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OVERVIEW & METHODOLOGY

BACKGROUND
This section seeks to quantify those apartments achieving 2 hours daylight access to support the SEPP 65 Design Verification Statements.

The Central Sydney DCP 2012 contains a control for sun access at clause 6.1.4. It states:
Living rooms and private open space should be the main recipients of sunlight in dwelling units. Where possible, sun access should be for a minimum of two hours per day on the equinox (March 21) measured on the main window of the rooms or at the front edge of the open space. Buildings should be designed to maximise the number of dwelling units with sun access to the principal windows.

The SEPP 65 Residential Flat Design Code contains a Rule of Thumb for the control of sun access in part 03 on page 85. It states: 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 9am and 3pm in mid winter. In dense urban areas a minimum of two hours may be acceptable.

MODIFIED CONCEPT PLAN
The target for daylight access for the Frasers Broadway site is defined in the Modified Concept Plan (MCP). It is expected, that 70% of units across the site are to achieve 2 hours direct daylight access using the “Cox /Tzannes method” of analysis. Individual blocks may achieve more or less than 70%, but all blocks are expected to achieve a minimum 60%.

ADOPTED METHODOLOGY
This report uses the Cox/Tzannes method, which looks at “effective sunlight” between 7:30am and 4:30pm, rather than sunlight limited only to the 9am and 3pm range as suggested by the SEPP 65 Residential Flat Design Code.

Effective sunlight is described as having a horizontal angle of incidence greater than 22º to the living room window or balcony edge and altitude greater than 5º (which roughly corresponds to a sun later than 7:30 am and earlier than 4:30pm on June 21).

The MCP and related Heggies report only considered daylight access for June 21 to enable comparison with the Residential Flat Design Code guidelines.

This design report presents the results for March 21, to enable comparison to the City of Sydney standard, which looks at daylight access in March.

PROPOSED SCHEME
The northern orientation of public open space and private apartment living space is most important.

The Proposed Scheme built form optimises the northern orientation through the curvilinear form, providing significantly increased sun access into both the apartments and public open space.

By curving the building form away from the MCP envelope toward the south and away from Block 5C allows for a substantial improvement in daylight access as follows:

**June 21**
- 217 out of 296 apartments achieve a SEPP65 compliant 2 hours of daylight access.
- This equates to 73%, however, this percentage rises significantly throughout the year, with March giving an indication of the optimum;

**March 21**
- 258 out of 296 apartments achieve a SEPP65 2 hours daylight access. This equates to 83.5%

SOLAR RESPONSE

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APARTMENT SOLAR ACCESS MARCH 21

SUNS EYE VIEW ANALYSIS
SHADOW STUDIES

As illustrated in the following massing diagrams the proposal essentially remains within the Modified Concept Plan envelope.

Where required to efficiently meet brief requirements, we have locally broken the envelope. For example, the eastern block accommodates 2 retail/child-care floor to floor heights of 4,700 plus 11 upper levels of residential at 3,150 (floor to floor).

Assuming 4,950mm from the top of the upper floor to the finished parapet level this building has an upper roof edge RL of 64,170. The Modified Concept Plan envelope allows for a RL of 58,800.

This results in a minor addition to the shadow cast by this portion of the proposal at 9am as indicated in blue on the images to the right.

Given the proposed scheme recommends that the gap between the two western buildings as present in the Modified Concept Plan be closed there is also an additional section of shadow cast at noon by this portion of the building.

These impacts to the shadows are not deemed significant and the proposal is considered to meet the intent of the Modified Concept Plan. As the shadow diagrams illustrate there are other areas where the extent of shadow has been reduced, ie: as illustrated in red on the images to the right.

PROPOSED SCHEME

The heights and alignments of the Proposed Scheme have been carefully determined to create great improvements to both the public domain and adjacent building amenity.

Overshadowing effects have been carefully studied to avoid additional impacts on adjacent sites and enhance penetration into open space.

A direct comparison between the built form of the Proposed Scheme and the Modified Concept Plan has been provided through a three dimensional overlay of both envelopes.

Areas of red indicate where the Modified Concept Plan is beyond that of the Proposed Scheme, and areas of white where the Proposed Scheme is outside the Modified Concept Plan Envelope.

This study, combined with shadow analysis has refined the “proposed scheme” such that the additional areas of shadow do not fall on key portions of the site and neighbouring properties.

The proposed scheme has opened the southern edge of the site to greater solar access so much so that the Wellington St edge of the site will achieve 21.2% more solar access than the Modified Concept Plan envelope.
A direct comparison between the built form of the Alternative Proposal and the Concept Design have been carefully determined to create great improvements to both the public domain, adjacent building amenity and value to the new space.

Additional sunlight relative to the Modified Concept Plan envelope.

Additional shadow relative to the Modified Concept Plan envelope.

New shadow resulting from the proposal.