: Winter: 14 EV - 14.5EV (1250, 8.0, ISO 100)
Euino: 14EV - 15EV (1250, 8.0, ISO 100)
Summer: 13EV - 15EV (1125, 8.0, ISO 100)

Materials: Artical Enhanced - Not Alicable or Stage 1 ot Sot.
Caustics Multilier 1.0 (or clarit)
Note these adustments enhance the intensit and not the ra traector.

Glass tical: IOR 1.5 , certied realistic Glass (V Ra hotorealism)
Transarenc 50 to enable reectiit strength in grahics.



Other Solid:Diuse Matt neutral gre (no reectiit generation)

Target Plane:Bitma ainted and darkened or contrast

SUN POSITION DATA				
LOCATION : Latitude -37.8 , Longitude 144.9 (MELBOURNE , Victoria)				
Frame #	Time	DATE	Azimuth °	Altitude °
8	0800	MID WINTER JUNE 21	56	3
9	0900		46	12
10	1000		34	20
11	1100		20	25
12	1200		5	28
13	1300		349	28
14	1400		334	24
15	1500		321	18
16	1600	EQUINOX March / Sept 22	310	10
27	0700		84	6
28	0800		74	18
29	0900		63	29
30	1000		50	39
31	1100		32	47
32	1200		10	51
33	1300		346	51
34	1400		324	46
35	1500		307	37
36	1600		294	27
37	1700		283	16
41	0600	MID SUMMER DEC 21	111	10
42	0700		103	22
43	0800		94	33
44	0900		85	45
45	1000		73	57
46	1100		54	68
47	1200		15	75
48	1300		324	72
49	1400		295	63
50	1500		280	52
51	1600		270	40
52	1700		261	28
53	1800		253	17

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

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CERTIFIED SHADOW DIAGRAM
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TITLE
REFLECTIVITY ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

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PAGE : RA 023
DATE : 29.06.23
VERSION : 02
REF : 2049

REFLECTIVITY ANALYSIS

28 - 32 Albert Road
SOUTH MELBOURNE

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

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Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024



CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.

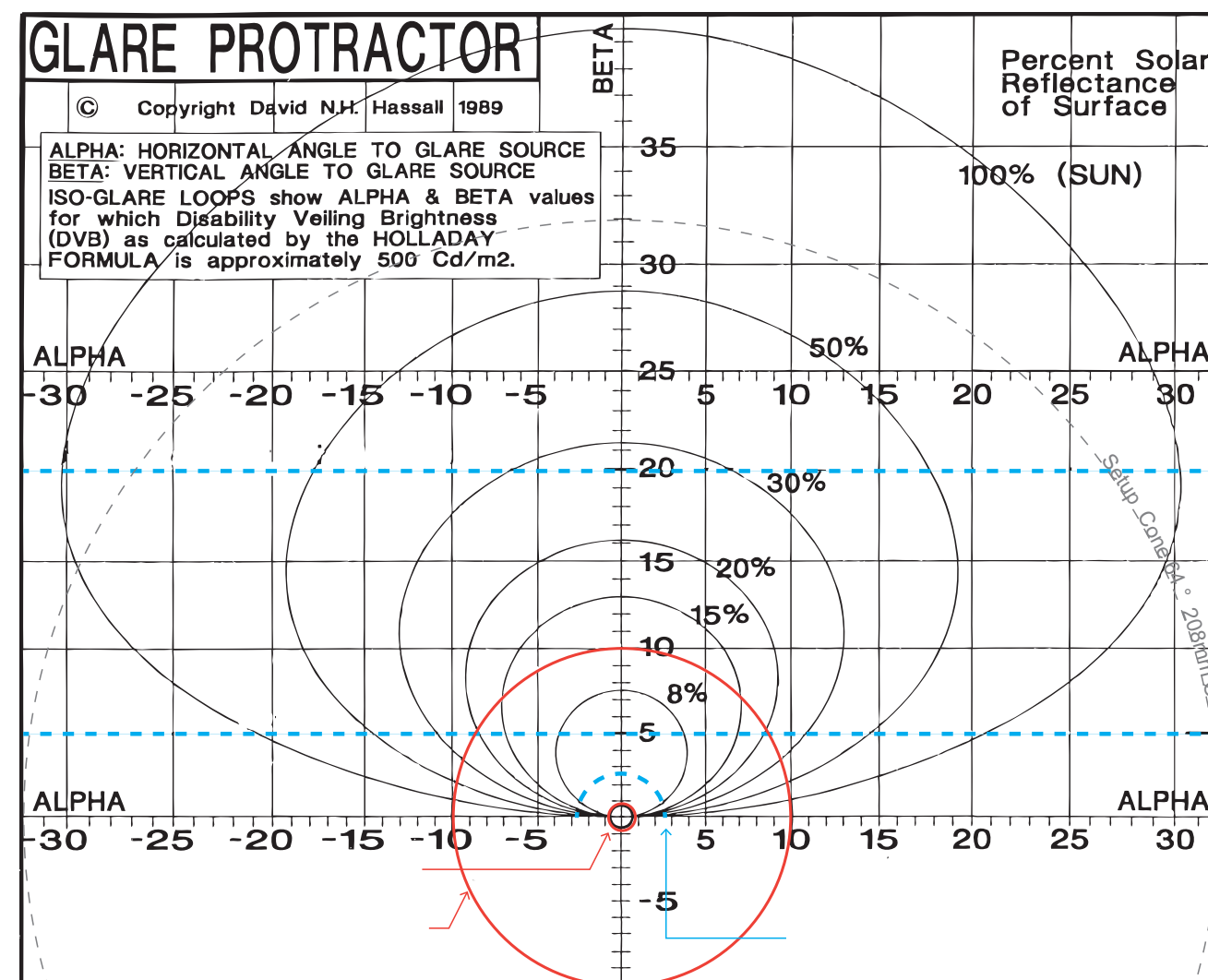
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

- Glass - MAIN
- Glass - CONCAVE SECTIONS



STAGE 2 GLARE ANALYSIS



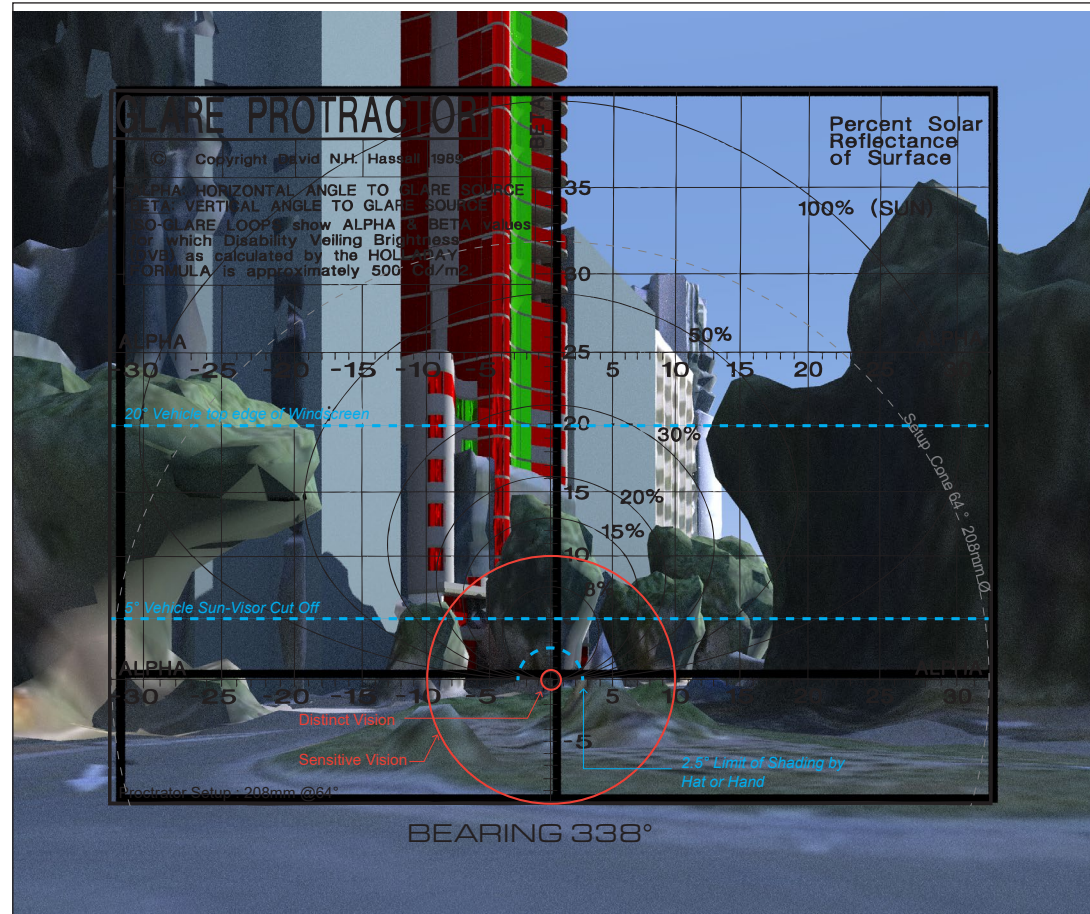
TITLE
STAGE 2 GLARE ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

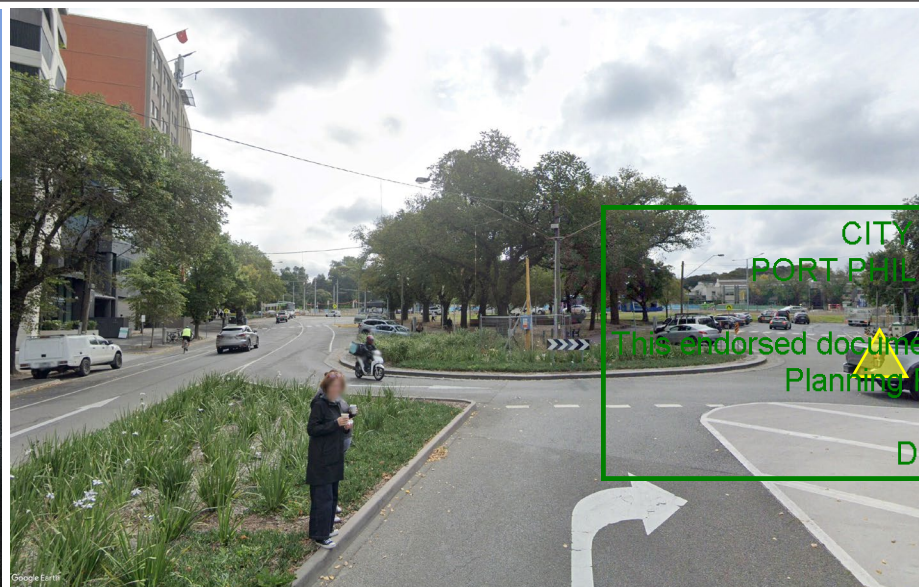
CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 024
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

Only position in which Proposed site is visible to drivers line of site during normal traffic conditions is for Southbound Albert Street drivers checking merging traffic to their right.

All other positions show Proposed site is not within drivers line of sight

GLARE PROTRACTOR

(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

Comments:
Line of Sight very limited and
NO GLARE THRESHOLD is
found with direct Line of Sight
and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

CALCULATION OF GLARE						
Location		FG				
Month		WINTER	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN			
Time		1000	99° - 130°			
Façade Aspect Orientation	ASP	111°	Degrees relative to Solar North			
View Line Bearing	BRG	338°				
Sun Pos	AZI	34°				
	ALT	20°				
GLASS	Type	2 Class	1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)			
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass			
Solar Power	W	650 W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15			
Luminous Efficacy	n	117 lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125			
Solar Illumination	E	76050 Lux				
	Normal Beam					
Sun Position with Façade						
	H.S.A	-77 Degrees	Azi - ASP Tan Cos			
	V.SA	58.28195 Degrees	Atn(Tan ALT / Cos H.S.A) 0.36397 0.224951			
Angle of Incidence	I	78 Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S.A) 18.76168 2.617916			
		80 Rounded				
Virtual Suns Position			VERTICAL ONLY			
Virtual Altitude	VALT	20 Degrees				
Virtual Azimuth	VAZI	8 Degrees	ASP - H.S.A - 180			
Glare Position with Observer						
	ALPHA	-330	VAZI-BRG			
	BETA	20	VALT			
	THETA	36.6	ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA			
			SIN TAN COS			
			0.25 0.132474 0.866025			
REFLECTIVITY OF GLASS						
Look Up suitable Reflectance Curves for Glass		%	70 60 75			
Normal Incidence	RN	5	Angle of In Clear Floa 20% Refle Film Tint			
Reflectivity at Angle of Incident	R	60	0 5 20 42			
			10 5 20 42			
			20 5 20 42			
			30 6 21 42			
			40 7 22 42			
			50 9 24 43			
			60 13 27 44			
			70 25 37 50			
			80 70 60 75			
			90 99 99 99			
Illumination at eye			Illumination at observers eye due to glare source in plane normal to Line of Sight			
E.G		36611.72 LUX	EG = E°R°*F°COSTHETA 0.802361			
Equivalent VEILING LUMINANCE (Holladay Formula)		273 cd/m2	LV = 10°EG/THETA2			
Provisional Limit to VEILING LUMINANCE						
	500 cd/m2	considered threshold	C			
In Situation ACCEPTABLE	YES					

The IES logo, featuring a stylized green sunburst above the letters 'ies' in a bold, lowercase font, with the text 'The Lighting Society' underneath. To the right of the logo, the text reads: 'CERTIFIED SHADOW DIAGRAM', 'No : RA204902', 'Refer to attached Certificate.', 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI', 'Member of IES', and '[The Illuminating Engineers Society of Australia]'.

COLOUR CODE KEY

61 in

Glass - MAIN

Glass - CONCAVE SECTIONS

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

WINTER 1000

AREA: FG
ALBERT RD INTERSECTION

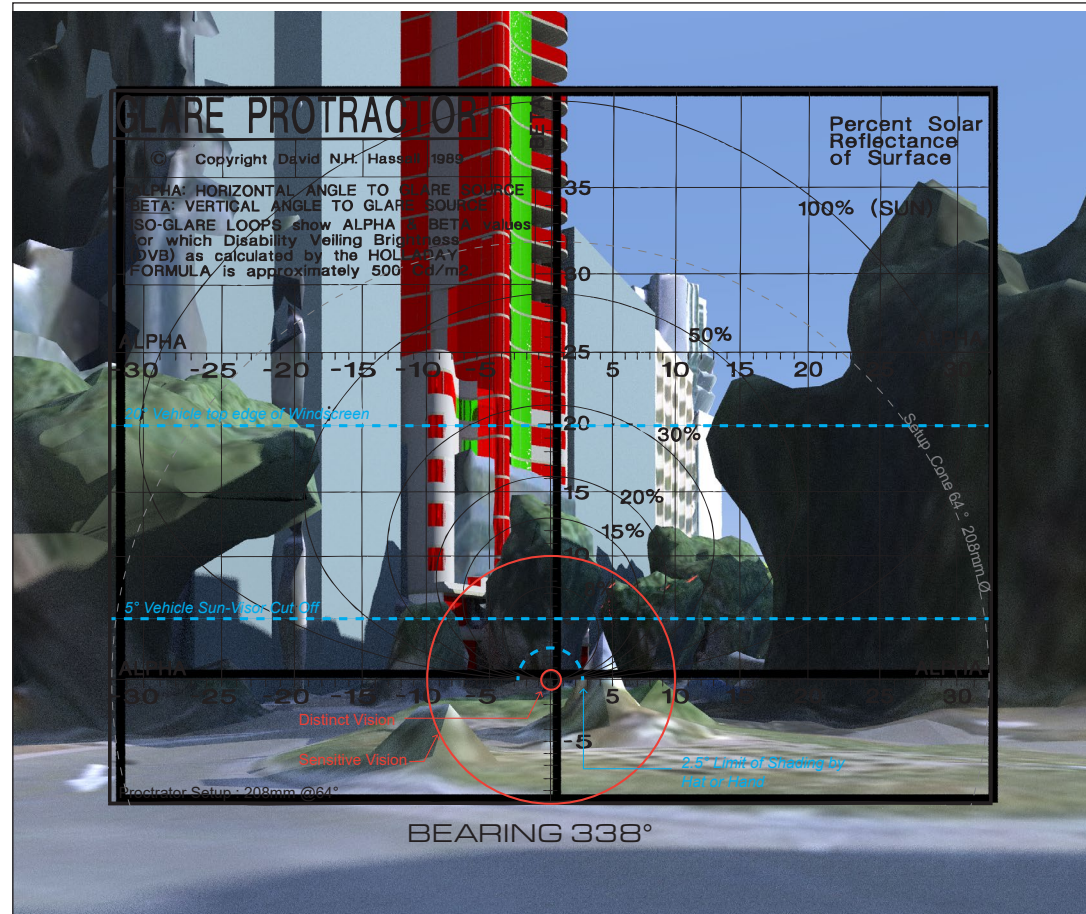
TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 025
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Only position in which Proposed site is visible to drivers line of site during normal traffic conditions is for Southbound Albert Street drivers checking merging traffic to their right.

All other positions show Proposed site is not within drivers line of sight

GLARE PROTRACTOR

[Stage 2 part 2a and 2b]

Comments:
Sun Disc not present on
Surface - Beyond Field of View

The logo for the Illuminating Engineering Society (IES) is on the left, featuring a stylized sunburst above the letters 'ies' and the text 'The Lighting Society'. To the right, the text reads: 'CERTIFIED SHADOW DIAGRAM', 'No : RA204902', 'Refer to attached Certificate.', 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI', 'Member of IES', and '[The Illuminating Engineers Society of Australia]'. The entire logo and text are enclosed in a rectangular box.

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

EQUINOX 0800

AREA: FG
ALBERT RD INTERSECTION

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

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279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 026
DATE : 29.06.23
VERSION : 02
REF : 2049

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

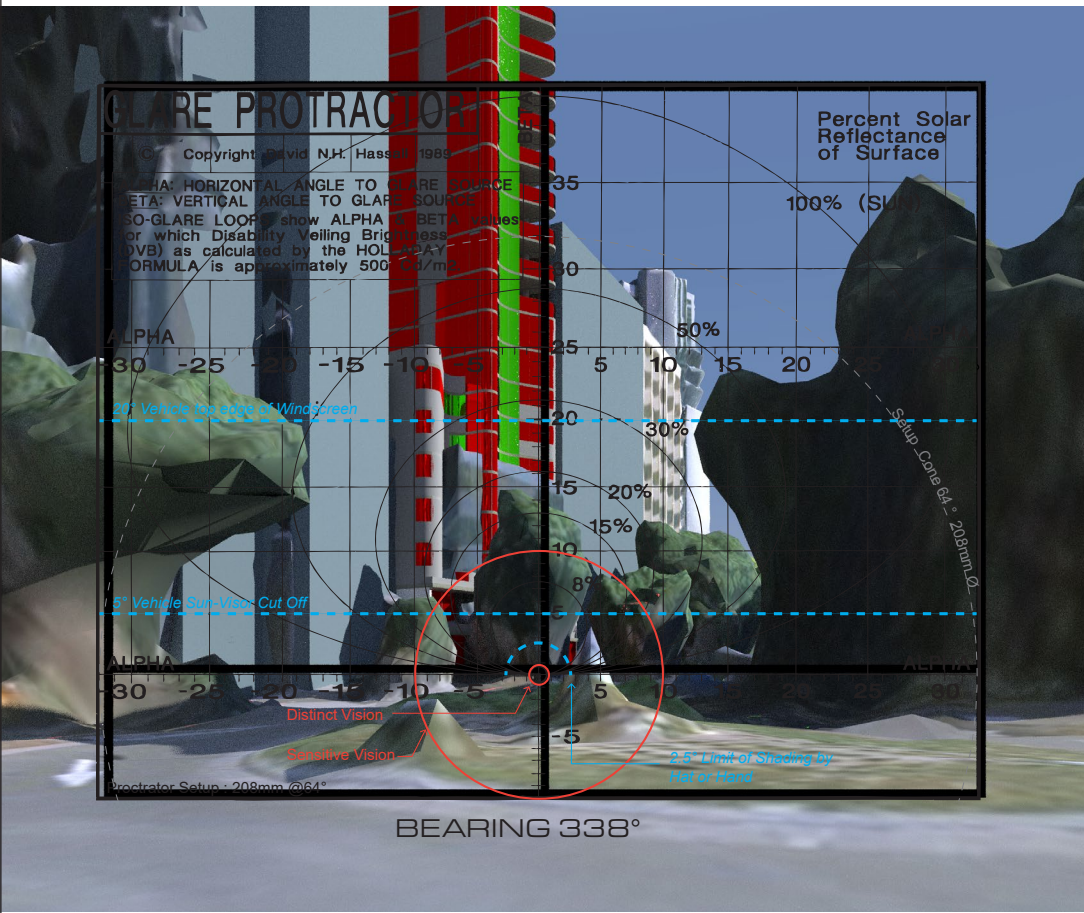
This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

Comments:
Line of Sight very limited and
NO GLARE THRESHOLD is
found with direct Line of Sight
and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

CALCULATION OF GLARE						
Location		FG				
Month		EQUINOX	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN			
Time		800	99° - 130°			
Façade Aspect Orientation	ASP	121 °	Degrees relative to Solar North			
View Line Bearing	BRG	338 °				
Sun Pos	AZI	74 °				
	ALT	18 °				
GLASS	Type	2 Class	1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)			
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass			
Solar Power	W	620 W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15			
Luminous Efficacy	n	117 lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125			
Solar Illumination	E	72540 Lux				
	Normal Beam					
Sun Position with Façade						
	H.S.A	-47 Degrees	Azi - ASP Tan Cos			
	V.SA	25.4742 Degrees	Atn(Tan ALT / Cos H.S.A) 0.32492 0.681998			
Angle of Incidence	I	50 Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S./ 1.149975 0.226979			
		50 Rounded				
Virtual Suns Position			VERTICAL ONLY			
Virtual Altitude	VALT	18 Degrees				
Virtual Azimuth	VAZI	-12 Degrees	ASP - H.S.A - 180			
Glare Position with Observer						
	ALPHA	-350	VAZI-BRG			
	BETA	18	VALT			
	THETA	20.5	ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA			
			SIN TAN COS			
			0.030154 0.105573 0.984808			
REFLECTIVITY OF GLASS						
Look Up suitable Reflectance	Curves for Glass	%	9 24 43			
Normal Incidence	RN	5 0.05	Angle of In Clear Floa 20% Refle Film Tint			
Reflectivity at Angle of Incident	R	24 0.24	0 5 20 42			
			10 5 20 42			
			20 5 20 42			
			30 6 21 42			
			40 7 22 42			
			50 9 24 43			
			60 13 27 44			
			70 25 37 50			
			80 70 60 75			
			90 99 99 99			
Illumination at eye			Illumination at observers eye due to glare source in plane normal to Line of Sight			
E.G		16303.22 LUX	EG = E°R%*F°COSTHETA 0.93645			
Equivalent VEILING LUMINANCE (Holladay Formula)		387 cd/m2	LV = 10°EG/THETA2			
Provisional Limit to VEILING LUMINANCE						
	500 cd/m2	considered threshold	C			
In Situation ACCEPTABLE	YES					



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

Only position in which Proposed site is visible to drivers line of site during normal traffic conditions is for Southbound Albert Street drivers checking merging traffic to their right.

All other positions show Proposed site is not within drivers line of site

GLARE PROTRACTOR
(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE
(Stage 2 part 2c)

Comments:
Line of Sight very limited and
NO GLARE THRESHOLD is
found with direct Line of Sight
and with 20% Reflective Glass

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 6 of the
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

SUMMARY

NO GLARE
HAZARD

CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

- Glass - MAIN
- Glass - CONCAVE SECTIONS

EQUINOX 0900

AREA: FG
ALBERT RD INTERSECTION

TITLE
GLARE HAZARD ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

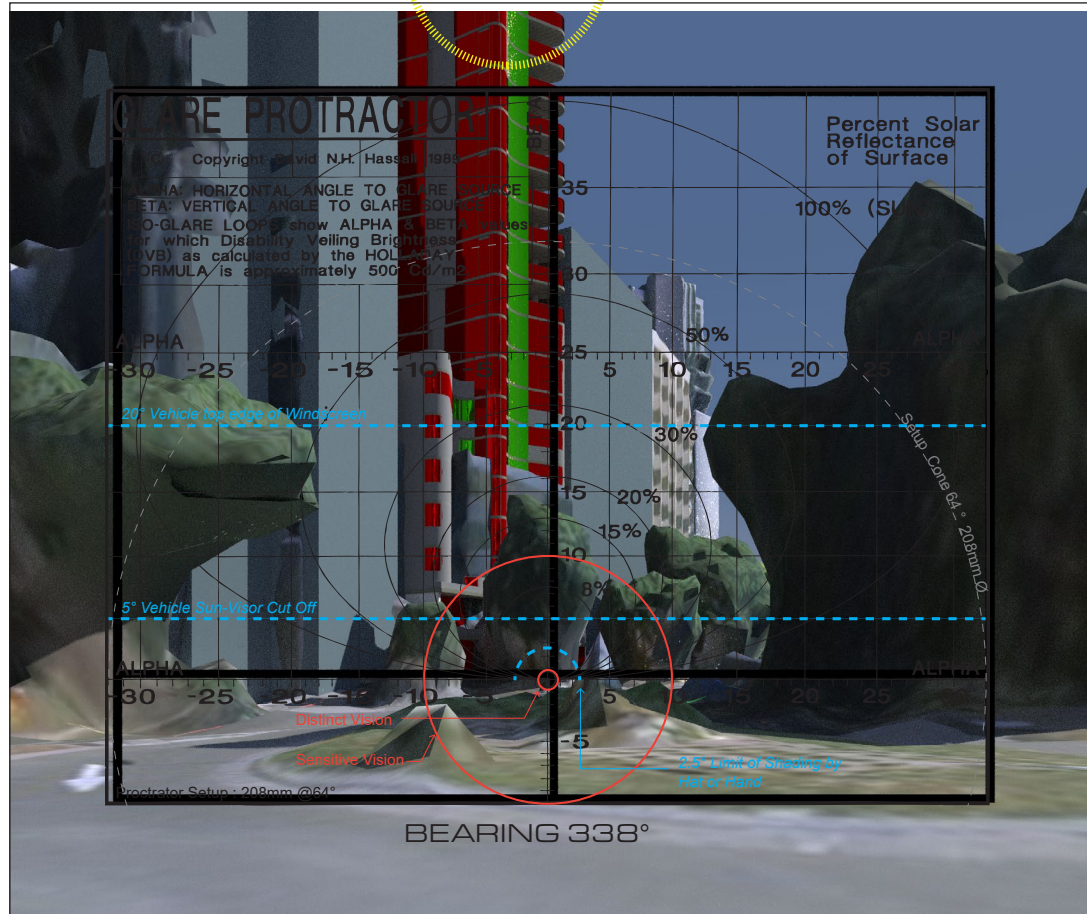
CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC
VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 027
DATE : 29.06.23
VERSION : 02
REF : 2049

CALCULATION OF GLARE			
Location		FG	
Month		EQUINOX	
Time		900	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN
Façade Aspect Orientation	ASP	110 °	99° - 130°
View Line Bearing	BRG	338 °	Degrees relative to Solar North
Sun Pos	AZI	63 °	
	ALT	29 °	
GLASS	Type	2 Class	1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass
Solar Power	W	785 W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500*(ALT-10)*15
Luminous Efficacy	n	125 lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125
Solar Illumination	E	98125 Lux	
	Normal Beam		
Sun Position with Façade			
H.S.A		-47 Degrees	Azi - ASP
V.S.A		39.10324 Degrees	Atn(Tan ALT / Cos H.S.A) 0.554309
Angle of Incidence	I	53 Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S.A) 1.149975
		50 Rounded	
Virtual Suns Position			VERTICAL ONLY
Virtual Altitude	VALT	29 Degrees	
Virtual Azimuth	VAZI	-23 Degrees	ASP - H.S.A - 180
Glare Position with Observer			
ALPHA		-361	VAZI-BRG
BETA		29	VALT
THETA		29.0	ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA
			SIN TAN COS
			0.000305 0.307259 0.999848
REFLECTIVITY OF GLASS			
Look Up suitable Reflectance Curves for Glass		%	
Normal Incidence	RN	5	0.05
Reflectivity at Angle of Incidence	R	24	0.24
			Angle of In Clear Floor 20% Refle Film Tint
			0 5 20 42
			10 5 20 42
			20 5 20 42
			30 6 21 42
			40 7 22 42
			50 9 24 43
			60 13 27 44
			70 25 37 50
			80 70 60 75
			90 99 99 99
Illumination at eye			
E.G		20594.01 LUX	Illumination at observers eye due to glare source in plane normal to Line of Sight EG = E*R%*F*COSTHETA 0.87448
Equivalent VEILING LUMINANCE (Holladay Formula)		245 cd/m2	LV = 10*EG/THETA2
Provisional Limit to VEILING LUMINANCE		500 cd/m2	considered threshold C
Is Situation ACCEPTABLE	YES		

- Search area for reflected sun disc



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Only position in which Proposed site is visible to drivers line of site during normal traffic conditions is for Southbound Albert Street drivers checking merging traffic to their right.

All other positions show Proposed site is not within drivers line of site

GLARE PROTRACTOR
(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

(Stage 2 part 2c)

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

Line of Sight very limited and NO GLARE THRESHOLD is found with direct Line of Sight and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

EQUINOX 1000

AREA: FG
ALBERT RD INTERSECTION

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

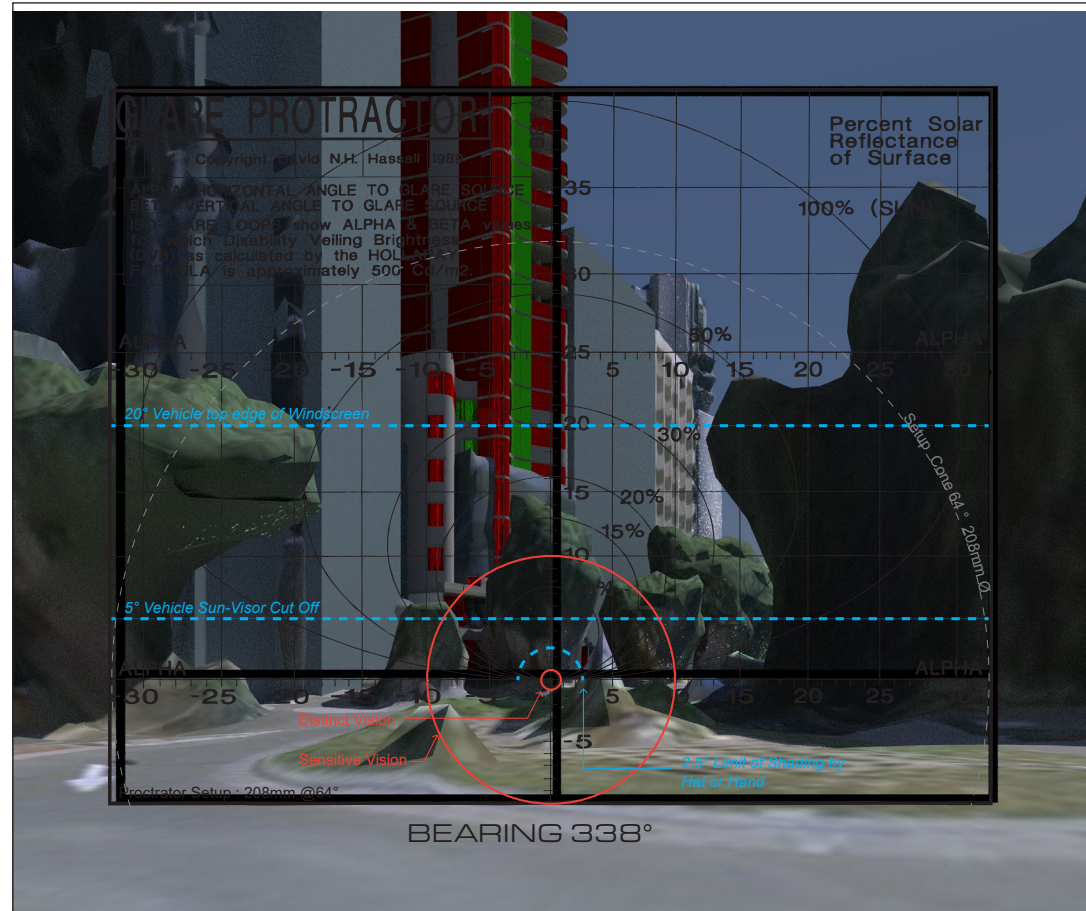
PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 028
DATE : 29.06.23
VERSION : 02
REF : 2049

CALCULATION OF GLARE					
Location		FG			
Month		EQUINOX		Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN	
Time		1000		99° - 130°	
Façade Aspect Orientation	ASP	112°		Degrees relative to Solar North	
View Line Bearing	BRG	338°			
Sun Pos	AZI	50°			
	ALT	39°			
GLASS	Type	2 Class		1 CLEAR 2 20% Reflective 3 40 % Reflective (tint)	
Fraction of Façade that is reflective		1		Decimal number - 1 is 100% Glass	
Solar Power	W	935 W/m ²		If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15	
Luminous Efficacy	n	125 lm/W		If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125	
Solar Illumination	E	116875 Lux			
	Normal Beam				
Sun Position with Façade					
	H.S.A	-62 Degrees		Azi - ASP Tan Cos	
	V.SA	59.89703 Degrees		Atn(Tan ALT / Cos H.S.A) 0.809784 0.469472	
Angle of Incidence	I	69 Degrees		Atn(Sqr(Tan2 H.S.A + Tan2 V.S.A) 3.537132 2.975225	
		70 Rounded			
Virtual Suns Position				VERTICAL ONLY	
Virtual Altitude	VALT	39 Degrees			
Virtual Azimuth	VAZI	-6 Degrees		ASP - H.S.A - 180	
Glare Position with Observer					
	ALPHA	-344		VAZI-BRG	
	BETA	39		VALT	
	THETA	42.2		ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA	
				SIN TAN COS	
				0.075976 0.65575 0.961262	
REFLECTIVITY OF GLASS					
Look Up suitable Reflectance	Curves for Glass	%		25 37 50	
Normal Incidence	RN	5	0.05	Angle of In Clear Floa 20% Refle Film Tint	
Reflectivity at Angle of Incident R		37	0.37	0 5 20 42	
				10 5 20 42	
				20 5 20 42	
				30 6 21 42	
				40 7 22 42	
				50 9 24 43	
				60 13 27 44	
				70 25 37 50	
				80 70 60 75	
				90 99 99 99	
Illumination at eye					
E.G		32046.37 LUX		Illumination at observers eye due to glare source in plane normal to Line of Sight EG = E*R*cos²(θ) 0.741064	
Equivalent VEILING LUMINANCE (Holladay Formula)		180 cd/m ²		LV = 10*EG/θ²	
Provisional Limit to VEILING LUMINANCE					
	500 cd/m ²			considered threshold C	
Is Situation ACCEPTABLE	YES				



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Only position in which Proposed site is visible to drivers line of site during normal traffic conditions is for Southbound Albert Street drivers checking merging traffic to their right.

All other positions show Proposed site is not within drivers line of sight

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

The IES logo is on the left, featuring a stylized green sunburst above the letters 'ies' in a bold, lowercase font, with 'The Lighting Society' written below. To the right, the text reads: 'CERTIFIED SHADOW DIAGRAM' in all caps, followed by 'No : RA204902' in a large, bold font, and 'Refer to attached Certificate.' in a smaller font. Below this, the certifier's details are listed: 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI'. At the bottom, it says 'Member of IES' and '[The Illuminating Engineers Society of Australia]' in brackets.

COLOUR CODE KEY

Glass - MAIN
 Glass - CONCAVE SECTIONS

GLARE PROTRACTOR
(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

Comments:
Line of Sight very limited and
NO GLARE THRESHOLD is
found with direct Line of Sight
and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

EQUINOX 1100

AREA: FG
ALBERT RD INTERSECTION

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

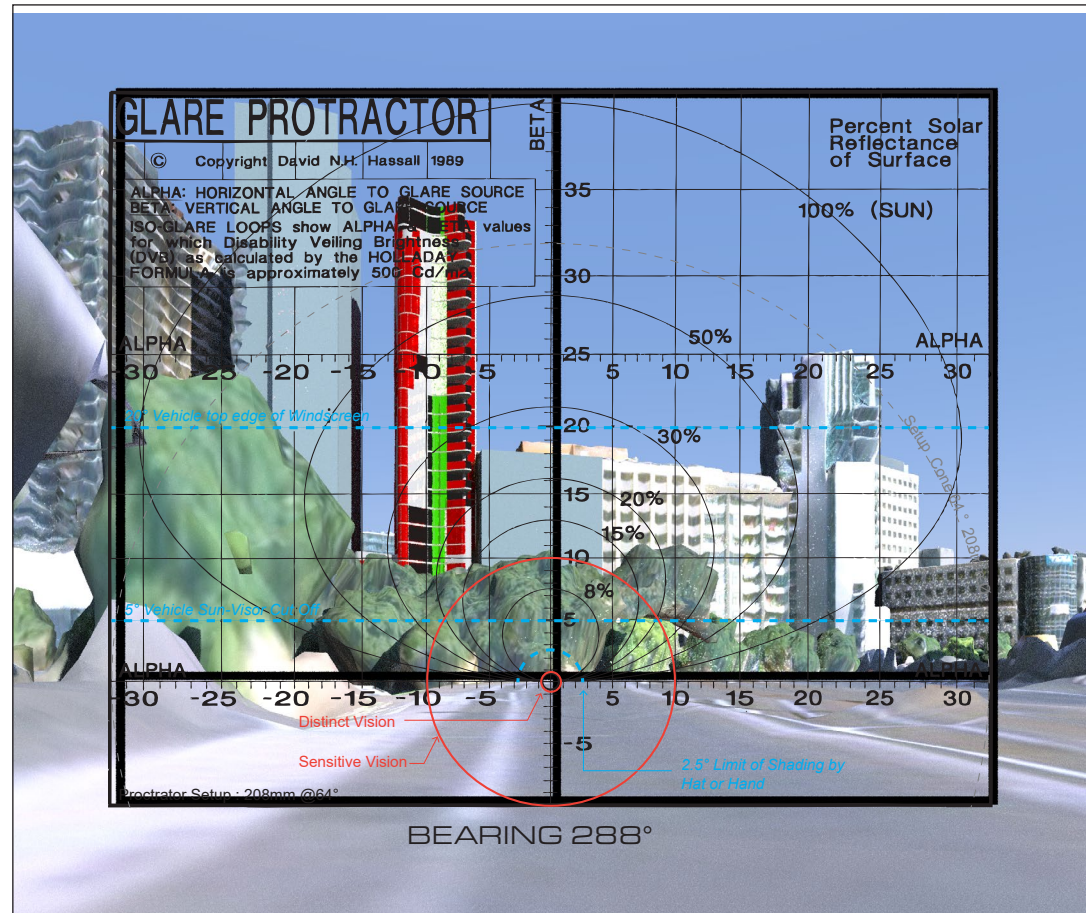
PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE	:	RA 029
DATE	:	29.06.23
VERSION	:	02
REF	:	2049

CALCULATION OF GLARE						
Location		FG				
Month		EQUINOX	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN			
Time		1100	99° - 130°			
Façade Aspect Orientation	ASP	100 °	Degrees relative to Solar North			
View Line Bearing	BRG	338 °				
Sun Pos	AZI	32 °				
	ALT	47 °				
GLASS	Type	2 Class	1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)			
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass			
Solar Power	W	1055 W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15			
Luminous Efficacy	n	125 lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125			
Solar Illumination	E	131875 Lux				
	Normal Beam					
Sun Position with Façade						
	H.S.A	-68 Degrees	Azi - ASP Tan Cos			
	V.SA	70.74435 Degrees	Atn(Tan ALT / Cos H.S.A) 1.072369 0.374607			
Angle of Incidence	I	75 Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S./ 2) 6.126055 8.194783			
		80 Rounded				
Virtual Suns Position			VERTICAL ONLY			
Virtual Altitude	VALT	47 Degrees				
Virtual Azimuth	VAZI	-12 Degrees	ASP - H.S.A - 180			
Glare Position with Observer						
	ALPHA	-350	VAZI-BRG			
	BETA	47	VALT			
	THETA	48.1	ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA			
			SIN TAN COS			
			0.030154 1.149975 0.984808			
REFLECTIVITY OF GLASS						
Look Up suitable Reflectance Curves for Glass		%	70 60 75			
Normal Incidence	RN	5 0.05	Angle of In Clear Floa 20% Refle Film Tint			
Reflectivity at Angle of Incident	R	60 0.6	0 5 20 42			
			10 5 20 42			
			20 5 20 42			
			30 6 21 42			
			40 7 22 42			
			50 9 24 43			
			60 13 27 44			
			70 25 37 50			
			80 70 60 75			
			90 99 99 99			
Illumination at eye						
E.G		52841.81 LUX	Illumination at observers eye due to glare source in plane normal to Line of Sight EG = E°R°*F°C°S°H°E°T°A° 0.667827			
Equivalent VEILING LUMINANCE (Holladay Formula)		228 cd/m2	LV = 10°EG/THETA2			
Provisional Limit to VEILING LUMINANCE						
	500 cd/m2	considered threshold	C			
In Situation ACCEPTABLE	YES					



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

Northbound (City) St Kilda Rd Drivers Line of Sight within Distinct Vision of Eye when turning into ALBERT ST - Bearing 288° Northbound (City) Drivers will be BEARING 316° and beyond field of view.

GLARE PROTRACTOR
(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

Comments:
DRIVERS LINE OF SIGHT
INCLUDES ABILITY TO SEE
PROPOSED DESIGN. NO
GLARE THRESHOLD is found
with direct Line of Sight and
with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

The logo for the Illuminating Engineering Society (IES) is on the left, featuring a stylized sunburst above the letters 'ies' and the text 'The Lighting Society'. To the right, the text reads: 'CERTIFIED SHADOW DIAGRAM', 'No : RA204902', 'Refer to attached Certificate.', 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI', 'Member of IES', and '[The Illuminating Engineers Society of Australia]'.

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

EQUINOX 0800

AREA: G - ST KILDA RD
ST KILDA RD Northbound

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

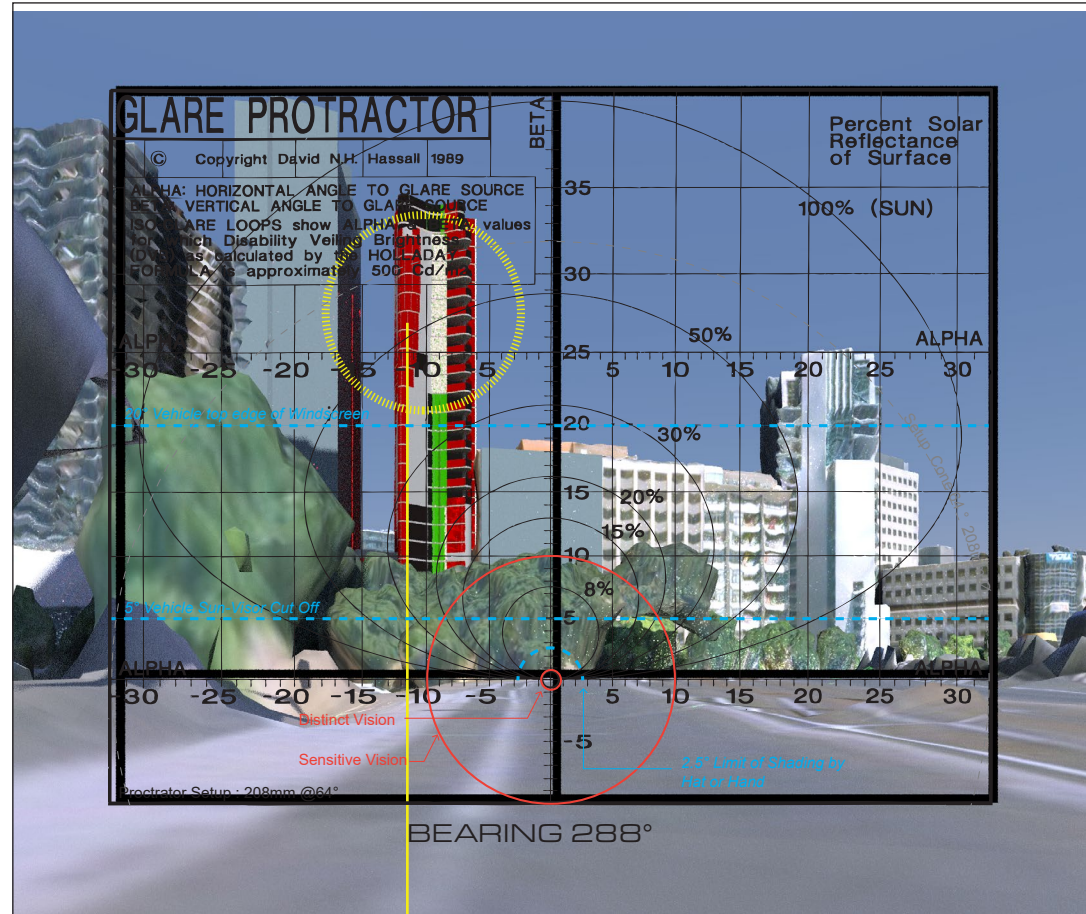
PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 031
DATE : 29.06.23
VERSION : 02
REF : 2049

CALCULATION OF GLARE						
Location		G				
Month		EQUINOX	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN			
Time		800	50° - 140°			
Façade Aspect Orientation	ASP	91°	Degrees relative to Solar North			
View Line Bearing	BRG	288°				
Sun Pos	AZI	74°				
	ALT	18°				
GLASS	Type	2 Class	1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)			
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass			
Solar Power	W	620 W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15			
Luminous Efficacy	n	117 lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125			
Solar Illumination	E	72540 Lux				
	Normal Beam					
Sun Position with Façade						
	H.S.A	-17 Degrees	Azi - ASP	Tan	Cos	
	V.SA	18.76601 Degrees	Atn(Tan ALT / Cos H.S.A)	0.32492	0.956305	
Angle of Incidence	I	25 Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S.A)	0.093471	0.115441	
		20 Rounded				
Virtual Suns Position			VERTICAL ONLY			
Virtual Altitude	VALT	18 Degrees				
Virtual Azimuth	VAZI	-72 Degrees	ASP - H.S.A - 180			
Glare Position with Observer						
	ALPHA	-360	VAZI-BRG			
	BETA	18	VALT			
	THETA	18.0	ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA			
			SIN	TAN	COS	
			6E-32	0.105573		1
REFLECTIVITY OF GLASS						
Look Up suitable Reflectance Curves for Glass		%				
Normal Incidence	RN	5	0.05	5	20	42
Reflectivity at Angle of Incident	R	20	0.2	Angle of In Clear Floa	20% Refle	Film Tint
				0	5	20
				10	5	20
				20	5	20
				30	6	21
				40	7	22
				50	9	24
				60	13	27
				70	25	37
				80	70	60
				90	99	99
Illumination at eye			Illumination at observers eye due to glare source in plane normal to Line of Sight			
E.G		13797.93 LUX	EG = E*R%*F*COSTHETA 0.951057			
Equivalent VEILING LUMINANCE (Holladay Formula)		426 cd/m2	LV = 10*EG/THETA2			
Provisional Limit to VEILING LUMINANCE						
500 cd/m2		considered threshold	C			
In Situation ACCEPTABLE	YES					



Base Image - Aerometrex Render
and 3D Proposed Render

Search area for reflected sun disc

[illegible]

LOCATION - note Line of Vision of traffic - Google Streetview

Northbound (City) St Kilda Rd Drivers Line of Sight within Distinct Vision of Eye when turning into ALBERT ST - Bearing 288° Northbound (City) Drivers will be BEARING 316° and beyond field of view.

GLARE PROTRACTOR

(Stage 2 part 2a and 2b)

GLARE VEILING LUMINANCE

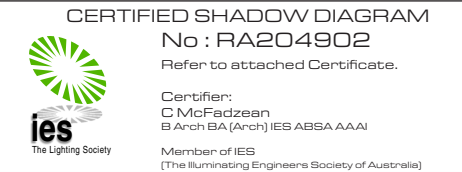
[Stage 2 part 2c]

Comments:
Sun Disc is present on
Surface

Comments:
DRIVERS LINE OF SIGHT
INCLUDES ABILITY TO SEE
PROPOSED DESIGN. NO
GLARE THRESHOLD is found
with direct Line of Sight and
with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD



COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

SUMMER 0700

AREA: G - ST KILDA RD
ST KILDA RD Northbound

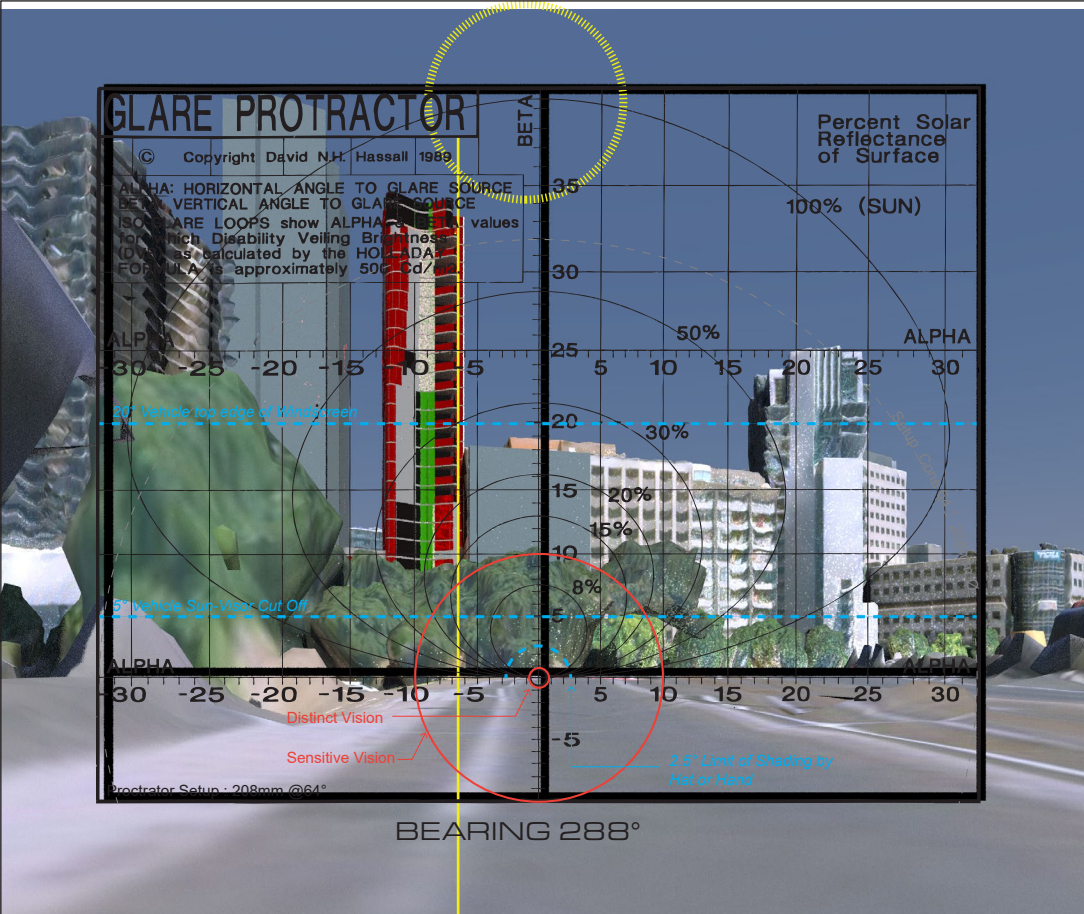
TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

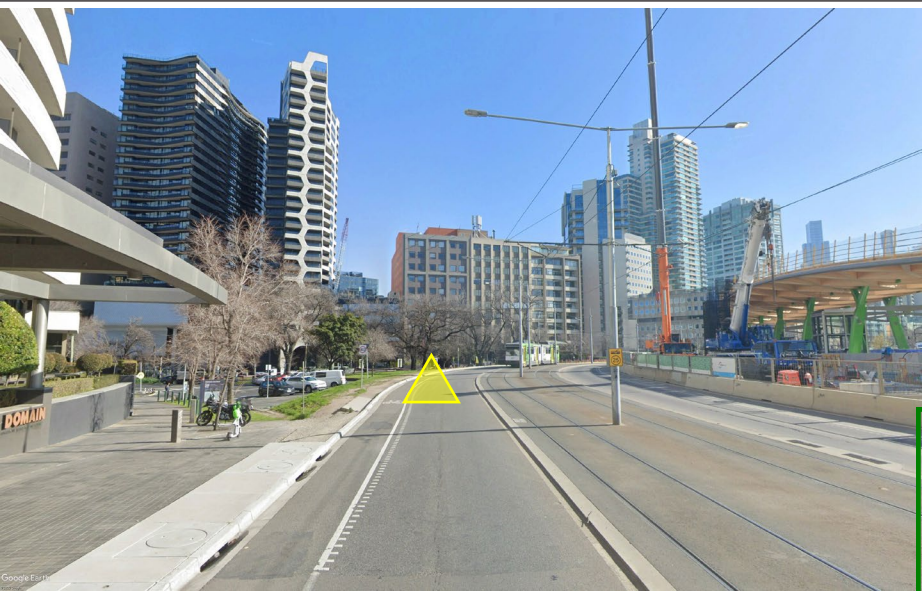
PAGE : RA 032
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render and 3D Proposed Render

Search area for reflected sun disc

CALCULATION OF GLARE			
Location		G	
Month		SUMMER	
Time		800	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN
Façade Aspect Orientation	ASP	107°	50° - 140°
View Line Bearing	BRG	288°	Degrees relative to Solar North
Sun Pos	AZI	94°	
	ALT	33°	
GLASS	Type	2 Class	1 CLEAR 2 20% Reflective 3 40 % Reflective (tint)
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass
Solar Power	W	845 W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15
Luminous Efficacy	n	125 lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125
Solar Illumination	E	105625 Lux	
	Normal Beam		
Sun Position with Façade			
	H.S.A	-13 Degrees	Azi - ASP Tan Cos
	V.S.A	33.68305 Degrees	Atn(Tan ALT / Cos H.S.A) 0.649408 0.97437
Angle of Incidence	I	35 Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S.A) 0.0533 0.444208
		40 Rounded	
Virtual Suns Position			VERTICAL ONLY
Virtual Altitude	VALT	33 Degrees	
Virtual Azimuth	VAZI	-60 Degrees	ASP - H.S.A - 180
Glare Position with Observer			
	ALPHA	-348	VAZI-BRG
	BETA	33	VALT
	THETA	35.1	ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA
			SIN TAN COS
			0.043227 0.42173 0.978148
REFLECTIVITY OF GLASS			
Look Up suitable Reflectance Curves for Glass		%	
Normal Incidence	RN	5	0.05
Reflectivity at Angle of Incidence	R	22	0.22



LOCATION - note Line of Vision of traffic - Google Streetview

Northbound (City) St Kilda Rd Drivers Line of Sight within Distinct Vision of Eye when turning into ALBERT ST - Bearing 288° Northbound (City) Drivers will be BEARING 316° and beyond field of view.

GLARE PROTRACTOR
(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE
(Stage 2 part 2c)

Comments:
DRIVERS LINE OF SIGHT
INCLUDES ABILITY TO SEE
PROPOSED DESIGN. NO
GLARE THRESHOLD is found
with direct Line of Sight and
with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.
Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI
Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

Glass - MAIN
Glass - CONCAVE SECTIONS

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

SUMMER 0800

AREA: G - ST KILDA
RD
ST KILDA RD Northbound

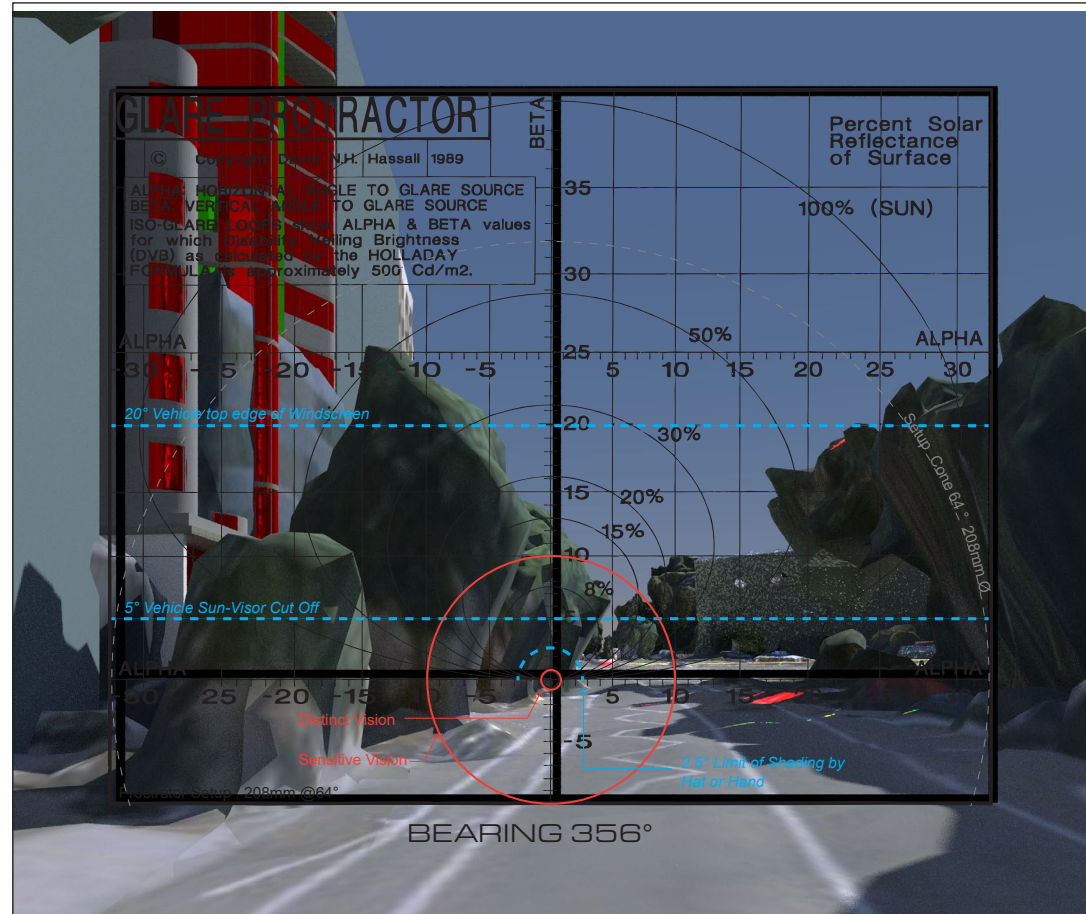
TITLE
GLARE HAZARD ANALYSIS

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC
VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 033
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Proposed design is beyond Field of View of Drivers Vision. In this location no traffic will experience the proposed design within the Field of View..

GLARE PROTRACTOR

[Stage 2 part 2a and 2b]

Comments:
Sun Disc not present on
Surface - Beyond Field of View

The IES logo is on the left, featuring a stylized green sunburst above the letters 'ies' in a bold, lowercase font, with 'The Lighting Society' in a smaller font below. To the right, the text reads: 'CERTIFIED SHADOW DIAGRAM' in all caps, followed by 'No : RA204902' in a large font, and 'Refer to attached Certificate.' in a smaller font. Below this, it says 'Certifier:' followed by 'C McFadzean' in a bold font, and 'B Arch BA (Arch) IES ABSA AAAI' in a smaller font. At the bottom, it says 'Member of IES' in a bold font, followed by '(The Illuminating Engineers Society of Australia)' in a smaller font.

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

EQUINOX 1000

AREA: F
STREETFRONT
ALBERT RD Northbound

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 034
DATE : 29.06.23
VERSION : 02
REF : 2049

CALCULATION OF GLARE			F				
Location			EQUINOX	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN			
Month			1000	50° - 140°			
Time			115°	Degrees relative to Solar North			
Façade Aspect Orientation	ASP						
View Line Bearing	BRG		356°				
Sun Pos	AZI		50°				
	ALT		39°				
GLASS	Type	2	Class	1 CLEAR 2 20% Reflective 3 40 % Reflective (tint)			
Fraction of Façade that is reflective		1		Decimal number - 1 is 100% Glass			
Solar Power	W	935	W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15			
Luminous Efficacy	n	125	lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125			
Solar Illumination	E	116875	Lux				
	Normal Beam						
Sun Position with Façade							
	H.S.A	-65	Degrees	Azi - ASP	Tan	Cos	
	V.S.A	62.44039	Degrees	Atn(Tan ALT / Cos H.S.A)	0.809784	0.422618	
Angle of Incidence	I	71	Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S.))	4.59891	3.671486	
		70	Rounded				
Virtual Suns Position				VERTICAL ONLY			
Virtual Altitude	VALT	39	Degrees				
Virtual Azimuth	VAZI	0	Degrees	ASP - H.S.A - 180			
Glare Position with Observer							
	ALPHA	-356		VAZI-BRG			
	BETA	39		VALT			
	THETA	39.2		ATAN(SQR(SIN2ALPHA + SIN2BETA)) / COS ALPHA			
				SIN TAN COS			
				0.004866 0.65515 0.975907			
REFLECTIVITY OF GLASS							
Look Up suitable Reflectance	Curves for Glass	%		25	37	50	
Normal Incidence	RN	5	0.05	Angle of In Clear Floa 20% Reflect Film Tint	20	42	
Reflectivity at Angle of Incidence	R	37	0.37	0	5	20	
				10	5	20	
				20	5	20	
				30	6	21	
				40	7	22	
				50	9	24	
				60	13	27	
				70	25	37	
				80	70	60	
				90	99	99	
Illumination at eye							
E.G		33511.93	LUX	Illumination at observers eye due to glare source in plane normal to Line of Sight EG = E°R°*F°COSTHETA 0.774954			
Equivalent VEILING LUMINANCE (Holladay Formula)		218	cd/m2	LV = 10°EG/THETA2			
Provisional Limit to VEILING LUMINANCE							
	500 cd/m2		considered threshold	C			
In Situation ACCEPTABLE	YES						

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

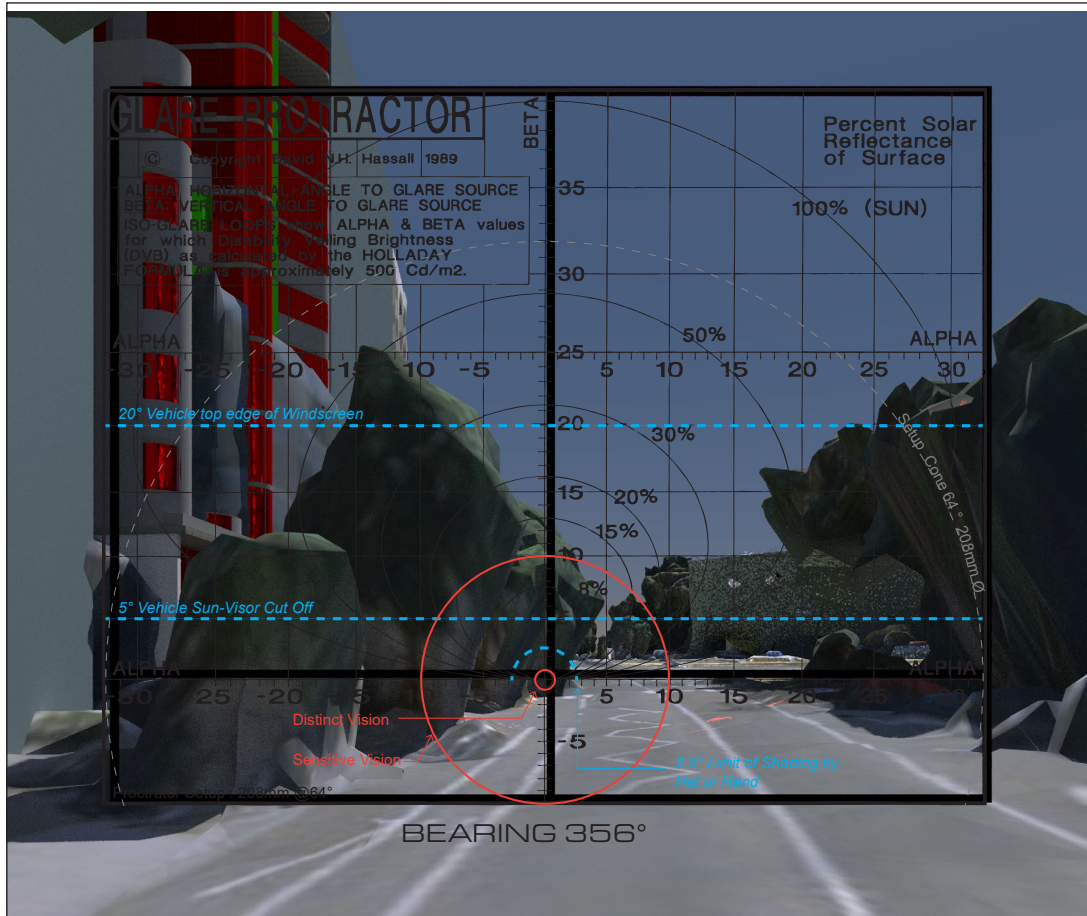
Comments:
NO GLARE THRESHOLD is
found with direct or indirect
Line of Sight and with 20%
Reflective Glass

SUMMARY

NO GLARE
HAZARD

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Proposed design is beyond Field of View of Drivers Vision. In this location no traffic will experience the proposed design within the Field of View..

GLARE PROTRACTOR

(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

Comments:
NO GLARE THRESHOLD is
found with direct or indirect
Line of Sight and with 20%
Reflecrive Glass

SUMMARY

NO GLARE
HAZARD

CALCULATION OF GLARE					
Location		F			
Month		EQUINOX		Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN	
Time		1100		50° - 140°	
Façade Aspect Orientation	ASP	105°	*	Degrees relative to Solar North	
View Line Bearing	BRG	356°	*		
Sun Pos	AZI	32°	*		
	ALT	47°	*		
GLASS	Type	2 Class		1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)	
Fraction of Façade that is reflective		1		Decimal number - 1 is 100% Glass	
Solar Power	W	1055	W/m ²	If Alt 0 - 10 then W = 50°ALT If Alt 10-33 then W=500+(ALT-10)*15	
Luminous Efficacy	n	125	lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125	
Solar Illumination	E	131875	Lux		
	Normal Beam				
Sun Position with Façade					
	H.S.A	-73	Degrees	Azi - ASP Tan Cos	
	V.SA	74.74948	Degrees	Atn(Tan ALT / Cos H.S.A) 1.072369 0.292372	
Angle of Incidence	I	78	Degrees	Atn(Sqr(Tan2 H.SA + Tan2 V.S.) 10.69848 13.45295	
		80	Rounded		
Virtual Suns Position				VERTICAL ONLY	
Virtual Altitude	VALT	47	Degrees		
Virtual Azimuth	VAZI	-2	Degrees	ASP - H.S.A - 180	
Glare Position with Observer					
	ALPHA	-358		VAZI-BRG	
	BETA	47		VALT	
	THETA	47.0		ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA	
				SIN TAN COS	
				0.001218 1.149975 0.999391	
REFLECTIVITY OF GLASS					
Look Up suitable Reflectance	Curves for Glass	%		70 60 75	
Normal Incidence	RN	5	0.05	Angle of In Clear Floa 20% Refle Film Tint	
Reflectivity at Angle of Incident R		60	0.6	0 5 20 42	
				10 5 20 42	
				20 5 20 42	
				30 6 21 42	
				40 7 22 42	
				50 9 24 43	
				60 13 27 44	
				70 25 37 50	
				80 70 60 75	
				90 99 99 99	
Illumination at eye					
E.G	53918.88	LUX		Illumination at observers eye due to glare source in plane normal to Line of Sight	
				EG = E*R%*F*COSTHETA	
				0.681439	
Equivalent VEILING LUMINANCE					
(Holladay Formula)	244	cd/m ²		LV = 10*EG/THETA2	
Provisional Limit to VEILING LUMINANCE					
	500/cd/m ²	considered threshold	C		
Is Situation ACCEPTABLE	YES				

CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.

Certifier:
C McFadzean
B Arch BA (Arch) IES ABSA AAAI

Member of IES
[The Illuminating Engineers Society of Australia]

ies
The Lighting Society

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

EQUINOX 1100

AREA: F
STREETFRONT
ALBERT RD Northbound

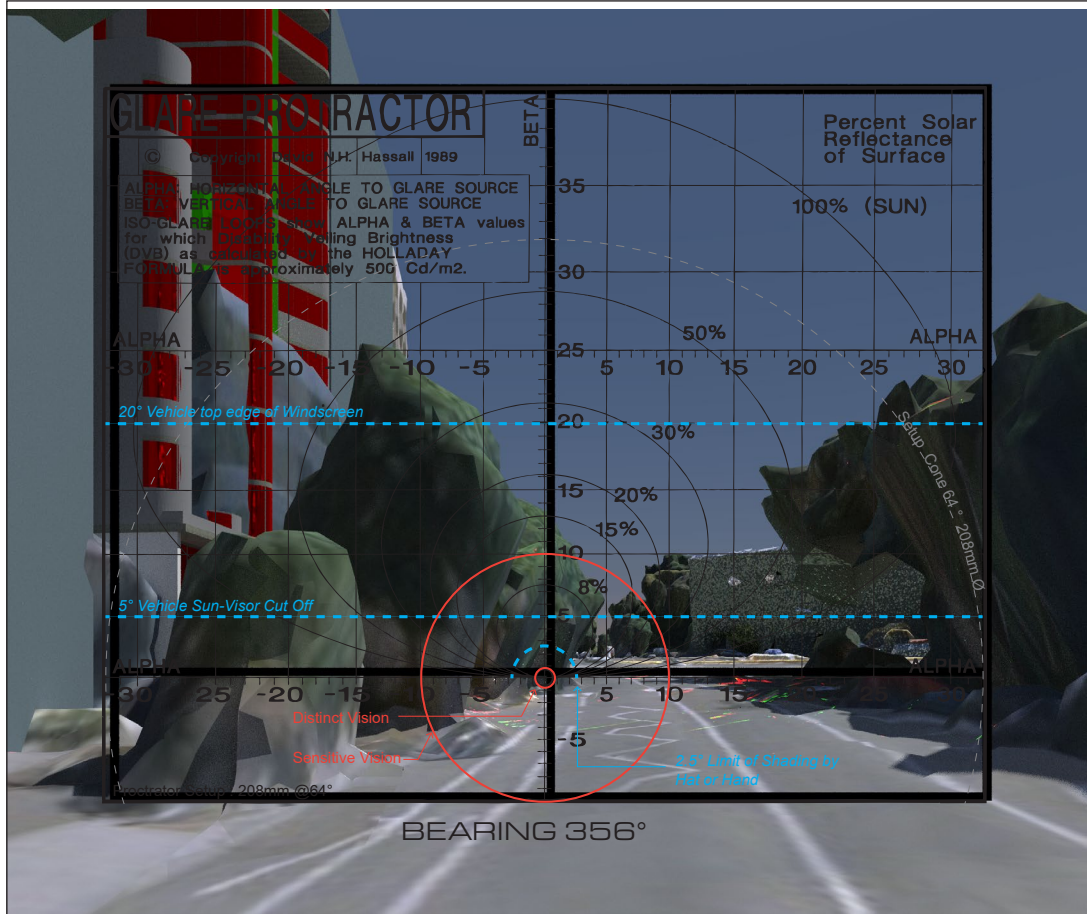
TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 035
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Proposed design is beyond Field of View of Drivers Vision. In this location no traffic will experience the proposed design within the Field of View..

GLARE PROTRACTOR

(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

CITY OF PORT PHILLIP PORT PHILLIP PLANNING SCHEME This endorsed document complies with Condition No. 61 in Planning Permit No: 1051/2017/A 121 pages Date: 20/02/2024	
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Comments:
NO GLARE THRESHOLD is found with direct or indirect Line of Sight and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

CERTIFIED SHADOW DIAGRAM
No : RA204902
Refer to attached Certificate.


ies
The Lighting Society

Classifier:
C McFadzean
B Arch BA (Arch) IES ABSS AAAI

Member of IES
(The Illuminating Engineers Society of Australia)

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

EQUINOX 1000

AREA: F
STREETFRONT
ALBERT RD Northbound

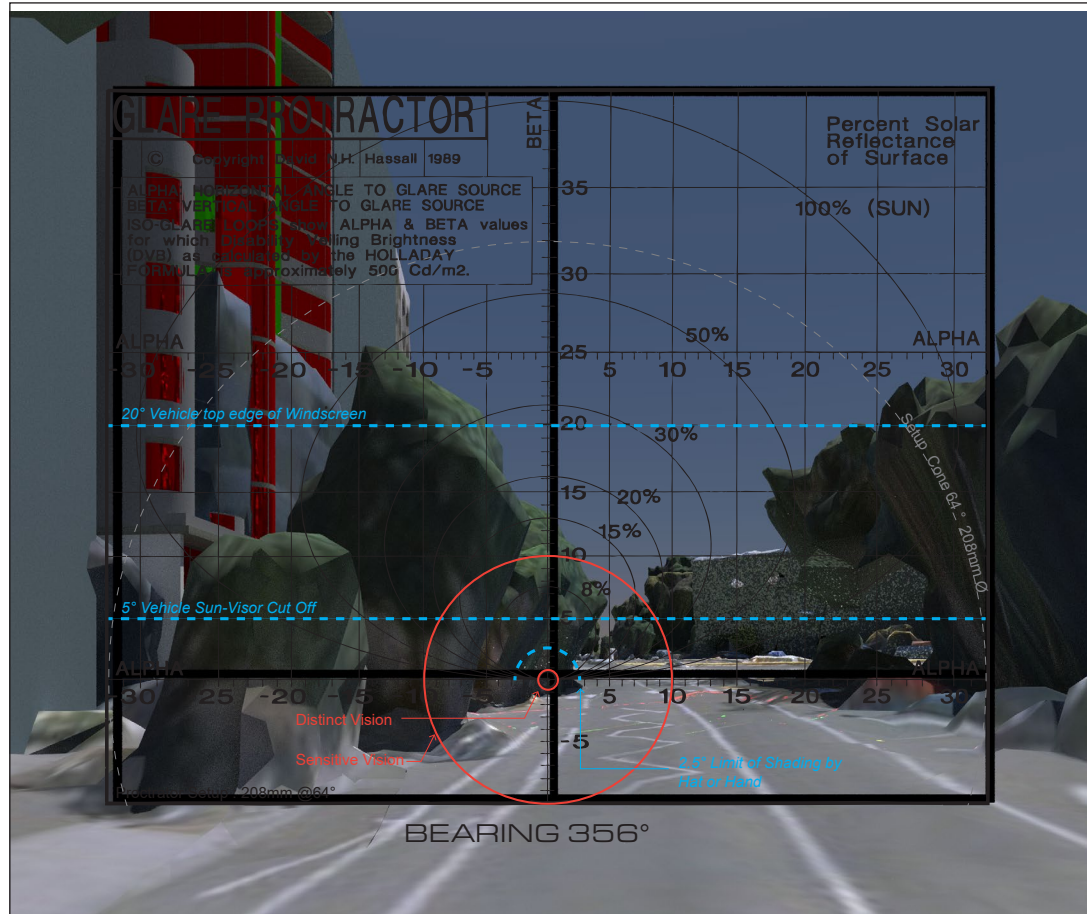
TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 036
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Proposed design is beyond Field of View of Drivers Vision. In this location no traffic will experience the proposed design within the Field of View..

GLARE PROTRACTOR

[Stage 2 part 2a and 2b]

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

Comments:
NO GLARE THRESHOLD is found with direct or indirect Line of Sight and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

CALCULATION OF GLARE			
Location		F	
Month		EQUINOX	
Time		1100	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN
Façade Aspect Orientation	ASP	105 °	50° - 140°
View Line Bearing	BRG	356 °	Degrees relative to Solar North
Sun Pos	AZI	32 °	
	ALT	47 °	
GLASS	Type	2 Class	1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass
Solar Power	W	1055 W/m2	If Alt 0 - 10 then W = 50*ALT
			If Alt 10-33 then W=500+(ALT-10)*15
Luminous Efficacy	n	125 lm/W	If ALT<10 then n=90
			If ALT 10 - 20 then n = 117
Solar Illumination	E	131875 Lux	If ALT 20 - 30 then n = 125
	Normal Beam		
Sun Position with Façade			
	H.S.A	-73 Degrees	Azi - ASP Tan Cos
	V.SA	74.74948 Degrees	Atn(Tan ALT / Cos H.S.A) 1.072369 0.292372
Angle of Incidence	I	78 Degrees	Atn(Sqr(Tan2 H.S.A + Tan2 V.S. 10.69848 13.45295
		80 Rounded	
Virtual Suns position			VERTICAL ONLY
Virtual Altitude	VALT	47 Degrees	
Virtual Azimuth	VAZI	-2 Degrees	ASP - H.S.A - 180
Glare Position with Observer			
	ALPHA	-358	VAZI-BRG
	BETA	47	VALT
	THETA	47.0	ATAN((SQR((SIN2ALPHA + TAN2 BETA))) / COS ALPHA
			SIN TAN COS
			0.001218 1.149975 0.999391
REFLECTIVITY OF GLASS			
Look Up suitable Reflectance	Curves for Glass	%	70 60 75
Normal Incidence	RN	5 0.05	Angle of In Clear Floa 20% Refle Film Tint
Reflectivity at Angle of Incident R		60 0.6	0 5 20 42
			10 5 20 42
			20 5 20 42
			30 6 21 42
			40 7 22 42
			50 9 24 43
			60 13 27 44
			70 25 37 50
			80 70 60 75
			90 99 99 99
Illumination at eye			Illumination at observers eye due to glare source in plane normal to Line of Sight
E.G	53918.88 LUX		EG = E*R%/F*COSTHETA
			0.681439
Equivalent VEILING LUMINANCE			
(Holaday Formula)	244 cd/m2		LV = 10*EG/THETA2
Provisional Limit to VEILING LUMINANCE			
500 cd/m2	considered threshold	C	
Is Situation ACCEPTABLE	YES		

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in the Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

The IES logo, featuring a stylized green sunburst above the letters 'ies' in a bold, lowercase font, with the text 'The Lighting Society' underneath. To the right of the logo, the text reads: 'CERTIFIED SHADOW DIAGRAM', 'No : RA204902', 'Refer to attached Certificate.', 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI', 'Member of IES', and '[The Illuminating Engineers Society of Australia]'.

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

EQUINOX 1100

AREA: F
STREETFRONT
ALBERT RD Northbound

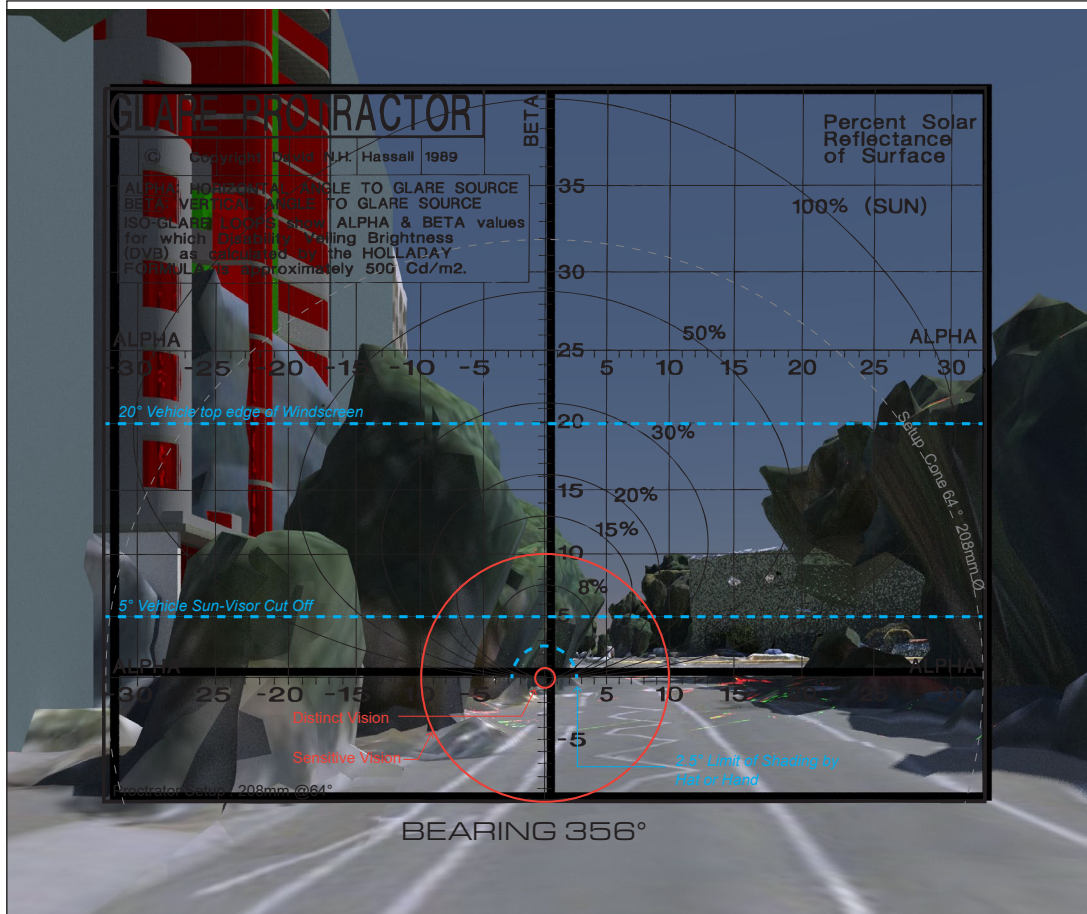
TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 037
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Proposed design is beyond Field of View of Drivers Vision. In this location no traffic will experience the proposed design within the Field of View..

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in Planning Permit No: 1051/2017/A

121 pages

Date: 20/02/2024

GLARE PROTRACTOR

(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

SUMMER 1000

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

Comments:
NO GLARE THRESHOLD is found with direct or indirect Line of Sight and with 20% Reflective Glass

AREA: F
STREETFRONT
ALBERT RD Northbound

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

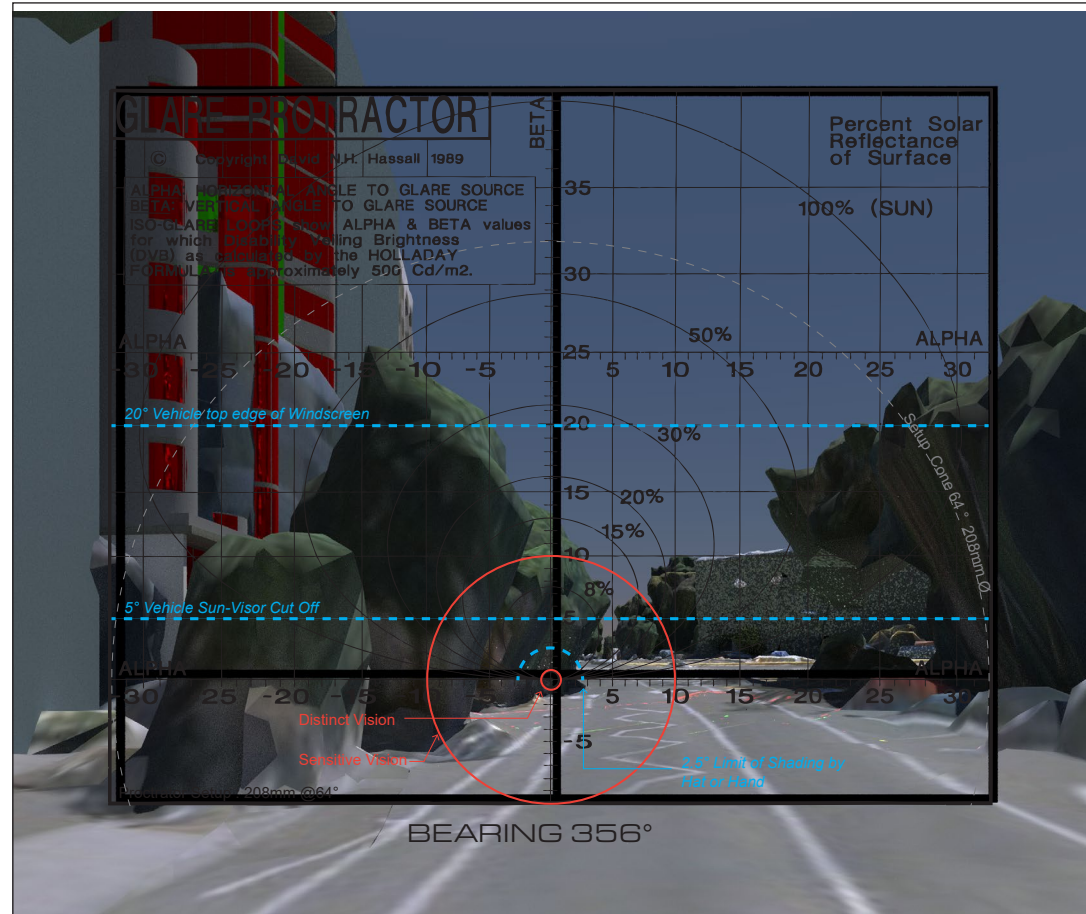
CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

SUMMARY

NO GLARE
HAZARD

PAGE : RA 038
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Proposed design is beyond Field of View of Drivers Vision. In this location no traffic will experience the proposed design within the Field of View..

GLARE PROTRACTOR

[Stage 2 part 2a and 2b]

Comments:
Sun Disc not present on
Surface - Beyond Field of View

The IES logo, featuring a stylized green sunburst above the letters 'ies' in a bold, lowercase font, with the text 'The Lighting Society' underneath. To the right of the logo, the text reads: 'CERTIFIED SHADOW DIAGRAM', 'No : RA204902', 'Refer to attached Certificate.', 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI', 'Member of IES', and '[The Illuminating Engineers Society of Australia]'.

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

SUMMER 1100

AREA: F
STREETFRONT
ALBERT RD Northbound

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 039
DATE : 29.06.23
VERSION : 02
REF : 2049

CALCULATION OF GLARE									
Location		F							
Month		SUMMER			Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN				
Time		1100			50° - 140°				
Façade Aspect Orientation	ASP	115 °	*		Degrees relative to Solar North				
View Line Bearing	BRG	356 °	*						
Sun Pos	AZI	54 °							
	ALT	68 °							
GLASS	Type	2 Class			1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)				
Fraction of Façade that is reflective		1			Decimal number - 1 is 100% Glass				
Solar Power	W	1370 W/m ²			If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15				
Luminous Efficacy	n	125 lm/W			If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125				
Solar Illumination	E	171250 Lux							
	Normal Beam								
Sun Position with Façade									
	H.S.A	-61 Degrees			Azi - ASP Tan Cos				
	V.SA	78.91746 Degrees			Atn(Tan ALT / Cos H.S.A) 2.475087 0.48481				
Angle of Incidence	I	80 Degrees 80 Rounded			Atn(Sqr(Tan2 H.S.A + Tan2 V.S./ 3.254588 26.06384				
Virtual Suns Position					VERTICAL ONLY				
Virtual Altitude	VALT	68 Degrees							
Virtual Azimuth	VAZI	-4 Degrees			ASP - H.S.A - 180				
Glare Position with Observer									
	ALPHA	-360			VAZI-BRG				
	BETA	68			VALT				
	THETA	68.0			ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA				
					SIN TAN COS				
					6E-32 6.126055 1				
REFLECTIVITY OF GLASS									
Look Up suitable Reflectance	Curves for Glass	%			70 60 75				
Normal Incidence	RN	5	0.05		Angle of In Clear Floa 20% Refle Film Tint				
Reflectivity at Angle of Incident	R	60	0.6		0 5 20 42				
					10 5 20 42				
					20 5 20 42				
					30 6 21 42				
					40 7 22 42				
					50 9 24 43				
					60 13 27 44				
					70 25 37 50				
					80 70 60 75				
					90 99 99 99				
Illumination at eye									
					Illumination at observers eye due to glare source in plane normal to Line of Sight				
E.G		38490.83 LUX			EG = E*R%"F"COSTHETA 0.374607				
Equivalent VEILING LUMINANCE (Holladay Formula)		83 cd/m ²			LV = 10*EG/THETA2				
Provisional Limit to VEILING LUMINANCE									
	500 cd/m ²				considered threshold C				
In Situation ACCEPTABLE	YES								

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in Planning Permit No: 1051/2017/A 121 pages Date: 20/02/2024		Comments: NO GL ARE THERE
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Comments:
NO GLARE THRESHOLD is
found with direct or indirect
Line of Sight and with 20%
Reflective Glass

SUMMARY

NO GLARE
HAZARD



LOCATION - note Line of Vision of traffic - Google Streetview

 Drivers Line of Sight when exiting Driveway.
Drivers Line of vision does not contain Proposed Design in field of view

GLARE PROTRACTOR

(Stage 2 part 2a and 2b)

Comments:
Sun Disc not present on
Surface - Beyond Field of View

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

Comments:
NO CLARE THRESHOLD is found with direct or indirect Line of Sight and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

CALCULATION OF GLARE					
Location		F			
Month		SUMMER	Note Curved Concave Glass - Either Options shown or WORST CASE SHOWN		
Time		1100	50° - 140°		
Façade Aspect Orientation	ASP	115 °	Degrees relative to Solar North		
View Line Bearing	BRG	356 °			
Sun Pos	AZI	54 °			
	ALT	68 °			
GLASS	Type	2 Class	1 CLEAR 2 20%Reflective 3 40 % Reflective (tint)		
Fraction of Façade that is reflective		1	Decimal number - 1 is 100% Glass		
Solar Power	W	1370 W/m2	If Alt 0 - 10 then W = 50*ALT If Alt 10-33 then W=500+(ALT-10)*15		
Luminous Efficacy	n	125 lm/W	If ALT<10 then n=90 If ALT 10 - 20 then n = 117 If ALT 20 - 30 then n = 125		
Solar Illumination	E	171250 Lux			
	Normal Beam				
Sun Position with Façade					
	H.S.A	-61 Degrees	Azi - ASP	Tan	Cos
	V.SA	78.91746 Degrees	Atn(Tan ALT / Cos H.S.A)	2.475087	0.48481
Angle of Incidence	I	80 Degrees 80 Rounded	Atn(Sqr(Tan2 H.S.A + Tan2 V.S./	3.254588	26.06384
Virtual Suns Position			VERTICAL ONLY		
Virtual Altitude	VALT	68 Degrees			
Virtual Azimuth	VAZI	-4 Degrees	ASP - H.S.A - 180		
Glare Position with Observer					
	ALPHA	-360	VAZI-BRG		
	BETA	68	VALT		
	THETA	68.0	ATAN(SQR(SIN2ALPHA + TAN2 BETA)) / COS ALPHA		
			SIN TAN COS		
			6E-32 6.126055 1		
REFLECTIVITY OF GLASS					
Look Up suitable Reflectance	Curves for Glass	%	70	60	75
Normal Incidence	RN	5	0.05	Angle of In Clear Floa 20% Refle Film Tint	
Reflectivity at Angle of Incident	R	60	0.6	0	5
				20	42
				10	5
				20	5
				20	42
				30	6
				21	42
				40	7
				22	42
				50	9
				24	43
				60	13
				27	44
				70	25
				37	50
				80	70
				60	75
				90	99
				99	99
Illumination at eye					
E.G		38490.83 LUX	Illumination at observers eye due to glare source in plane normal to Line of Sight EG = E°R°*F°COSTHETA 0.374607		
Equivalent VEILING LUMINANCE (Holladay Formula)		83 cd/m2	LV = 10°EG/THETA2		
Provisional Limit to VEILING LUMINANCE					
500 cd/m2		considered threshold	C		
In Situation ACCEPTABLE	YES				

The IES logo, featuring a stylized green sunburst above the letters 'ies' in a bold, lowercase font, with 'The Lighting Society' written in a smaller font below. To the right of the logo, the text reads: 'CERTIFIED SHADOW DIAGRAM', 'No : RA204902', 'Refer to attached Certificate.', 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI', 'Member of IES', and '[The Illuminating Engineers Society of Australia]'. The entire content is enclosed in a thin black rectangular border.

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

EQUINOX 1500

AREA: B Side Street
Palmerston Cres - Exit Driveway

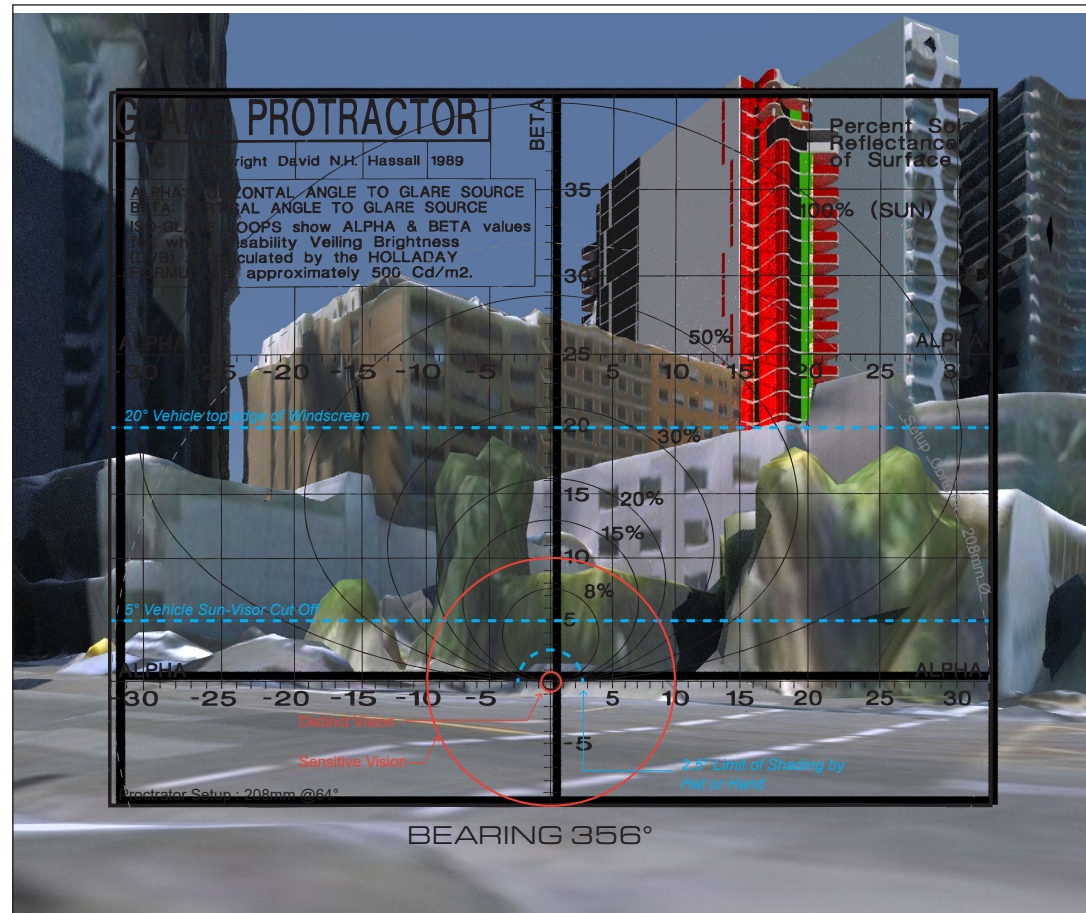
TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 040
DATE : 29.06.23
VERSION : 02
REF : 2049



Base Image - Aerometrex Render
and 3D Proposed Render



LOCATION - note Line of Vision of traffic - Google Streetview

 Drivers Line of Sight when exiting Palmerston (North).
All other driver field of view do not contain Proposed Design within field of View

CITY OF PORT PHILLIP
PORT PHILLIP PLANNING SCHEME

This endorsed document complies with Condition No. 61 in
Planning Permit No: 1051/2017/A
121 pages
Date: 20/02/2024

The logo for the Illuminating Engineering Society (IES) is on the left, featuring a stylized sunburst above the letters 'ies' and the text 'The Lighting Society'. To the right, the text reads: 'CERTIFIED SHADOW DIAGRAM', 'No : RA204902', 'Refer to attached Certificate.', 'Certifier:', 'C McFadzean', 'B Arch BA (Arch) IES ABSA AAAI', 'Member of IES', and '[The Illuminating Engineers Society of Australia]'.

COLOUR CODE KEY

 Glass - MAIN
 Glass - CONCAVE SECTIONS

GLARE PROTRACTOR

[Stage 2 part 2a and 2b]

Comments:
Sun Disc not present on
Surface - Beyond Field of View

EQUINOX 1600

AREA: B PARK
Street
Park St and Palmerston Cres

TITLE	GLARE HAZARD ANALYSIS
-------	-----------------------

PROJECT
28-32 Albert Road
South Melbourne

CLIENT
M PROPERTY
Architects - Elenberg Fraser

VIPAC VIPAC Engineers & Scientists Lt
279 Normanby Rd, Port
Melbourne 3207
Ph 0396479718

PAGE : RA 041
DATE : 29.06.23
VERSION : 02
REF : 2049

GLARE VEILING LUMINANCE

[Stage 2 part 2c]

Comments:
NO GLARE THRESHOLD is found with direct or indirect Line of Sight and with 20% Reflective Glass

SUMMARY

NO GLARE
HAZARD

[illegible]