2.4 **Atria strategy**

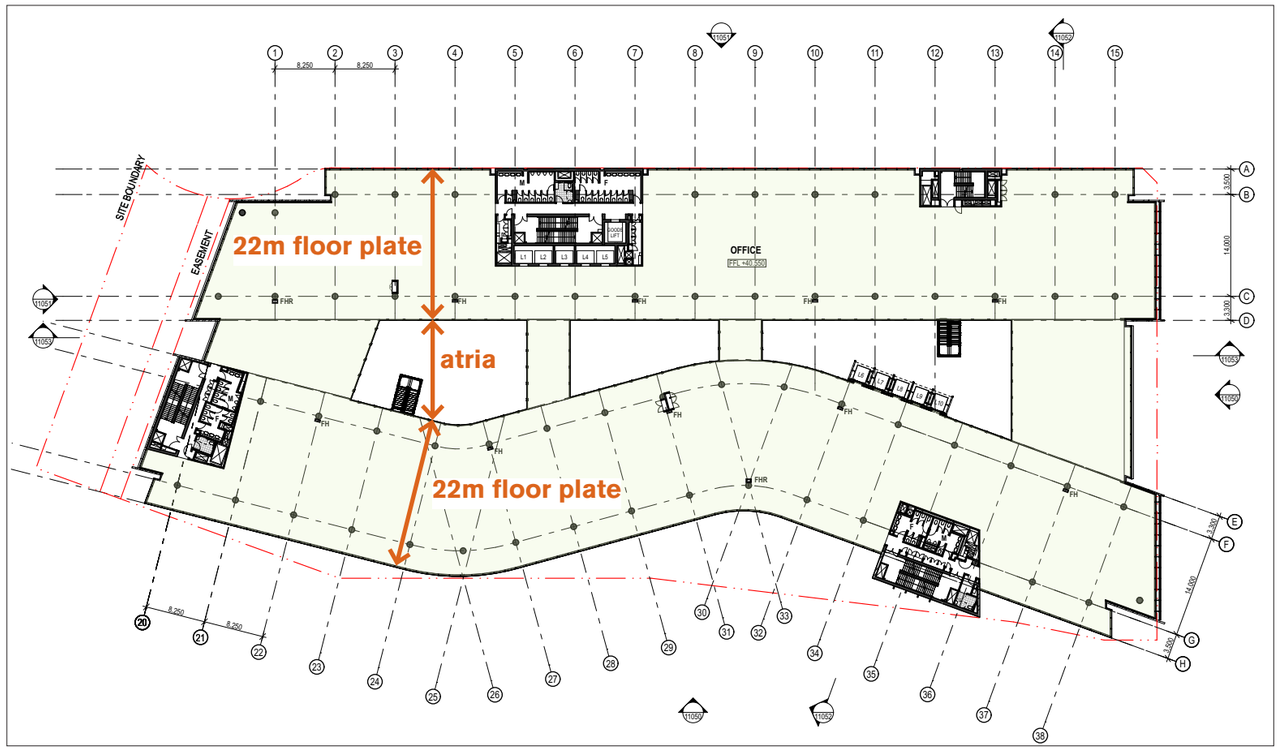
Building 1 is planned around a pair of workplace accommodation wings which run in the east / west direction. A long linear atrium space, characterised by bridge elements and platforms separates these two wings for the full length of the building to form a 'future-proofed' contemporary workplace environment of excellence, that enables flexibility, promotes informal interaction, collaboration and knowledge transfer as well as health and well being by introducing access to daylight deep into the floorplate.

While the northern floorplate is regular in shape, the southern floorplate is curved in plan, responding to the shape of the site and thus creating various width atria. The floorplates come together in the middle of the plan, almost 'kissing' while at the eastern end of the plan the floorplates move apart to create a wide 'collaboration platform' with views to the east opening over the wider ATP precinct.

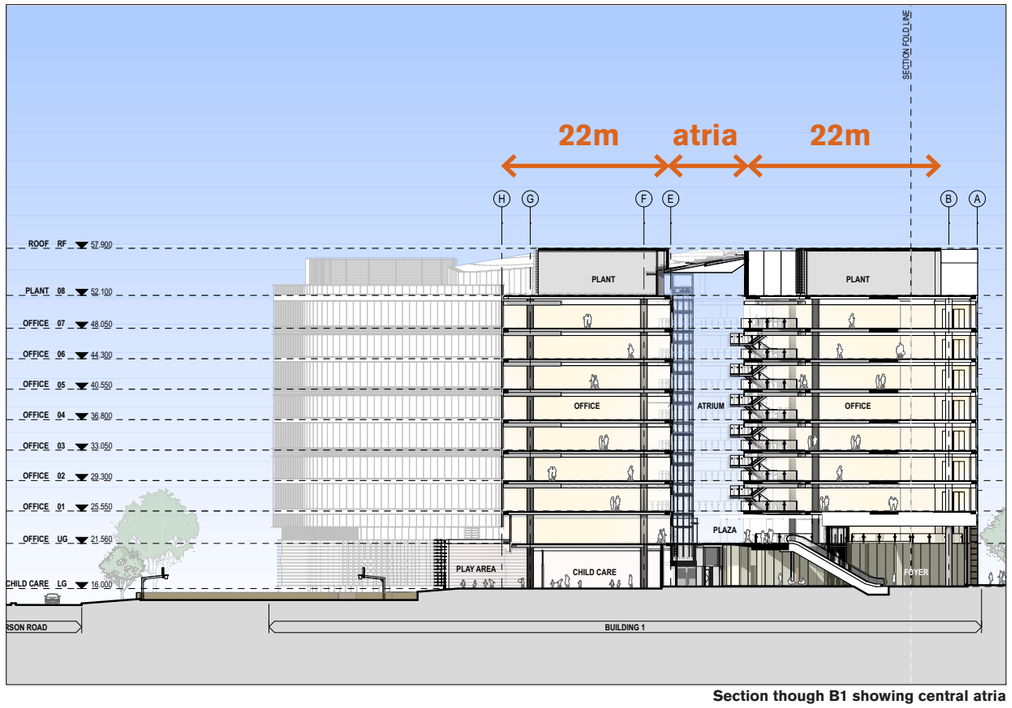
Given the depth of the site, the central atria are essential to deliver an appropriate quality of workspace on typical office levels. The atria allow natural light deep into the plan ensuring that all portions of the floorplate are no more than 12 m from natural daylight. High quality workspace is typically within 6m of natural light. The zone between 6-12m is considered of secondary natural lighting quality. Beyond 12m the space is not considered suitable for desk bound tasks.

The central atria strategy is common in large campus style workplaces, e.g.: Darling Quarter, Sydney which is also occupied by CBA. Photographs and drawings of Darling Quarter are provided on this page for reference. The Darling Quarter atria are approximately 12m wide. The B1 atria widths vary as the southern floorplate curves, providing 14m separation at the widest, closing to 5.5 in the centre of the building plan. On average the B1 atria are approximately 10.5m wide. These dimensions will allow daylight targets to be similar to those adopted at Darling Quarter.

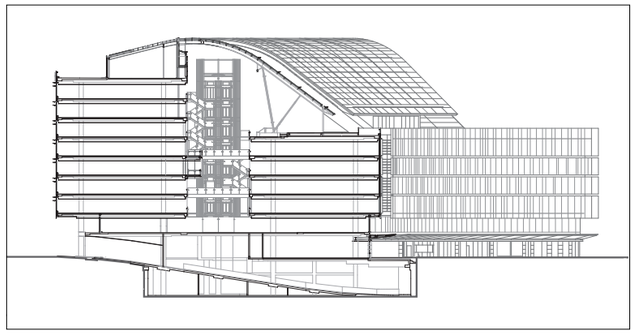
The central atria strategy and associated day lighting benefits are fundamental brief requirements for the successful delivery of Mirvac and CBA's vision for ATP.

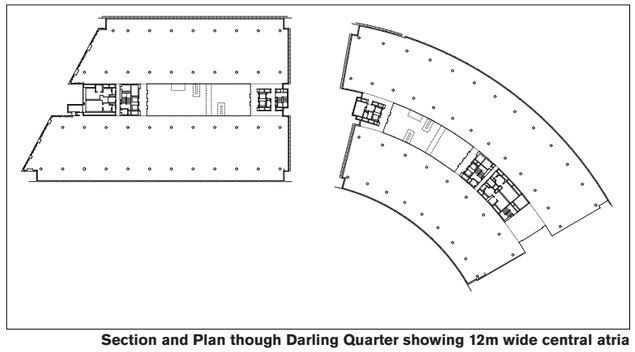


Plan of B1 showing key atria dimensions



Section though B1 showing central atria





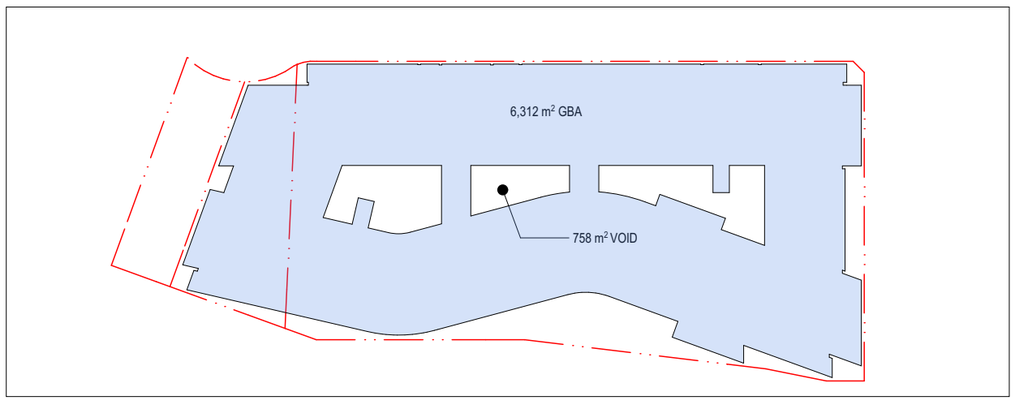
Section and Plan though Darling Quarter showing 12m wide central atria

photographs of Darling Quarter atrium space.

2.5 **Envelope Adjustments**

The following diagrams illustrate adjustments to the SSDA B1 massing relative to the original submission. Following review with the services consultants the extent of roof top plant along the southern edge of the building has been reduced by 330 sqm. Additionally the south west plant room has been reduced in height from 5.8m to 4.0m.

These adjustments deliver a reduction in the extent of overshadowing to the adjacent Henderson Road residences and an increase to the solar access compared to the initial SSDA submission.

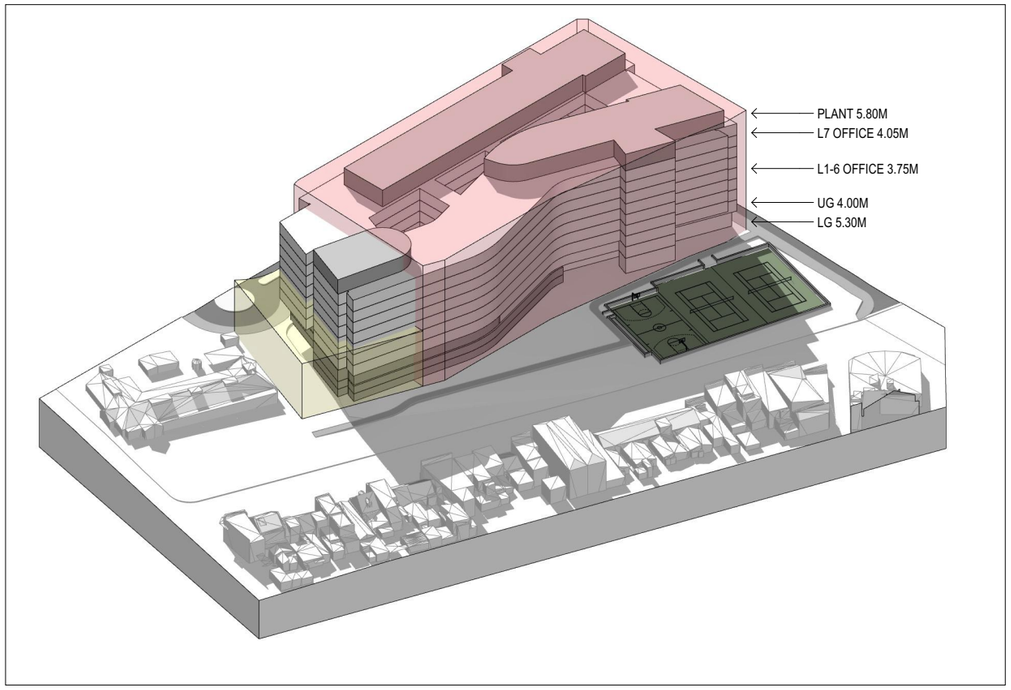


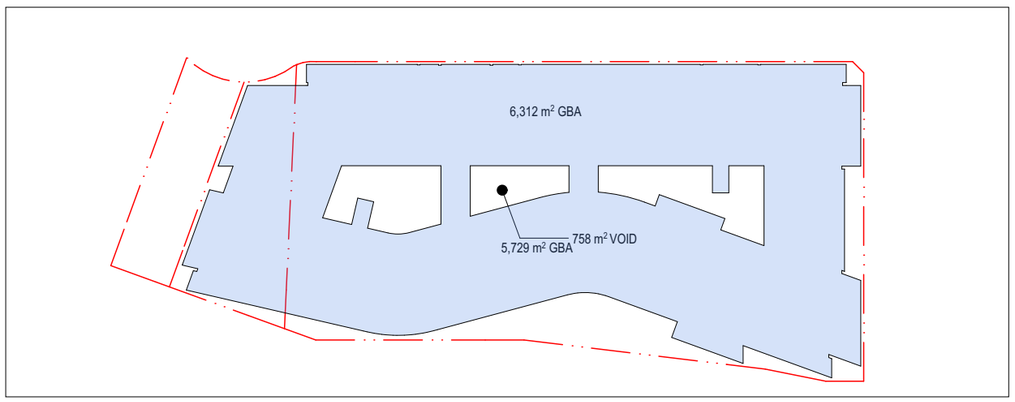
Diagrammatic plan and massing diagram showing original SSDA submission.

Notes:

Floor plates circa 22m wide to allow natural day lighting, with central atria.

Note: GFA of original SSDA submission = 46,832 sqm. Associated Gross Building Area = 63,590 sqm. Carparking located above ground.



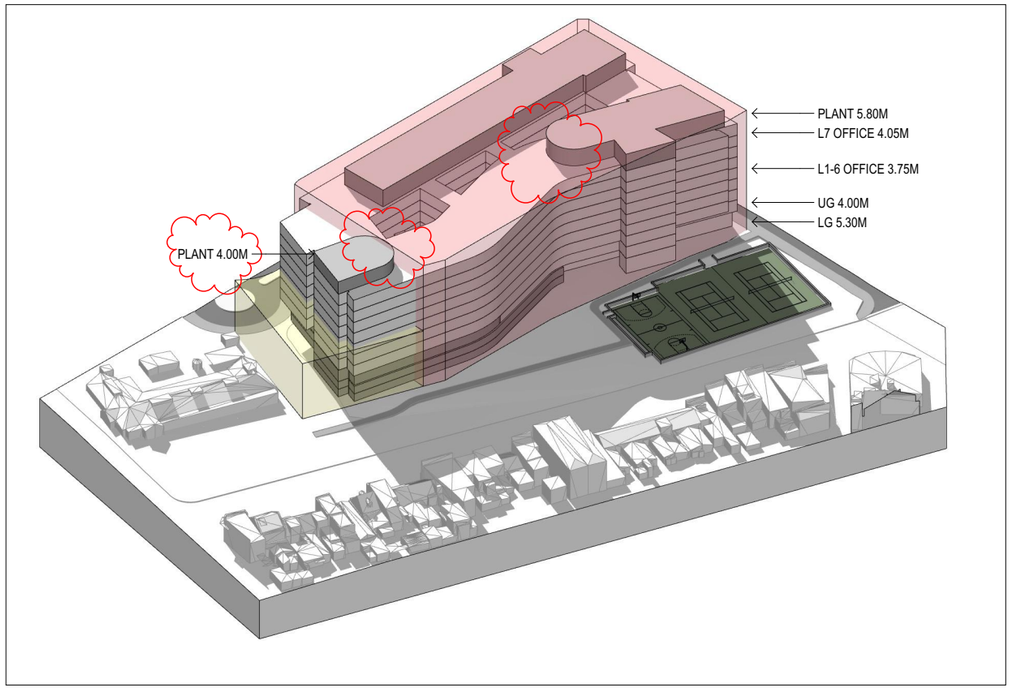


Diagrammatic plan and massing diagram showing original SSDA submission with modifications to extent of roof plant.

Notes:

Floor plates circa 22m wide to allow natural day lighting, with central atria.

Note: GFA of original SSDA submission = 46,832 sqm. Associated Gross Building Area = 63,590 sqm. Carparking located above ground.

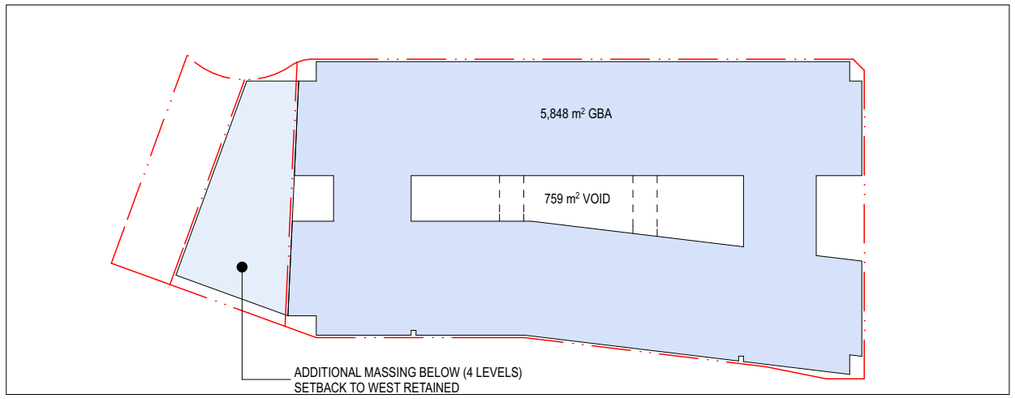


2.6 **Compliant 'Base' alternates; GFA and Building Height**

The following diagrams illustrate compliment schemes with 44,000 sqm of GFA fully located within the height envelope as illustrated previously within this document. These alternate schemes adopt the same number of storeys as the modified SSDA proposals.

Floor to floors for typical commercial levels have been set at 3,850mm which is consistent with similar developments. Non typical levels adopt the same floor to floor heights as the modified SSDA proposal.

These comparison schemes adopt a similar strategy for the design of the office levels, ie: 22m wide floor plates with natural light delivered deep into the plan via the use of central atria. The atria sizes are consistent with those in the modified SSDA proposal, and are representative of large campus style commercial office buildings, eg: Darling Quarter, Sydney. Details of the Darling Quarter atria are included at Section 1.4 of this report for information. Carparking is configured similar to the modified SSDA proposal, ie: above ground and located at the west of the building to ensure a high level of activation along the east.

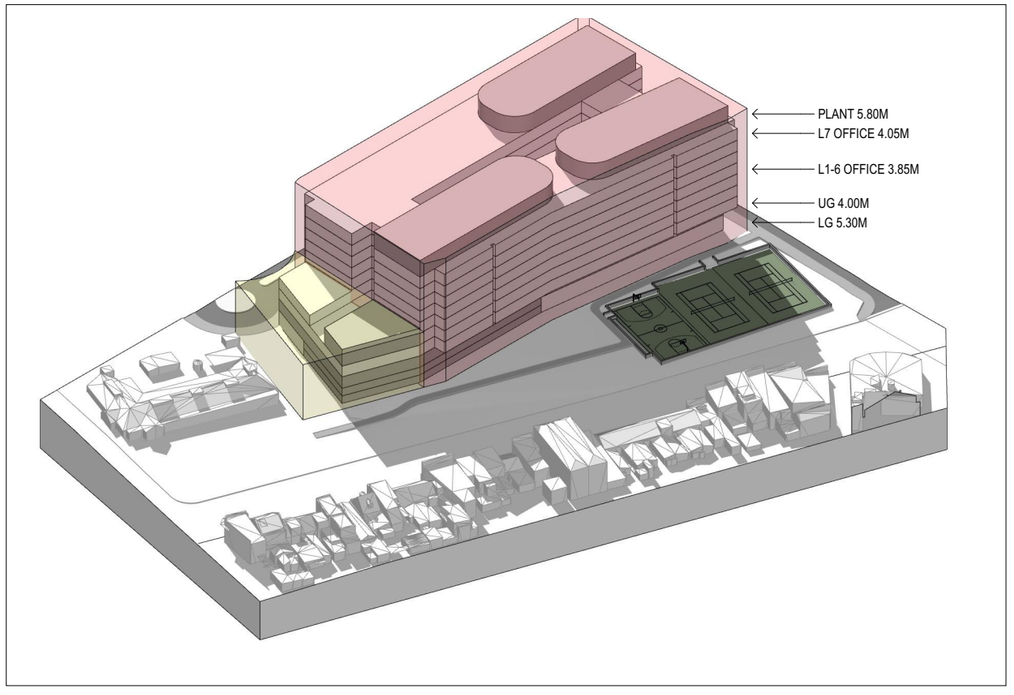


Diagrammatic plan and massing diagram showing GFA and Height complaint 'Base' scheme.

Notes:

Floor plates circa 22m wide to allow natural day lighting, with central atria. Atria area equal to size of original SSDA submission.

Note: GFA = 44,000 sqm. Associated Gross Building Area = 59,576 sqm. Carparking located above ground.



SSDA Submission:

GFA: 46,823 sqm

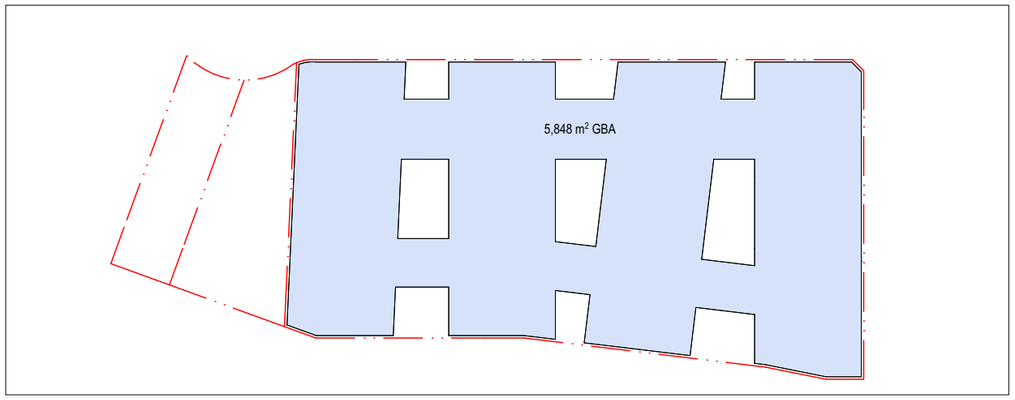
GBA (as associated): 63,590 sqm

GFA compliant:

(based on similar building configuration with pro- rata adjustments)

GFA: 44,000 sqm

GBA (as associated): 59,576 sqm

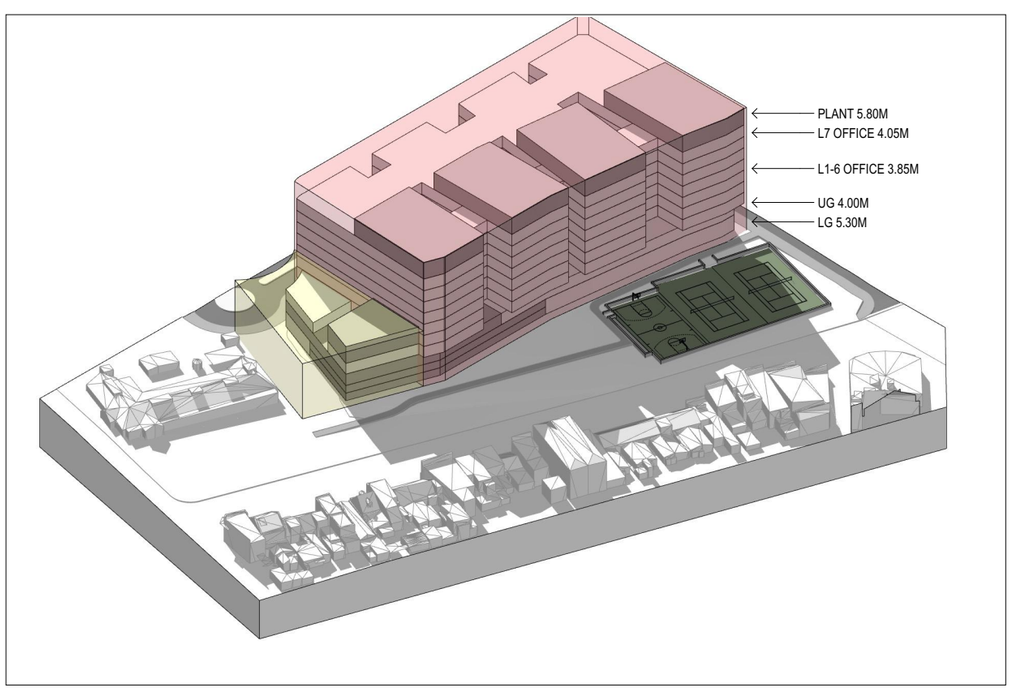


Diagrammatic plan and massing diagram showing GFA and Height complaint 'Alternate' scheme.

Notes:

Floor plates circa 22m wide to allow natural day lighting, with central atria. Atria area equal to size of original SSDA submission.

Note: GFA = 44,000 sqm. Associated Gross Building Area = 59,576 sqm. Carparking located above ground.



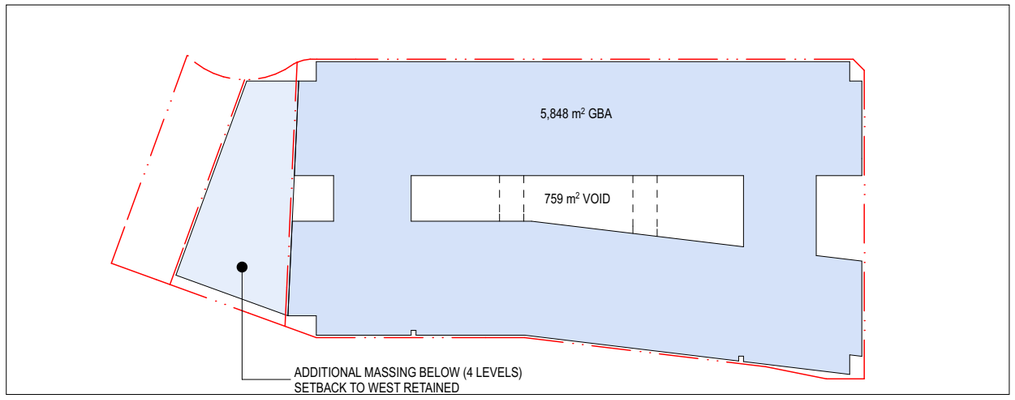
2.7 Compliant ‘Refined Base’ alternates; GFA and Building Height

The following diagrams illustrate ‘Refined Base’ compliant schemes with 44,000 sqm of GFA fully located within the height envelope. These options seek to limit the extent of roof top plant on the southern plate to the same as provided in the modified SSDA proposal. Floor to floor heights for typical commercial levels are as per the modified SSDA proposals, i.e.: 3,750mm.

The ‘Refined Base’ scheme as illustrated below has been tested against the overshadowing and visual impacts of the modified SSDA proposal for B1. Additionally, a solar access study has been undertaken to examine the hours of direct sunlight achieved on the Henderson Road residences at mid winter. This study is set out on the following pages of this report.

These studies demonstrate that the shadows, solar access and visual impacts of the modified SSDA proposal are no greater than those of the ‘refined’ GFA and height compliant scheme.

The ‘refined’ compliant scheme has been adopted as the benchmark to ensure the comparison studies are undertaken against a fair and reasonable comparison.

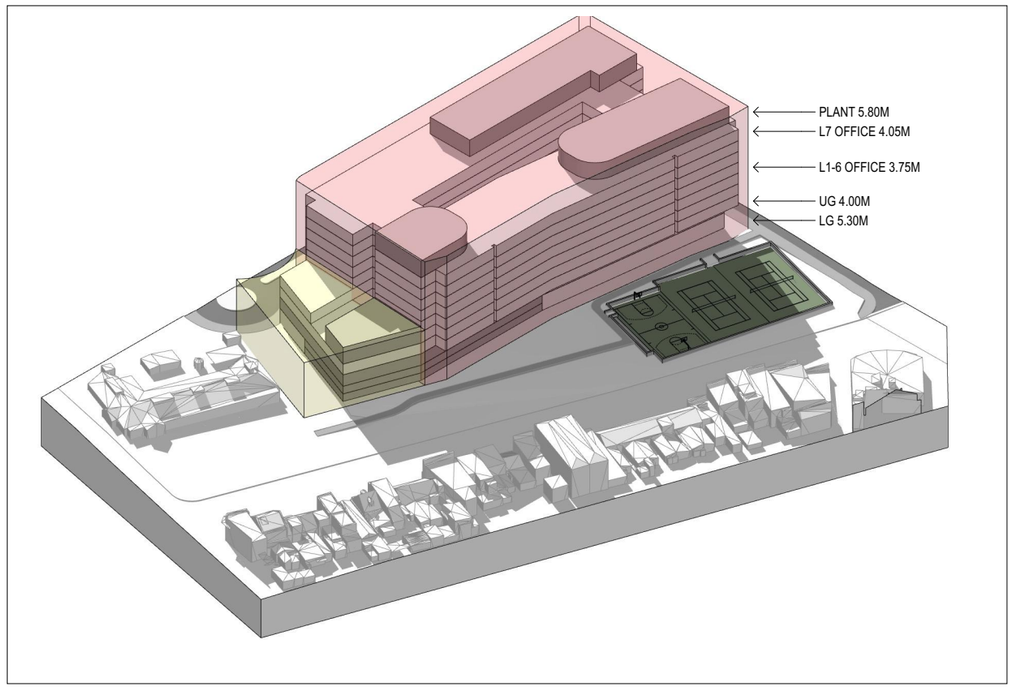


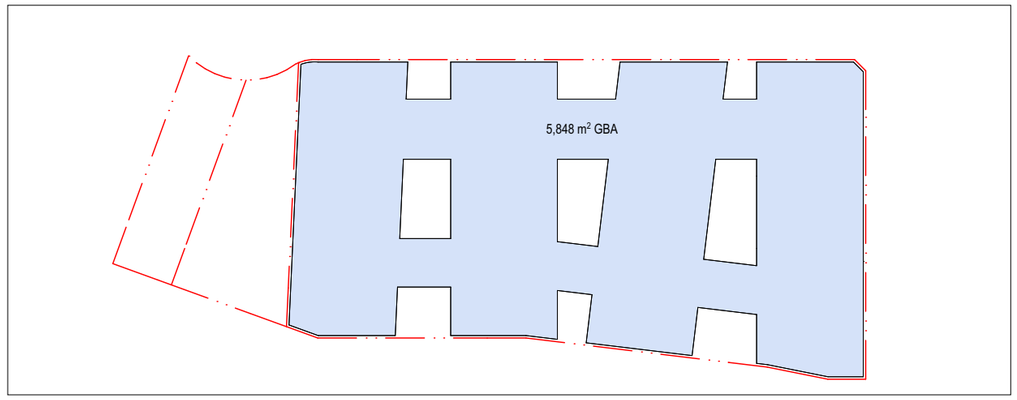
Diagrammatic plan and massing diagram showing GFA and Height complaint ‘Refined Base’ scheme.

Notes:

Floor plates circa 22m wide to allow natural day lighting, with central atria. Atria area equal to size of original SSDA submission.

Note: GFA = 44,000 sqm. Associated Gross Building Area = 59,576 sqm. Carparking located above ground.



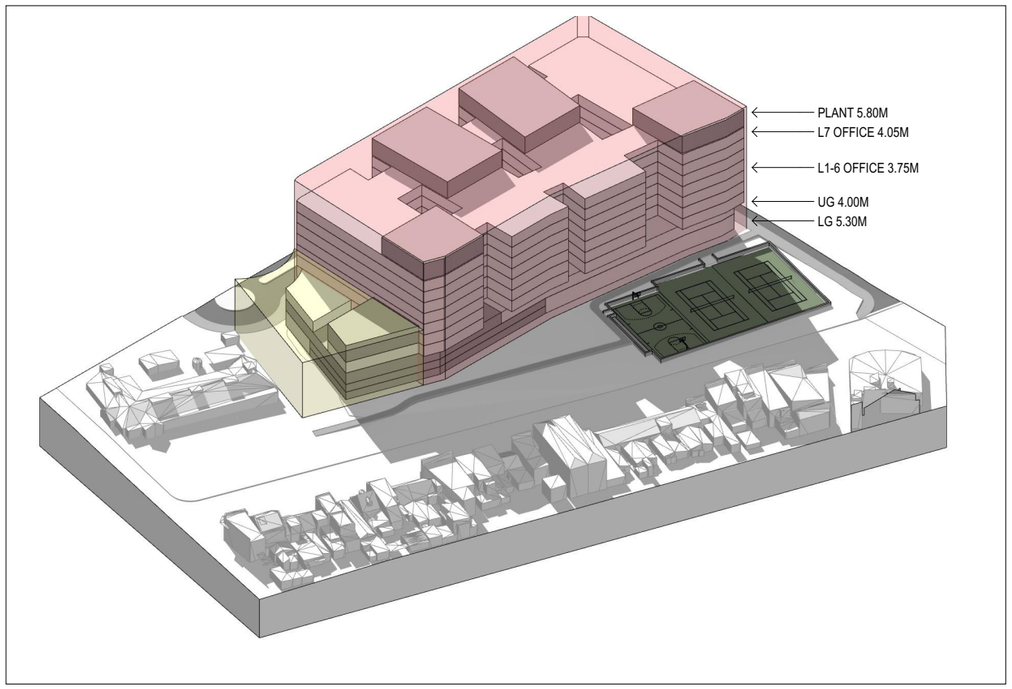


Diagrammatic plan and massing diagram showing GFA and Height complaint ‘Refined Alternate’ scheme.

Notes:

Floor plates circa 22m wide to allow natural day lighting, with central atria. Atria area equal to size of original SSDA submission.

Note: GFA = 44,000 sqm. Associated Gross Building Area = 59,576 sqm. Carparking located above ground.

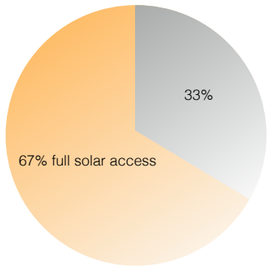


2.8 Analysis of shadow impacts over year

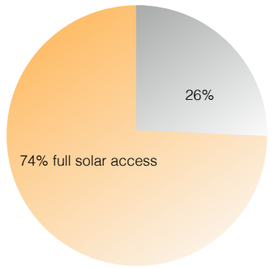
The following diagrams determine that portion of the year during which zero overshadowing to the Henderson Road residences occurs.

Modified SSDA submission

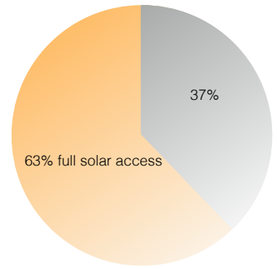
Analysis of the 12.00pm shadow as cast by the modified SSDA scheme shows that for 74% of the year there is zero overshadowing to the Henderson Road residences. The remainder 26% of the year sees the 12.00pm shadow increase from nil to that illustrated on the shadow diagrams attached in the following pages of this report.



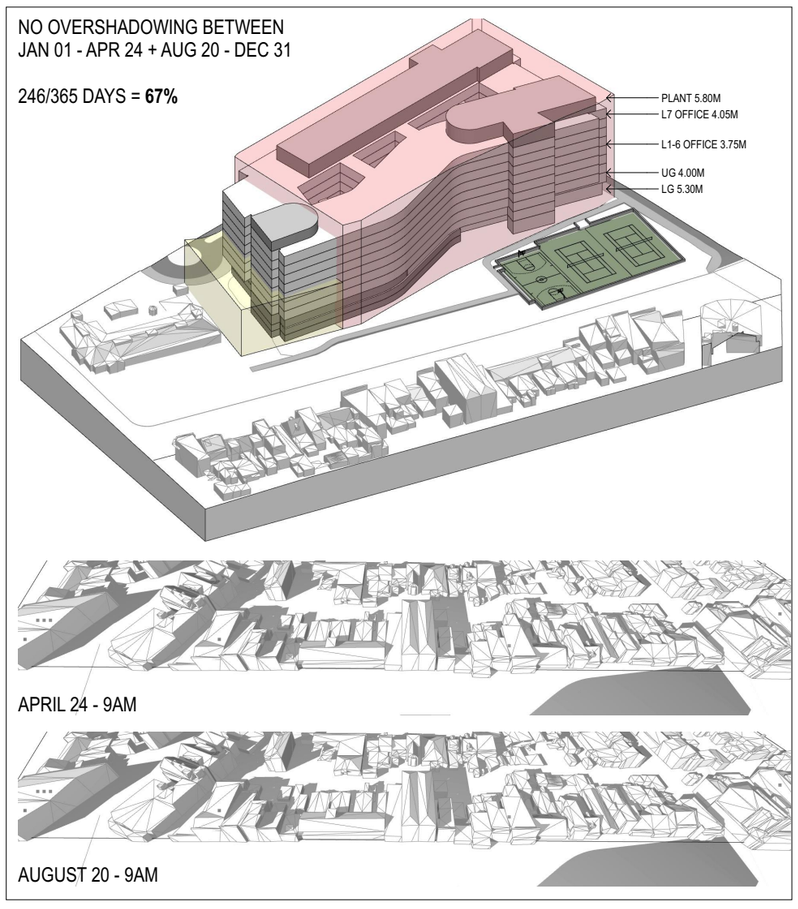
9.00am **Analysis of shadow casting on Henderson Road residences at 9.00am over year.**

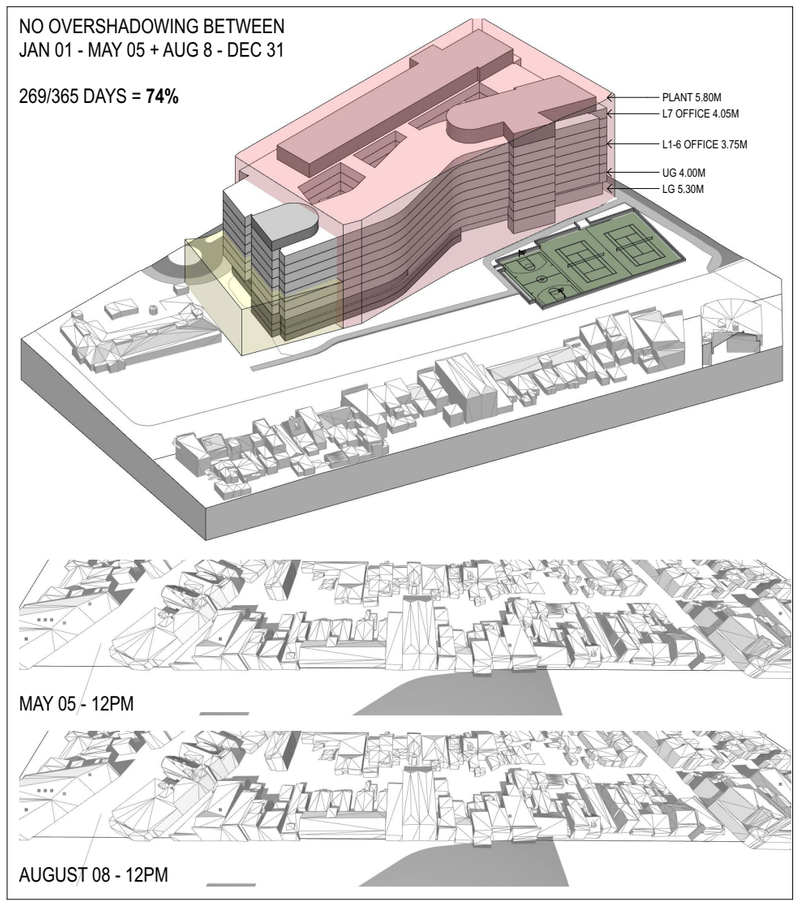


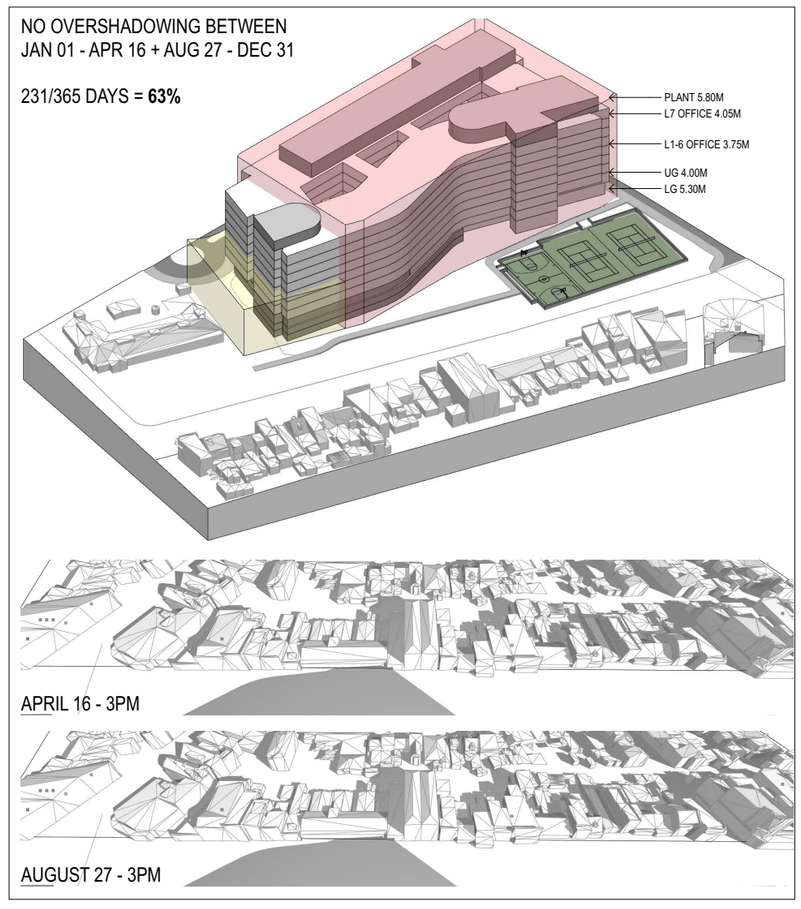
12.00pm **Analysis of shadow casting on Henderson Road residences at 12.00pm over year.**



3.00pm **Analysis of shadow casting on Henderson Road residences at 3.00pm over year.**

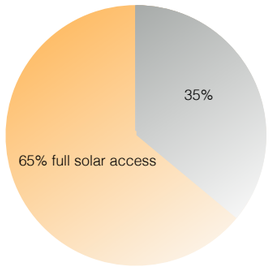






GFA & Height Compliant ‘Refined Base’ Scheme

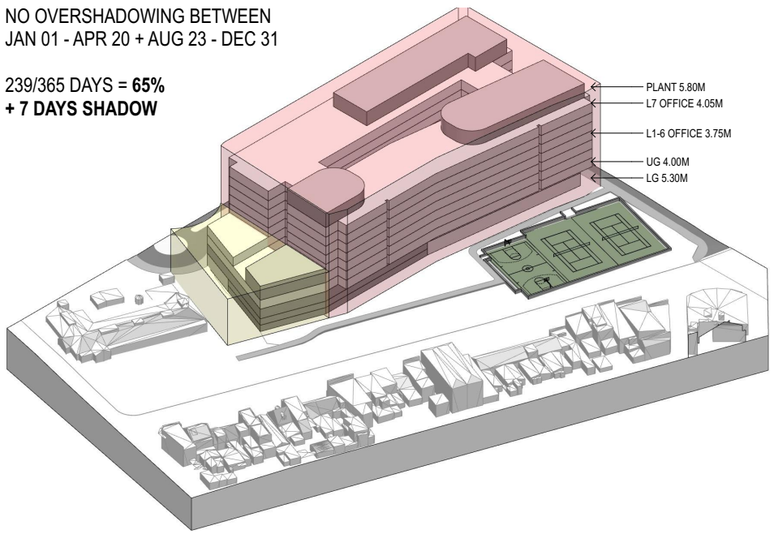
Analysis of the 12.00pm shadow as cast by the GFA & height compliant ‘refined base’ scheme shows that for 67% of the year there is zero overshadowing to the Henderson Road residences. This is 7% of the year less than the modified SSDA submission or an additonal 24 days where shadow impacts the residences.

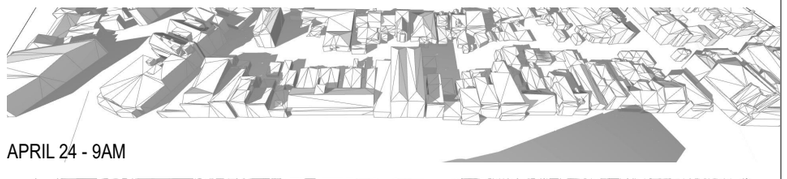


9.00am **Analysis of shadow casting on Henderson Road residences at 9.00am over year.**

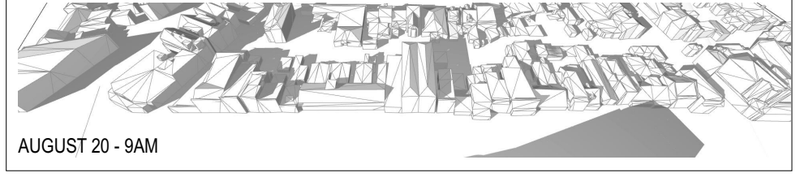
NO OVERSHADOWING BETWEEN
JAN 01 - APR 20 + AUG 23 - DEC 31

239/365 DAYS = **65%**
+ 7 DAYS SHADOW

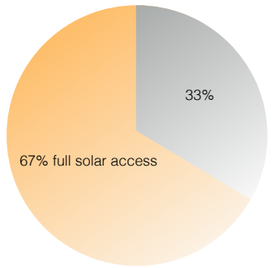




APRIL 24 - 9AM



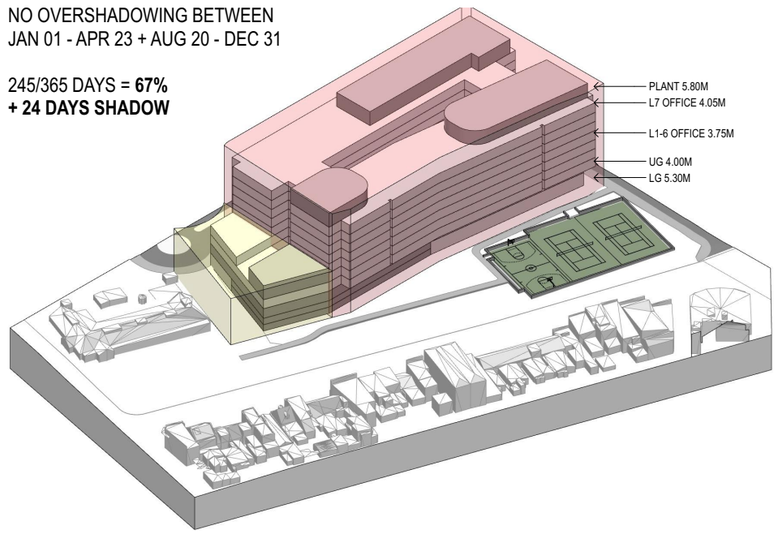
AUGUST 20 - 9AM

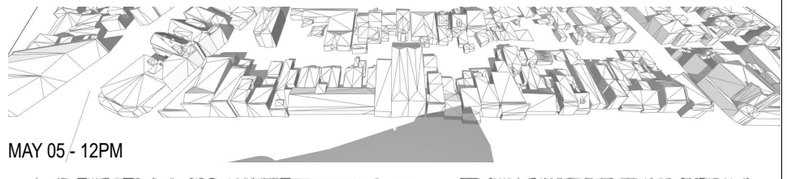


12.00pm **Analysis of shadow casting on Henderson Road residences at 12.00pm over year.**

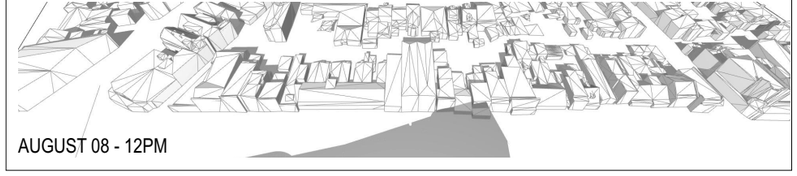
NO OVERSHADOWING BETWEEN
JAN 01 - APR 23 + AUG 20 - DEC 31

245/365 DAYS = **67%**
+ 24 DAYS SHADOW

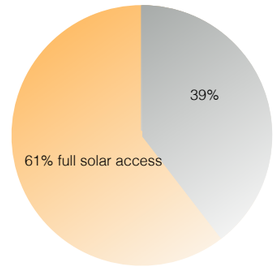




MAY 05 - 12PM



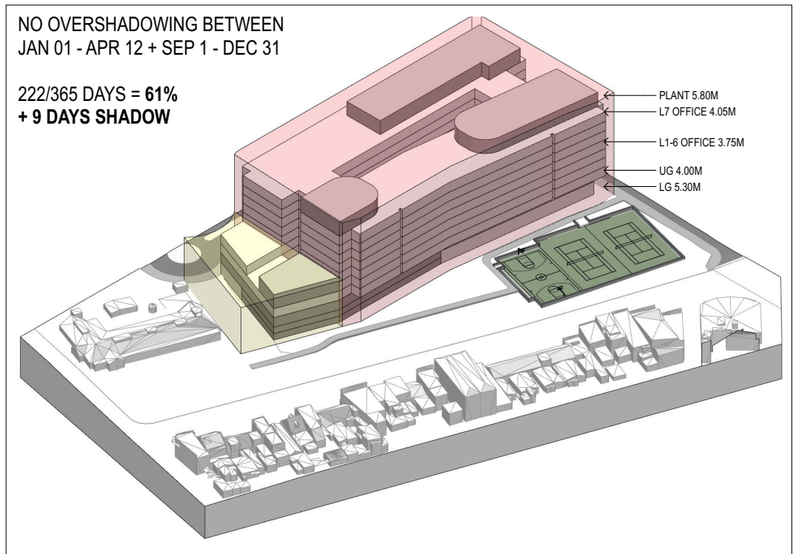
AUGUST 08 - 12PM

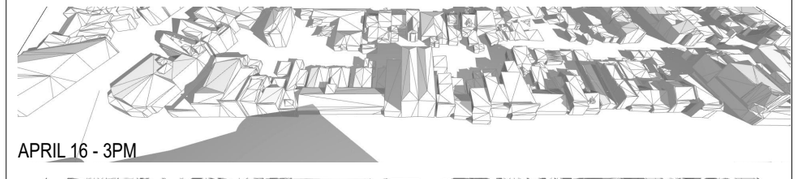


3.00pm **Analysis of shadow casting on Henderson Road residences at 3.00pm over year.**

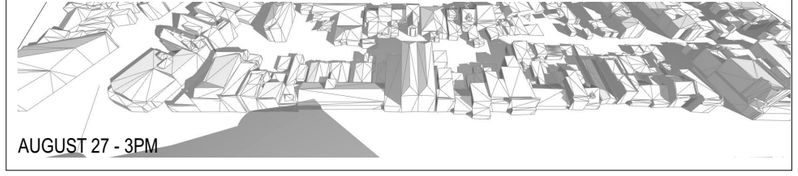
NO OVERSHADOWING BETWEEN
JAN 01 - APR 12 + SEP 1 - DEC 31

222/365 DAYS = **61%**
+ 9 DAYS SHADOW





APRIL 16 - 3PM



AUGUST 27 - 3PM

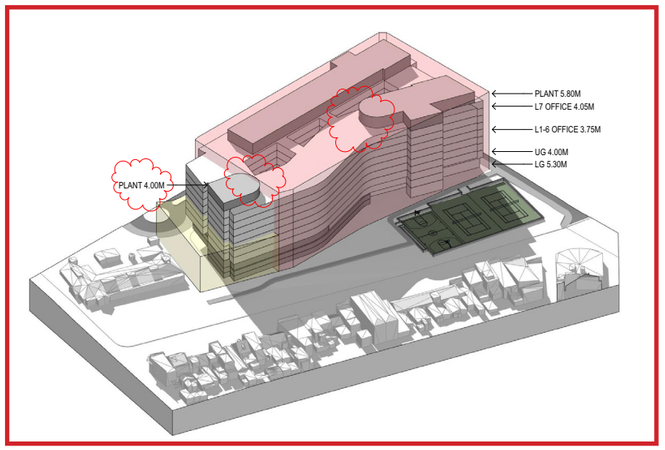
2.9 Detail Shadow comparison: Henderson Road residences

GFA and height compliant 'Base' scheme

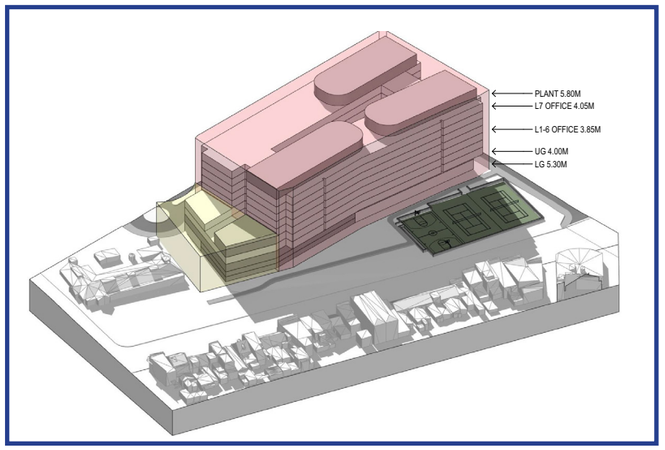
The following analysis compares shadows to the Henderson Road residences as cast by the modified SSDA B1 proposal against those cast by a GFA & Height compliant 'Base' scheme. The red shadow represents that cast by the modified SSDA proposal as illustrated below (framed in red box). The blue shadow represents the shadow as cast by the GFA and height compliant 'Base' scheme.

The red portion of shadow cast at the west of the site is attributed to the portion of the modified SSDA B1 proposal that sits outside the 10 storey height limit as noted in the SEPP. The blue portion of shadow illustrates an area of shadow as cast by the GFA & Height compliant 'Base' scheme, which is not cast by the modified SSDA B1 proposal. The curved southern elevation in the modified SSDA proposal steps back from the boundary thus improving solar access to the central portion of the Henderson Road residences.

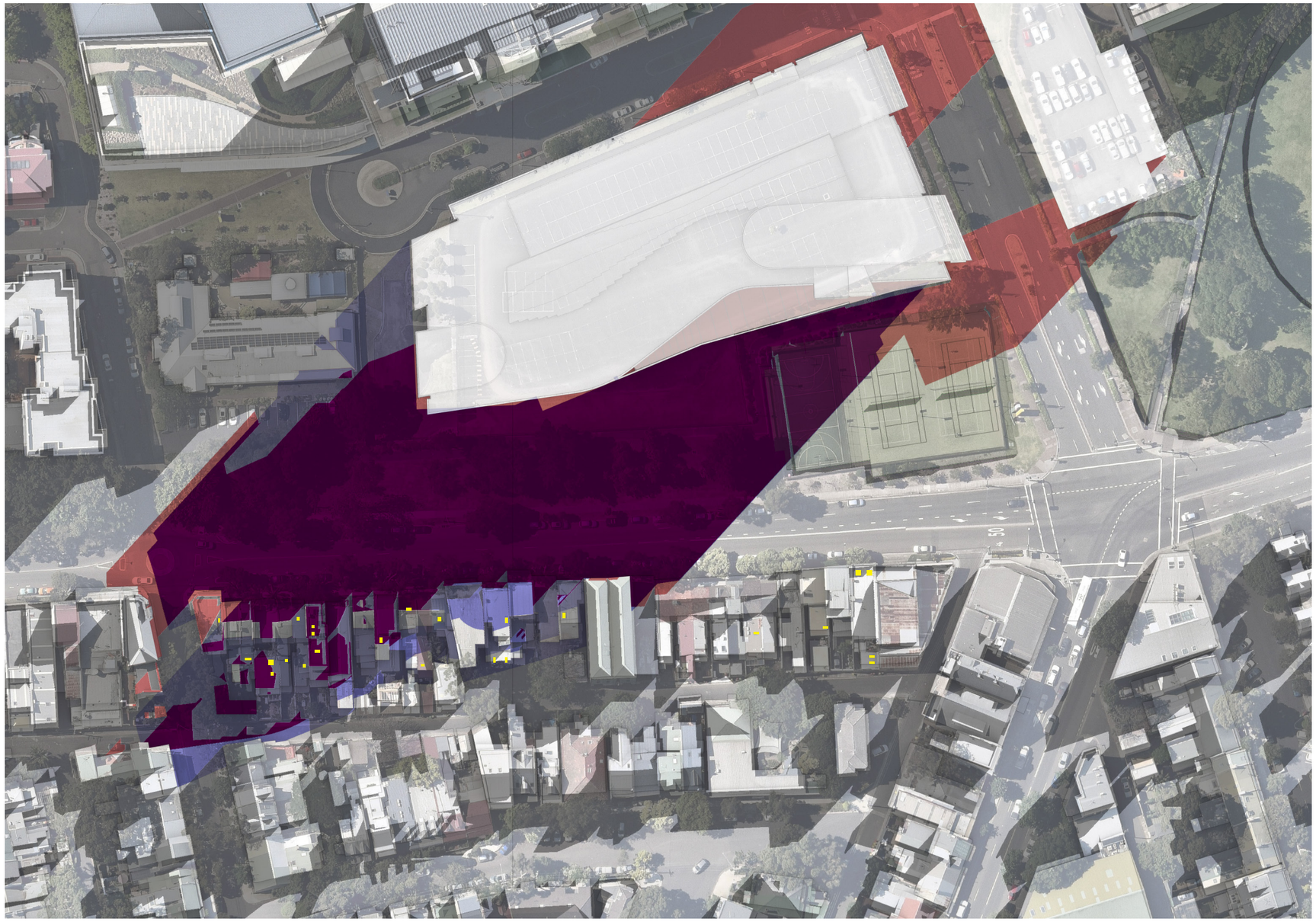
Skylights to the Henderson Road residences are highlighted in yellow for clarity. Analysis of these indicates that the compliant 'Base' scheme impacts a greater number of skylights than the modified SSDA B1 proposal. All skylights received more than 2 hours of direct sunlight during midwinter.



SSDA scheme as modified.



GFA and Height complaint 'Base' scheme.



Shadow cast by the GFA & Height compliant 'Base' scheme

Shadow cast by the GFA & Height compliant 'Base' scheme & proposed SSDA scheme as modified

Shadow cast by proposed SSDA scheme as modified

Existing Shadows

Skylight Analysis - 24 counted along Henderson Road	
Compliant 'Base' Scheme	10 negatively affected
Modified SSDA scheme	7 negatively affected

June 21 : 9.00am

Notes:

- Varying building heights along Henderson Road influence shadows

- The North-South orientation of existing buildings along Henderson Road cast existing shadows