

Addendum A: Solar Analysis

This chapter includes additional information to support the contents of this report. It includes:

A) Diagrams showing the overshadowing on Block 1 from surrounding buildings. The analysis has been conducted for the 22nd of March and 21st of June between 9.00 and 15.00 and 07.30 and 16.30.

B) Solar access studies, design principles

- Horizontal banding/slot windows
- Passive shading devices and light shelves
- "Lanai" concept
- Massing form
- Conclusion

C) Sun-access studies for the residential apartments

- 2hr or more of direct sun-light to living room windows for the 22nd of March and 21st of June with and without horizontal transoms.
- 1hr or more of direct sun-light to living room windows for the 22nd of March and 21st of June with and without horizontal transoms.

- 2hr or more of direct sun-light to private open spaces for the 22nd of March and 21st of June.
- 1hr or more of direct sun-light to private open spaces for the 22nd of March and 21st of June.

D) Summary of the studies that were conducted along with the results, showing the percentage of flats compliant to the requirements for:

- 2.0 h or more of direct sun-light
- 1.5 h or more of direct sun-light
- 1.0 h or more of direct sun-light

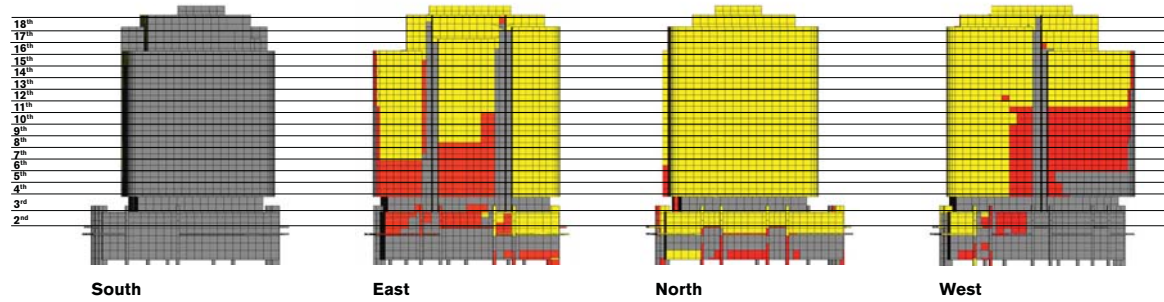
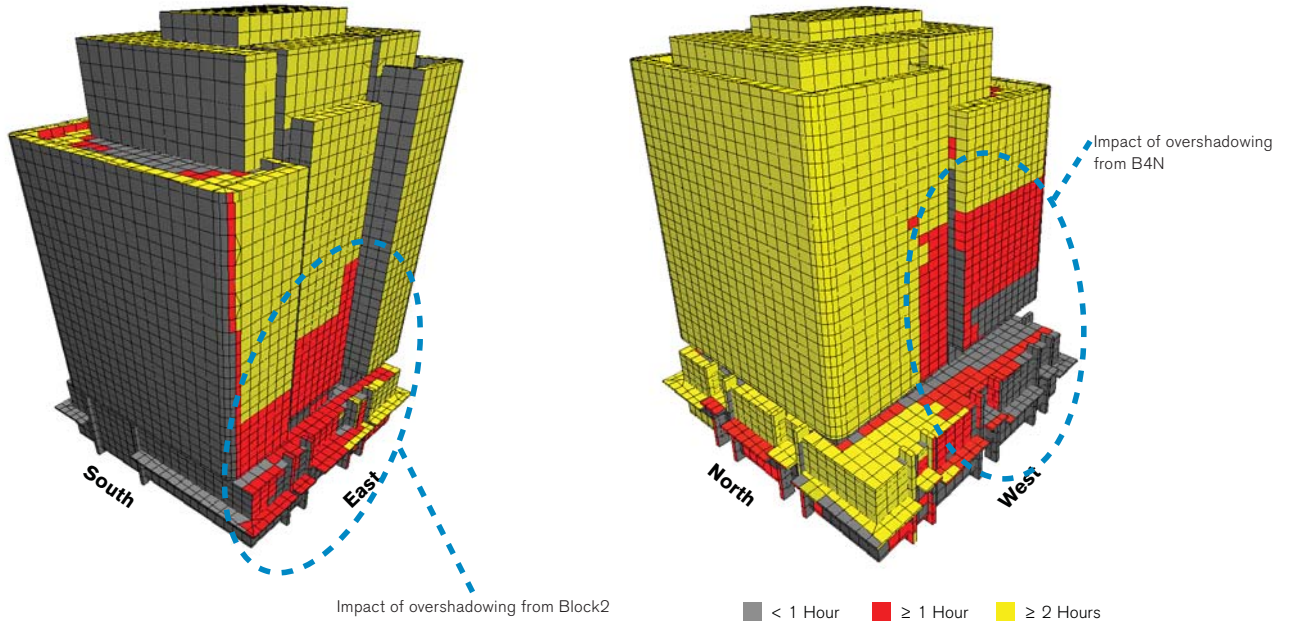
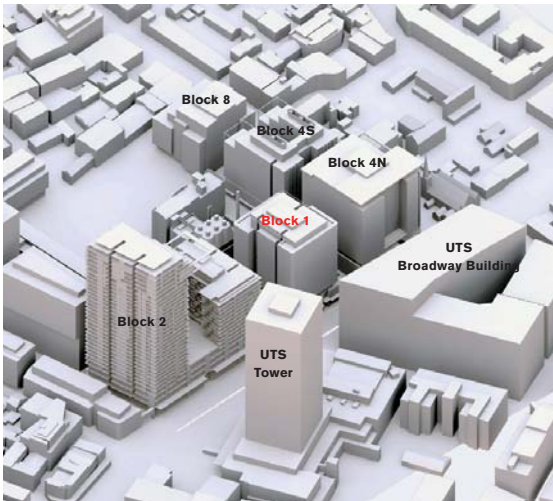
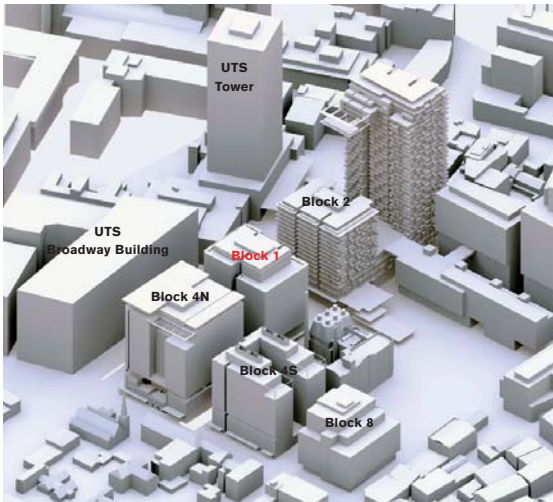
Solar Analysis

Overshadowing on Block1 from surrounding buildings
 March 22nd - 9.00 to 15.00.

The study shows the impact of overshadowing from the adjacent buildings on Block1 as per the given time period.

The result highlights the zones in which the block receives sun access for a period less than 1 hour, between 1 and 2 hours and 2 hours and more.

DCP standards
 March 22nd - 9.00 - 15.00

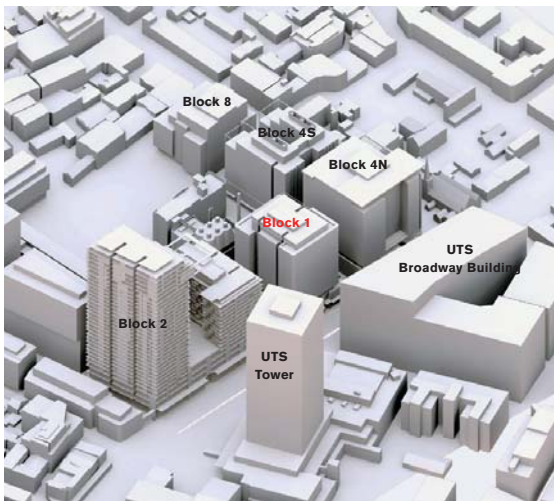
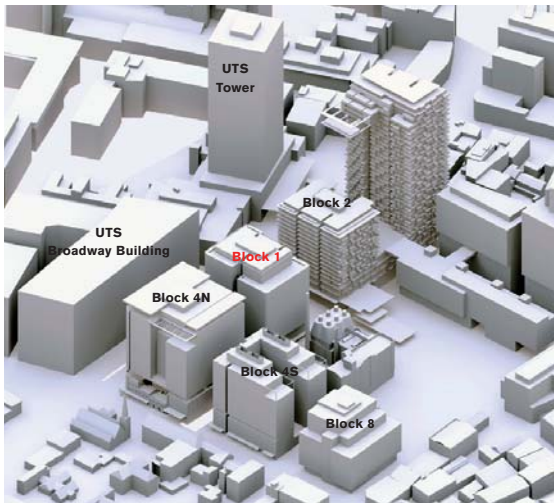


Solar Analysis

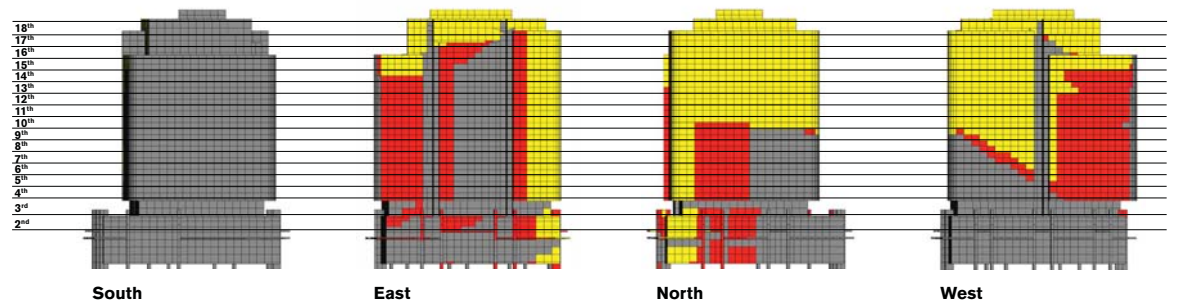
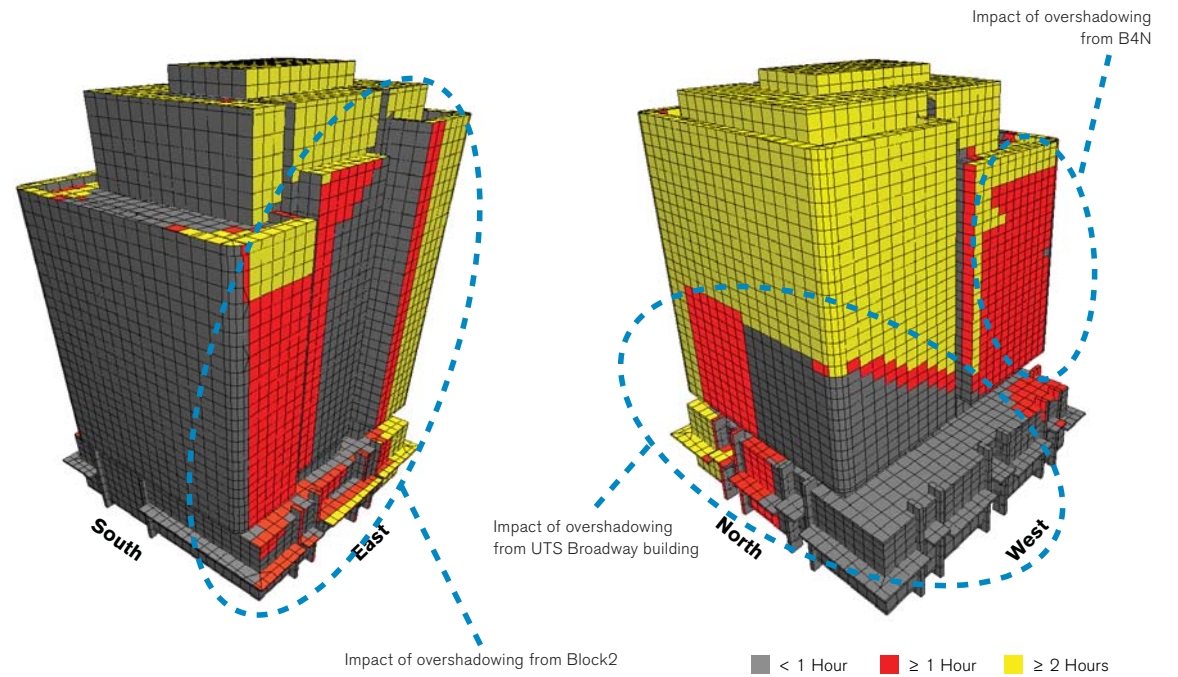
Overshadowing on Block1 from surrounding buildings
 June 21st - 9.00 to 15.00.

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DCP/SEPP65 standards
 June 21st - 9.00 - 1500

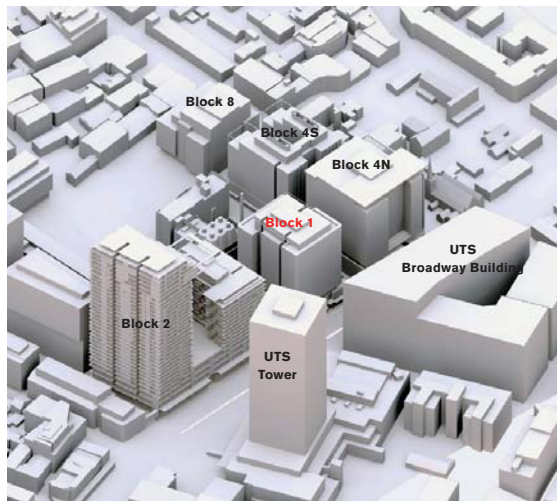
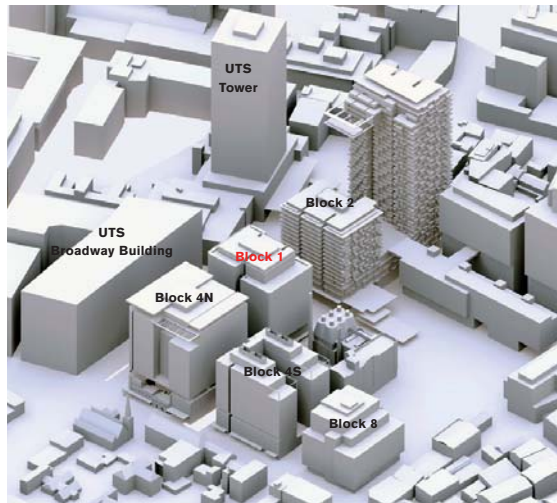


Solar Analysis

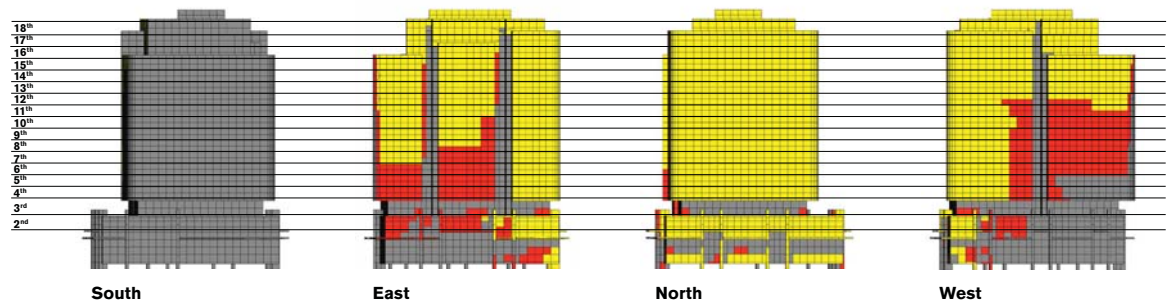
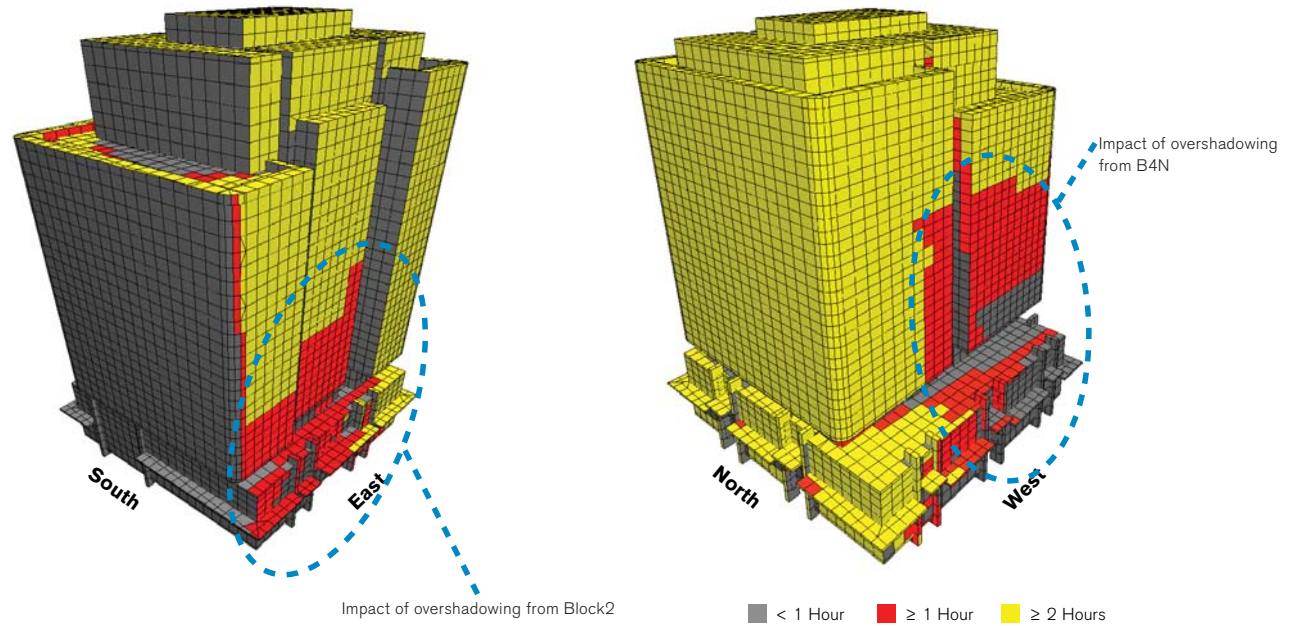
Overshadowing on Block1 from surrounding buildings
 March 22nd - 7.30 to 16.30.

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EXTENDED HOURS
 March 22nd - 7.30 - 16.30

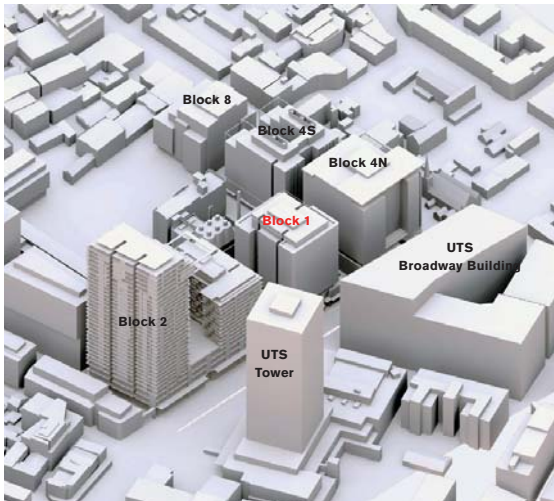
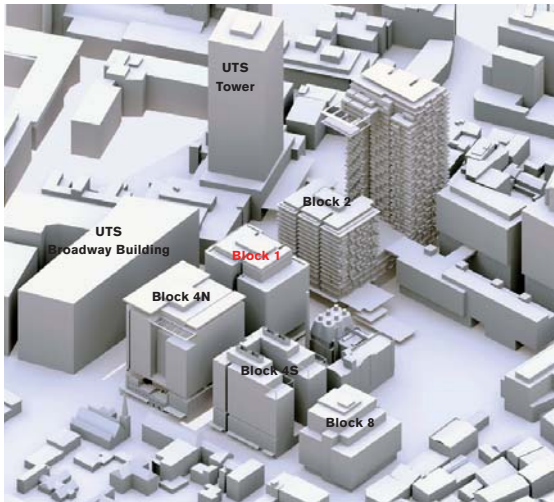


Solar Analysis

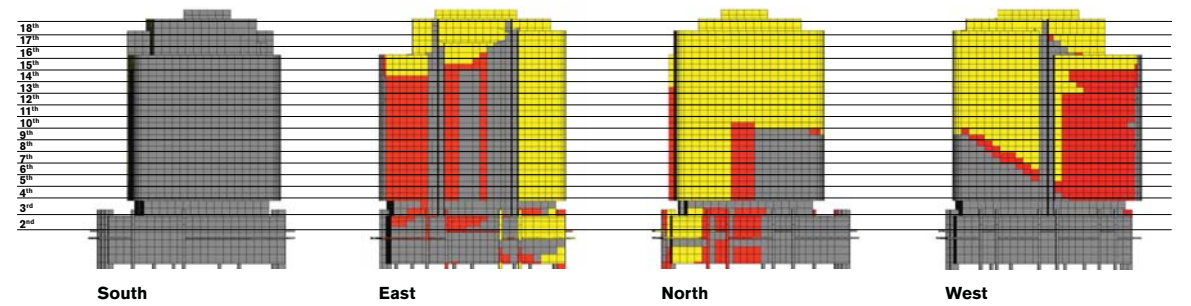
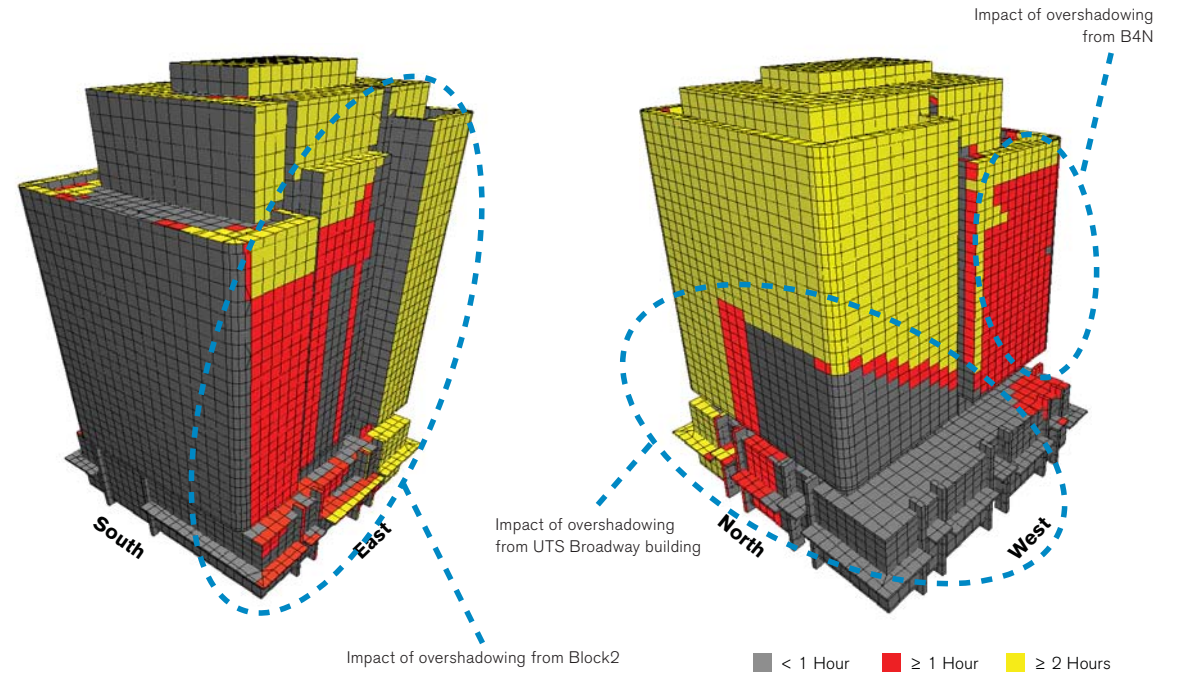
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The result highlights the zones in which the block receives sun access for a period less than 1 hour, between 1 and 2 hours and 2 hours and more.



EXTENDED HOURS June 21st - 7.30 - 16.30



Horizontal Banding/Slot windows

The traditional approach to articulating the façade of a residential building with glazing is to either introduce a series of full-height vertical glazed slots (Fig.1) or punch windows into a solid wall (Fig.2).

This is usually set out in response to the internal layout of the apartments, providing a level of privacy with intermittent solar access and views outwards.

The façade put forward for Block 1 looks to balance the issues of solar access, views out and privacy without compromising each other through the use of horizontal "banding" in the design of the elevations. The use of horizontal bands allows for a continuous strip of glazing along each façade maximising the extent of glass where sunlight can penetrate the building. The white concrete spandrel provides privacy to bedrooms.

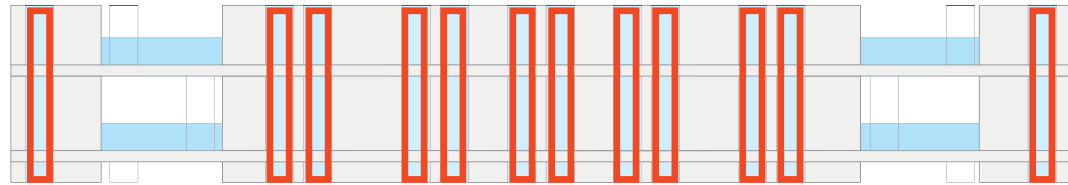


Fig.1 - Full height vertical glazed slots



Fig.2 - Punch windows into a solid wall

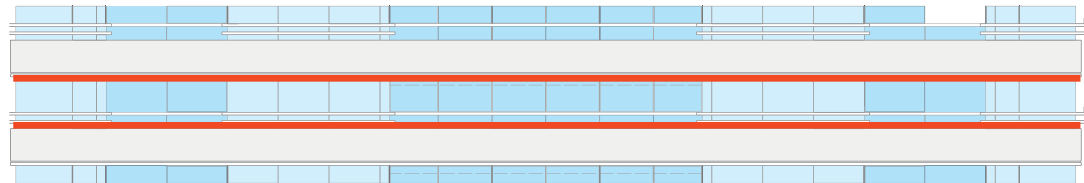


Fig.3 - Horizontal band of windows

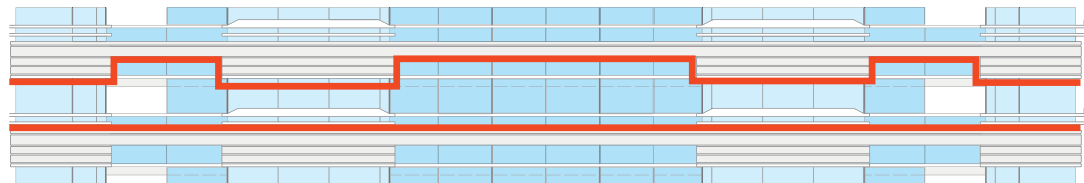


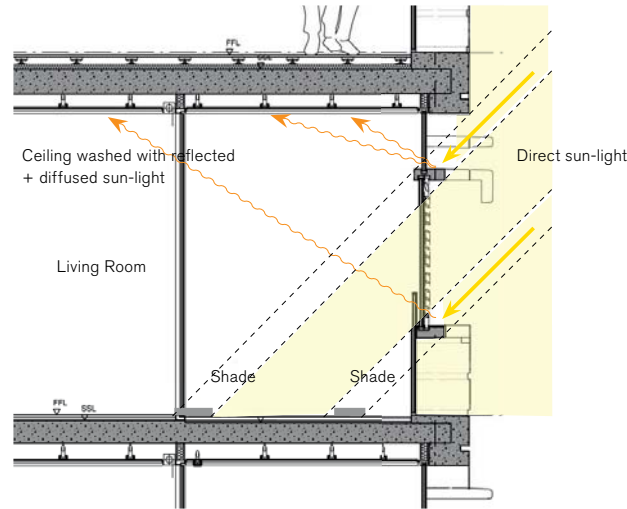
Fig.4 - Current design, horizontal band of windows with increased height where living rooms, balconies and loggias are located to maximize sun-access penetration

Solar Analysis

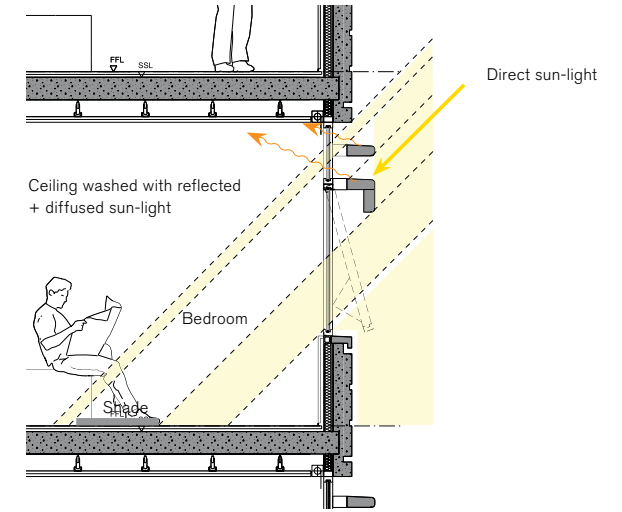
Solar Access study - Design principles

Passive shading devices and light shelves

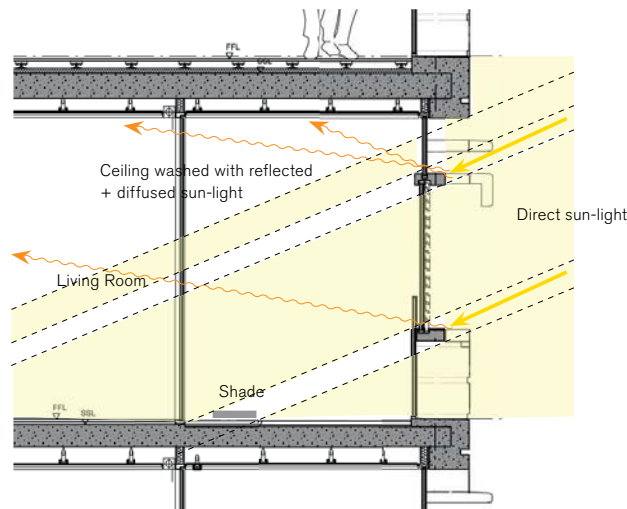
The façade has also been designed to maximise daylight to the habitable areas of the apartments while minimising too much direct solar access. The façade uses passive elements which works in tandem with the MEP systems of the building to minimise the energy loads required for providing a comfortable environment for residents within the apartments. To this extent, we have introduced horizontal shading devices, in the form of louvers. These are very effective at cutting out the high angle most intense sunlight in line with best practice ESD principles. The horizontal shades are position and designed to also reflect light off their top surfaces to act as 'light shelves'. They bounce sunlight into the apartments, washing the ceilings with daylight, whilst diffusing its intensity by using a reflective spectral finish. The exact design profile colour and finish will be looked at and modelled in computer simulations as well as mock-ups during the next detailed design to maximise this effect.



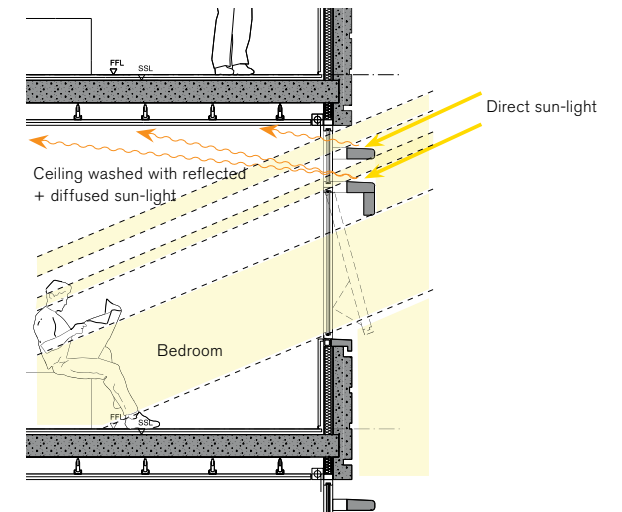
Living room/balcony scenario, high sun-angle



Bedroom scenario, high sun angle



Living room/balcony scenario, low sun-angle



Bedroom scenario, low sun angle

Solar Analysis

Solar Access study - Design principles

9.2

“Lanai” concept

The “lanai” is a roofed outdoor living space, furnished as a room also known as a patio or a veranda. It is intended to be a more defined outdoor living space, often screened where the term “lanai” has its roots in the Aloha State.

The “lanai” is designed to catch breezes and provide ventilation.

The private open space of each apartment are designed to be a flexible extension of the internal living space. These evolved into either a loggia or a “lanai” balcony which is accessed from the main living areas of each apartment.

This is articulated in the facades by the way the elevation “opens up” along its length. By replacing the solid white concrete spandrels commonly located at bedrooms with a glazed balustrade at loggias and lanai balconies, the increased opening looks to allow a greater area for sunlight to enter the living spaces.

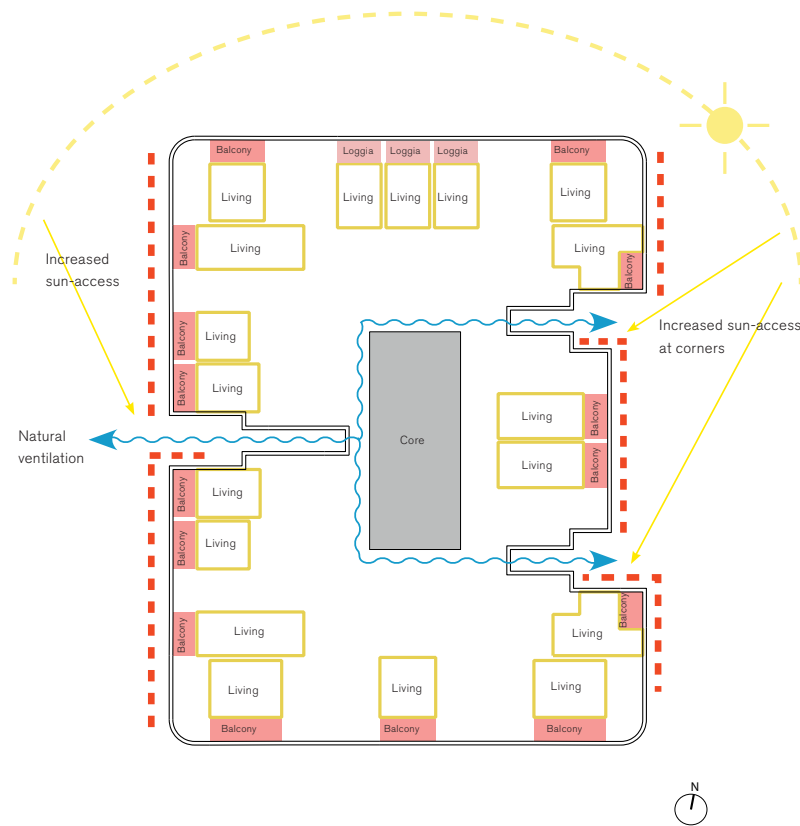


Solar Analysis

Solar Access study - Design principles

Massing form

The massing form of the building aims to improve sun-access at corners, where balconies and living rooms are located, to guarantee natural ventilation to the public internal circulation and to achieve cross ventilation to the maximum number of apartments.



Conclusion

Due to the technicality of how solar access is measured, the conclusions of the analysis produce less than favourable results, further hampered by the building's location within a dense urban site. The combination of the tall surrounding buildings and the methodology of how solar access is measured does not truly reflect the potential figure if you account for the true extent of living space assigned to each building. To this extent we have provided an alternative analysis which aligns with the proposed design.

Solar Analysis

Solar Access analysis - Apartments

Objective

Identify the direct sunlight availability for living room windows and private open spaces. Determine percentage of apartments receiving solar access.

Methodology

The assessment was run in accordance with SEPP 65/ Residential Flat Design Code principles which establishes the following (consideration has also been given the requirement of Sydney DCP 2012 when calculating solar access)

"Living rooms and private open spaces for at least 70 percent of apartments in a development should receive a minimum of three hours direct sunlight between 9 am and 3 pm in mid-winter. In dense urban areas a minimum of two hours may be acceptable"

For a consistent comparison of the solar access achieved by the proposed development (compared to other buildings on the Central Park Site), the same methodology that was adopted during the preparation of the Concept Plan (as amended) prepared by COX/ATA has been used. This study identified parameters for solar access being: 2 hours of solar access should be provided to apartments between the hours of 7:30am and 4:30pm on midwinters day (June)

Consistent with the current sunlight planning principles established by the NSW Land and Environment Court, sunlight achieved to the balconies/lanais which would reach seated or standing occupants has been considered when arranging the modelling.

By that, for the private open space, the solar access was assessed on the external vertical surface. (Figure 1.1)

All studies were conducted both with horizontal fixed transoms as well as without (Figure 1.2)"

The Sunlight simulations and analysis has been carried out using a custom software program which links Bentley Microstation and the Radiance simulation engine to perform Sunlight Hours Analysis. The analysis used the AUS_Sydney_IWEC.epw weather file, running the rtrace program at a 15 minute interval for the specified dates/ times requested.

without horizontal fixed transoms

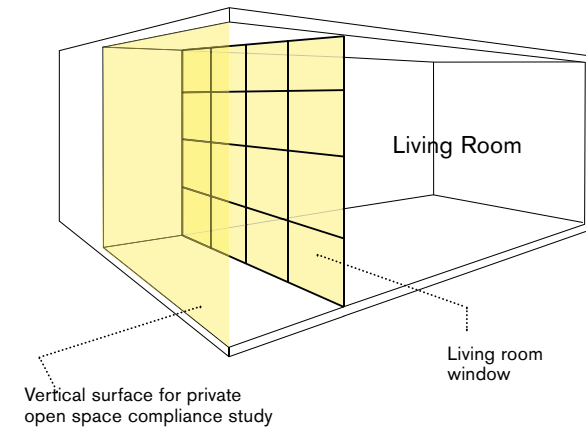


figure 1.1

with horizontal fixed transoms

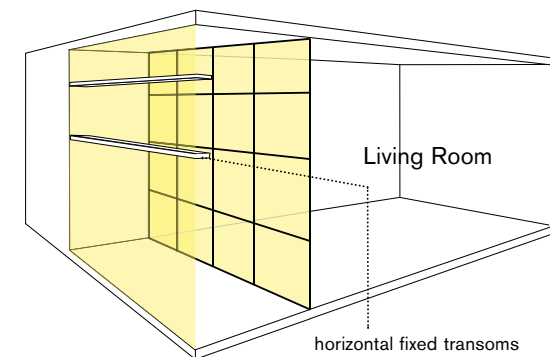


figure 1.2

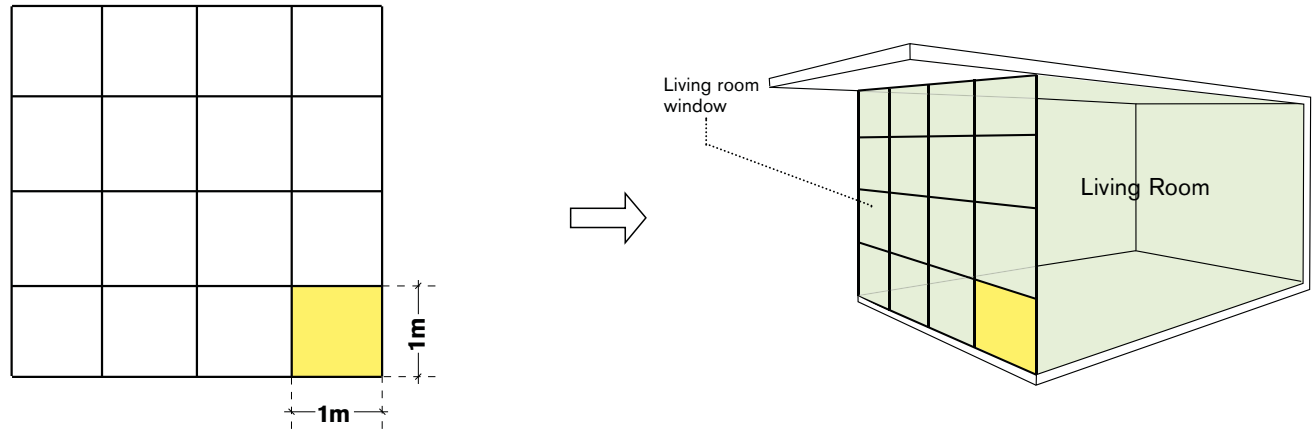
Addendum

2hr or more direct sunlight to living room windows

Solar Assessment - Sydney DCP 2012

minimum 2 hours direct sunlight to at least 1m² of living room window on March 22nd and June 21st, between 9:00 - 15:00

this range was extended as requested by the client to 7:30 - 16:30



when at least 1m² of living room window gets 2h of direct sunlight or more, then that room complies with the DCP standards.

Addendum

2hr or more direct sunlight to living room windows

22nd of March

09:00 - 15:00

minimum 2 hours direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

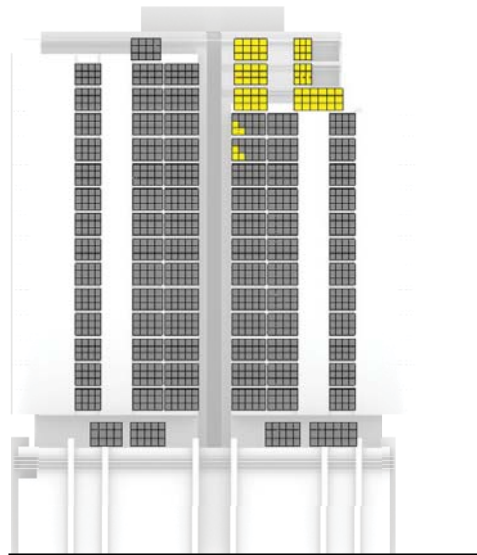
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

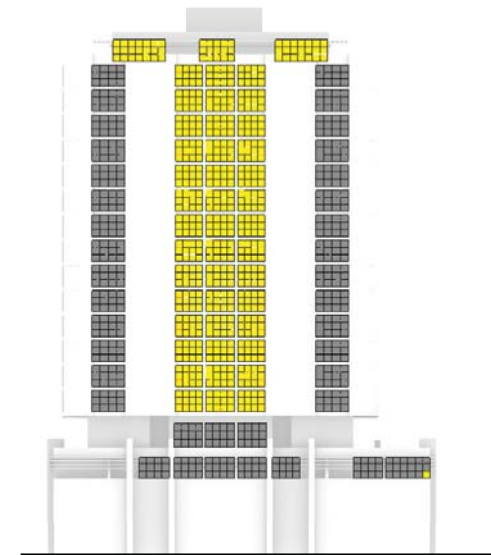
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	67%	100%	0%	0%
17	40%	60%	0%	75%
16	40%	60%	0%	50%
15	17%	60%	0%	50%
14	17%	60%	0%	50%
13	0%	60%	0%	50%
12	0%	60%	0%	50%
11	0%	60%	0%	50%
10	0%	60%	0%	50%
9	0%	60%	0%	50%
8	0%	60%	0%	50%
7	0%	60%	0%	50%
6	0%	60%	0%	25%
5	0%	60%	0%	25%
4	0%	60%	0%	25%
3	0%	0%	0%	0%
2	0%	14%	0%	0%
	11%	56%	0%	38%

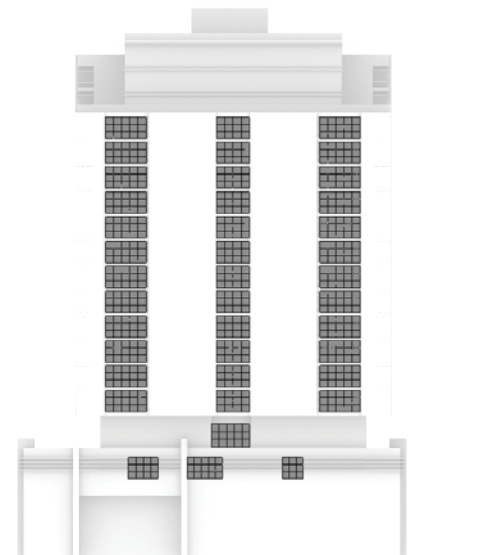
overall 26% 2 hours or more direct sun



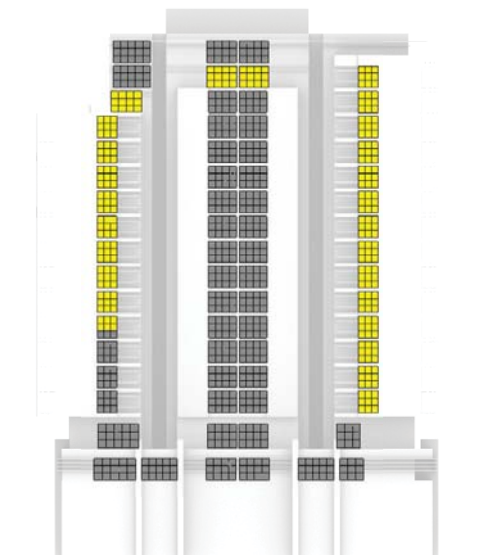
West Elevation



North Elevation



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

2hr or more direct sunlight to living room windows

22nd of March

09:00 - 15:00

minimum 2 hours direct sunlight to at least 1m² of living room window

tested **with horizontal fixed transoms**

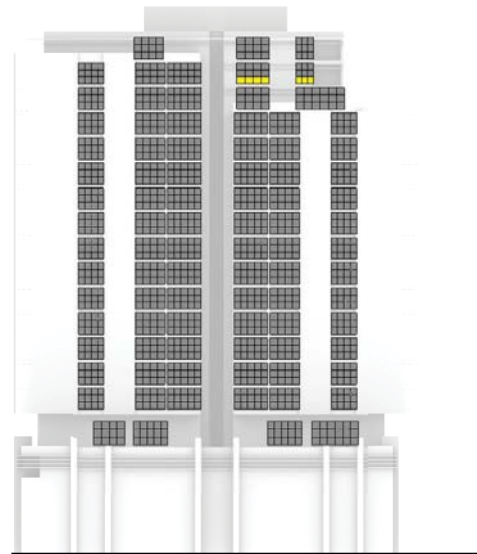
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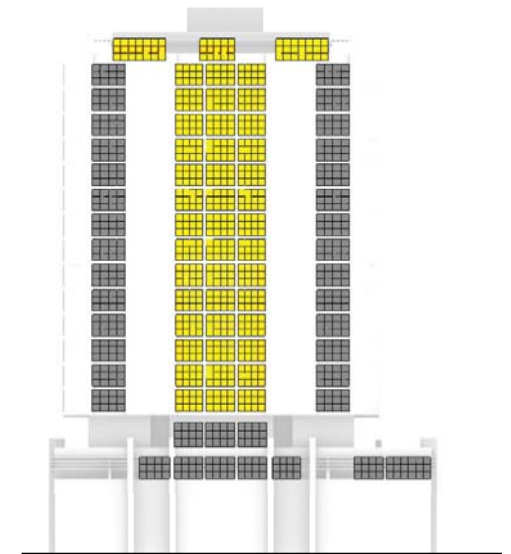
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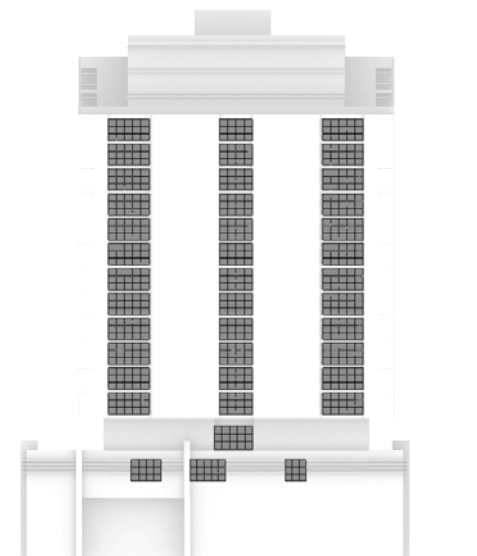
overall 24% 2 hours or more direct sun



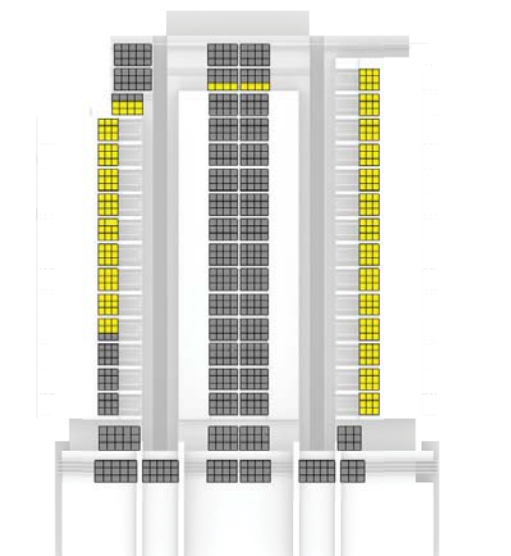
West Elevation



North Elevation



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East Elevation

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Addendum

2hr or more direct sunlight to living room windows

22nd of March

07:30 - 16:30

minimum 2 hours direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

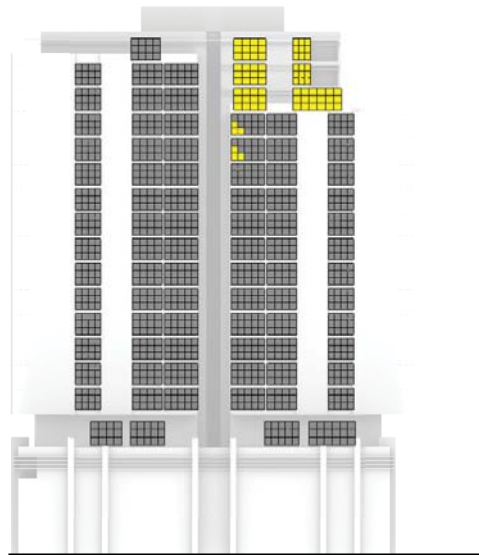
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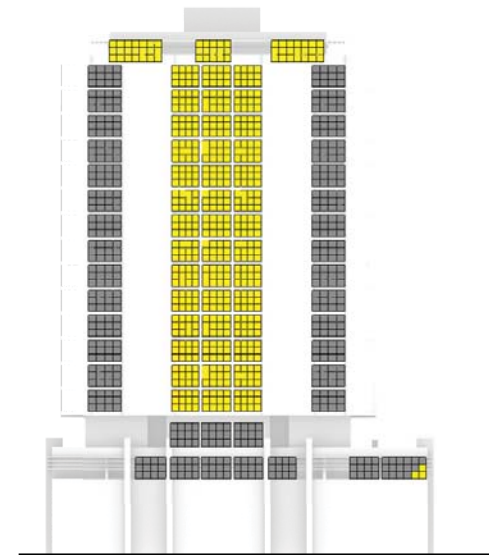
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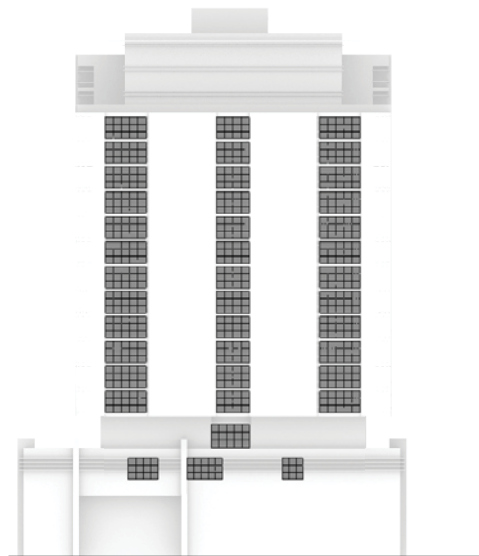
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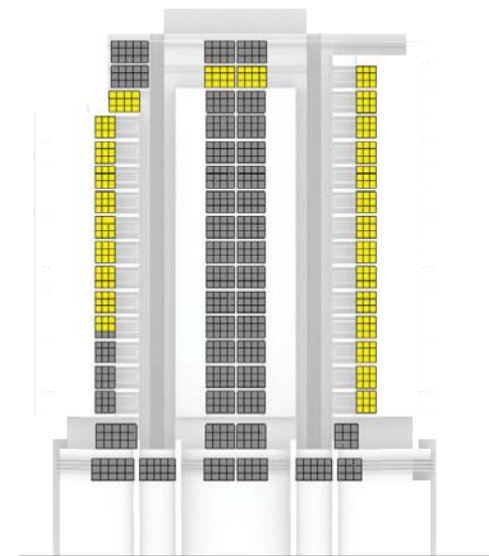
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22nd of March

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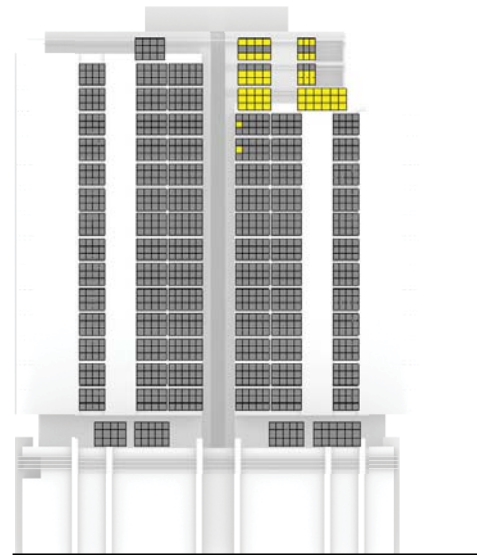
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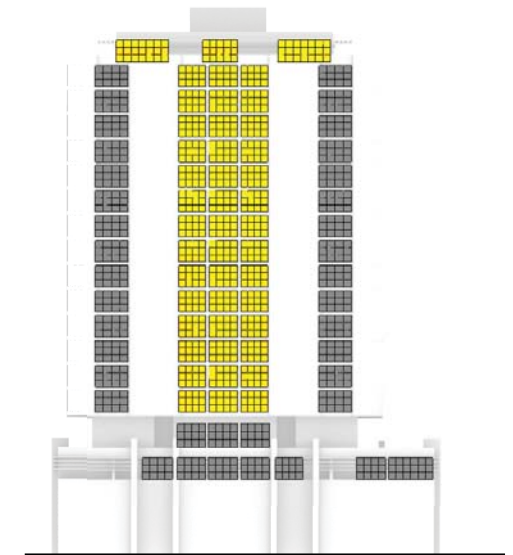
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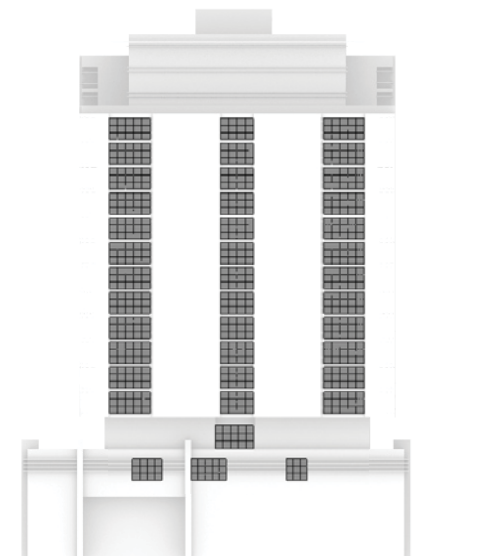
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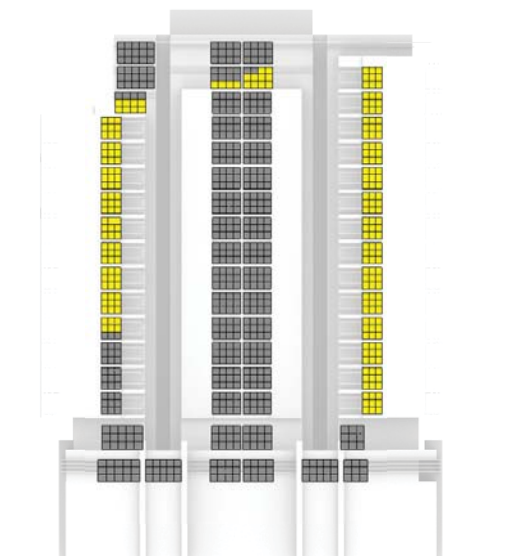
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South Elevation



East Elevation

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Addendum

2hr or more direct sunlight to living room windows

21st of June

09:00 - 15:00

minimum 2 hours direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

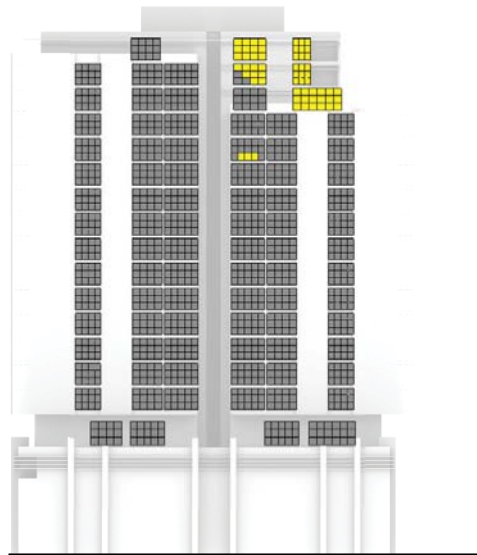
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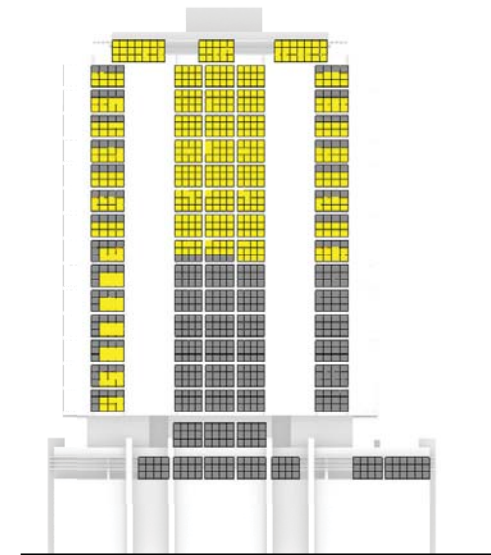
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6	0%	20%	0%	25%
5	0%	20%	0%	25%
4	0%	20%	0%	25%
3	0%	0%	0%	0%
2	0%	0%	0%	0%
	8%	60%	0%	28%

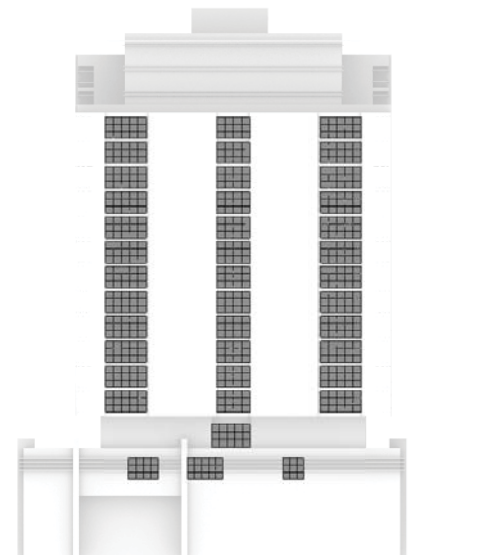
overall 24% 2 hours or more direct sun



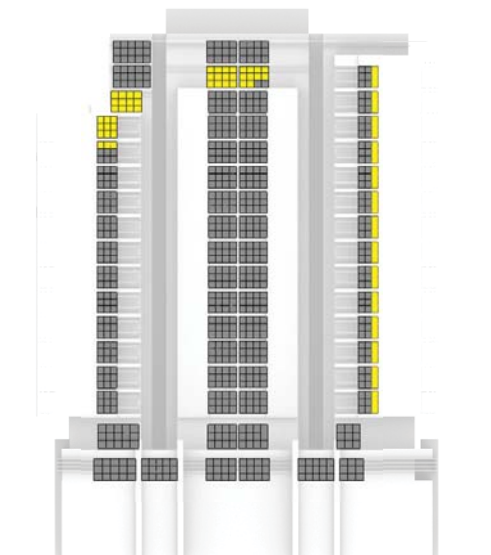
West Elevation



North Elevation



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

2hr or more direct sunlight to living room windows

21st of June

09:00 - 15:00

minimum 2 hours direct sunlight to at least 1m² of living room window

tested **with horizontal fixed transoms**

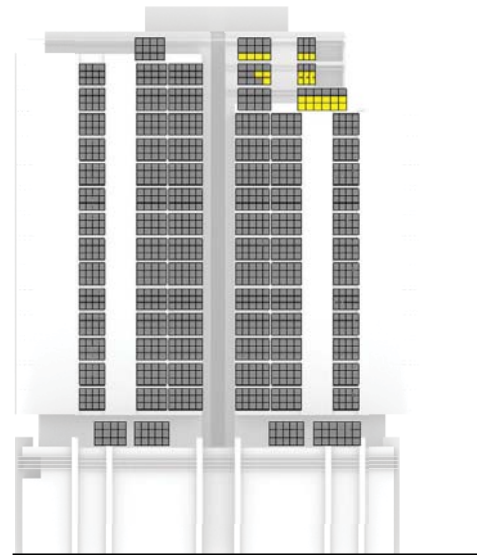
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

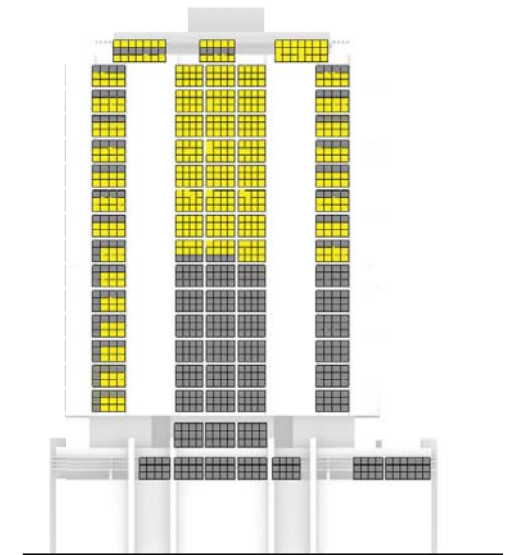
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	67%	100%	0%	0%
17	40%	100%	0%	25%
16	20%	100%	0%	25%
15	0%	100%	0%	50%
14	0%	100%	0%	50%
13	0%	100%	0%	25%
12	0%	100%	0%	25%
11	0%	100%	0%	25%
10	0%	100%	0%	25%
9	0%	20%	0%	25%
8	0%	20%	0%	25%
7	0%	20%	0%	25%
6	0%	20%	0%	25%
5	0%	20%	0%	25%
4	0%	20%	0%	25%
3	0%	0%	0%	0%
2	0%	0%	0%	0%
	7%	60%	0%	24%

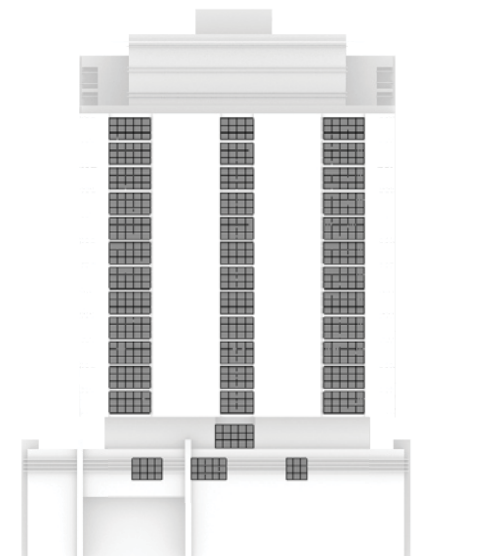
overall 23% 2 hours or more direct sun



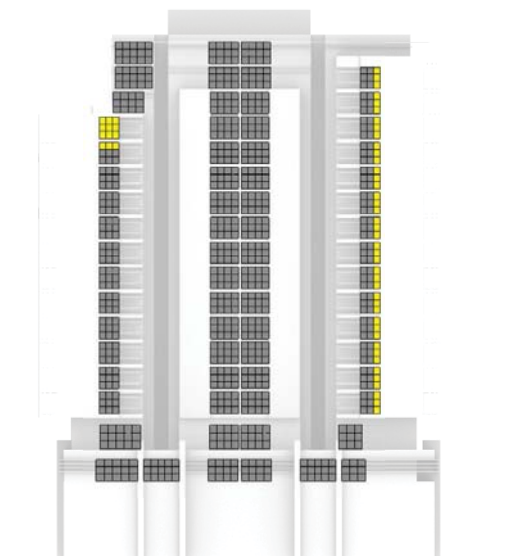
West Elevation



North Elevation



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

2hr or more direct sunlight to living room windows

21st of June

07:30 - 16:30

minimum 2 hours direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

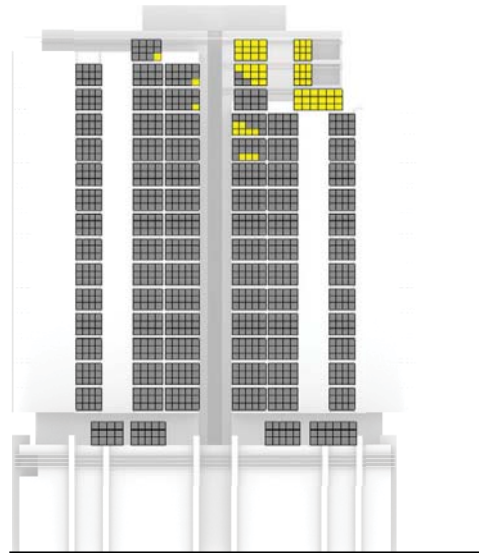
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

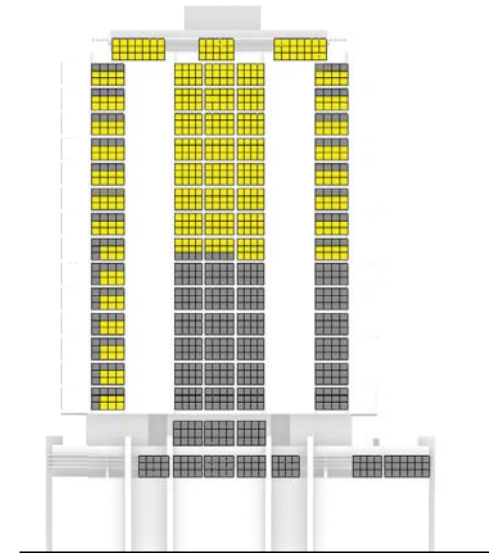
only living room windows were tested for each flat and the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	100%	100%	0%	0%
17	60%	100%	0%	75%
16	40%	100%	0%	50%
15	17%	100%	0%	50%
14	17%	100%	0%	50%
13	0%	100%	0%	25%
12	0%	100%	0%	25%
11	0%	100%	0%	25%
10	0%	100%	0%	25%
9	0%	20%	0%	25%
8	0%	20%	0%	25%
7	0%	20%	0%	25%
6	0%	20%	0%	25%
5	0%	20%	0%	25%
4	0%	20%	0%	25%
3	0%	0%	0%	0%
2	0%	0%	0%	0%
	14%	60%	0%	28%

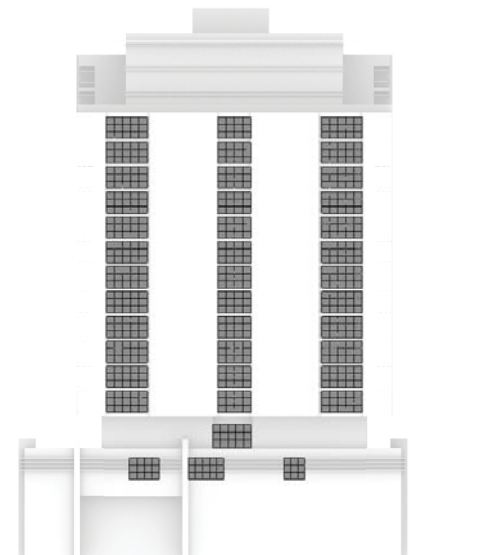
overall 26% 2 hours or more direct sun



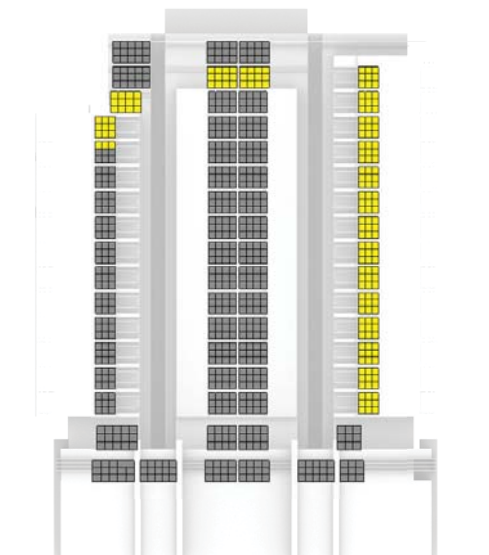
West Elevation



North Elevation



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

2hr or more direct sunlight to living room windows

21st of June

07:30 - 16:30

minimum 2 hours direct sunlight to at least 1m² of living room window

tested **with horizontal fixed transoms**

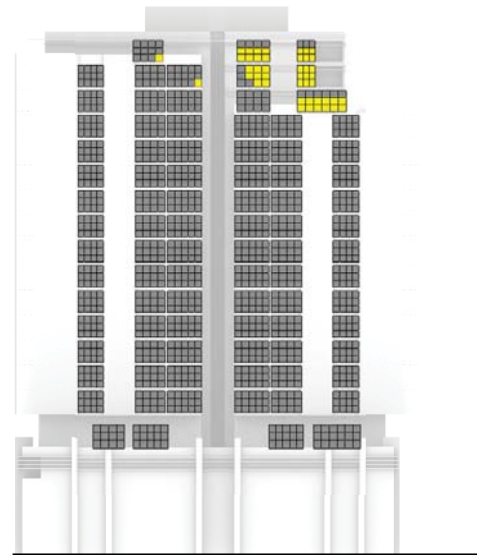
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

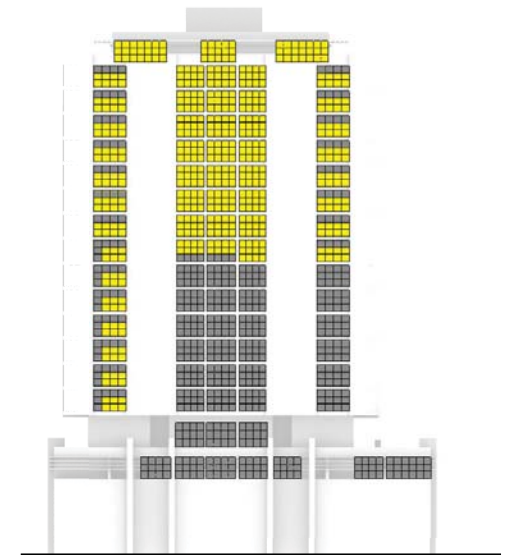
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	100%	100%	0%	0%
17	60%	100%	0%	75%
16	20%	100%	0%	50%
15	0%	100%	0%	50%
14	0%	100%	0%	50%
13	0%	100%	0%	25%
12	0%	100%	0%	25%
11	0%	100%	0%	25%
10	0%	100%	0%	25%
9	0%	20%	0%	25%
8	0%	20%	0%	25%
7	0%	20%	0%	25%
6	0%	20%	0%	25%
5	0%	20%	0%	25%
4	0%	20%	0%	25%
3	0%	0%	0%	0%
2	0%	0%	0%	0%
	11%	60%	0%	28%

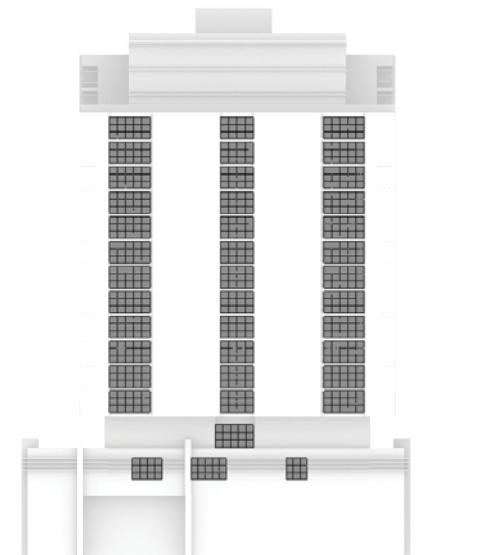
overall 25% 2 hours or more direct sun



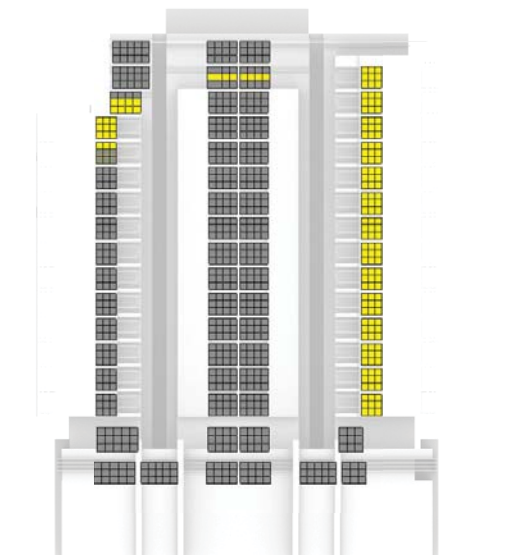
West Elevation



North Elevation



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

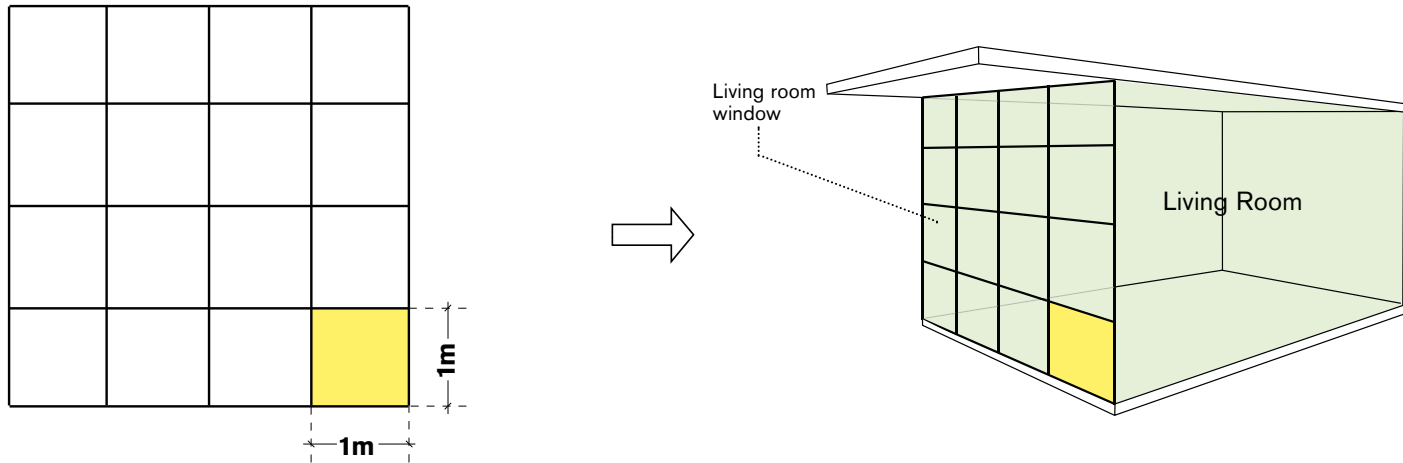
1hr or more direct sunlight to living room windows

9.3

Solar Assessment - Client requirement

minimum 1 hour direct sunlight to at least 1m² of living room window on March 22nd and June 21st, between 9:00 - 15:00

this range was extended as requested by the client to 7:30 - 16:30



Addendum

1hr or more direct sunlight to living room windows

22nd of March

09:00 - 15:00

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

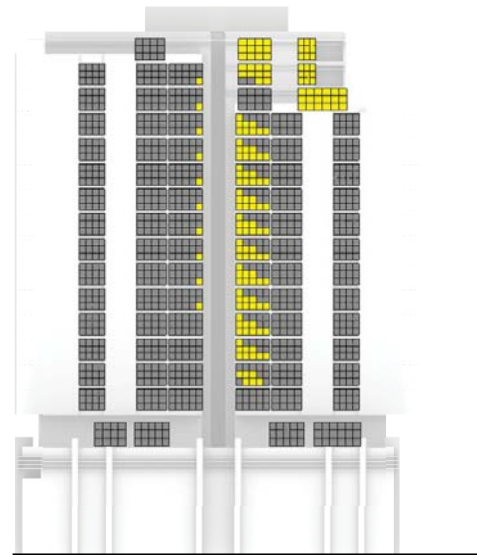
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

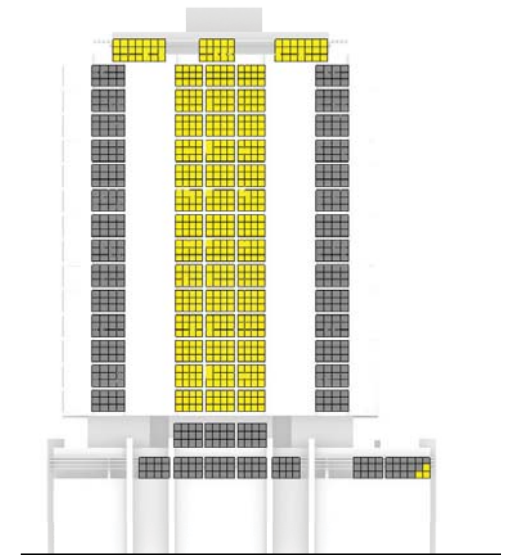
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	67%	100%	0%	0%
17	60%	60%	0%	75%
16	40%	60%	0%	50%
15	33%	60%	0%	50%
14	33%	60%	0%	50%
13	33%	60%	0%	50%
12	33%	60%	0%	50%
11	33%	60%	0%	50%
10	33%	60%	0%	50%
9	33%	60%	0%	50%
8	33%	60%	0%	50%
7	17%	60%	0%	50%
6	17%	60%	0%	50%
5	17%	60%	0%	50%
4	0%	60%	0%	50%
3	0%	0%	0%	75%
2	0%	14%	0%	0%
	28%	56%	0%	47%

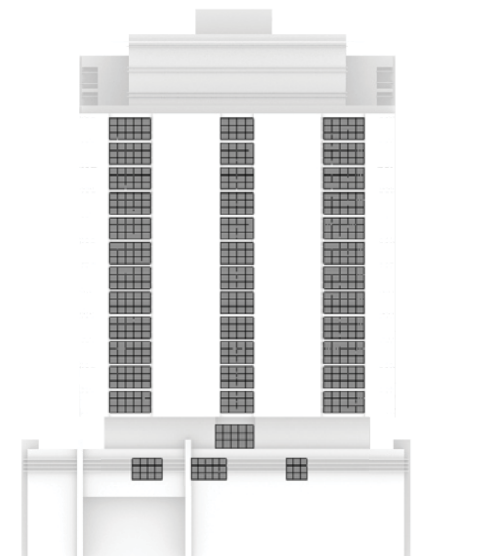
overall 33% 1 hour or more direct sun



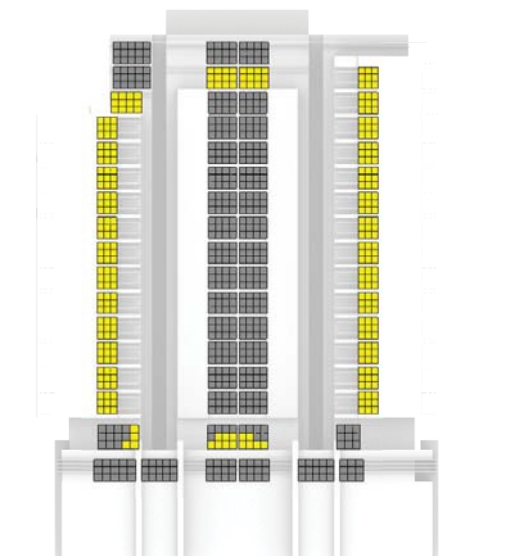
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to living room windows

22nd of March

09:00 - 15:00

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **with horizontal fixed transoms**

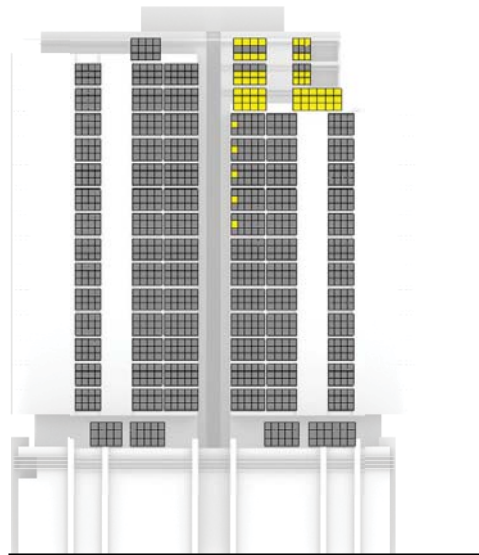
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

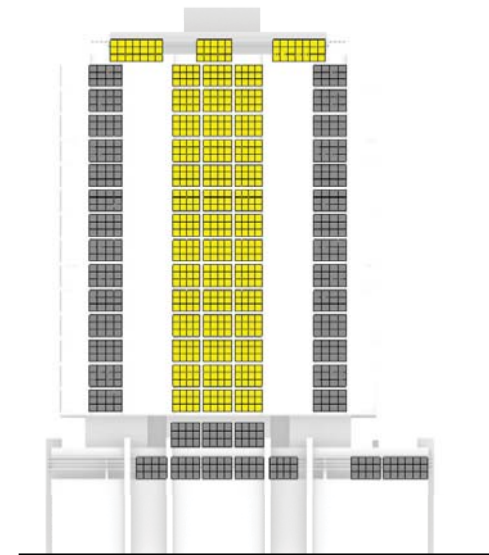
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	67%	100%	0%	0%
17	40%	60%	0%	75%
16	40%	60%	0%	50%
15	17%	60%	0%	50%
14	17%	60%	0%	50%
13	17%	60%	0%	50%
12	17%	60%	0%	50%
11	17%	60%	0%	50%
10	0%	60%	0%	50%
9	0%	60%	0%	50%
8	0%	60%	0%	50%
7	0%	60%	0%	50%
6	0%	60%	0%	50%
5	0%	60%	0%	50%
4	0%	60%	0%	50%
3	0%	0%	0%	75%
2	0%	0%	0%	0%
	14%	55%	0%	47%

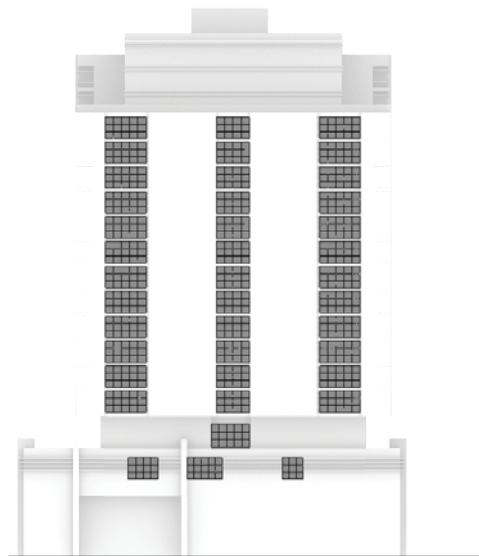
overall 29% 1 hour or more direct sun



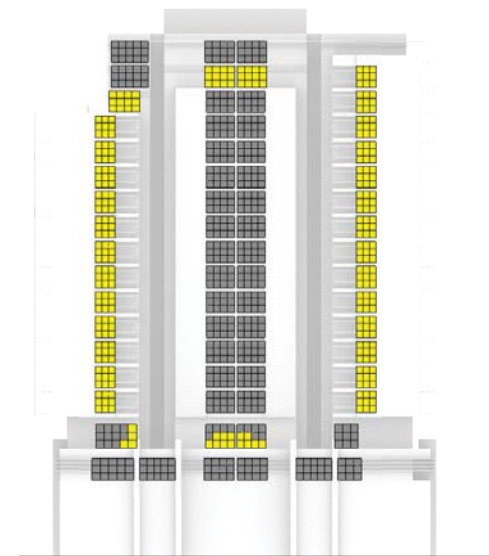
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to living room windows

22nd of March

07:30 - 16:30

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

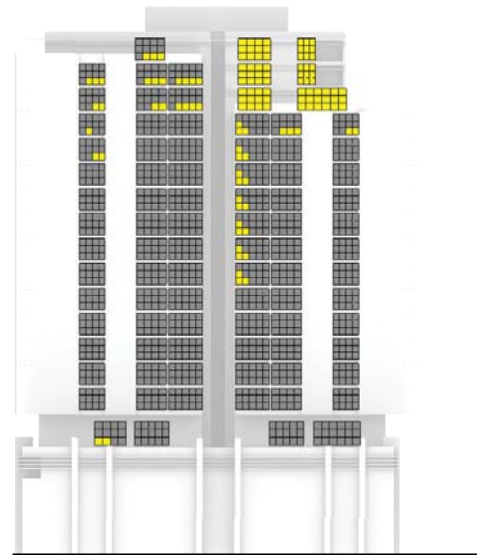
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

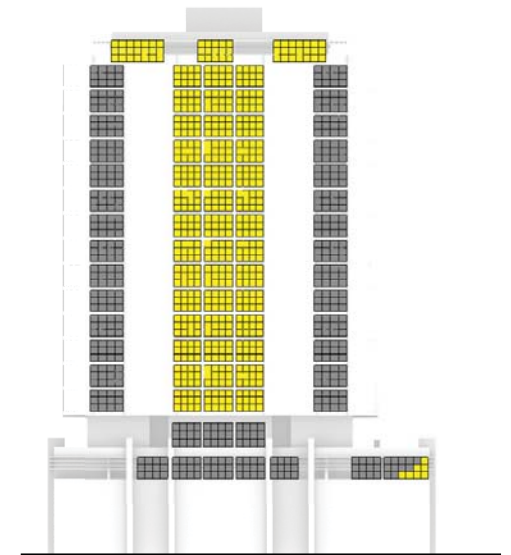
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	100%	100%	0%	33%
17	100%	60%	0%	75%
16	100%	60%	0%	75%
15	67%	60%	0%	100%
14	33%	60%	0%	100%
13	17%	60%	0%	100%
12	17%	60%	0%	50%
11	17%	60%	0%	50%
10	17%	60%	0%	50%
9	17%	60%	0%	50%
8	0%	60%	0%	50%
7	0%	60%	0%	50%
6	0%	60%	0%	50%
5	0%	60%	0%	50%
4	0%	60%	0%	50%
3	25%	0%	0%	75%
2	0%	14%	0%	0%
	30%	56%	0%	59%

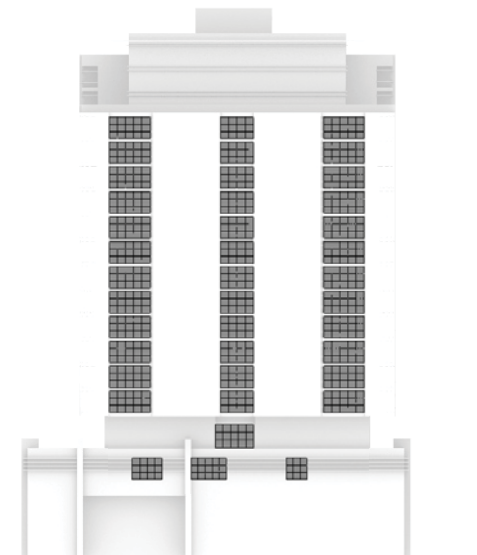
overall 36% 1 hour or more direct sun



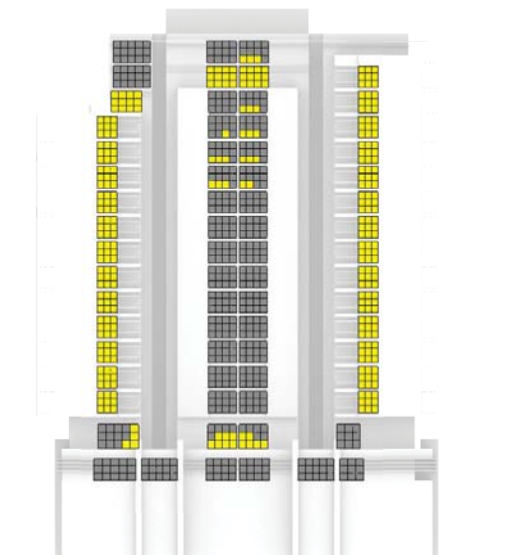
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to living room windows

22nd of March

07:30 - 16:30

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **with horizontal fixed transoms**

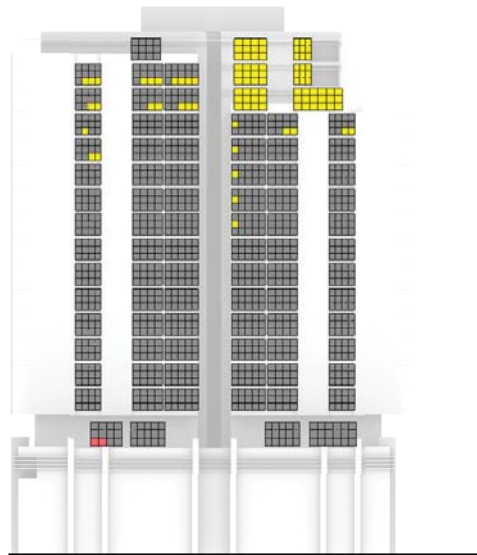
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

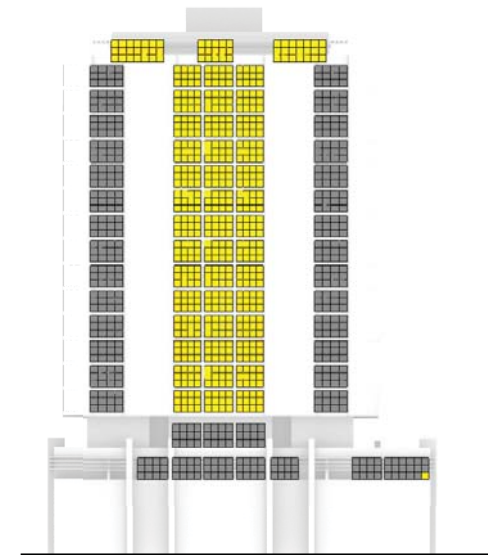
only living room windows were tested for each flat and the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	67%	100%	0%	0%
17	100%	60%	0%	75%
16	100%	60%	0%	75%
15	67%	60%	0%	75%
14	33%	60%	0%	100%
13	17%	60%	0%	50%
12	17%	60%	0%	50%
11	17%	60%	0%	50%
10	0%	60%	0%	50%
9	0%	60%	0%	50%
8	0%	60%	0%	50%
7	0%	60%	0%	50%
6	0%	60%	0%	50%
5	0%	60%	0%	50%
4	0%	60%	0%	50%
3	25%	0%	0%	75%
2	0%	14%	0%	0%
	26%	56%	0%	53%

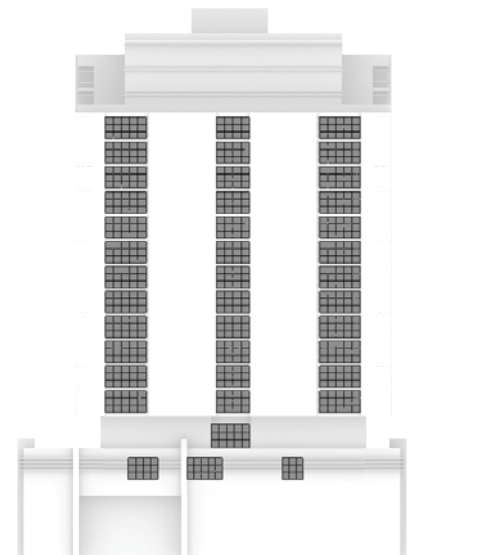
overall 34% 1 hour or more direct sun



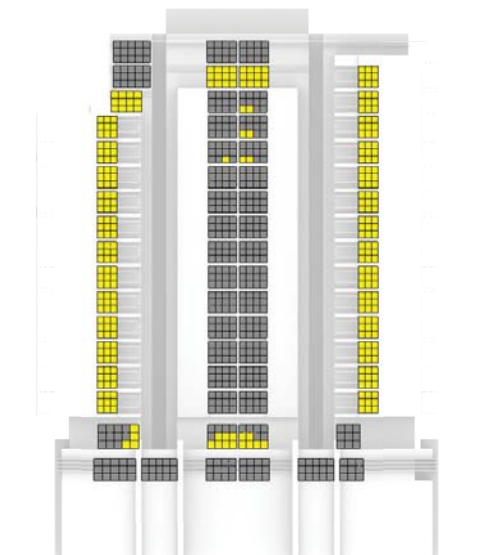
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to living room windows

21st of June

09:00 - 15:00

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

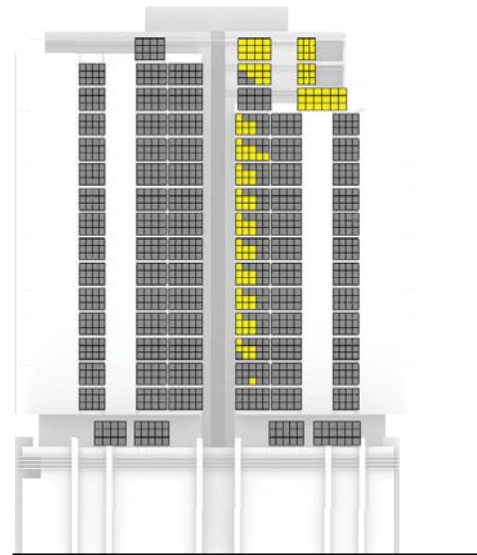
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

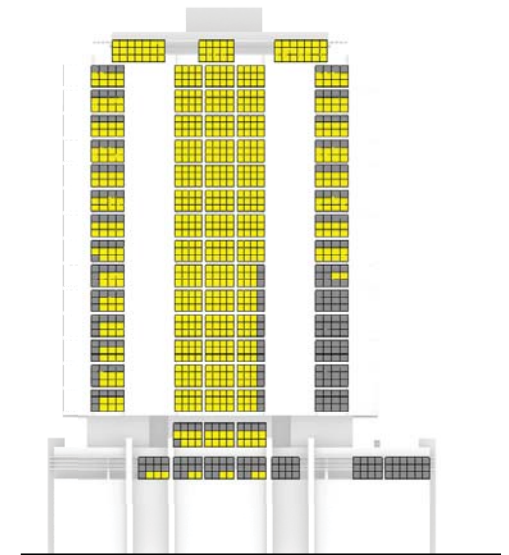
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	67%	100%	0%	0%
17	40%	100%	0%	75%
16	20%	100%	0%	50%
15	17%	100%	0%	50%
14	17%	100%	0%	50%
13	17%	100%	0%	50%
12	17%	100%	0%	50%
11	17%	100%	0%	50%
10	17%	100%	0%	50%
9	17%	100%	0%	50%
8	17%	80%	0%	50%
7	17%	80%	0%	50%
6	17%	80%	0%	50%
5	17%	80%	0%	50%
4	0%	80%	0%	50%
3	0%	100%	0%	50%
2	0%	57%	0%	0%
	18%	92%	0%	46%

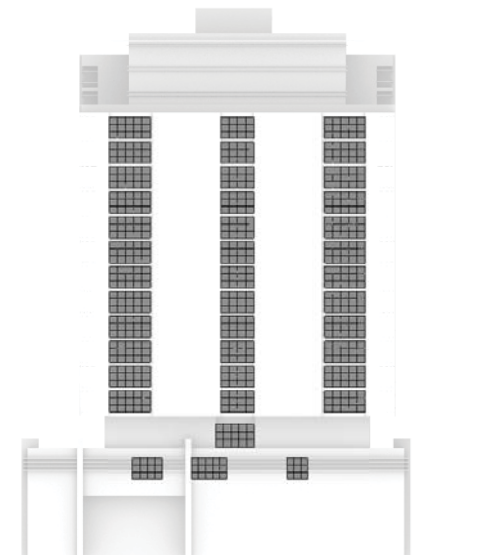
overall 39% 1 hour or more direct sun



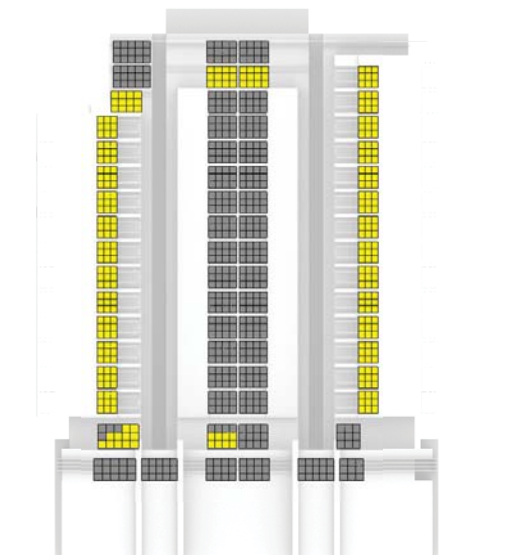
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to living room windows

21st of June

09:00 - 15:00

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **with horizontal fixed transoms**

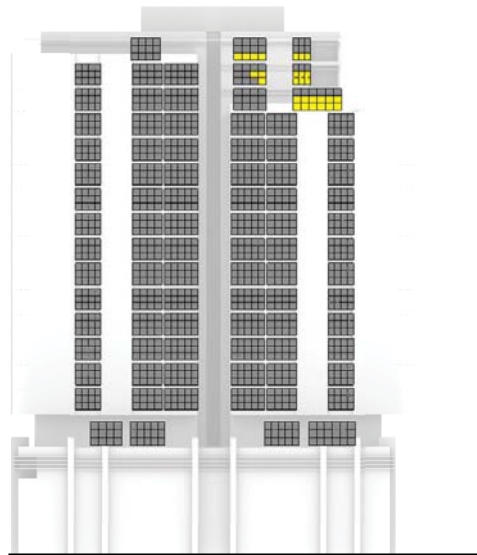
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

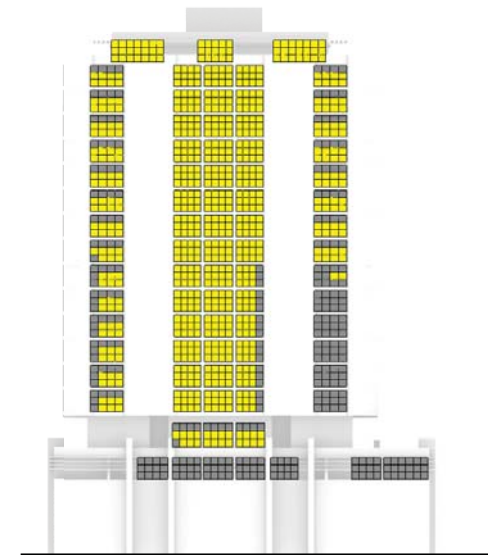
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	67%	100%	0%	0%
17	40%	100%	0%	75%
16	20%	100%	0%	50%
15	0%	100%	0%	50%
14	0%	100%	0%	50%
13	0%	100%	0%	50%
12	0%	100%	0%	50%
11	0%	100%	0%	50%
10	0%	100%	0%	50%
9	0%	100%	0%	50%
8	0%	80%	0%	50%
7	0%	80%	0%	50%
6	0%	80%	0%	50%
5	0%	80%	0%	50%
4	0%	80%	0%	50%
3	0%	100%	0%	50%
2	0%	0%	0%	0%
	7%	88%	0%	46%

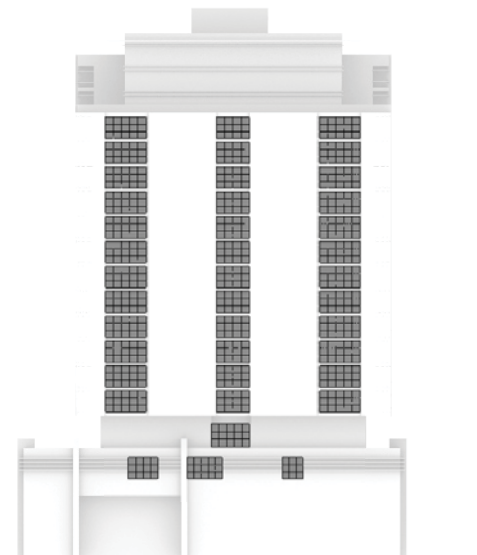
overall 35% 1 hour or more direct sun



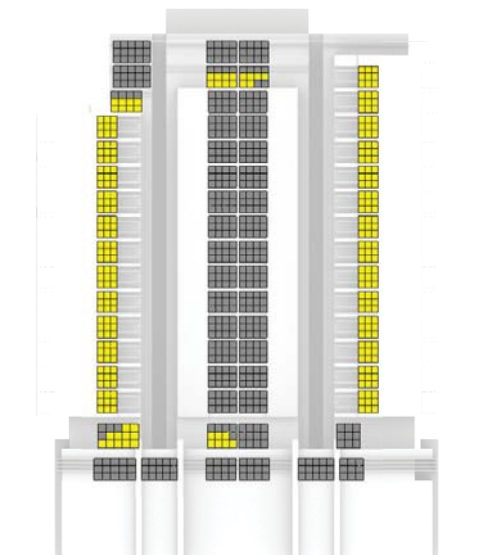
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to living room windows

21st of June

07:30 - 16:30

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **without horizontal fixed transoms**

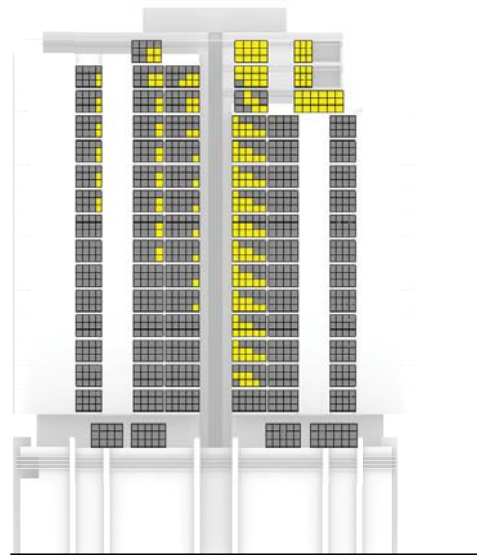
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

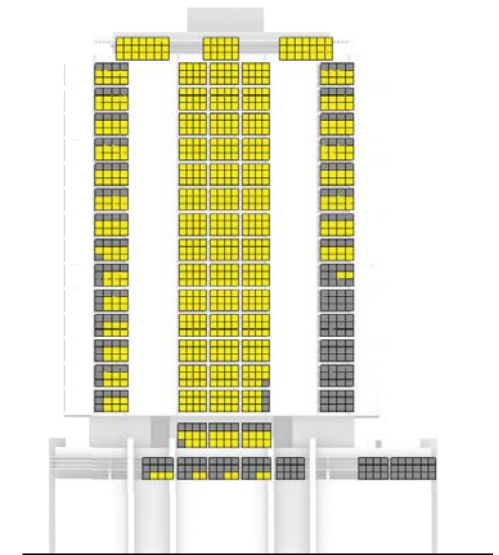
only living room windows were tested for each flat and the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	100%	100%	0%	67%
17	100%	100%	0%	100%
16	100%	100%	0%	50%
15	67%	100%	0%	50%
14	67%	100%	0%	50%
13	67%	100%	0%	50%
12	67%	100%	0%	50%
11	50%	100%	0%	50%
10	50%	100%	0%	50%
9	33%	100%	0%	50%
8	33%	80%	0%	50%
7	17%	80%	0%	50%
6	17%	80%	0%	50%
5	17%	80%	0%	50%
4	0%	80%	0%	50%
3	0%	100%	0%	100%
2	0%	57%	0%	0%
	46%	92%	0%	54%

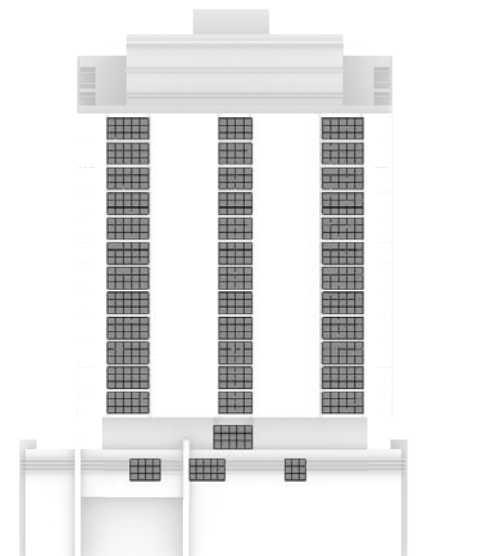
overall 48% 1 hour or more direct sun



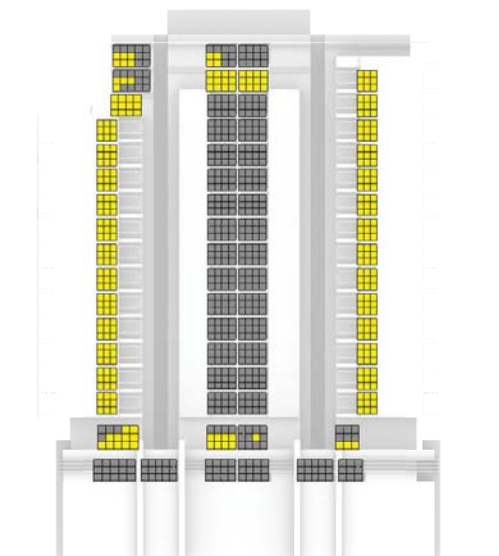
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to living room windows

21st of June

07:30 - 16:30

minimum 1 hour direct sunlight to at least 1m² of living room window

tested **with horizontal fixed transoms**

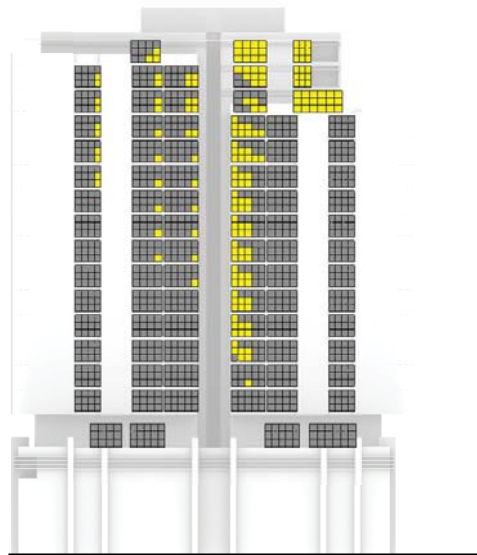
the windows were divided into 1m² surfaces to identify compliance with the minimum requirements.

the simulation was done considering the context of the building

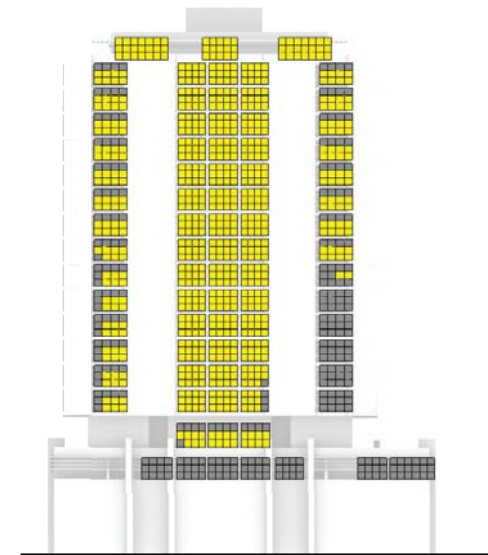
only living room windows were tested for each flat and the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements

	West	North	South	East
18	100%	100%	0%	67%
17	100%	100%	0%	100%
16	100%	100%	0%	50%
15	67%	100%	0%	50%
14	67%	100%	0%	50%
13	67%	100%	0%	50%
12	50%	100%	0%	50%
11	50%	100%	0%	50%
10	50%	100%	0%	50%
9	33%	100%	0%	50%
8	17%	80%	0%	50%
7	17%	80%	0%	50%
6	17%	80%	0%	50%
5	17%	80%	0%	50%
4	0%	80%	0%	50%
3	0%	100%	0%	75%
2	0%	0%	0%	0%
	44%	88%	0%	52%

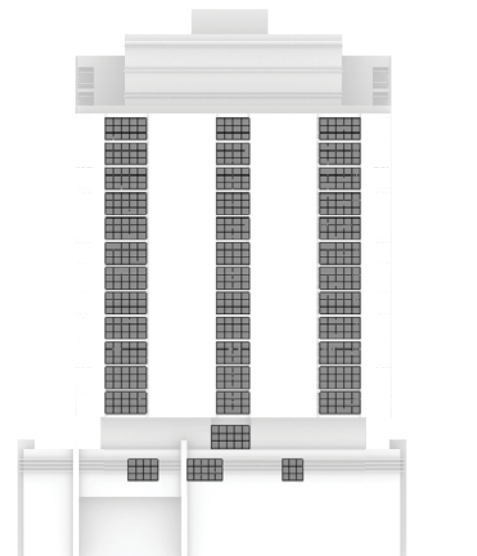
overall 46% 1 hour or more direct sun



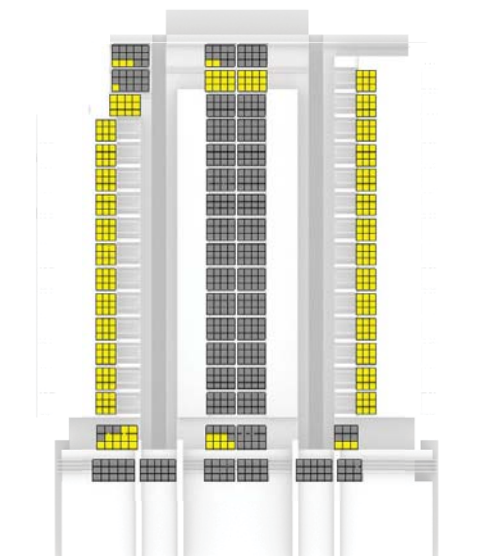
West Elevation



North Elevation



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

2hr or more direct sunlight to private open spaces (balconies)

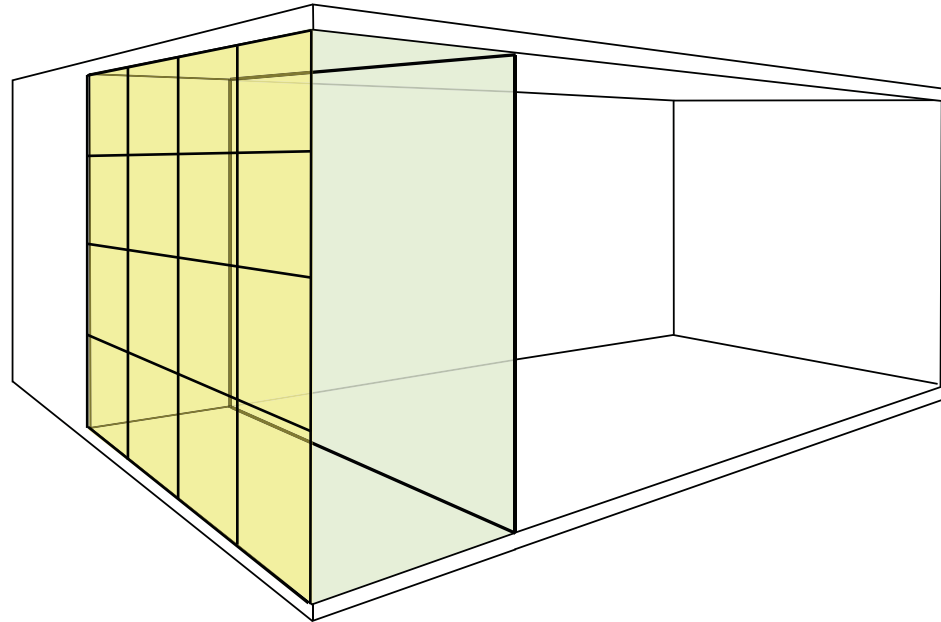
9.3

Solar Assessment - Client Requirement

minimum **2 hours** of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

The division into 1m² surfaces was done in order to get a more safe result. Keeping the area as a single surface the study would test only the middle of it and it would not provide sufficient evidence.



Addendum

2hr or more direct sunlight to private open spaces (balconies)

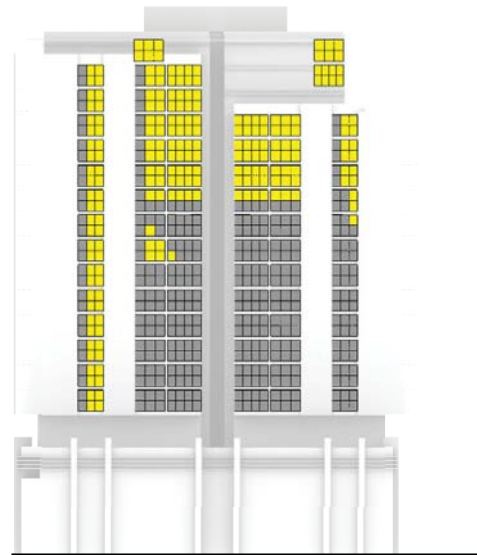
22nd of March

09:00 - 15:00

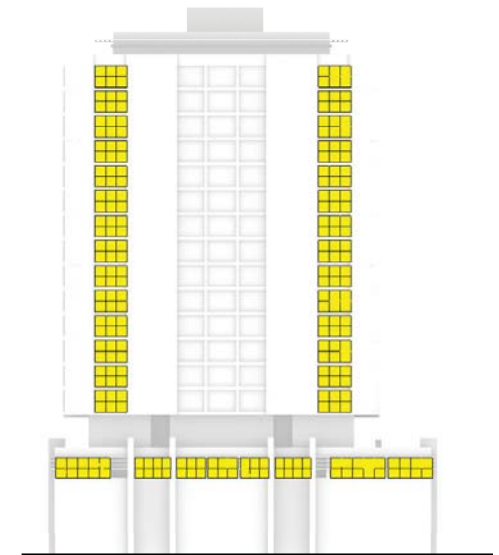
minimum 2 hours of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

the percentage result that is given below indicates the percentage of flats on each facade that comply to the requirements



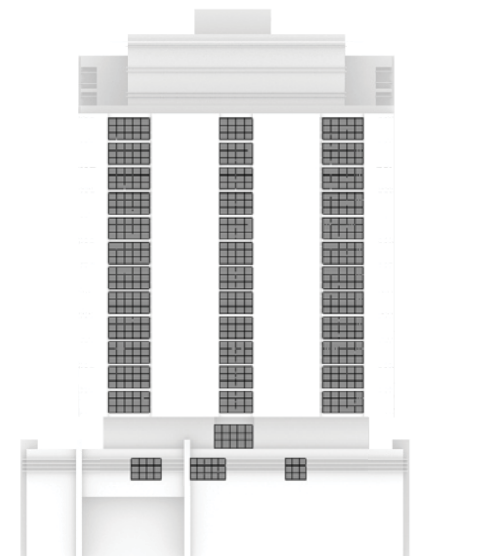
West Elevation



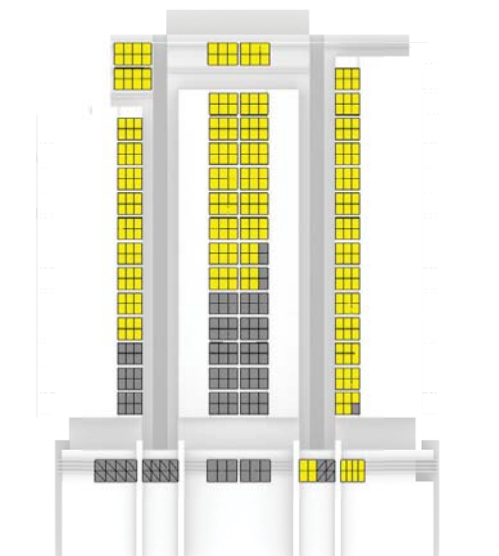
North Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	80%	100%	0%	100%
16	80%	100%	0%	100%
15	67%	100%	0%	100%
14	67%	100%	0%	100%
13	67%	100%	0%	100%
12	17%	100%	0%	100%
11	17%	100%	0%	100%
10	17%	100%	0%	75%
9	17%	100%	0%	75%
8	17%	100%	0%	50%
7	17%	100%	0%	50%
6	17%	100%	0%	25%
5	17%	100%	0%	25%
4	17%	100%	0%	0%
3	20%	100%	0%	100%
2	0%	100%	0%	17%
	37%	100%	0%	72%

overall 52% 2 hours or more direct sun



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

2hr or more direct sunlight to private open spaces (balconies)

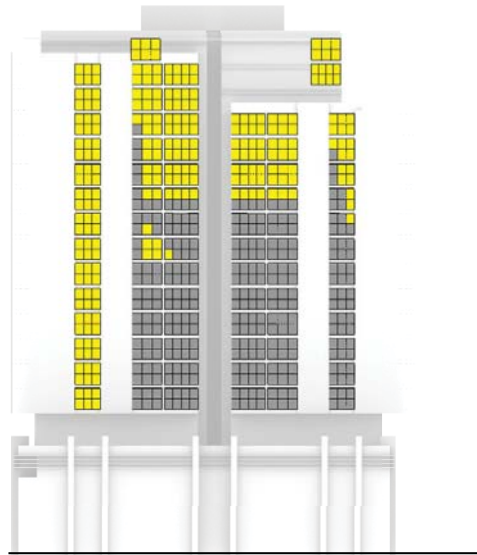
22nd of March

07:30 - 16:30

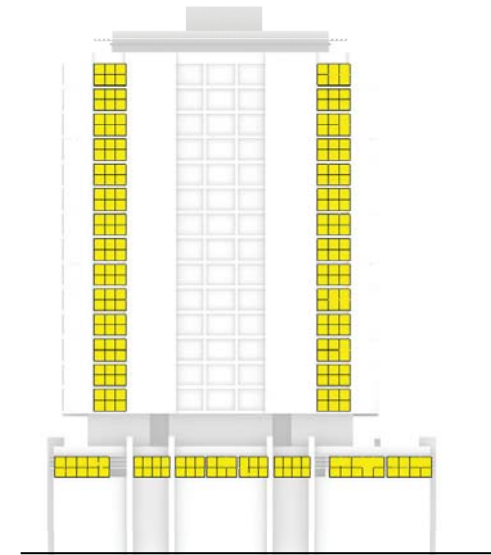
minimum 2 hours of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements



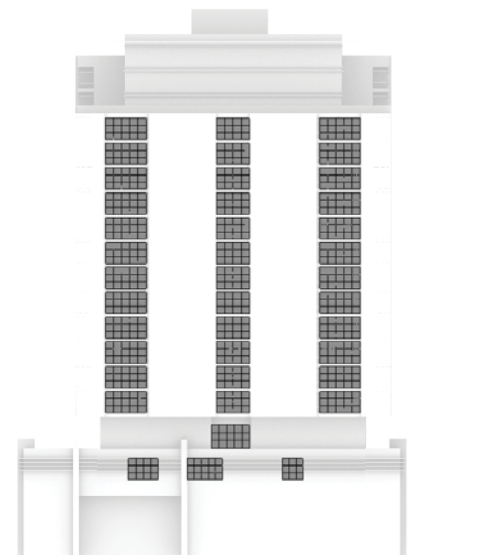
West Elevation



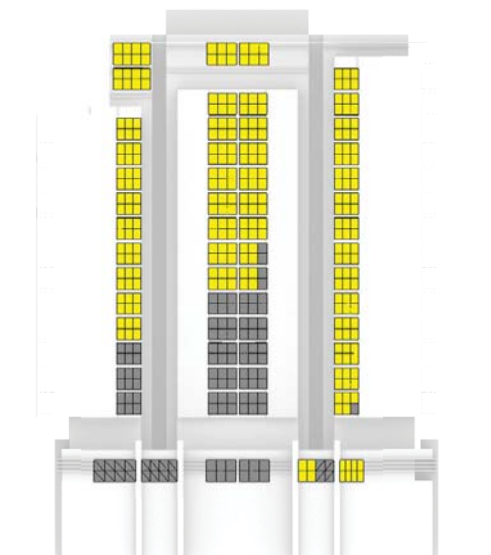
North Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	100%	100%	0%	100%
16	100%	100%	0%	100%
15	67%	100%	0%	100%
14	67%	100%	0%	100%
13	67%	100%	0%	100%
12	17%	100%	0%	100%
11	17%	100%	0%	100%
10	17%	100%	0%	75%
9	17%	100%	0%	75%
8	17%	100%	0%	50%
7	17%	100%	0%	50%
6	17%	100%	0%	25%
5	17%	100%	0%	25%
4	17%	100%	0%	0%
3	20%	100%	0%	100%
2	0%	100%	0%	17%
	39%	100%	0%	72%

overall 53% 2 hours or more direct sun



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

2hr or more direct sunlight to private open spaces (balconies)

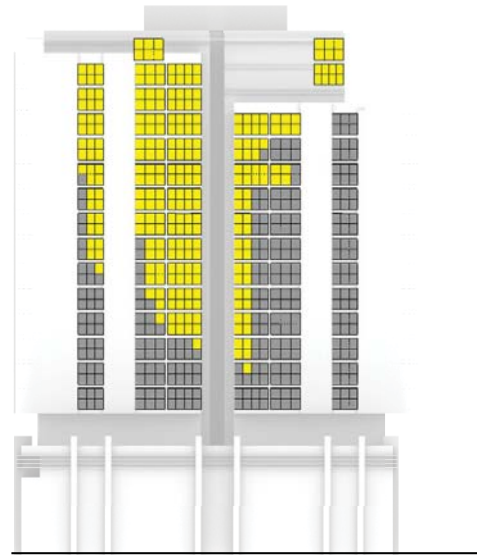
21st of June

09:00 - 15:00

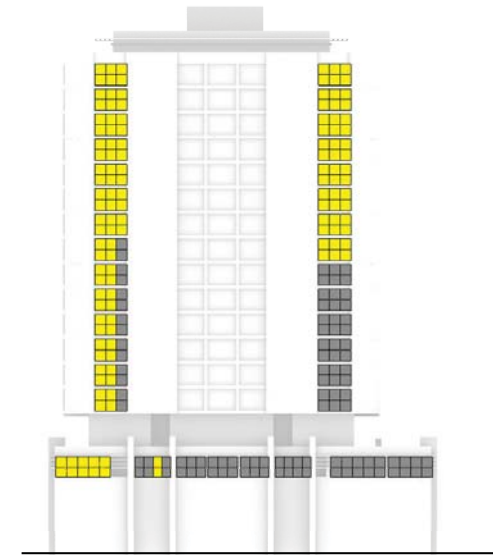
minimum 2 hours of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements



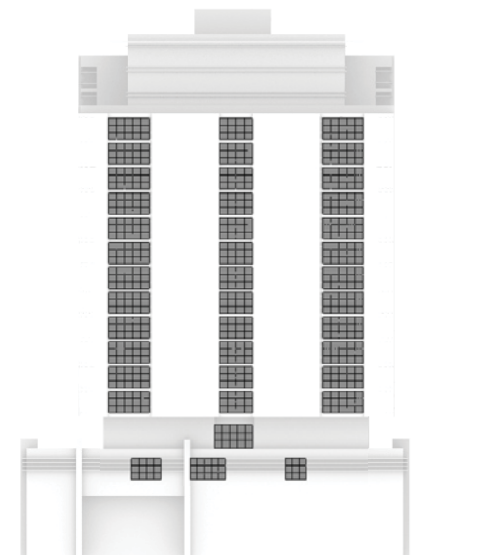
West Elevation



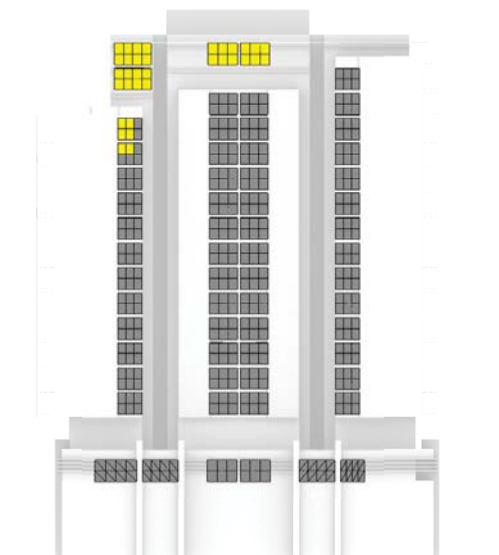
North Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	100%	100%	0%	75%
16	100%	100%	0%	25%
15	67%	100%	0%	0%
14	50%	100%	0%	0%
13	50%	100%	0%	0%
12	33%	100%	0%	0%
11	33%	100%	0%	0%
10	17%	50%	0%	0%
9	17%	50%	0%	0%
8	17%	0%	0%	0%
7	17%	0%	0%	0%
6	0%	0%	0%	0%
5	0%	0%	0%	0%
4	0%	0%	0%	0%
3	0%	100%	0%	0%
2	0%	14%	0%	0%
	35%	60%	0%	12%

overall 27% 2 hours or more direct sun



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

2hr or more direct sunlight to private open spaces (balconies)

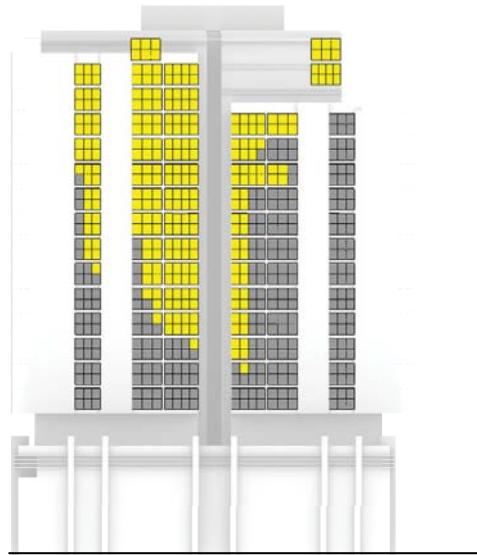
21st of June

07:30 - 16:30

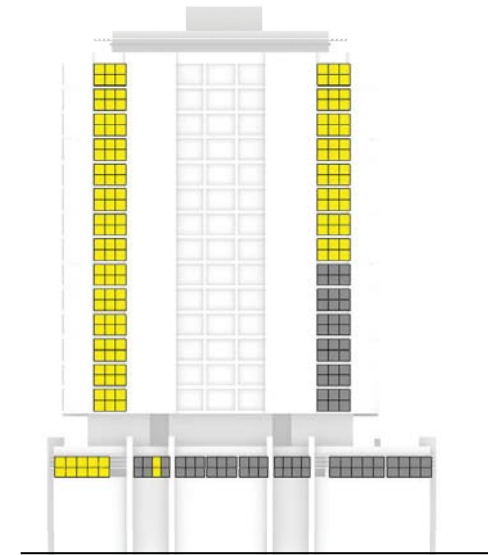
minimum 2 hours of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements



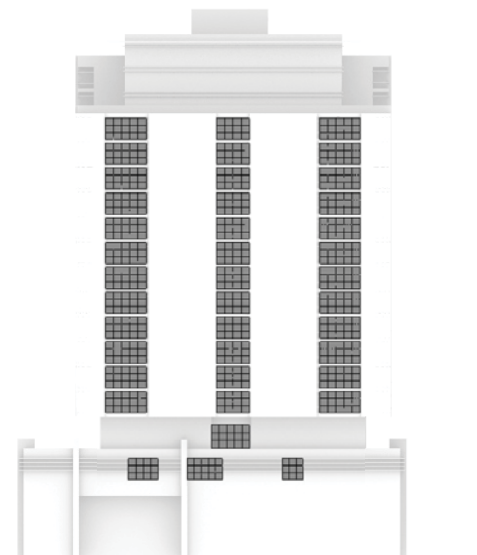
West Elevation



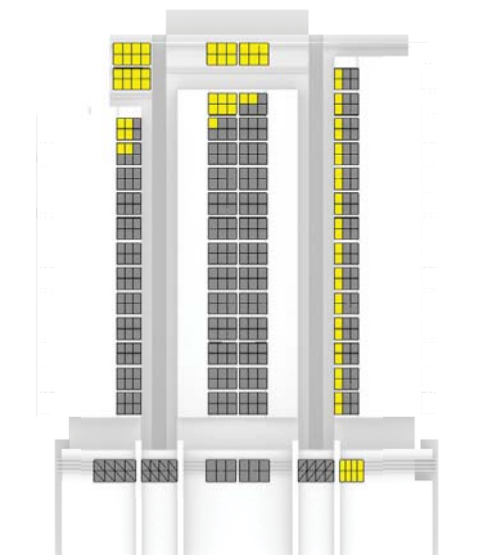
North Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	100%	100%	0%	75%
16	100%	100%	0%	50%
15	67%	100%	0%	0%
14	50%	100%	0%	0%
13	50%	100%	0%	0%
12	33%	100%	0%	0%
11	33%	100%	0%	0%
10	17%	100%	0%	0%
9	17%	100%	0%	0%
8	17%	50%	0%	0%
7	17%	50%	0%	0%
6	0%	50%	0%	0%
5	0%	50%	0%	0%
4	0%	50%	0%	0%
3	0%	100%	0%	0%
2	0%	14%	0%	0%
	35%	80%	0%	13%

overall 32% 2 hours or more direct sun



South Elevation



East Elevation

■ < 2 Hours ■ ≥ 2 Hours

Addendum

1hr or more direct sunlight to private open spaces (balconies)

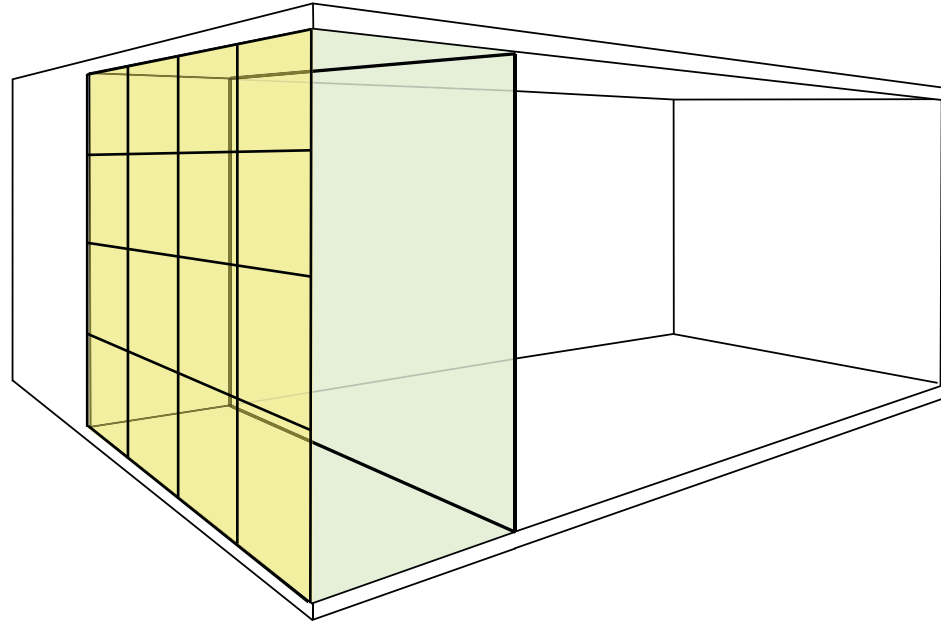
9.3

Solar Assessment - Client Requirement

minimum **1 hours** of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

The division into 1m² surfaces was done in order to get a more safe result. Keeping the area as a single surface the study would test only the middle of it and it would not provide sufficient evidence.



Addendum

1hr or more direct sunlight to private open spaces (balconies)

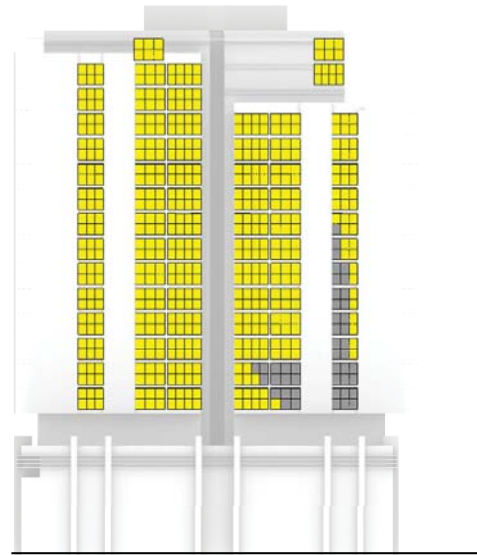
22nd of March

09:00 - 15:00

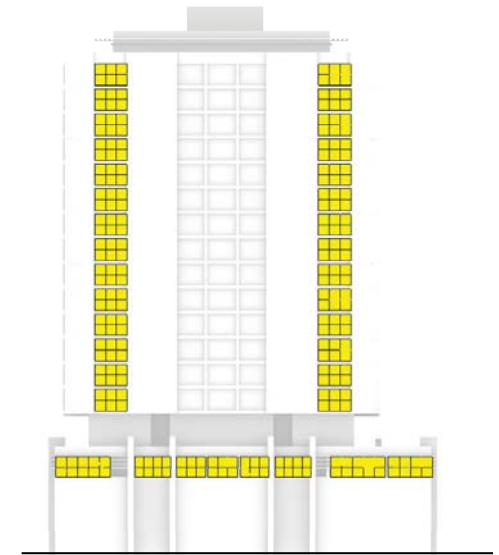
minimum 1 hour of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements



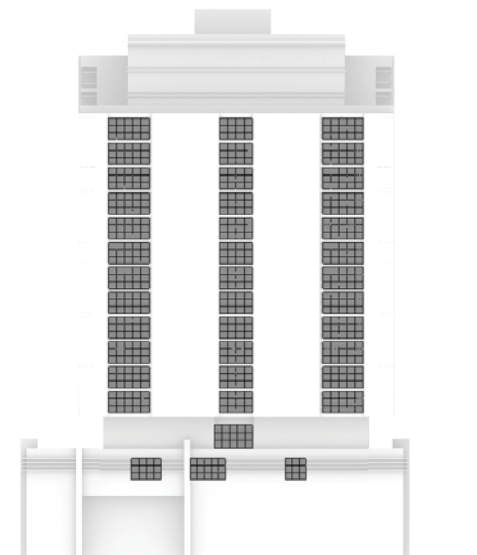
West Elevation



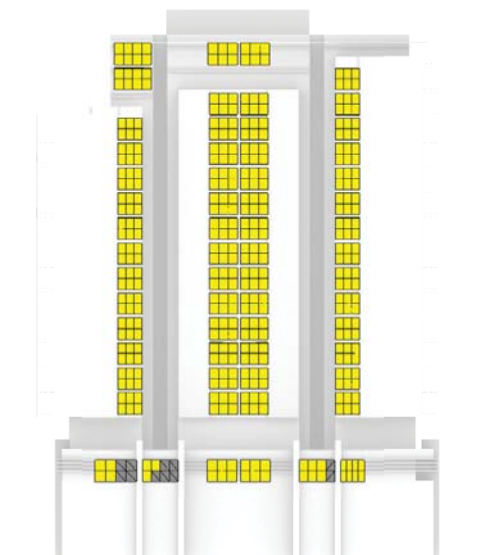
North Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	100%	100%	0%	100%
16	100%	100%	0%	100%
15	100%	100%	0%	100%
14	100%	100%	0%	100%
13	100%	100%	0%	100%
12	100%	100%	0%	100%
11	100%	100%	0%	100%
10	83%	100%	0%	100%
9	83%	100%	0%	100%
8	83%	100%	0%	100%
7	83%	100%	0%	100%
6	83%	100%	0%	100%
5	67%	100%	0%	100%
4	67%	100%	0%	100%
3	0%	100%	0%	100%
2	0%	100%	0%	33%
	79%	100%	0%	96%

overall 69% 1 hour or more direct sun



South Elevation



East Elevation

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to private open spaces (balconies)

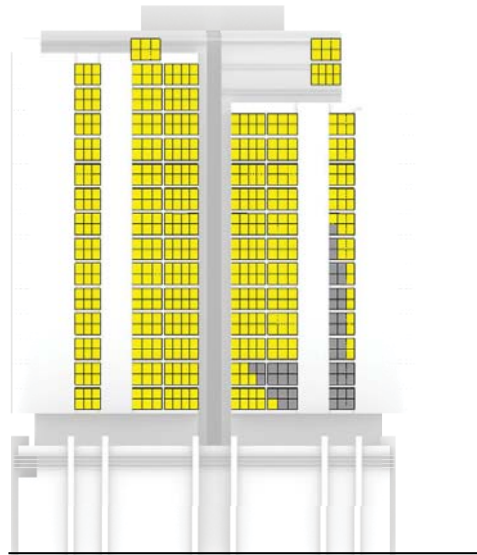
22nd of March

07:30 - 16:30

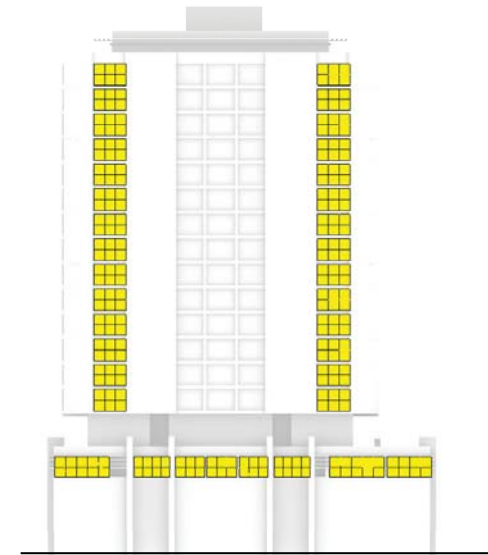
minimum 1 hour of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements

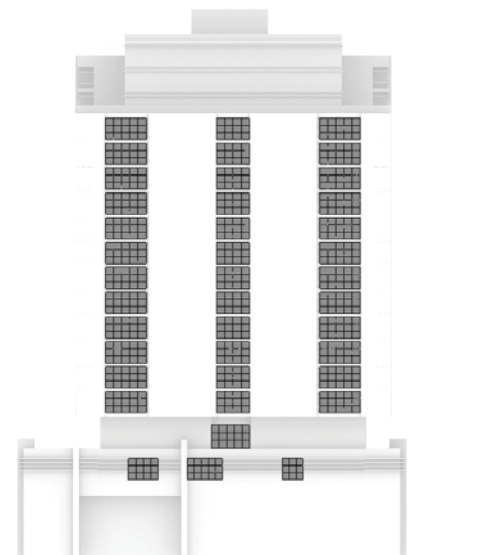


West Elevation

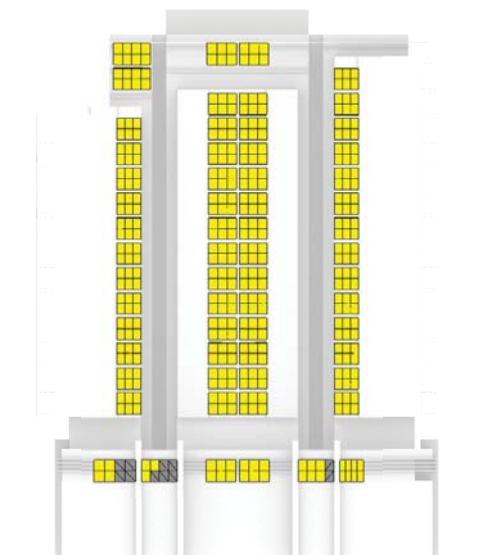


North Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	100%	100%	0%	100%
16	100%	100%	0%	100%
15	100%	100%	0%	100%
14	100%	100%	0%	100%
13	100%	100%	0%	100%
12	100%	100%	0%	100%
11	100%	100%	0%	100%
10	83%	100%	0%	100%
9	83%	100%	0%	100%
8	83%	100%	0%	100%
7	83%	100%	0%	100%
6	83%	100%	0%	100%
5	67%	100%	0%	100%
4	67%	100%	0%	100%
3	0%	100%	0%	100%
2	0%	100%	0%	33%
	79%	100%	0%	96%



South Elevation



East Elevation

overall 69% 1 hour or more direct sun

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to private open spaces (balconies)

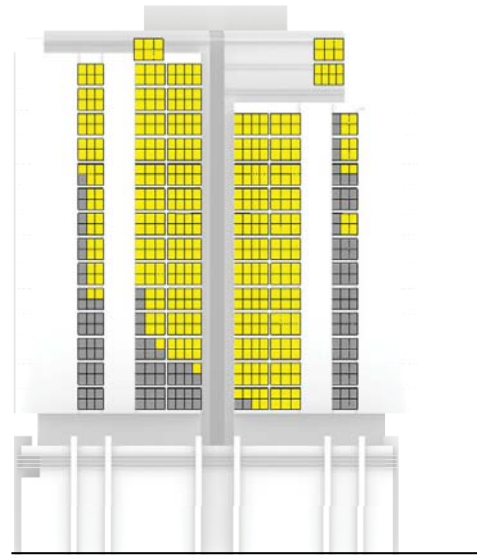
21st of June

09:00 - 15:00

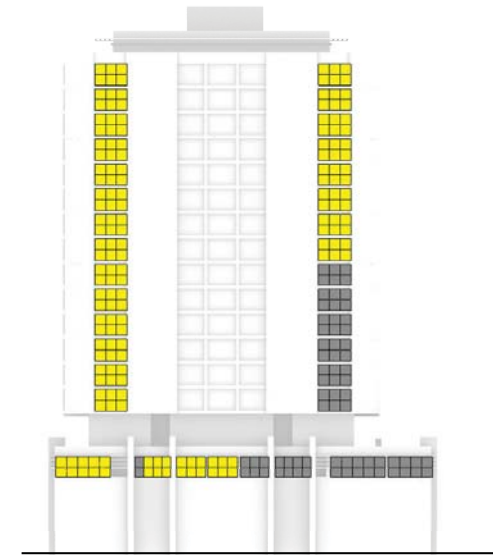
minimum 1 hour of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

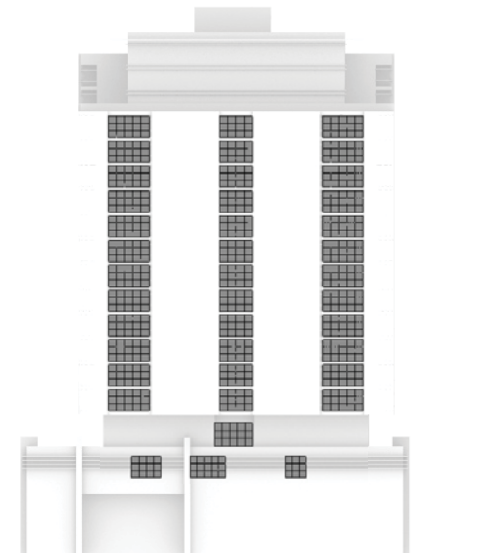
the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements



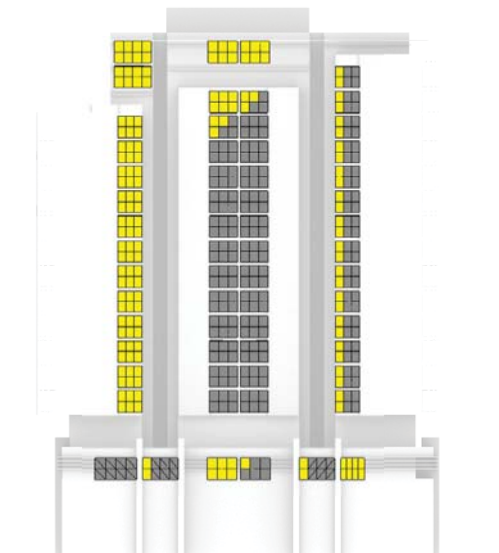
West Elevation



North Elevation



South Elevation



East Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	100%	100%	0%	75%
16	100%	100%	0%	50%
15	83%	100%	0%	25%
14	83%	100%	0%	25%
13	67%	100%	0%	25%
12	67%	100%	0%	25%
11	67%	100%	0%	25%
10	67%	100%	0%	25%
9	67%	100%	0%	25%
8	50%	100%	0%	25%
7	50%	100%	0%	25%
6	50%	100%	0%	25%
5	33%	100%	0%	25%
4	17%	100%	0%	25%
3	0%	100%	0%	100%
2	0%	43%	0%	33%
	59%	97%	0%	39%

overall 49% 1 hour or more direct sun

■ < 1 Hours ■ ≥ 1 Hours

Addendum

1hr or more direct sunlight to private open spaces (balconies)

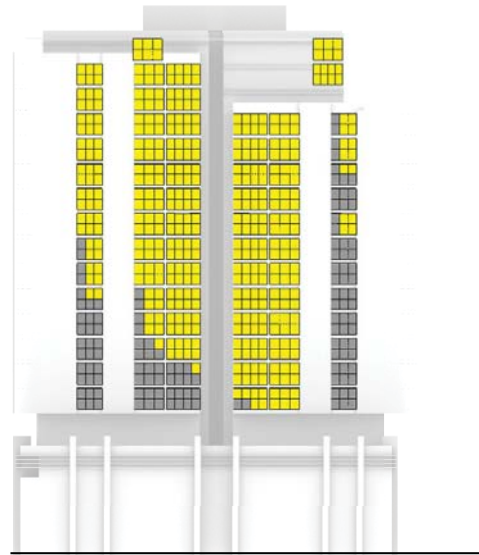
21st of June

07:30 - 16:30

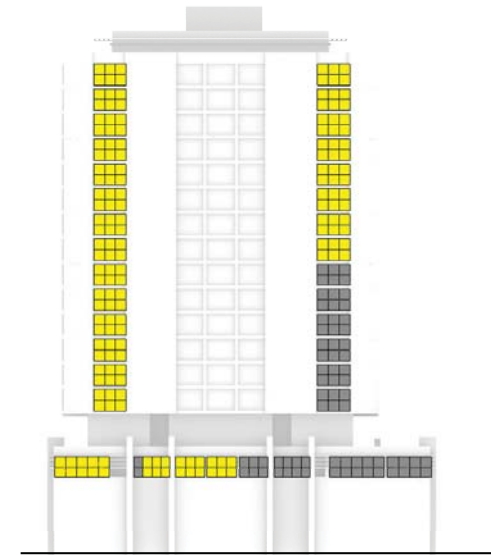
minimum 1 hour of direct sunlight to at least 50% of the required minimum area of private open space.

Because most of the private open spaces are failing the minimum area requirement, the compliance was restricted to surfaces that pass for the 100% of the area.

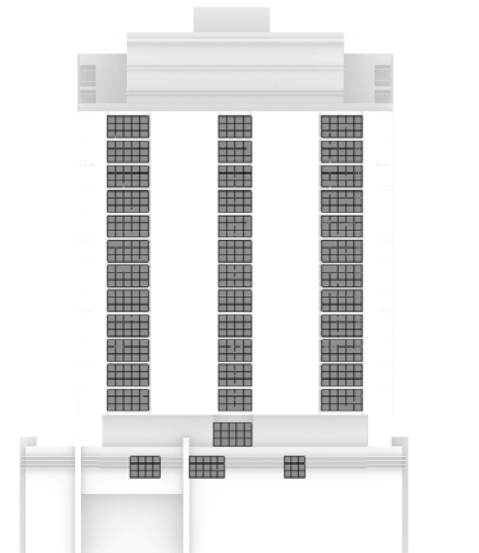
the percentage result that is given bellow indicates the percentage of flats on each facade that comply to the requirements



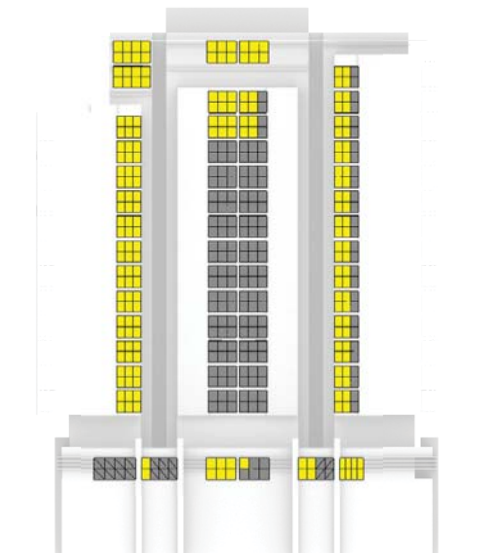
West Elevation



North Elevation



South Elevation



East Elevation

	West	North	South	East
18	100%	100%	0%	100%
17	100%	100%	0%	75%
16	100%	100%	0%	50%
15	83%	100%	0%	50%
14	83%	100%	0%	25%
13	83%	100%	0%	25%
12	83%	100%	0%	25%
11	83%	100%	0%	25%
10	67%	100%	0%	25%
9	67%	100%	0%	25%
8	50%	100%	0%	25%
7	50%	100%	0%	25%
6	50%	100%	0%	25%
5	33%	100%	0%	25%
4	17%	100%	0%	25%
3	0%	100%	0%	100%
2	0%	43%	0%	33%
	62%	97%	0%	40%

overall 50% 1 hour or more direct sun

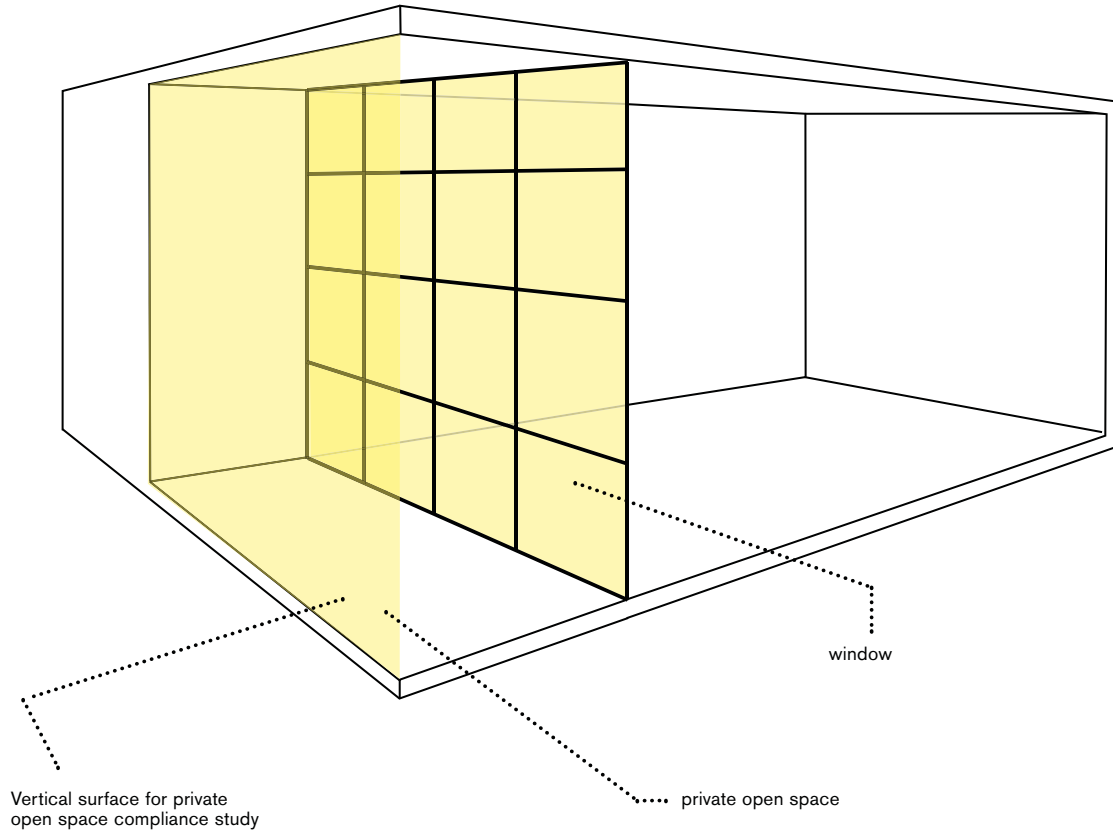
■ < 1 Hours ■ ≥ 1 Hours

Addendum

Summary of the studies that were conducted along with the results, showing the percentage of flats compliant to the requirements

The following results illustrate the percentage of flats that comply to both window and private open space requirements.

The report covers both the DCP 2012 as well as the client requirements to test sun access considering the extended hours between 7:30 and 16:30



Addendum

Flats receiving 2hr of direct sun-light or more

March 22nd 9:00 - 15:00

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying
18	0%	100%	0%	0%	3
17	40%	60%	0%	50%	7
16	0%	60%	0%	50%	5
15	0%	60%	0%	50%	5
14	0%	60%	0%	50%	5
13	0%	60%	0%	50%	5
12	0%	60%	0%	50%	5
11	0%	60%	0%	50%	5
10	0%	60%	0%	50%	5
9	0%	60%	0%	50%	5
8	0%	60%	0%	50%	5
7	0%	60%	0%	50%	5
6	0%	60%	0%	25%	4
5	0%	60%	0%	25%	4
4	0%	60%	0%	25%	4
3	0%	0%	0%	0%	0
2	0%	0%	0%	0%	0
2% 55% 0% 37%					24%

March 22nd 7:30 - 16:30

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying
18	67%	100%	0%	0%	5
17	40%	60%	0%	50%	7
16	40%	60%	0%	50%	7
15	17%	60%	0%	50%	6
14	17%	60%	0%	50%	6
13	0%	60%	0%	50%	5
12	0%	60%	0%	50%	5
11	0%	60%	0%	50%	5
10	0%	60%	0%	50%	5
9	0%	60%	0%	50%	5
8	0%	60%	0%	50%	5
7	0%	60%	0%	50%	5
6	0%	60%	0%	25%	4
5	0%	60%	0%	25%	4
4	0%	60%	0%	25%	4
3	0%	0%	0%	0%	0
2	0%	0%	0%	0%	0
11% 55% 0% 37%					26%

Without transoms

Floor	West	North	South	East	Flats complying
18	67%	100%	0%	0%	5
17	40%	60%	0%	50%	7
16	40%	60%	0%	50%	7
15	17%	60%	0%	50%	6
14	17%	60%	0%	50%	6
13	0%	60%	0%	50%	5
12	0%	60%	0%	50%	5
11	0%	60%	0%	50%	5
10	0%	60%	0%	50%	5
9	0%	60%	0%	50%	5
8	0%	60%	0%	50%	5
7	0%	60%	0%	50%	5
6	0%	60%	0%	25%	5
5	0%	60%	0%	25%	4
4	0%	60%	0%	25%	4
3	0%	0%	0%	0%	0
2	0%	14%	0%	0%	1
11% 56% 0% 37%					26%

Without transoms

Floor	West	North	South	East	Flats complying
18	67%	100%	0%	0%	5
17	40%	60%	0%	50%	7
16	40%	60%	0%	50%	7
15	17%	60%	0%	50%	6
14	17%	60%	0%	50%	6
13	0%	60%	0%	50%	5
12	0%	60%	0%	50%	5
11	0%	60%	0%	50%	5
10	0%	60%	0%	50%	5
9	0%	60%	0%	50%	5
8	0%	60%	0%	50%	5
7	0%	60%	0%	50%	5
6	0%	60%	0%	25%	4
5	0%	60%	0%	25%	4
4	0%	60%	0%	25%	4
3	0%	0%	0%	0%	0
2	0%	14%	0%	0%	1
11% 56% 0% 37%					26%

Addendum

Flats receiving 2hr of direct sun-light or more

June 21st 9:00 - 15:00

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying
18	67%	100%	0%	0%	7
17	40%	100%	0%	0%	7
16	20%	100%	0%	0%	6
15	0%	100%	0%	25%	6
14	0%	100%	0%	25%	6
13	0%	100%	0%	0%	5
12	0%	100%	0%	0%	5
11	0%	100%	0%	0%	5
10	0%	100%	0%	0%	5
9	0%	20%	0%	0%	1
8	0%	20%	0%	0%	1
7	0%	20%	0%	0%	1
6	0%	20%	0%	0%	1
5	0%	20%	0%	0%	1
4	0%	20%	0%	0%	1
3	0%	0%	0%	0%	0
2	0%	0%	0%	0%	0
7% 60% 0% 3%					18%

June 21st 7:30 - 16:30

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying
18	100%	100%	0%	0%	8
17	60%	100%	0%	50%	10
16	20%	100%	0%	0%	6
15	0%	100%	0%	25%	6
14	0%	100%	0%	25%	6
13	0%	100%	0%	0%	5
12	0%	100%	0%	0%	5
11	0%	100%	0%	0%	5
10	0%	100%	0%	0%	5
9	0%	20%	0%	0%	1
8	0%	20%	0%	0%	1
7	0%	20%	0%	0%	1
6	0%	20%	0%	0%	1
5	0%	20%	0%	0%	1
4	0%	20%	0%	0%	1
3	0%	0%	0%	0%	0
2	0%	0%	0%	0%	0
11% 60% 0% 6%					19%

Without transoms

Floor	West	North	South	East	Flats complying
18	67%	100%	0%	0%	7
17	40%	100%	0%	50%	9
16	20%	100%	0%	25%	7
15	0%	100%	0%	25%	6
14	17%	100%	0%	25%	7
13	0%	100%	0%	0%	5
12	0%	100%	0%	0%	5
11	0%	100%	0%	0%	5
10	0%	100%	0%	0%	5
9	0%	20%	0%	0%	1
8	0%	20%	0%	0%	1
7	0%	20%	0%	0%	1
6	0%	20%	0%	0%	1
5	0%	20%	0%	0%	1
4	0%	20%	0%	0%	1
3	0%	0%	0%	0%	0
2	0%	0%	0%	0%	0
8% 60% 0% 7%					19%

Without transoms

Floor	West	North	South	East	Flats complying
18	100%	100%	0%	0%	8
17	60%	100%	0%	50%	10
16	40%	100%	0%	25%	8
15	17%	100%	0%	25%	7
14	17%	100%	0%	25%	7
13	0%	100%	0%	0%	5
12	0%	100%	0%	0%	5
11	0%	100%	0%	0%	5
10	0%	100%	0%	0%	5
9	0%	20%	0%	0%	1
8	0%	20%	0%	0%	1
7	0%	20%	0%	0%	1
6	0%	20%	0%	0%	1
5	0%	20%	0%	0%	1
4	0%	20%	0%	0%	1
3	0%	0%	0%	0%	0
2	0%	0%	0%	0%	0
14% 60% 0% 7%					20%

Addendum

Flats receiving 1.5hr of direct sun-light or more

March 22nd 9:00 - 15:00

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying				
18	67%	100%	0%	0%	5				
17	40%	60%	0%	50%	7				
16	40%	60%	0%	50%	7				
15	17%	60%	0%	50%	6				
14	17%	60%	0%	50%	6				
13	0%	60%	0%	50%	5				
12	0%	60%	0%	50%	5				
11	0%	60%	0%	50%	5				
10	0%	60%	0%	50%	5				
9	0%	60%	0%	50%	5				
8	0%	60%	0%	50%	5				
7	0%	60%	0%	50%	5				
6	0%	60%	0%	50%	5				
5	0%	60%	0%	50%	5				
4	0%	60%	0%	50%	5				
3	0%	0%	0%	0%	0				
2	0%	0%	0%	0%	0				
<table border="1" style="width:100%; text-align:center;"> <tr> <td>11%</td> <td>55%</td> <td>0%</td> <td>41%</td> </tr> </table>					11%	55%	0%	41%	27%
11%	55%	0%	41%						

March 22nd 7:30 - 16:30

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying				
18	67%	100%	0%	0%	5				
17	40%	60%	0%	50%	7				
16	40%	60%	0%	50%	7				
15	17%	60%	0%	50%	6				
14	17%	60%	0%	50%	6				
13	0%	60%	0%	50%	5				
12	0%	60%	0%	50%	5				
11	0%	60%	0%	50%	5				
10	0%	60%	0%	50%	5				
9	0%	60%	0%	50%	5				
8	0%	60%	0%	50%	5				
7	0%	60%	0%	50%	5				
6	0%	60%	0%	50%	5				
5	0%	60%	0%	50%	5				
4	0%	60%	0%	50%	5				
3	0%	0%	0%	0%	0				
2	0%	0%	0%	0%	0				
<table border="1" style="width:100%; text-align:center;"> <tr> <td>11%</td> <td>55%</td> <td>0%</td> <td>41%</td> </tr> </table>					11%	55%	0%	41%	27%
11%	55%	0%	41%						

Without transoms

Floor	West	North	South	East	Flats complying				
18	67%	100%	0%	0%	5				
17	40%	60%	0%	50%	7				
16	40%	60%	0%	50%	7				
15	17%	60%	0%	50%	6				
14	17%	60%	0%	50%	6				
13	17%	60%	0%	50%	6				
12	17%	60%	0%	50%	6				
11	0%	60%	0%	50%	5				
10	0%	60%	0%	50%	5				
9	0%	60%	0%	50%	5				
8	0%	60%	0%	50%	5				
7	0%	60%	0%	50%	5				
6	0%	60%	0%	50%	5				
5	0%	60%	0%	50%	5				
4	0%	60%	0%	50%	5				
3	0%	0%	0%	0%	0				
2	0%	0%	0%	0%	0				
<table border="1" style="width:100%; text-align:center;"> <tr> <td>13%</td> <td>55%</td> <td>0%</td> <td>41%</td> </tr> </table>					13%	55%	0%	41%	27%
13%	55%	0%	41%						

Without transoms

Floor	West	North	South	East	Flats complying				
18	100%	100%	0%	0%	6				
17	100%	60%	0%	50%	10				
16	40%	60%	0%	50%	7				
15	17%	60%	0%	50%	6				
14	17%	60%	0%	50%	6				
13	17%	60%	0%	50%	6				
12	17%	60%	0%	50%	6				
11	0%	60%	0%	50%	5				
10	0%	60%	0%	50%	5				
9	0%	60%	0%	50%	5				
8	0%	60%	0%	50%	5				
7	0%	60%	0%	50%	5				
6	0%	60%	0%	50%	5				
5	0%	60%	0%	50%	5				
4	0%	60%	0%	50%	5				
3	0%	0%	0%	0%	0				
2	0%	0%	0%	0%	0				
<table border="1" style="width:100%; text-align:center;"> <tr> <td>18%</td> <td>55%</td> <td>0%</td> <td>41%</td> </tr> </table>					18%	55%	0%	41%	29%
18%	55%	0%	41%						

Addendum

Flats receiving 1.5hr of direct sun-light or more

June 21st 9:00 - 15:00

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East
18	67%	100%	0%	0%
17	40%	100%	0%	0%
16	20%	100%	0%	25%
15	0%	100%	0%	25%
14	0%	100%	0%	25%
13	0%	100%	0%	25%
12	0%	100%	0%	25%
11	0%	100%	0%	0%
10	0%	100%	0%	0%
9	0%	40%	0%	0%
8	0%	20%	0%	0%
7	0%	20%	0%	0%
6	0%	20%	0%	0%
5	0%	20%	0%	0%
4	0%	20%	0%	0%
3	0%	33%	0%	0%
2	0%	0%	0%	0%

Flats complying
5
7
7
6
6
6
5
5
2
1
1
1
1
1
0

7%	63%	0%	7%
----	-----	----	----

19%

June 21st 7:30 - 16:30

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East
18	67%	100%	0%	0%
17	60%	100%	0%	50%
16	60%	100%	0%	25%
15	50%	100%	0%	25%
14	33%	100%	0%	25%
13	17%	100%	0%	25%
12	0%	100%	0%	25%
11	0%	100%	0%	0%
10	0%	100%	0%	0%
9	0%	40%	0%	0%
8	0%	20%	0%	0%
7	0%	20%	0%	0%
6	0%	20%	0%	0%
5	0%	20%	0%	0%
4	0%	20%	0%	0%
3	0%	33%	0%	0%
2	0%	0%	0%	0%

Flats complying
5
10
9
9
8
7
6
5
5
2
1
1
1
1
1
0

17%	63%	0%	10%
-----	-----	----	-----

23%

Without transoms

Floor	West	North	South	East
18	67%	100%	0%	0%
17	40%	100%	0%	25%
16	20%	100%	0%	25%
15	17%	100%	0%	25%
14	17%	100%	0%	25%
13	17%	100%	0%	25%
12	17%	100%	0%	25%
11	17%	100%	0%	0%
10	17%	100%	0%	0%
9	17%	40%	0%	0%
8	17%	20%	0%	0%
7	17%	20%	0%	0%
6	17%	20%	0%	0%
5	0%	20%	0%	0%
4	0%	20%	0%	0%
3	0%	33%	0%	0%
2	0%	0%	0%	0%

Flats complying
5
8
7
7
7
7
7
7
6
6
3
2
2
2
1
1
1
0

17%	63%	0%	9%
-----	-----	----	----

22%

Without transoms

Floor	West	North	South	East
18	100%	100%	0%	33%
17	100%	100%	0%	50%
16	60%	100%	0%	25%
15	50%	100%	0%	25%
14	33%	100%	0%	25%
13	33%	100%	0%	25%
12	17%	100%	0%	25%
11	17%	100%	0%	0%
10	17%	100%	0%	0%
9	17%	40%	0%	0%
8	17%	20%	0%	0%
7	17%	20%	0%	0%
6	17%	20%	0%	0%
5	0%	20%	0%	0%
4	0%	20%	0%	0%
3	0%	33%	0%	0%
2	0%	0%	0%	0%

Flats complying
7
12
9
9
8
8
7
6
6
3
2
2
2
1
1
1
0

29%	63%	0%	12%
-----	-----	----	-----

26%

Addendum

Flats receiving 1hr of direct sun-light or more

March 22nd 9:00 - 15:00

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying				
18	67%	100%	0%	0%	5				
17	40%	60%	0%	75%	8				
16	40%	60%	0%	50%	7				
15	17%	60%	0%	50%	6				
14	17%	60%	0%	50%	6				
13	17%	60%	0%	50%	6				
12	17%	60%	0%	50%	6				
11	17%	60%	0%	50%	6				
10	0%	60%	0%	50%	5				
9	0%	60%	0%	50%	5				
8	0%	60%	0%	50%	5				
7	0%	60%	0%	50%	5				
6	0%	60%	0%	50%	5				
5	0%	60%	0%	50%	5				
4	0%	60%	0%	50%	5				
3	0%	0%	0%	75%	3				
2	0%	0%	0%	0%	0				
<table border="1"> <tr> <td>14%</td> <td>55%</td> <td>0%</td> <td>47%</td> </tr> </table>					14%	55%	0%	47%	29%
14%	55%	0%	47%						

March 22nd 7:30 - 16:30

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East	Flats complying				
18	67%	100%	0%	33%	6				
17	100%	60%	0%	100%	12				
16	100%	60%	0%	75%	11				
15	67%	60%	0%	75%	10				
14	33%	60%	0%	100%	9				
13	17%	60%	0%	50%	6				
12	17%	60%	0%	50%	6				
11	17%	60%	0%	50%	6				
10	0%	60%	0%	50%	5				
9	0%	60%	0%	50%	5				
8	0%	60%	0%	50%	5				
7	0%	60%	0%	50%	5				
6	0%	60%	0%	50%	5				
5	0%	60%	0%	50%	5				
4	0%	60%	0%	50%	5				
3	20%	0%	0%	75%	4				
2	0%	0%	0%	33%	2				
<table border="1"> <tr> <td>26%</td> <td>55%</td> <td>0%</td> <td>58%</td> </tr> </table>					26%	55%	0%	58%	35%
26%	55%	0%	58%						

Without transoms

Floor	West	North	South	East	Flats complying				
18	67%	100%	0%	0%	5				
17	60%	60%	0%	75%	9				
16	40%	60%	0%	50%	7				
15	33%	60%	0%	50%	7				
14	33%	60%	0%	50%	7				
13	33%	60%	0%	50%	7				
12	33%	60%	0%	50%	7				
11	33%	60%	0%	50%	7				
10	33%	60%	0%	50%	7				
9	33%	60%	0%	50%	7				
8	33%	60%	0%	50%	7				
7	17%	60%	0%	50%	6				
6	17%	60%	0%	50%	6				
5	17%	60%	0%	50%	6				
4	0%	60%	0%	50%	5				
3	0%	0%	0%	75%	3				
2	0%	0%	0%	0%	0				
<table border="1"> <tr> <td>28%</td> <td>55%</td> <td>0%</td> <td>47%</td> </tr> </table>					28%	55%	0%	47%	33%
28%	55%	0%	47%						

Without transoms

Floor	West	North	South	East	Flats complying				
18	100%	100%	0%	33%	7				
17	100%	60%	0%	100%	12				
16	100%	60%	0%	75%	11				
15	83%	60%	0%	100%	12				
14	50%	60%	0%	100%	10				
13	33%	60%	0%	100%	9				
12	33%	60%	0%	50%	7				
11	33%	60%	0%	50%	7				
10	33%	60%	0%	50%	7				
9	33%	60%	0%	50%	7				
8	33%	60%	0%	50%	7				
7	17%	60%	0%	50%	6				
6	17%	60%	0%	50%	6				
5	17%	60%	0%	50%	6				
4	0%	60%	0%	50%	5				
3	20%	0%	0%	75%	4				
2	0%	0%	0%	33%	2				
<table border="1"> <tr> <td>41%</td> <td>55%</td> <td>0%</td> <td>63%</td> </tr> </table>					41%	55%	0%	63%	40%
41%	55%	0%	63%						

Addendum

Flats receiving 1hr of direct sun-light or more

June 21st 9:00 - 15:00

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East
18	67%	100%	0%	0%
17	40%	100%	0%	75%
16	20%	100%	0%	25%
15	0%	100%	0%	25%
14	0%	100%	0%	25%
13	0%	100%	0%	25%
12	0%	100%	0%	25%
11	0%	100%	0%	25%
10	0%	100%	0%	25%
9	0%	80%	0%	25%
8	0%	80%	0%	25%
7	0%	80%	0%	25%
6	0%	80%	0%	25%
5	0%	80%	0%	25%
4	0%	80%	0%	25%
3	0%	67%	0%	50%
2	0%	0%	0%	0%

Flats complying
5
10
7
6
6
6
6
6
5
5
5
5
5
4
0

7%	85%	0%	26%
----	-----	----	-----

30%

June 21st 7:30 - 16:30

With facade transoms at 800mm and 2100mm above FFL

Floor	West	North	South	East
18	100%	100%	0%	67%
17	100%	100%	0%	75%
16	100%	100%	0%	25%
15	67%	100%	0%	25%
14	67%	100%	0%	25%
13	67%	100%	0%	25%
12	50%	100%	0%	25%
11	50%	100%	0%	25%
10	50%	100%	0%	25%
9	33%	80%	0%	25%
8	17%	80%	0%	25%
7	17%	80%	0%	25%
6	17%	80%	0%	25%
5	17%	80%	0%	25%
4	0%	80%	0%	25%
3	0%	100%	0%	75%
2	0%	0%	0%	0%

Flats complying
8
13
11
10
10
10
9
9
9
7
6
6
6
5
6
0

44%	87%	0%	32%
-----	-----	----	-----

41%

Without transoms

Floor	West	North	South	East
18	67%	100%	0%	0%
17	40%	100%	0%	75%
16	20%	100%	0%	25%
15	17%	100%	0%	25%
14	17%	100%	0%	25%
13	17%	100%	0%	25%
12	17%	100%	0%	25%
11	17%	100%	0%	25%
10	17%	100%	0%	25%
9	17%	80%	0%	25%
8	17%	80%	0%	25%
7	17%	80%	0%	25%
6	17%	80%	0%	25%
5	17%	80%	0%	25%
4	0%	80%	0%	25%
3	0%	100%	0%	50%
2	0%	29%	0%	0%

Flats complying
5
10
7
7
7
7
7
7
7
6
6
6
6
5
5
2

18%	89%	0%	26%
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33%

Without transoms

Floor	West	North	South	East
18	133%	100%	0%	67%
17	100%	100%	0%	75%
16	100%	100%	0%	25%
15	67%	100%	0%	25%
14	67%	100%	0%	25%
13	67%	100%	0%	25%
12	67%	100%	0%	25%
11	50%	100%	0%	25%
10	50%	100%	0%	25%
9	33%	80%	0%	25%
8	33%	80%	0%	25%
7	17%	80%	0%	25%
6	17%	80%	0%	25%
5	17%	80%	0%	25%
4	0%	80%	0%	25%
3	0%	100%	0%	100%
2	0%	29%	0%	17%

Flats complying
9
13
11
10
10
10
10
9
9
7
7
6
6
6
7
3

48%	89%	0%	34%
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43%

