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29.01.2025

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23-47 Villiers Street, North Melbourne - Daylight Analysis: Light court Level 2

Dear Andrea

As instructed, Ark Resources has conducted a comparative analysis of the internal daylight levels in habitable rooms adjacent to the light court on Level 2 of the proposed residential development at 23-47 Villiers Street, North Melbourne in response to item 4 of the request for further information issued by the Department of Transport and Planning on 14 October 2024.

In the absence of any specific methodology nominated in the Melbourne Planning Scheme, the daylight modelling has been undertaken using the daylight factor method utilised in the BESS sustainability rating tool which sets the following 'best practice' performance standards for daylight within habitable rooms in residential developments:

- A daylight factor greater than 1% for at least 90% of the floor area in living areas, including kitchens.
- A daylight factor greater than 0.5% for at least 90% of the floor area in bedrooms.

An analysis of the apartment layouts based on the architectural drawings submitted to the Minister on 17 September 2024 reveals that all bedrooms meet the best practice standard however there are minor daylight constraints within living zones as illustrated in Figure 1 below.

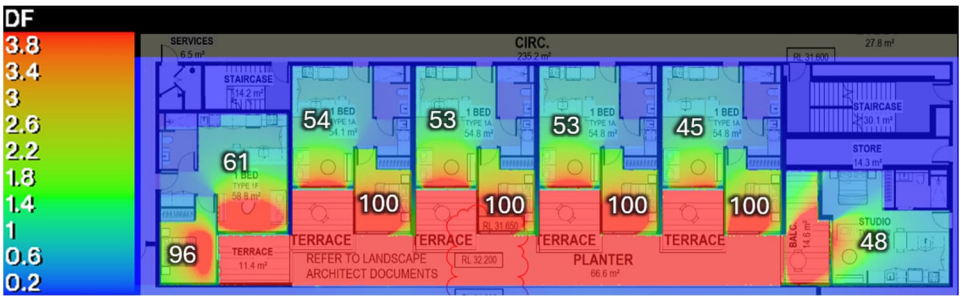

Figure 1 TP Submission Level 2 Light Court Apartments Contour Plot

To improve daylight penetration to living areas, the layouts of the one bedroom apartments were redesigned to relocate the balcony in front of the bedrooms. The results of the daylight modelling of these alternative layouts are illustrated in Figure 2 below and confirm that the living rooms will receive significantly higher levels of daylight and these layouts have therefore been incorporated into the

Revision B drawing set issued by Architectus on 24 January 2024 in response to the RFI.

Please refer to Appendix A for details of the daylight modelling parameters which have been assumed for this analysis.

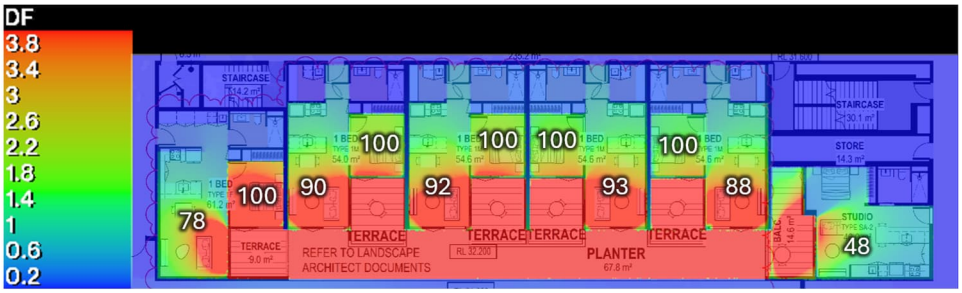

Figure 2 Revised Level 2 Light Court Apartments Contour Plot (RFI Plans)

I trust this the above provides an adequate response to item 4 of the RFI, however, should you require any further details or clarification, please do not hesitate to contact me.

Yours sincerely

Jan Talacko

Director

Appendix A: Daylight Modelling Assumptions

Assumed Glazing Visual Light Transmittance

Glazing Type	Visible Light Transmittance (VLT)
	%
External Glazing – Clear, Double Glazing	70
Balustrade- Railing	40

Assumed Surface Reflectances

Construction Element	Reflectance (%)	Description
Floors	30	Default internal floor reflectance
Internal Walls	85	Dulux Natural White
Ceilings	85	Dulux Natural White
External Soffit	70	Light colour finish
External Walls	40	Medium colour finish. Concrete
External Balcony/light court Walls	70	Light colour finish
Adjacent buildings	40	Medium colour finish
Balcony Pavers	40	Medium colour finish
External Ground	10	Pavement

Sky conditions: 10K Lux CIE overcast sky.