



## DAYLIGHT ANALYSIS REPORT

Proposed School Redevelopment (New Administration  
Building and Alteration to Existing Building)

17 Regal Avenue  
Thomastown

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FOR

**CROSIER SCOTT ARCHITECTS**

18 June 2024

File 524A

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Issue	Date	Prepared by	Checked by	Status
A	11 June 2024	JD	MD	Draft
A	18 June 2024	JD	MD	Final

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# 1. Executive Summary

This report has been developed to demonstrate that proposed school redevelopment receives adequate daylight penetration based on daylight modelling undertaken by Northern Environmental Design Pty Ltd.

The daylight modelling was performed using the energy modelling program DesignBuilder. Daylight modelling to new administration building and school alteration have been undertaken.

## 2. Introduction

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Northern Environmental Design has been engaged by Crosier Scott Architects to perform daylight modelling in relation to the proposed school redevelopment at 17 Regal Avenue, Thomastown.

This report was based on plans prepared by Crosier Scott Architects:

Drawing No.	Description	Revision	Date
A000	Cover sheet		May 2024
A001	Existing site conditions		May 2024
A002 -004	Proposed site plan		May 2024
A100	Proposed slab setout plan		May 2024
A102	Proposed floor and finished plan		May 2024
A103	Proposed ceiling and roof plan		May 2024
A105	Wall sections		May 2024
A106	Typical details		May 2024
A120-125	Proposed internal details		May 2024
A124	Proposed sections		May 2024
A125	Proposed elevations		May 2024
A130	Window and door schedule		May 2024
A105	Wall sections		May 2024
A200	Existing/Demolition plan		May 2024
A201	Proposed floor plan		May 2024
A202	Existing/Demolition ceiling plan		May 2024
A203	Proposed ceiling plan		May 2024
A204	Existing/Demolition & proposed roof plan		May 2024
A205	Existing/Demolition & proposed elevations		May 2024
A206	Proposed sections		May 2024
A220	Proposed internal elevation		May 2024
A230	Window and door schedule		May 2024

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- Discussions and correspondence with:
  - Crosier Scott Architects

### 3. Modelling Methodology

The modelling has been undertaken in the 3-dimensional daylight and energy modelling program DesignBuilder. This program makes use of location and orientation data, building fabric reflectance and absorption values, and glazing transmission values and then models not only the impact of direct light through windows but also reflections and inter-reflections between rooms within the building. The 3D building model was built using DesignBuilder.

The investigation has been undertaken with the modelling parameters set out by the Green Star daylight guide created by the Green Building Council of Australia and Moreland Design Code

The calculation method for daylight outlined in this guide is applicable to the following Green Star rating tools:

- Greens Star – Design & As-Built V1.2

Daylight levels of the proposed development have been investigated to ensure good indoor environment quality for the occupants based on Best practice standard by the BESS IEQ Credits 1.4 for non-residential tenancies. Therefore, this requires the development to:

**Non-Residential Areas**

*“Achieve a minimum daylight factor of 2% Daylight modelling is required to demonstrate compliance with this credit. Points are awarded as follows:*

*30% floor area achieves the daylight factor (33% score)*

*60% of floor area achieves the daylight factor (66% score)*

*90% of floor area achieves the daylight factor (100% score)*

Green Star requires that the modelling be undertaken making use of a uniform design sky that measurements be taken at floor level, and that average cleanliness of windows be taken into account. There are several modelling parameters listed in Green Star technical manual that have been used in this analysis. These are listed below:

### 4. Modelling Parameters

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Design criteria	Modelling Parameters	Notes
<b>Weather data and sky conditions</b>	Region: Melbourne Sky conditions used: Uniform design sky Sky Lux for Melbourne: 10000 Lux	
<b>Visual transmittance of glazing</b>	Glazing type: Single glazed Low-e VLT: 0.42	Dirt can give a further 5% reduction in VLT with normal cleaning in an urban setting. Reductions in VLT due to dirt do not need to be included for the purposes of a Green Star Daylight assessment.
<b>Light reflectance values of internal surfaces</b>	Floor: 0.3 Walls: 0.5 Ceiling: 0.6	
<b>Overshadowing requirements</b>	Overshadowing have been incorporated in the modelling	External shadings include buildings, fence, and any other solid structure.

**Please note that modelling is undertaken with a Uniform Design Sky and thus the time of year is irrelevant for this type of modelling. This modelling does not take into account the time of day or time of year as this would yield misleading results, whereas with a uniform design sky results are deemed to be based on the average amount of light that is received during daylight hours in Melbourne (10,000 lux) year round.**

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## 5. 3D Model

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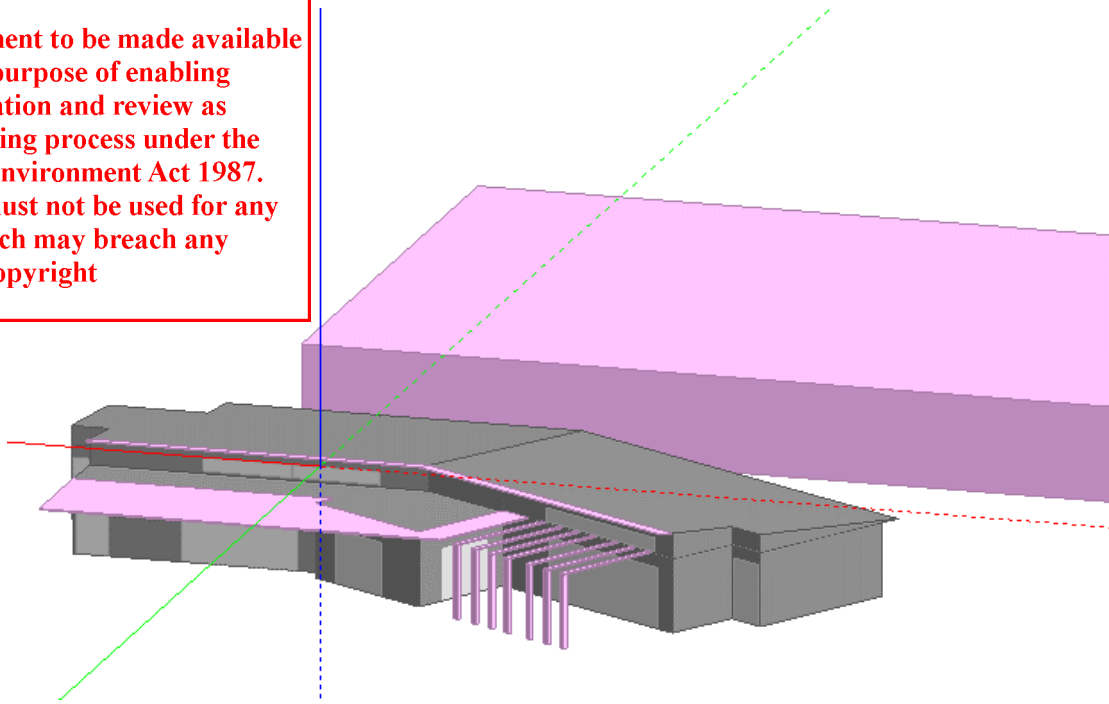


Figure 1: Administration Building 3D Model

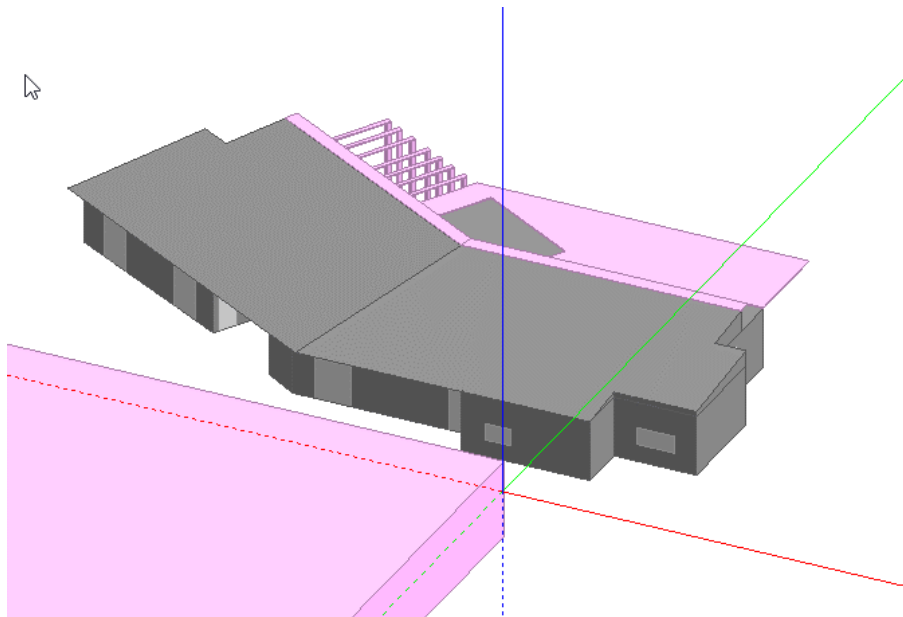


Figure 2: Administration Building 3D Model

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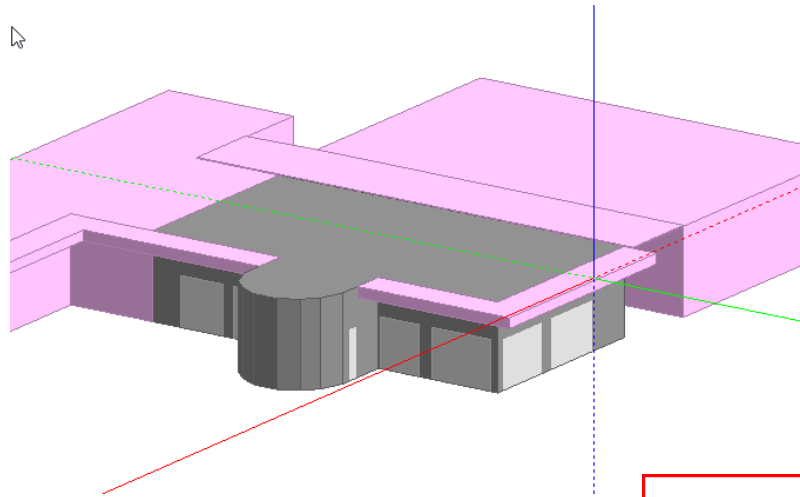
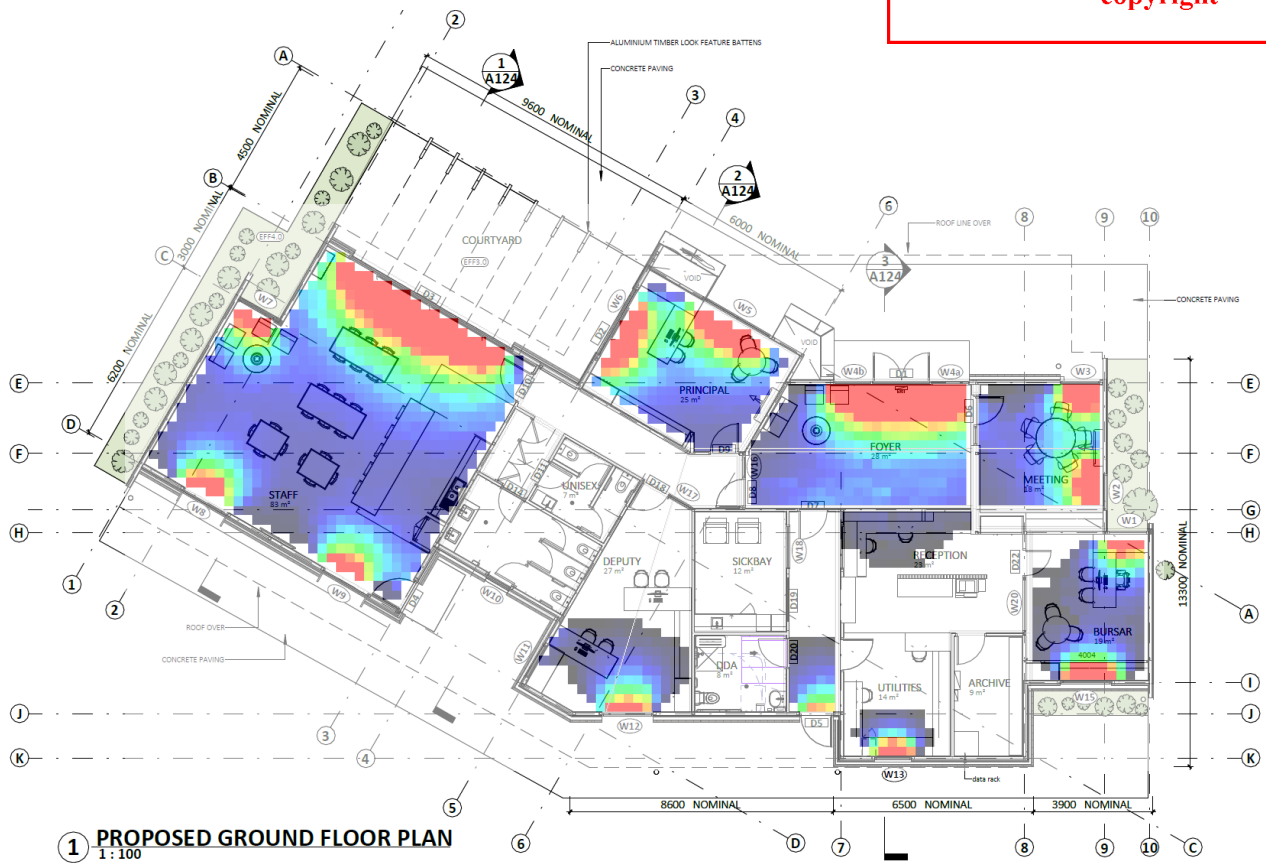


Figure 3: School Alteration 3D Model

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## 6. Daylight Analysis Result

### 6.1. Administrative Building



1 PROPOSED GROUND FLOOR PLAN 1:100

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Figure 4: Ground floor- Administrative Building (floor area over 2 % DF)

## 6.2. School Alteration

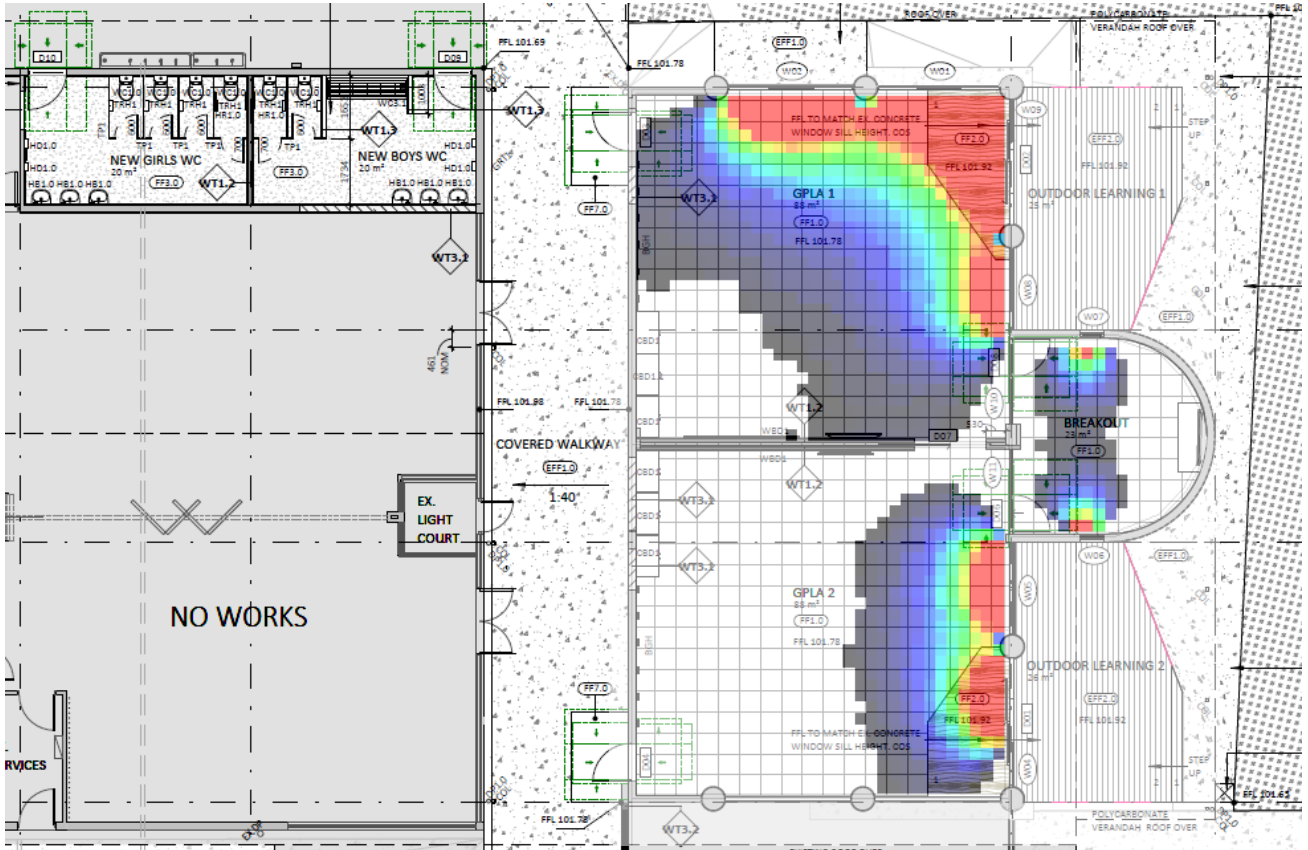


Figure 5: School Alteration (floor area over 2% DF)

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## 7. Daylight result

### New Administration Building

Room Name	Floor Area (m <sup>2</sup> )	Floor Area > 2% DF(m <sup>2</sup> )	Percentage Floor area > 2% DF (%)
Staff	81.6	75.4	92.4
Principal	22.9	22.9	100
Foyer	27.8	27.4	98.5
Meeting	15.8	14.7	92.8
Bursar	17.9	11.9	66.6
Deputy	25.7	7.2	28.2
Reception and Utility	35.8	7.3	20.4
<b>Total</b>	<b>227.2</b>	<b>166.8</b>	<b>73.4</b>

Table 1: Administration Building areas over 2% DF – 73.4 %

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**School Alteration**

Room Name	Floor Area (m <sup>2</sup> )	Floor Area > 2 % DF(m <sup>2</sup> )	Percentage Floor area > 2% DF (%)
GPLA 1	87	69	79.4
GPLA 2	87	28.3	32.6
Breakout	21.8	10.6	48.8
<b>Total</b>	<b>195.8</b>	<b>107.9</b>	<b>55.1</b>

Table 2: School Alteration areas over 2 % DF – 55.1 %

## 8. Conclusion

In terms of daylight penetration outcome, the analysis presented in this report demonstrates that the proposed development achieves:

- BESS IEQ 1.4 daylight requirement of 2.0% for 73.4 % for administrative areas and 55.1 for school alteration areas.



**Dr. Jonathan Duverge**  
Director

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