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Passive Design & Sustainability

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20/02/2025

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10-16 Campbell St Bowen Hills

Ref: WBQ3182-ESD-CAN-001

OVERVIEW

This advice notice proposes various sustainable design initiatives for consideration for the 10-16 Campbell Street. Also provided is an initial thermal compliance assessment with NCC 2022 Section J, via the J1V5 pathway.

Setting quantifiable targets early within the design is an important step to ensure enhanced building performance and long-term asset quality while addressing environmental and social stewardship.

The sustainability strategy outlined in this technical note focuses on:

- passive design
- enhanced indoor environmental quality (daylight, glare & thermal comfort).
- energy efficiency & electrification
- water conservation
- low-impact materials
- climate resilience.

PROJECT OPPORTUNITIES

INDOOR ENVIRONMENT QUALITY – DAYLIGHT & GLARE

A preliminary daylight quality and glare risk assessment was carried out for a representative mid-rise apartment level using the Spatial Daylight Autonomy (sDA) and Annual Sunlight Exposure (ASE) metric.

The table below provides the indicative Visible Light Transmittance (VLT) performance data used for the windows which aligns with a system performance that meets the thermal performance requirements of Section J, with a single- or double-glazed aluminium window. It should be noted that double glazed systems offer a higher VLT (higher light transmittance) while meeting improved thermal performance.

Table 1: Preliminary VLT specification

Building Element	Indicative VLT Performance	Glazing System
Balcony Sliding Doors	0.49	Single or Double glazed
Awning & Fixed Windows	0.45	Single or Double glazed

sDA measures the availability of daylight in an interior space over a given period. It represents the percentage of floor area that receives at least 160 lux of daylight for 80% of the hours (typically measured between 8 AM and 6 PM).

- Higher sDA values indicate good daylight access, reducing the need for artificial lighting.
- If sDA is too low, spaces may feel dark, increasing reliance on artificial lighting.

ASE evaluates glare risk by determining the percentage of floor area exposed to direct sunlight exceeding 1000 lux for more than 250 occupied hours per year.

- Lower ASE values indicate reduced glare and visual discomfort.
- If ASE is too high, excessive sunlight penetration can lead to glare and overheating issues, requiring shading or glazing adjustments.

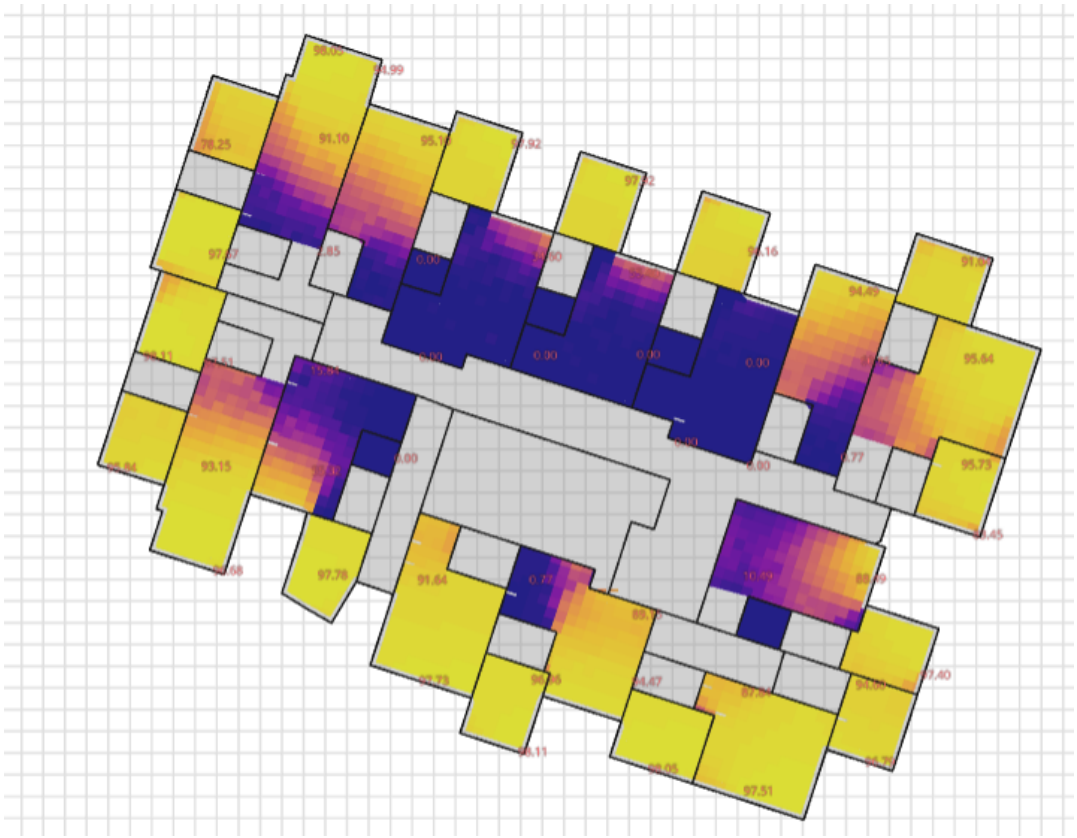


Figure 1: Spatial Daylight Autonomy Results

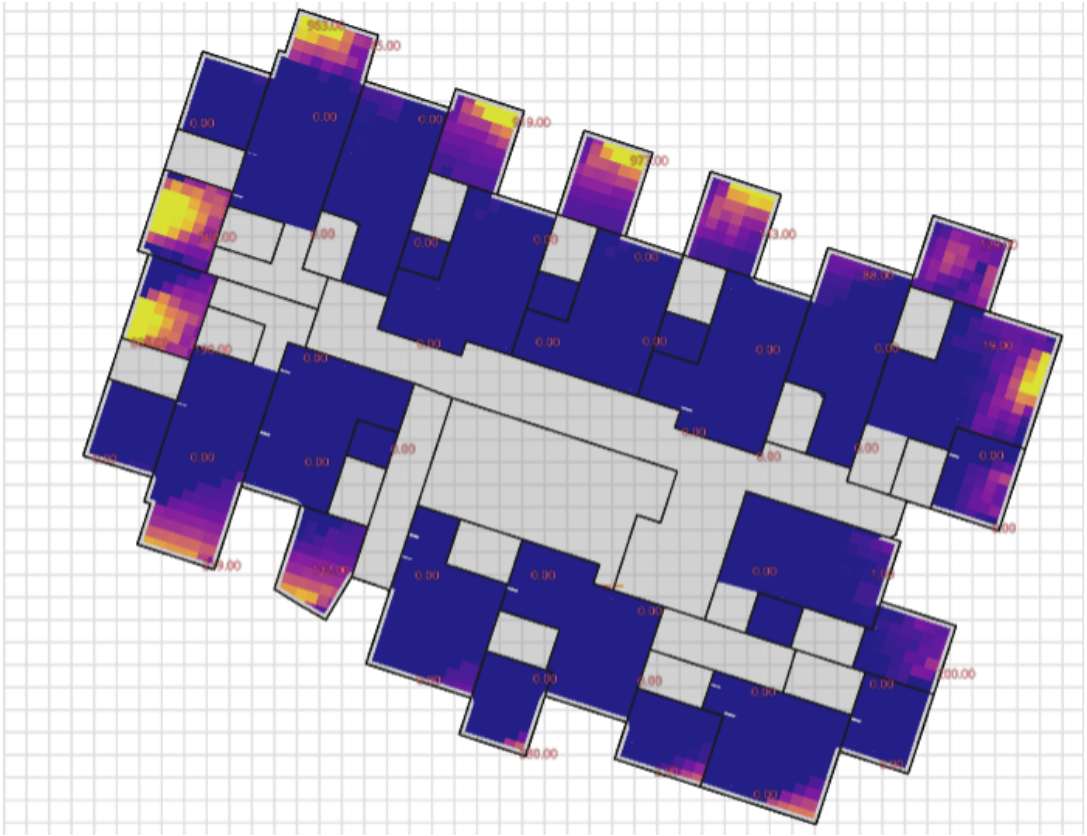


*Figure 2 **:** Annual Sunlight Exposure*

The summary of the analysis is as follows:

- Spatial Daylight Autonomy (sDA): 46% of the assessed apartments met this threshold. Note that the Green Star criteria used 95% as the pass mark.
- Annual Sunlight Exposure (ASE): The ASE metric requires no more than 10% of the total apartment area to exceed 3000 lux. The level assessed performed well in this metric, with 95.22% of the assessed area complying, indicating minimal glare risk.

VLT should be tracked as the design progresses, with further daylight and glare analysis recommended across more levels of the building to ascertain a complete understanding of daylight and glare quality.

VLT is a key passive design metric to enable daylight, however, must be balanced with the thermal performance requirements. A lower SHGC is correlated with a lower VLT (darker tint). A double-glazed glazing system will typically offer higher VLT values compared with single glazed, for equal and improved thermal performance (U-value).

Refer to Appendix A for the detailed results.

An additional daylight & glare analysis was carried out using VLT of 0.65 (65%) for typical windows and 0.80 (80%) for the sliding glazed doors.

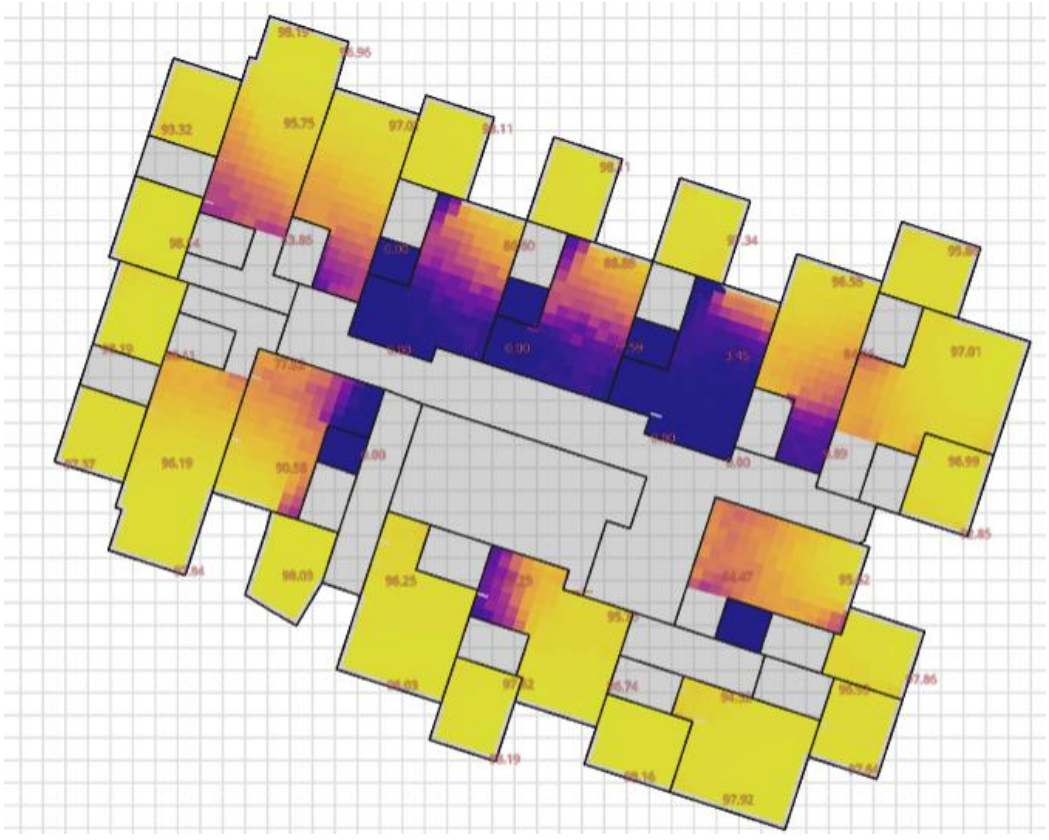


Figure 3: Revised VLT Spatial Daylight Autonomy Results

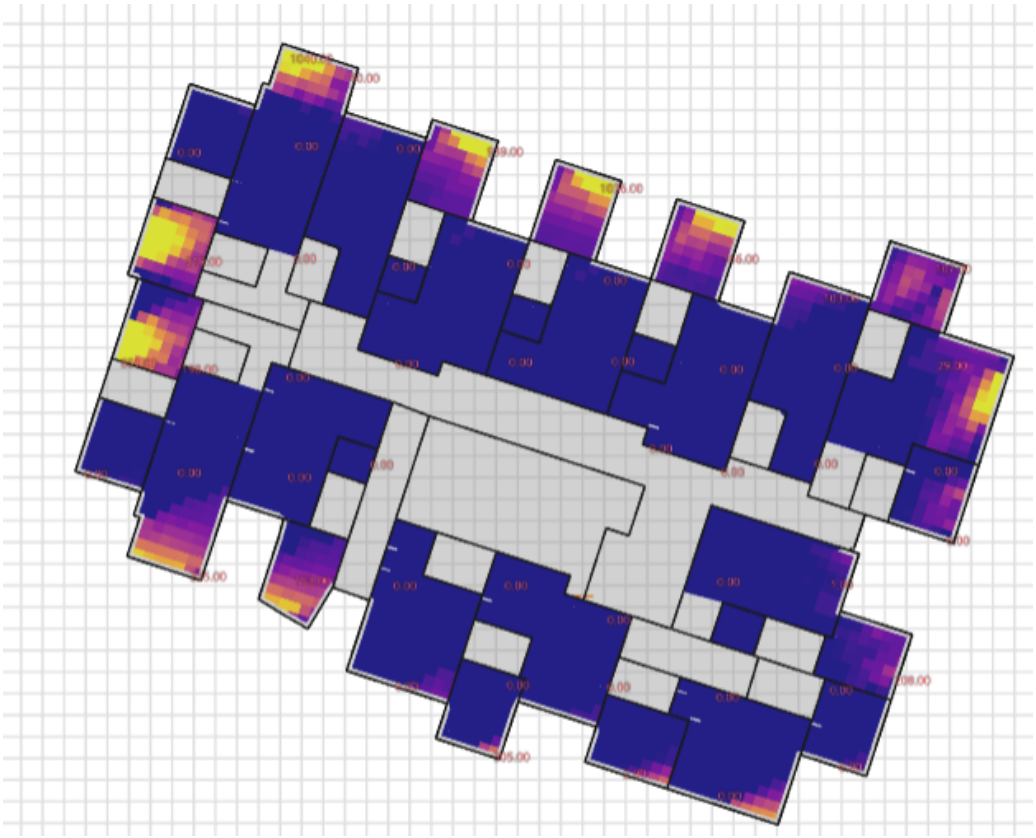


Figure 4 : Revised VLT Annual Sunlight Exposure

The results are summarised below, and the detailed outputs are provided in Appendix C.

- Spatial Daylight Autonomy (sDA): 54% of the assessed apartments met this threshold.
- Annual Sunlight Exposure (ASE): The level assessed performed well in this metric, with >95% of the assessed area complying, indicating minimal glare risk.

The results indicate that the VLT impact for these levels tested is limited however the results were improved. A key driver to the natural daylight levels is the surrounding buildings to the north & northeast, as well as the shape of the building itself. It is expected that the higher apartment levels will perform better with daylight autonomy however this should be balanced with glare and thermal performance.

ON SITE SOLAR PV

- Photovoltaic system(s) – proposed capacity of ***24kWp***, (73 panels at 330Wp) as shown below:

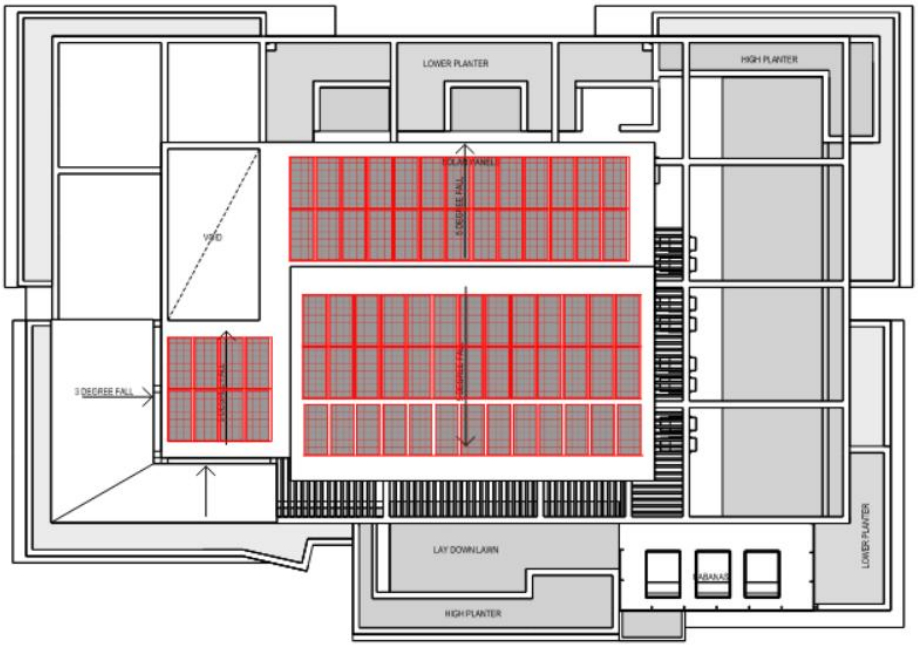


Figure 5: Indicative Solar PV layout

It is proposed that the solar system be used to supplement central services such as lifts, common area lighting and other equipment. Indicative greenhouse gas emissions and energy costs saved for a system of this capacity are shown below: (elec cost assumed at $0.25/kWh, carbon factor 0.88kg/kWh).

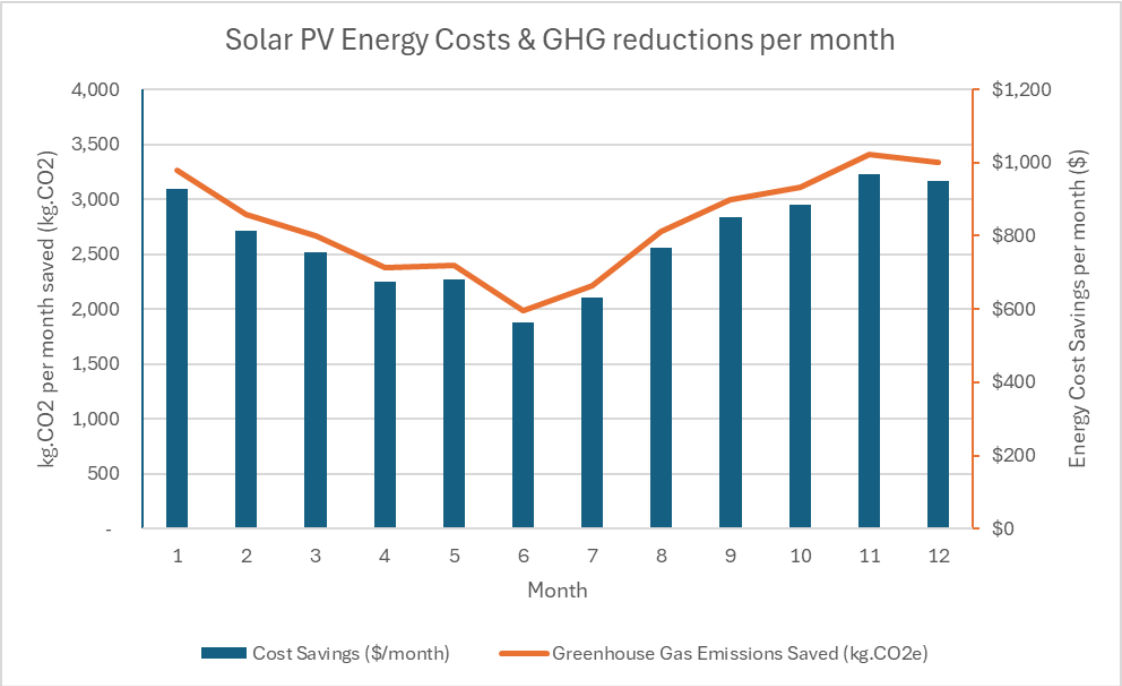


Figure 6: Energy cost & GHG savings per month

	Cost Savings ($/annum)	Greenhouse Gas Emissions Saved (kg.CO2e/annum)
Annual Total	***$9,469***	***33,332***

ELECTRIFICATION

We propose the project to be all-electric for building services, including for cooking. Eliminating gas from the development aligns with global decarbonisation trends and supports the shift toward Net Zero building operations.

The electrification strategy should include:

- Direct electric or heat pump water heaters for hot water supply.
- Electric heat pump systems for space heating.
- Electrical Vehicle charging stations for at least 5% of total car parks for day one.
- Equipping all residential units with electric cooktops and ovens, specifically induction cooktops, which are known for their efficiency and safety.

Transitioning to electric cooking appliances is not only an environmental benefit but also a health and wellbeing decision. Research indicates that gas stoves emit pollutants such as nitrogen dioxide (NO_2), carbon monoxide (CO), formaldehyde, and benzene, even when ventilated, which have been linked to various health issues.

Reference - What Science Says About the Health Risks of Gas Stoves | Columbia University Mailman School of Public Health

Next Steps & Design Considerations:

- Power Supply & Load Assessment: Evaluate total electrical load capacity to confirm feasibility for full electrification, including hot water, space heating, and cooking appliances.
- EV Charging Readiness: Ensure that provisions for EV infrastructure align with anticipated growth in electric vehicle adoption, allowing for future expansion beyond the 5% of car parks designated for charging.

THERMAL PERFORMANCE & SECTION J

The Performance Requirement of the NCC 2022 Section, Part J1P2 focuses on the thermal performance (envelope heating and cooling loads) of Class 2 SOUs and Class 4 parts of buildings.

Compliance can be demonstrated through a combination of either the NatHERS pathway, the DTS elemental provisions, or the J1V5 Verification Method, which uses a reference building for comparison.

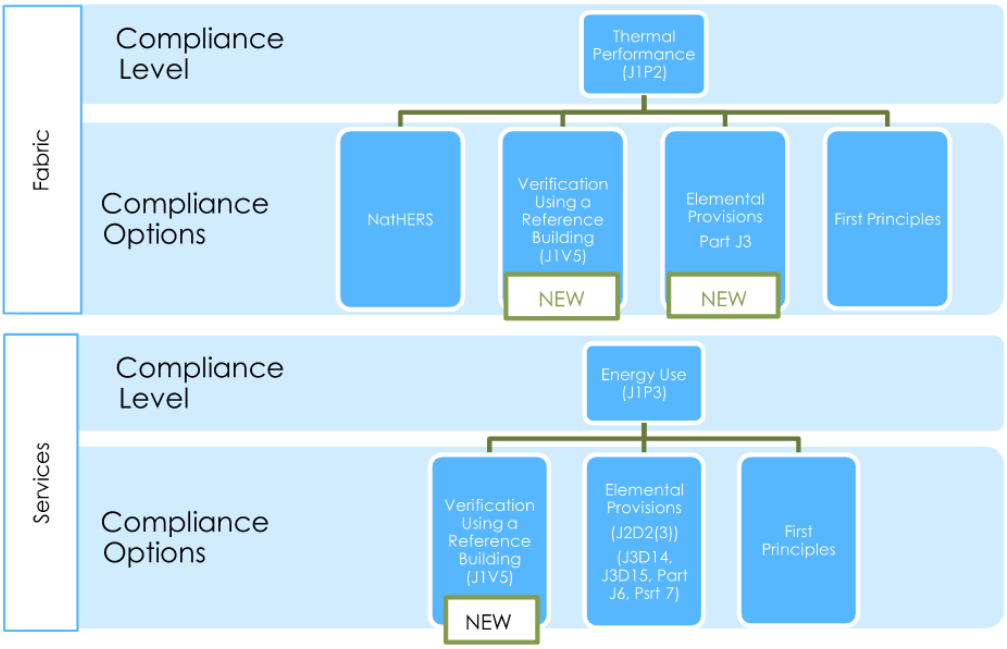


Figure 7: Compliance pathways for J1P2 & J1P3

Preliminary analysis has been carried out via the J1V5 pathway.

The assessment compared the proposed building against a reference building, ensuring that all assessed zones met the required cooling load limits. The preliminary analysis confirmed:

Building Element	Performance Requirement	Design Implications & Actions
External Walls	Minimum R2.0 insulation (~90mm glass wool)	Ensure insulation continuity, particularly at junctions to reduce thermal bridging.
Glazing – Balcony Sliding Doors	U ≤ 4.30 W/m²K, SHGC ≤ 0.32	Confirm if glazing specification suitable for project. ***Indicative of a single glazed aluminium system, double glazed to be considered for improved daylighting.***
Glazing – Awning/Fixed Windows	U ≤ 4.50 W/m²K, SHGC ≤ 0.36	Confirm if glazing specification suitable for project. ***Indicative of a single glazed aluminium system, double glazed to be considered for improved daylighting.***
Roof Insulation (Level 26)	Minimum 50mm R2.0 rigid insulation	Insulation proposed as fixed to soffit of level 26. Confirm space provision for insulation.
Shading Strategy	Horizontal & Vertical shades in the design provide effective solar load mitigation	-

Airtightness & Thermal Bridging	Well-sealed glazing, wall junctions.	Detail airtightness & vapour barrier measures in specifications.

The openability of windows has a direct impact on cooling loads under the Section J J1V5 verification method. While sliding glazed doors provide ventilation access, additional openable awning or casement windows should be incorporated to enhance natural ventilation, reduce risk of overheating, improve occupant comfort, and reduce reliance on mechanical cooling. It is recommended that this be further assessed in the detailed design phase to ensure the most effective balance between indoor air quality, passive cooling, and energy efficiency.

Refer to Appendix B for detailed thermal envelope markup.

FURTHER INITIATIVES FOR CONSIDERATION

Embodied Carbon

- Concrete mix targeting 40%+ Portland cement reduction
- 10% overall reduction in upfront carbon
- 95% construction waste diversion
- Lower carbon Aluminium for windows
- High recycled content asphalt, such as Reconophalt for carparks.

Water Use Conservation:

- Rainwater harvesting with tank storage either above or below ground.
- Irrigation to be served by rainwater
- Minimum 5 Star WELS-rated taps, showers, dishwashers & washing machines
- Native & drought tolerant species selection for all planting

Climate Resilience:

- Consider mechanical systems to be designed with additional 2-degree design temperature above code
- Reduction of the heat island impact by high reflectance materials, shading, vegetation, tree canopy coverage
- Stormwater/drainage to be designed to Q100 + 20% to allow for potential changes in rainfall intensity.

CONCLUSION

To ensure the successful integration of sustainability initiatives into the 10-16 Campbell Street, Bowen Hills project, the design team must review and evaluate the proposed strategies and determine which initiatives will be adopted for implementation.

Immediate Actions:

- Project team to conduct a review of the proposed sustainability measures and agree appropriate targets.
- Confirm thermal performance, glazing specifications are acceptable to ensure NCC Section J compliance.

Next Steps for Implementation:

- Incorporate the agreed sustainability initiatives into the architectural and broader design disciplines documentation.
- Conduct further energy analysis, daylight & glare simulations, and shading analyses to optimise thermal comfort and indoor environment quality.

Yours sincerely,

Jasper Riikonen

Sustainability Lead
E: jasper.riikonen@walkerbai.com
M: 0457 035 555

APPENDIX A – DAYLIGHT & GLARE ANALYSIS – VLT 0.45-0.50

Daylight Simulation Report

Project	10-16 Campbell Street
Address	Bowen Hills QLD 4006, Australia (27.45° S, 153.04° E)
Date	2025-02-14, 11:59 AM
Author	Jasper Riikonen (Walkerbai) jasper.riikonen@walkerbai.com
Scope	National Construction Code 2022 - sole-occupancy unit of a Class 2 building and a Class 4 part of a building

Using Speckel

Speckel provides various daylight calculations to satisfy the requirements of your local construction code. Radiance 5.3 (Validated against CIE171:2006) has been used to simulate the building with wall, roof, floor, window, and shading surfaces according to user inputs. A grid of sensor points have been generated in the appropriate zones accordance with user inputs. Each metric result includes a summary compared to required outcomes, a level-by-level visualisation of results, and zone-by-zone reporting.

Results

Spatial Daylight Autonomy

To meet the acceptance criteria, **100** % of the assessed groups must meet the conditions:

- 60 % of total area across the assessed zones
- greater than 160.0 lux
- for at least 2920 (80 %) of the simulated hours
- between the hours of 8 am until 6 pm
- on all days

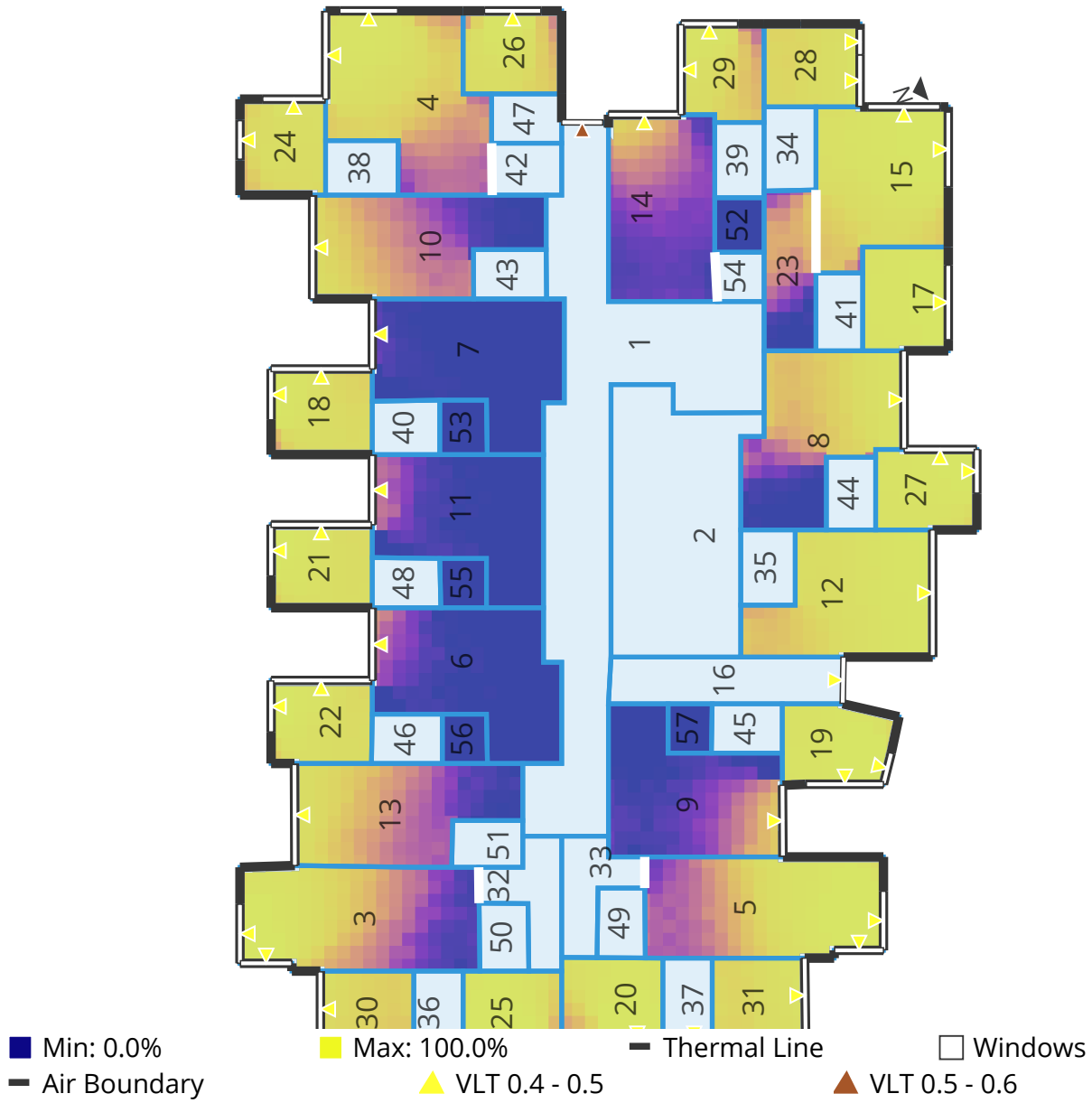
A total of 26 groups were assessed, where **46.15** % achieved the conditions, **not meeting** the acceptance criteria.

Group	Zones	Area (m²)	Points	Pass
L5 - 2 Bed A (North)	3	56.18	262	Yes
L5 - 1 Bed - E	3	44.78	209	No
L5 - 2 Bed A (South)	3	55.02	260	Yes
L5 - 1 Bed - A (North)	3	47.49	213	No
L5 - Studio A	1	29.33	129	No
L5 - 1 Bed B (North)	3	43.70	199	No
L5 - 1 Bed - C	3	47.55	216	No
L5 - 2 Bed - B	3	55.43	247	Yes
L5 - Studio B	1	29.43	129	No
L5 - 1 Bed - B (East)	3	43.34	196	No
L5 - 2 Bed - C	4	62.50	287	Yes
L5 - 1 Bed - D	2	41.56	188	Yes
L5 - Studio C	1	28.49	126	Yes
L6 - 2 Bed A (North)	3	56.18	262	Yes
L6 - 2 Bed A (South)	3	55.02	260	Yes
L6 - Studio A	1	29.33	129	No
L6 - 1 Bed - A	3	47.49	213	No
L6 - 1 Bed - E	3	44.78	209	No
L6 - 1 Bed C	3	47.55	216	No
L6 - Studio B	1	29.43	129	No
L6 - 2 Bed - B	3	55.43	247	Yes
L6 - 1 Bed B (East)	3	43.34	196	No
L6 - 2 Bed - C	3	50.14	235	Yes

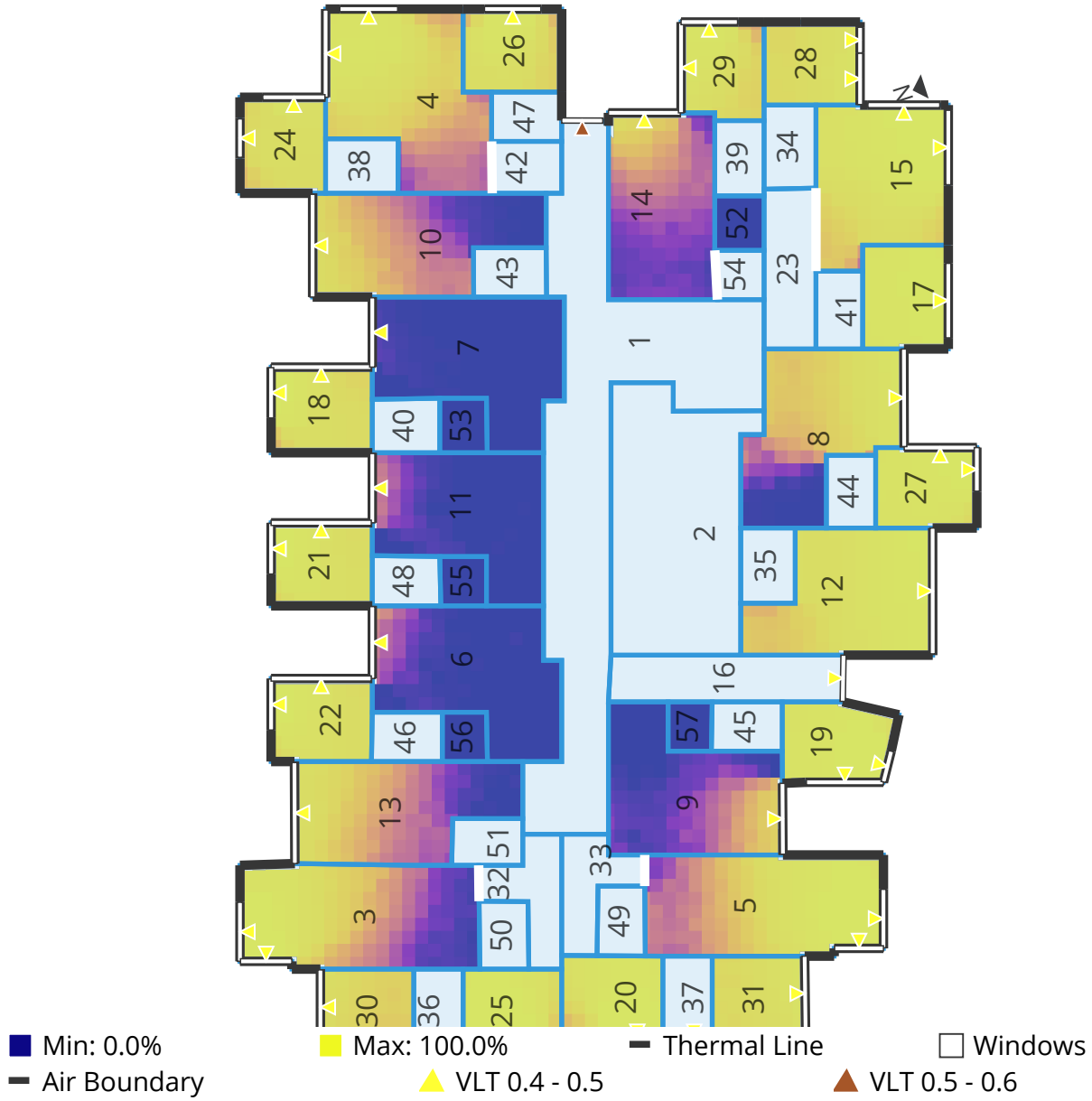
Radiance Options

Option	Value	Description
Limit Weight (lw)	1e-06	Maximum influence of specific effects in rendering.
Limit Reflections (lr)	8	Maximum number of reflections considered in rendering.
Ambient Bounces (ab)	8	Number of times light reflects off surfaces.
Ambient Accuracy (aa)	0.05	Degree of precision in simulating indirect light.
Ambient Divisions (ad)	8192	Subdivision of surfaces for ambient lighting calculation.
Ambient Supersamples (as)	1024	Additional samples taken to improve accuracy in ambient lighting.
Ambient Resolution (ar)	512	Detail level in ambient lighting computation.
Sky Model		Perez Sky, adapted according to hourly weather conditions

Level 5


Min: 0.0%
Max: 100.0%
Thermal Line
Windows
Air Boundary
VLT 0.4 - 0.5
VLT 0.5 - 0.6

Level 6

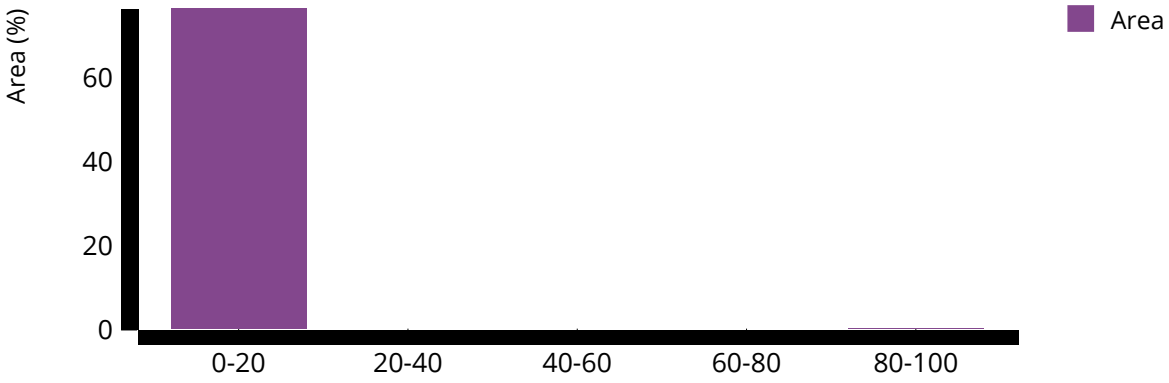

Min: 0.0%
Max: 100.0%
Thermal Line
Windows
Air Boundary
VLT 0.4 - 0.5
VLT 0.5 - 0.6

Annual Sunlight Exposure

To meet the acceptance criteria, **10** % of total area across the assessed zones must meet the conditions:

- annual sunlight exposure is less than 3000.0 lux
- for all hours
- between the hours of 8 am until 6 pm
- on all days

A total of 5270 sensor points representing an area of 1157.22 m² across 65 zones were assessed, where an area of **95.22** % achieved the conditions, **meeting** the acceptance criteria.



Level	Zone	Area (m²)	Min (Hrs)	Avg (Hrs)	Max (Hrs)	Pass Area (m²)	Contribution (%)
1	L5 - 1 Bed - A (North) L5 - 1 Bed - A - Bedroom	10.89	33	161	780	8.99	0.78
1	L5 - 1 Bed - A (North) L5 - 1 Bed - A - Living	33.33	0	0	15	33.33	2.88
1	L5 - 1 Bed - A (North) L5 - 1 Bed - A - Study	3.27	0	0	0	3.27	0.28
1	L5 - 1 Bed - B (East) L5 - 1 Bed - B - Bedroom (East)	10.47	0	39	200	10.47	0.90
1	L5 - 1 Bed - B (East) L5 - 1 Bed - B - Living (East)	28.88	0	1	40	28.88	2.50
1	L5 - 1 Bed - B (East) L5 - 1 Bed - B - Study (East)	3.99	0	0	0	3.99	0.34
1	L5 - 1 Bed - C L5 - 1 Bed - C - Bedroom	10.73	0	162	729	8.71	0.75
1	L5 - 1 Bed - C L5 - 1 Bed - C - Living	33.01	0	0	0	33.01	2.85

Level	Zone	Area (m²)	Min (Hrs)	Avg (Hrs)	Max (Hrs)	Pass Area (m²)	Contribution (%)
1	L5 - 1 Bed - C L5 - 1 Bed - C - Study	3.81	0	0	0	3.81	0.33
1	L5 - 1 Bed - D L5 - 1 Bed - D - Bedroom	10.57	0	7	280	10.45	0.90
1	L5 - 1 Bed - D L5 - 1 Bed - D - Living	30.99	0	0	0	30.99	2.68
1	L5 - 1 Bed - E L5 - 1 Bed - E - Bedroom	10.95	0	123	520	8.82	0.76
1	L5 - 1 Bed - E L5 - 1 Bed - E - Living/Kitchen	30.63	0	0	0	30.63	2.65
1	L5 - 1 Bed - E L5 - 1 Bed - E - Study	3.20	0	0	0	3.20	0.28
1	L5 - 1 Bed B (North) L5 - 1 Bed - B - Bedroom (North)	10.36	47	194	964	7.96	0.69
1	L5 - 1 Bed B (North) L5 - 1 Bed - B - Living (North)	29.95	0	0	15	29.95	2.59
1	L5 - 1 Bed B (North) L5 - 1 Bed - B - Study (North)	3.38	0	0	0	3.38	0.29
1	L5 - 2 Bed - B L5 - 2 Bed - B - Bedroom 1	10.29	0	110	239	10.29	0.89
1	L5 - 2 Bed - B L5 - 2 Bed - B - Bedroom 2	10.80	0	38	198	10.80	0.93
1	L5 - 2 Bed - B L5 - 2 Bed - B - Living	34.34	0	61	677	31.59	2.73
1	L5 - 2 Bed - C L5 - 2 Bed - C - Bedroom 1	10.50	0	0	0	10.50	0.91
1	L5 - 2 Bed - C L5 - 2 Bed - C - Bedroom 2	12.06	0	6	136	12.06	1.04
1	L5 - 2 Bed - C L5 - 2 Bed - C - Kitchen	12.36	0	0	0	12.36	1.07
1	L5 - 2 Bed - C L5 - 2 Bed - C - Living	27.58	0	15	339	27.07	2.34
1	L5 - 2 Bed A (North) L5 - 2A - Bedroom 1 (North)	10.20	0	1	24	10.20	0.88
1	L5 - 2 Bed A (North) L5 - 2A - Bedroom 2 (North)	11.30	0	300	919	5.65	0.49
1	L5 - 2 Bed A (North) L5 - 2A -	34.68	0	56	947	31.56	2.73

Level	Zone	Area (m²)	Min (Hrs)	Avg (Hrs)	Max (Hrs)	Pass Area (m²)	Contribution (%)
	Living (North)						
1	L5 - 2 Bed A (South) L5 - 2A - Bedroom 1 (South)	11.76	0	250	888	6.91	0.60
1	L5 - 2 Bed A (South) L5 - 2A - Bedroom 2 (South)	10.15	0	0	0	10.15	0.88
1	L5 - 2 Bed A (South) L5 - 2A - Living/Dining (South)	33.12	0	48	418	30.77	2.66
1	L5 - Studio A L5 - Studio A - Living/Dining	29.33	0	2	50	29.33	2.53
1	L5 - Studio B L5 - Studio B - Living	29.43	0	6	115	29.43	2.54
1	L5 - Studio C L5 - Studio C - Living	28.49	0	3	84	28.49	2.46
2	L6 - 1 Bed - A L6 - 1 Bed - A - Bedroom	10.89	10	168	919	8.99	0.78
2	L6 - 1 Bed - A L6 - 1 Bed - A - Living	33.33	0	0	15	33.33	2.88
2	L6 - 1 Bed - A L6 - 1 Bed - A - Study	3.27	0	0	0	3.27	0.28
2	L6 - 1 Bed - D L6 - 1 Bed - D - Bedroom	10.57	0	7	280	10.45	0.90
2	L6 - 1 Bed - D L6 - 1 Bed - D - Living	30.99	0	0	0	30.99	2.68
2	L6 - 1 Bed - E L6 - 1 Bed - E - Bedroom	10.95	0	125	519	9.07	0.78
2	L6 - 1 Bed - E L6 - 1 Bed - E - Living/Kitchen	30.63	0	0	0	30.63	2.65
2	L6 - 1 Bed - E L6 - 1 Bed - E - Study	3.20	0	0	0	3.20	0.28
2	L6 - 1 Bed B (East) L6 - 1 Bed - B - Bedroom (East)	10.47	0	39	200	10.47	0.90
2	L6 - 1 Bed B (East) L6 - 1 Bed - B - Living (East)	28.88	0	4	85	28.88	2.50
2	L6 - 1 Bed B (East) L6 - 1 Bed - B - Study (East)	3.99	0	0	0	3.99	0.34
2	L6 - 1 Bed B - North L6 - 1 Bed - B - Bedroom (North)	10.36	47	201	1036	7.96	0.69

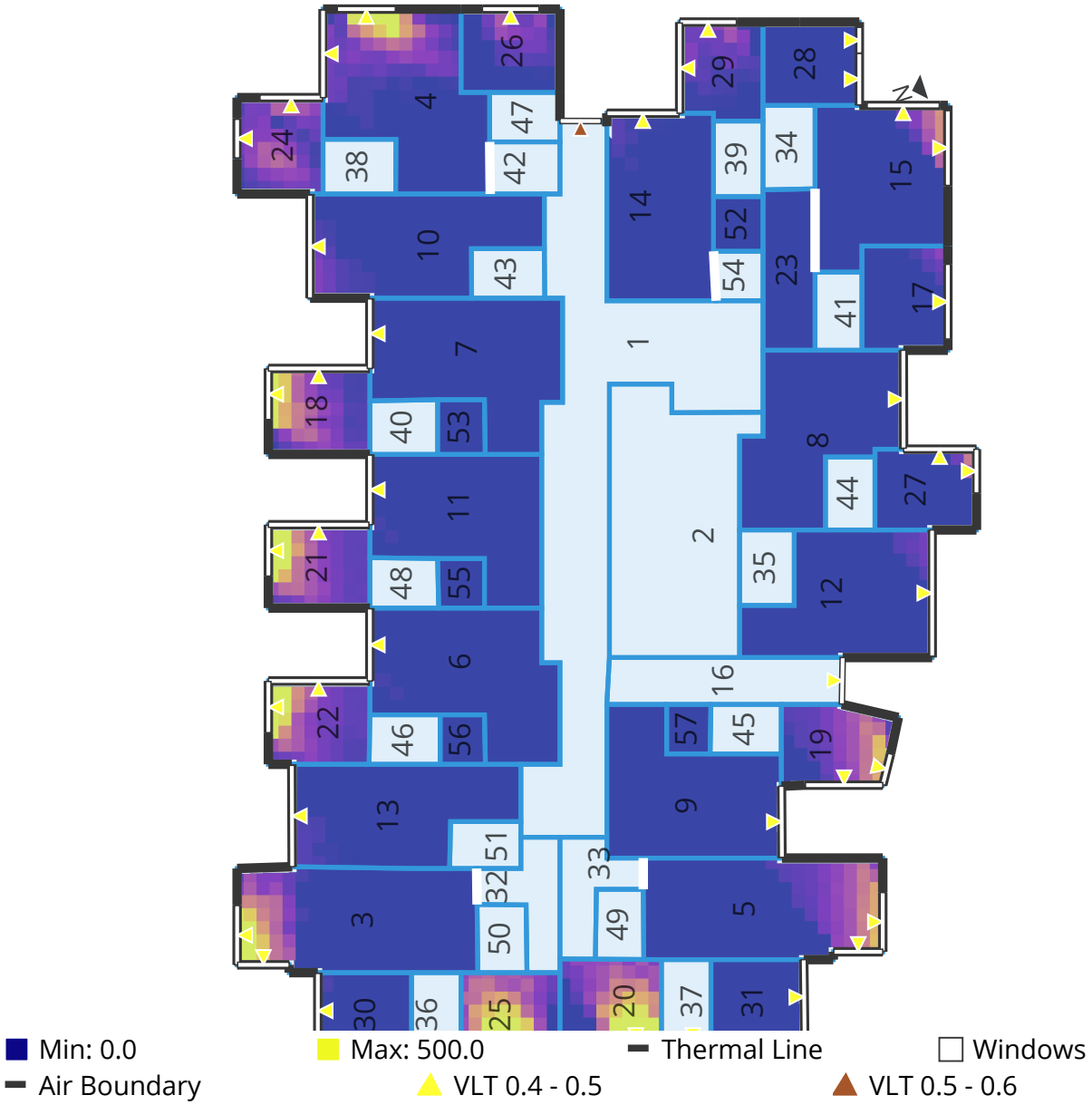
Level	Zone	Area (m²)	Min (Hrs)	Avg (Hrs)	Max (Hrs)	Pass Area (m²)	Contribution (%)
2	L6 - 1 Bed B - North L6 - 1 Bed - B - Living (North)	29.95	0	0	15	29.95	2.59
2	L6 - 1 Bed B - North L6 - 1 Bed - B - Study (North)	3.38	0	0	0	3.38	0.29
2	L6 - 1 Bed C L6 - 1 Bed - C - Bedroom	10.73	12	170	790	8.71	0.75
2	L6 - 1 Bed C L6 - 1 Bed - C - Living	33.01	0	0	0	33.01	2.85
2	L6 - 1 Bed C L6 - 1 Bed - C - Study	3.81	0	0	0	3.81	0.33
2	L6 - 2 Bed - B L6 - 2 Bed - B - Bedroom 1	10.29	0	111	239	10.29	0.89
2	L6 - 2 Bed - B L6 - 2 Bed - B - Bedroom 2	10.80	0	38	216	10.80	0.93
2	L6 - 2 Bed - B L6 - 2 Bed - B - Living	34.34	0	62	686	31.59	2.73
2	L6 - 2 Bed - C L6 - 2 Bed - C - Bedroom 1	10.50	0	0	0	10.50	0.91
2	L6 - 2 Bed - C L6 - 2 Bed - C - Bedroom 2	12.06	0	15	273	11.91	1.03
2	L6 - 2 Bed - C L6 - 2 Bed - C - Living	27.58	0	15	339	27.07	2.34
2	L6 - 2 Bed A (North) L6 - 2A - Bedroom 1 (North)	10.20	0	1	24	10.20	0.88
2	L6 - 2 Bed A (North) L6 - 2A - Bedroom 2 (North)	11.30	0	300	904	5.30	0.46
2	L6 - 2 Bed A (North) L6 - 2A - Living (North)	34.68	0	58	964	31.81	2.75
2	L6 - 2 Bed A (South) L6 - 2A - Bedroom 1 (South)	11.76	0	247	871	7.16	0.62
2	L6 - 2 Bed A (South) L6 - 2A - Bedroom 2 (South)	10.15	0	1	18	10.15	0.88
2	L6 - 2 Bed A (South) L6 - 2A - Living/Dining (South)	33.12	0	47	418	30.77	2.66
2	L6 - Studio A L6 - Studio A - Living/Dining	29.33	0	2	54	29.33	2.53
2	L6 - Studio B L6 - Studio B -	29.43	0	6	94	29.43	2.54

Level	Zone	Area (m²)	Min (Hrs)	Avg (Hrs)	Max (Hrs)	Pass Area (m²)	Contribution (%)
	Living						
2	L6 Studio - C L6 - Studio C - Living	28.49	0	3	98	28.49	2.46
						Pass	Yes

Radiance Options

Option	Value	Description
Secondary Source Presampling Density (dp)	512	Density of samples taken for secondary light sources.
Direct Sampling Ratio (ds)	0.2	Ratio of samples taken to estimate direct lighting.
Direct Threshold (dt)	0.03	Threshold for considering direct lighting contribution.
Direct Certainty (dc)	0.75	Level of confidence in direct lighting calculations.
Limit Weight (lw)	1e-6	Maximum influence of specific effects in rendering.
Limit Reflections (lr)	10	Maximum number of reflections considered in rendering.
Specular Sampling Threshold (st)	0.15	Threshold for considering specular reflections.
Ambient Bounces (ab)	0	Number of times light reflects off surfaces.
Ambient Accuracy (aa)	0.05	Degree of precision in simulating indirect light.
Ambient Divisions (ad)	512	Subdivision of surfaces for ambient lighting calculation.
Ambient Supersamples (as)	512	Additional samples taken to improve accuracy in ambient lighting.
Ambient Resolution (ar)	512	Detail level in ambient lighting computation.
Sky Model		Direct solar component only

Level 1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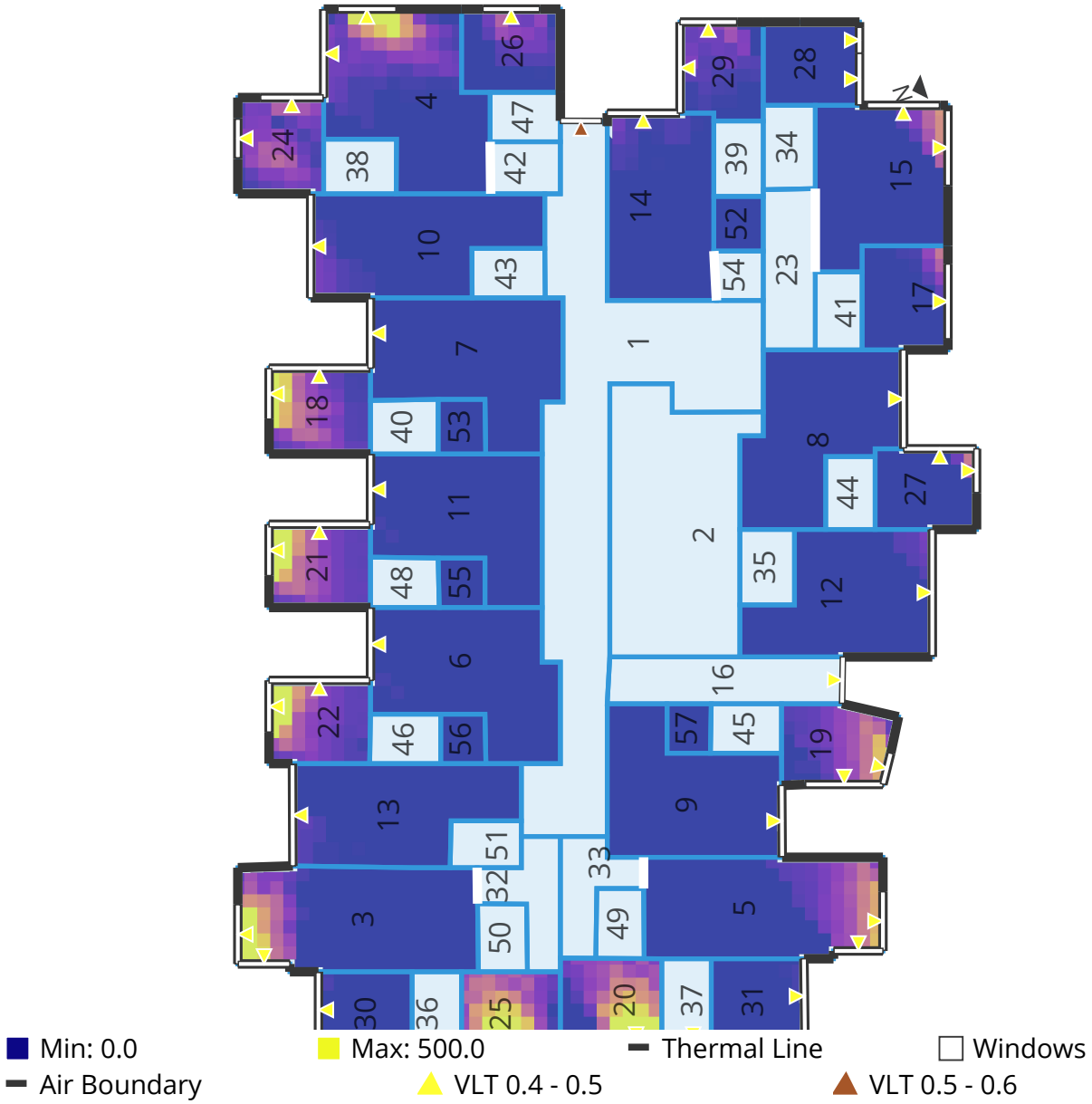
Min: 0.0
Max: 500.0
Thermal Line
Windows
Air Boundary
VLT 0.4 - 0.5
VLT 0.5 - 0.6

Level 2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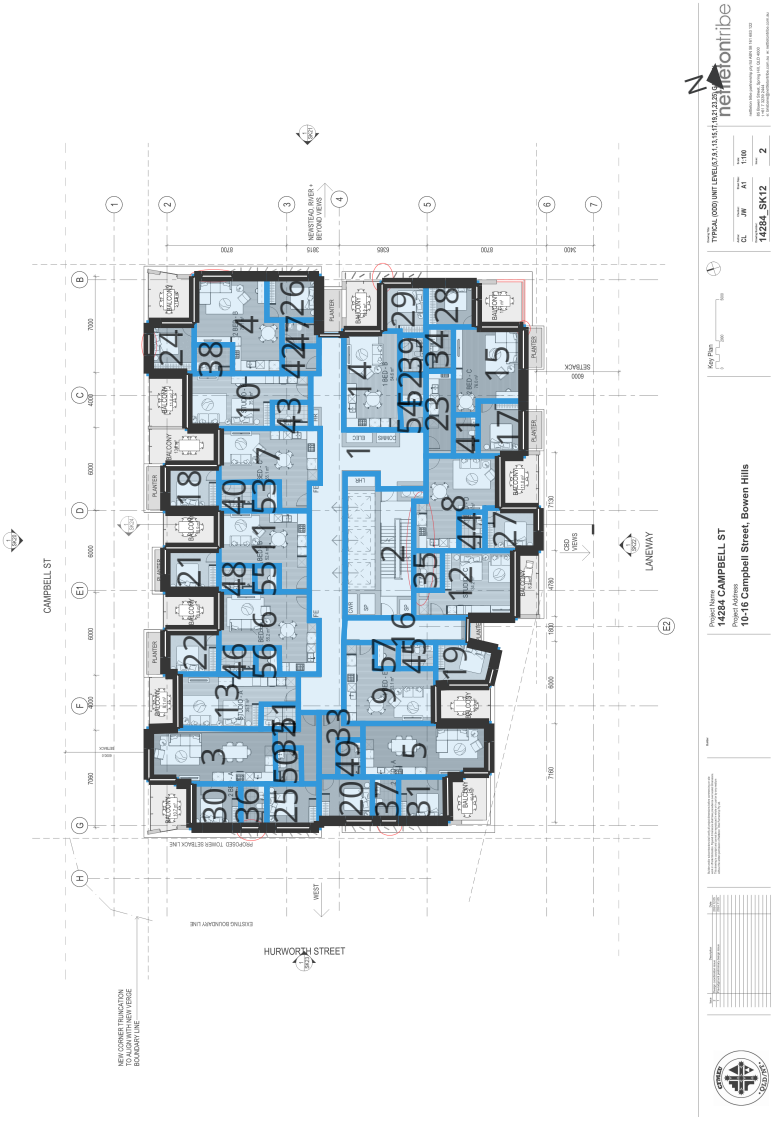
Min: 0.0
Max: 500.0
Thermal Line
Windows
Air Boundary
VLT 0.4 - 0.5
VLT 0.5 - 0.6

Drawings

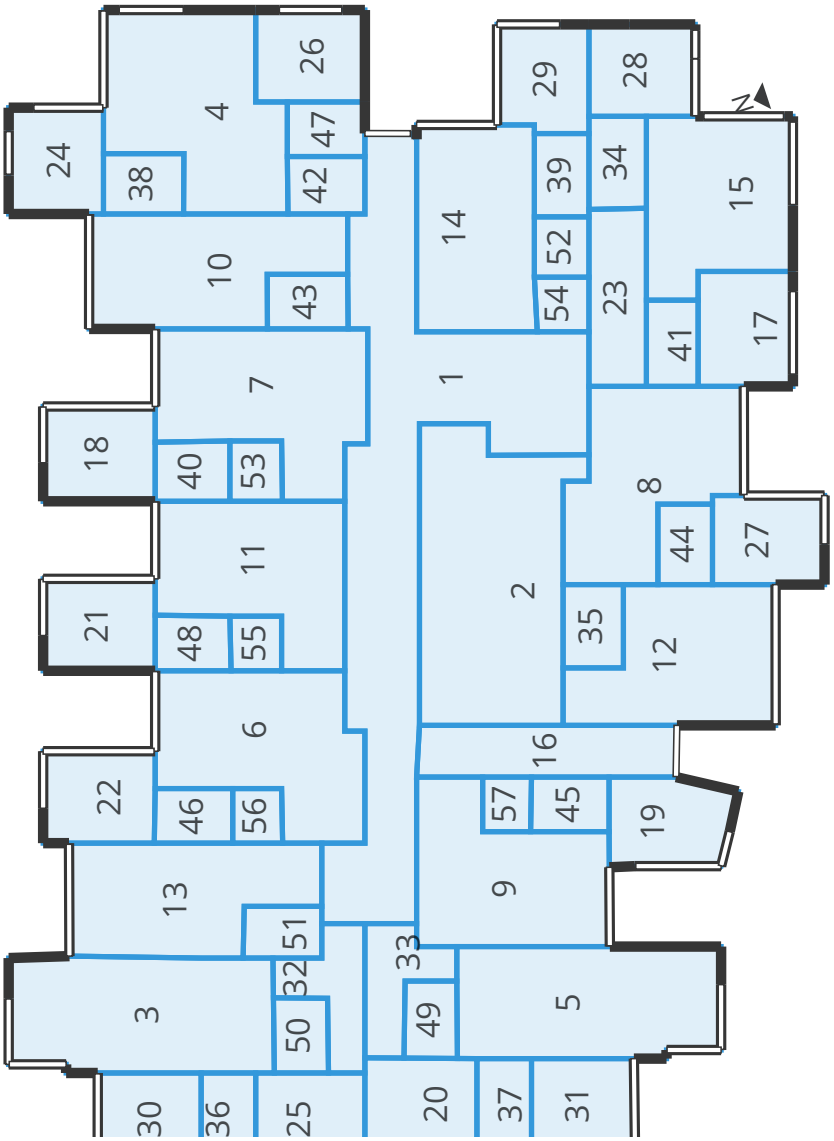
Level 1 - Level 5



Thermal Line

Windows

Level 2 - Level 6



Thermal Line Windows

APPENDIX B – THERMAL ENVELOPE MARKUP

WALL TYPE 1 - MIN. Rt 2.0 insulation

Glazing #1 Awning Uv<4.5, SHGC=0.36 (openable min 20%)

Glazing #2 Sliding Glazed Doors Uv<4.3, SHGC=0.32

WALKERBAI

Date: 14/02/2025, Rev-01

Client

CFMEU QLD/NT

Issue	Description	Date
2	Design coordination issue	2024.12.05
1	Pre-lodgment preliminary design issue	2024.11.05

Builder

Project Name
14284 CAMPBELL ST

Project Address
10-16 Campbell Street, Bowen Hills

Key Plan
0 2000 5000

Drawing Title:
TYPICAL (ODD) UNIT LEVEL(5,7,9,1,13,15,17,19,21,23,25) GA PLAN

Author:	Checker:	Sheet Size:	Scale:
CL	JW	A1	1:100

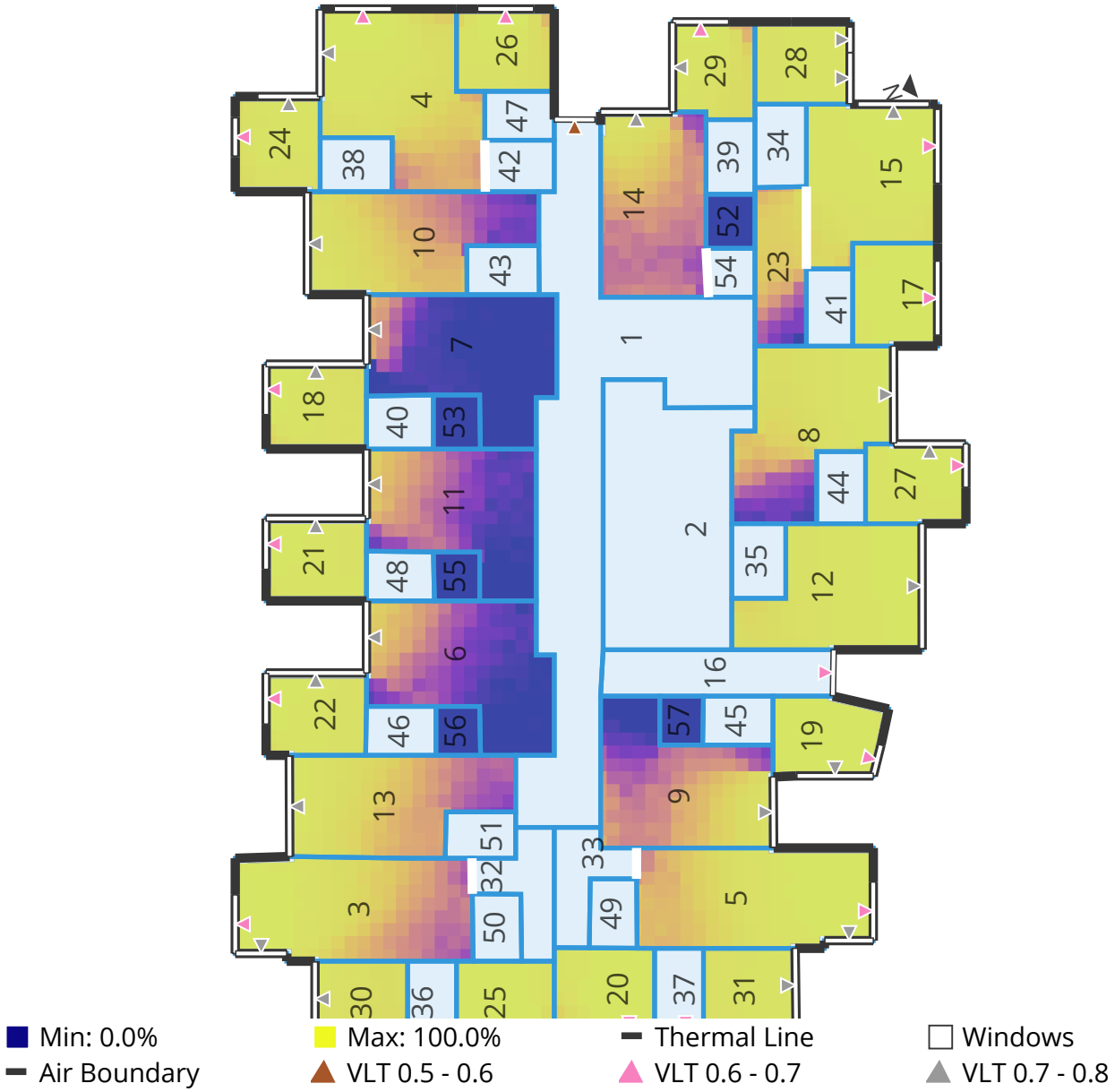
Drawing Number: **14284_SK12**

Issue: **2**

nettleton tribe partnership pty ltd ABN 58 161 683 122
85 Bowen Street, Spring Hill, QLD 4000
t +61 7 3239 2444
e: brisbane@nettletontribe.com.au w: nettletontribe.com.au

APPENDIX C – DAYLIGHT & GLARE ANALYSIS – VLT 0.65-0.80

Level 1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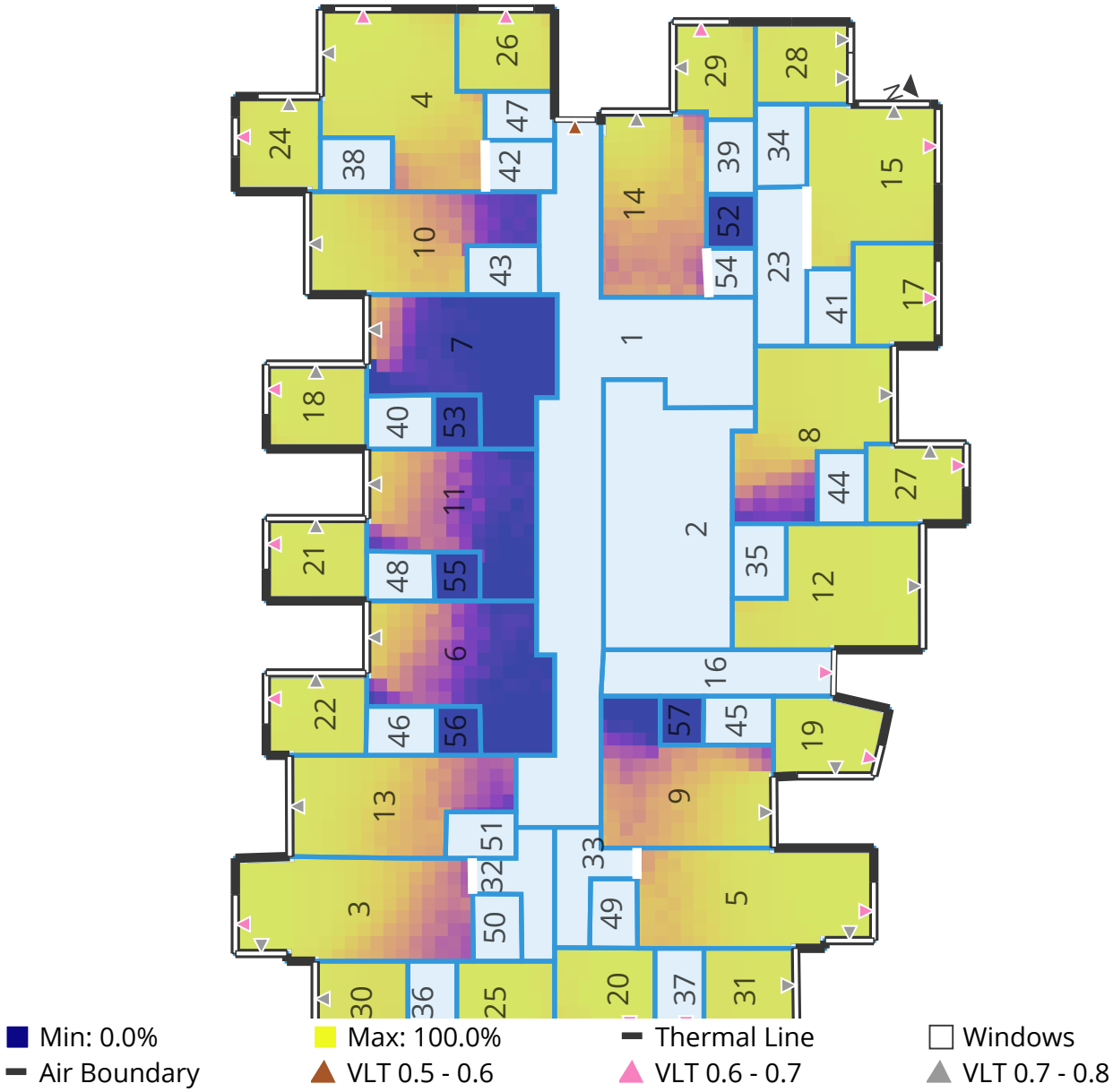
Min: 0.0%
Max: 100.0%
Thermal Line
Windows
Air Boundary
VLT 0.5 - 0.6
VLT 0.6 - 0.7
VLT 0.7 - 0.8

Level 2



Annual Sunlight Exposure

To meet the acceptance criteria, **100** % of the assessed groups must meet the conditions:

- **10** % of total area across the assessed zones
- annual sunlight exposure is less than 3000.0 lux
- for all hours
- between the hours of 8 am until 6 pm
- on all days

A total of 26 groups were assessed, where **100.00** % achieved the conditions, **meeting** the acceptance criteria.

Group	Zones	Area (m²)	Points	Pass

Group	Zones	Area (m²)	Points	Pass
L5 - 2 Bed A (North)	3	56.18	262	Yes
L5 - 1 Bed - E	3	44.78	209	Yes
L5 - 2 Bed A (South)	3	55.02	260	Yes
L5 - 1 Bed - A (North)	3	47.49	213	Yes
L5 - Studio A	1	29.33	129	Yes
L5 - 1 Bed B (North)	3	43.70	199	Yes
L5 - 1 Bed - C	3	47.55	216	Yes
L5 - 2 Bed - B	3	55.43	247	Yes
L5 - Studio B	1	29.43	129	Yes
L5 - 1 Bed - B (East)	3	43.34	196	Yes
L5 - 2 Bed - C	4	62.50	287	Yes
L5 - 1 Bed - D	2	41.56	188	Yes
L5 - Studio C	1	28.49	126	Yes
L6 - 2 Bed A (North)	3	56.18	262	Yes
L6 - 2 Bed A (South)	3	55.02	260	Yes
L6 - Studio A	1	29.33	129	Yes
L6 - 1 Bed - A	3	47.49	213	Yes
L6 - 1 Bed - E	3	44.78	209	Yes
L6 - 1 Bed C	3	47.55	216	Yes
L6 - Studio B	1	29.43	129	Yes
L6 - 2 Bed - B	3	55.43	247	Yes
L6 - 1 Bed B (East)	3	43.34	196	Yes
L6 - 2 Bed - C	3	50.14	235	Yes
L6 - 1 Bed - D	2	41.56	188	Yes
L6 Studio - C	1	28.49	126	Yes
L6 - 1 Bed B - North	3	43.70	199	Yes

Group L5 - 2 Bed A (North)

A total of 262 sensor points representing an area of 56.18 m² across 3 zones were assessed, where an area of **82.17** % achieved the conditions, **meeting** the acceptance criteria.

Radiance Options

Option	Value	Description
Secondary Source Presampling Density (dp)	512	Density of samples taken for secondary light sources.
Direct Sampling Ratio (ds)	0.2	Ratio of samples taken to estimate direct lighting.
Direct Threshold (dt)	0.03	Threshold for considering direct lighting contribution.
Direct Certainty (dc)	0.75	Level of confidence in direct lighting calculations.
Limit Weight (lw)	1e-6	Maximum influence of specific effects in rendering.
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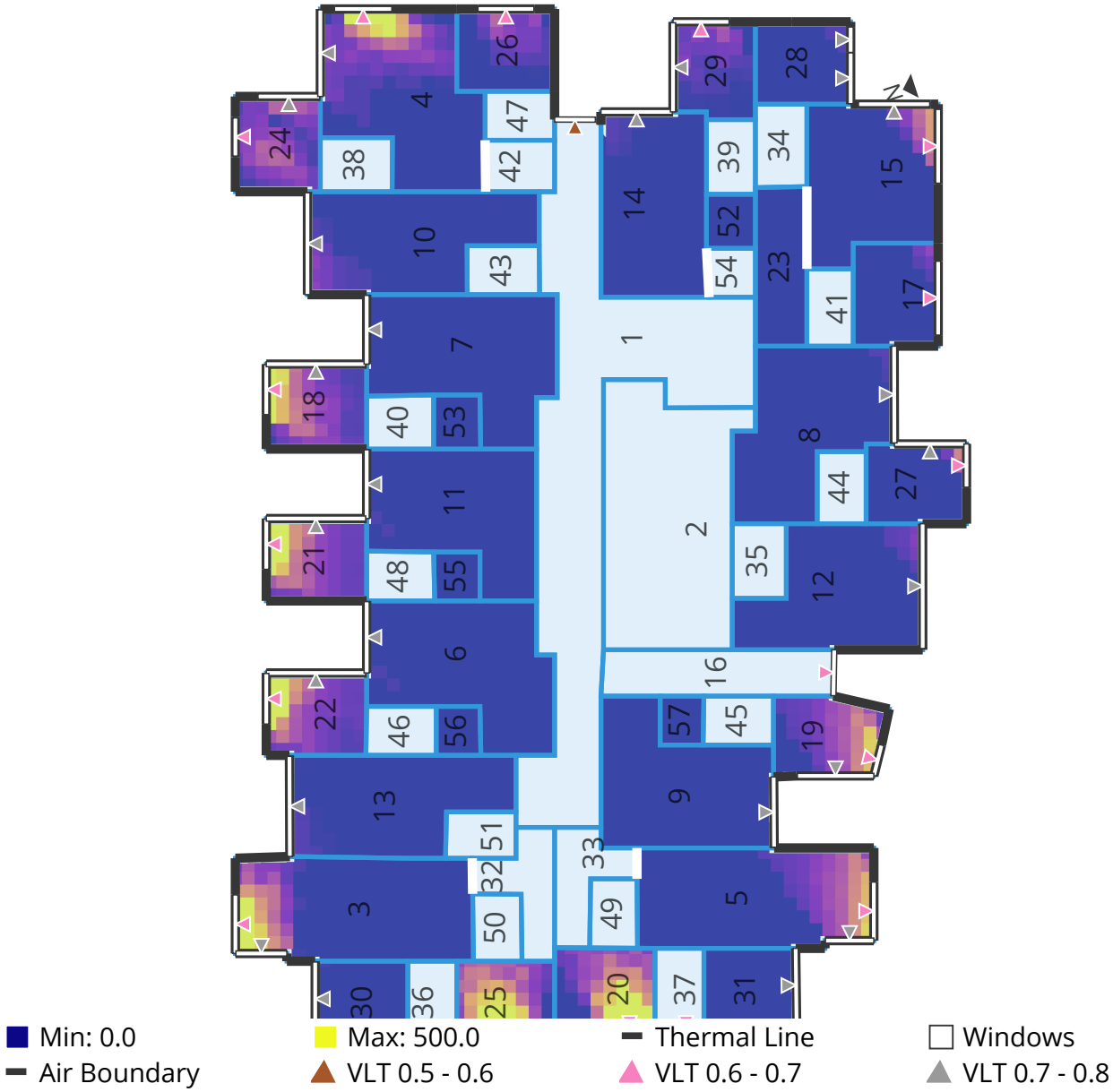
Ambient Supersamples (as)	512	Additional samples taken to improve accuracy in ambient lighting.
Ambient Resolution (ar)	512	Detail level in ambient lighting computation.
Sky Model		Direct solar component only

Level 1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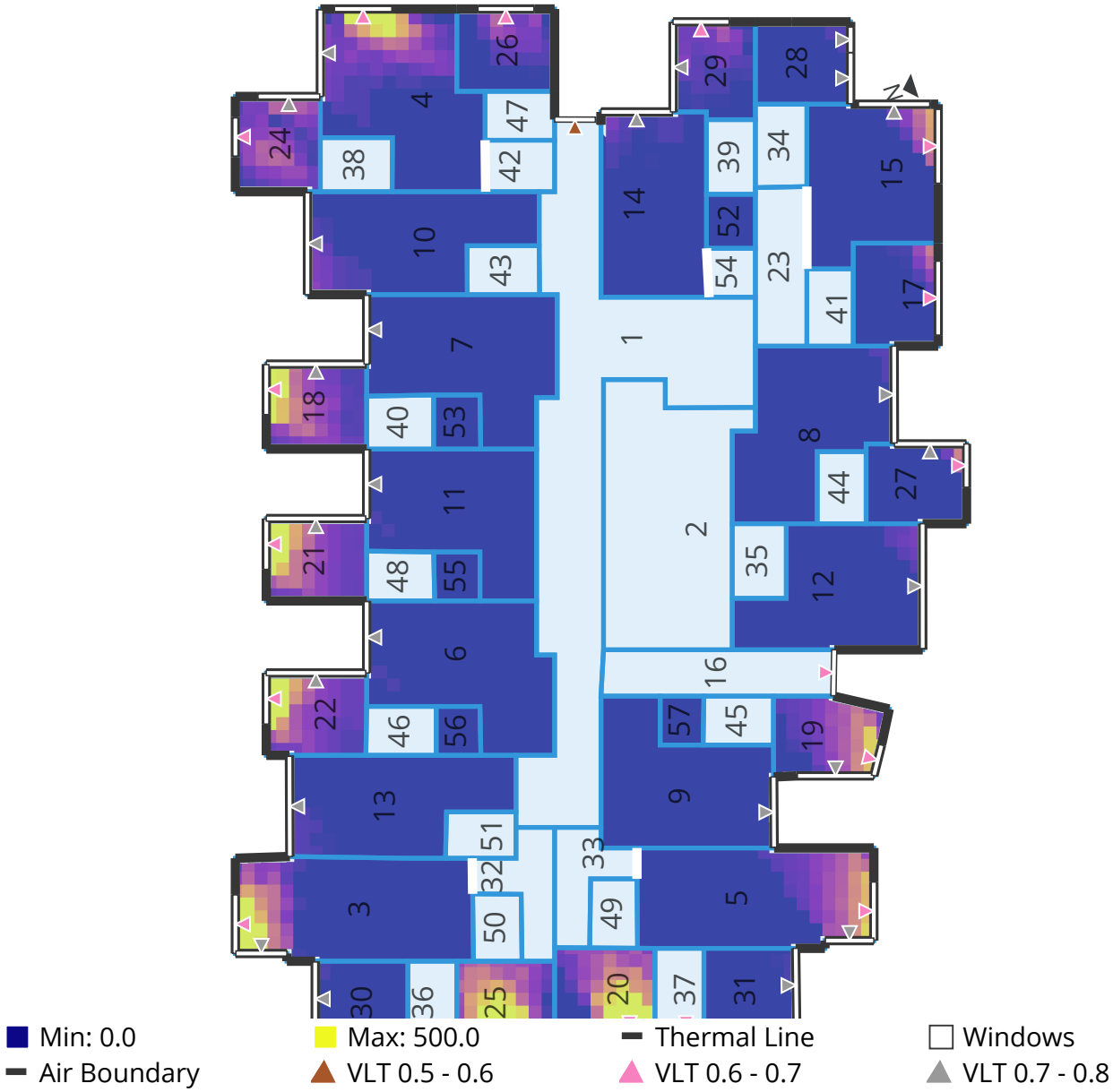
Min: 0.0
Max: 500.0
Thermal Line
Windows
Air Boundary
VLT 0.5 - 0.6
VLT 0.6 - 0.7
VLT 0.7 - 0.8

Level 2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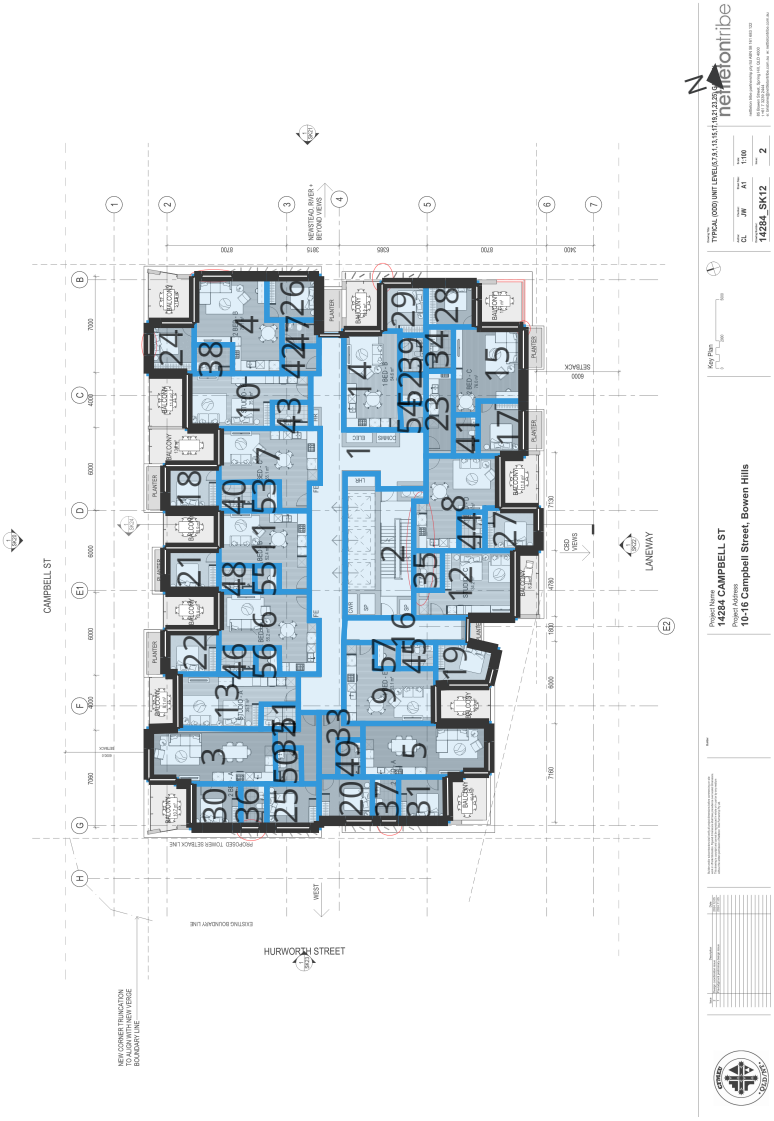
Min: 0.0
Max: 500.0
Thermal Line
Windows
Air Boundary
VLT 0.5 - 0.6
VLT 0.6 - 0.7
VLT 0.7 - 0.8

Drawings

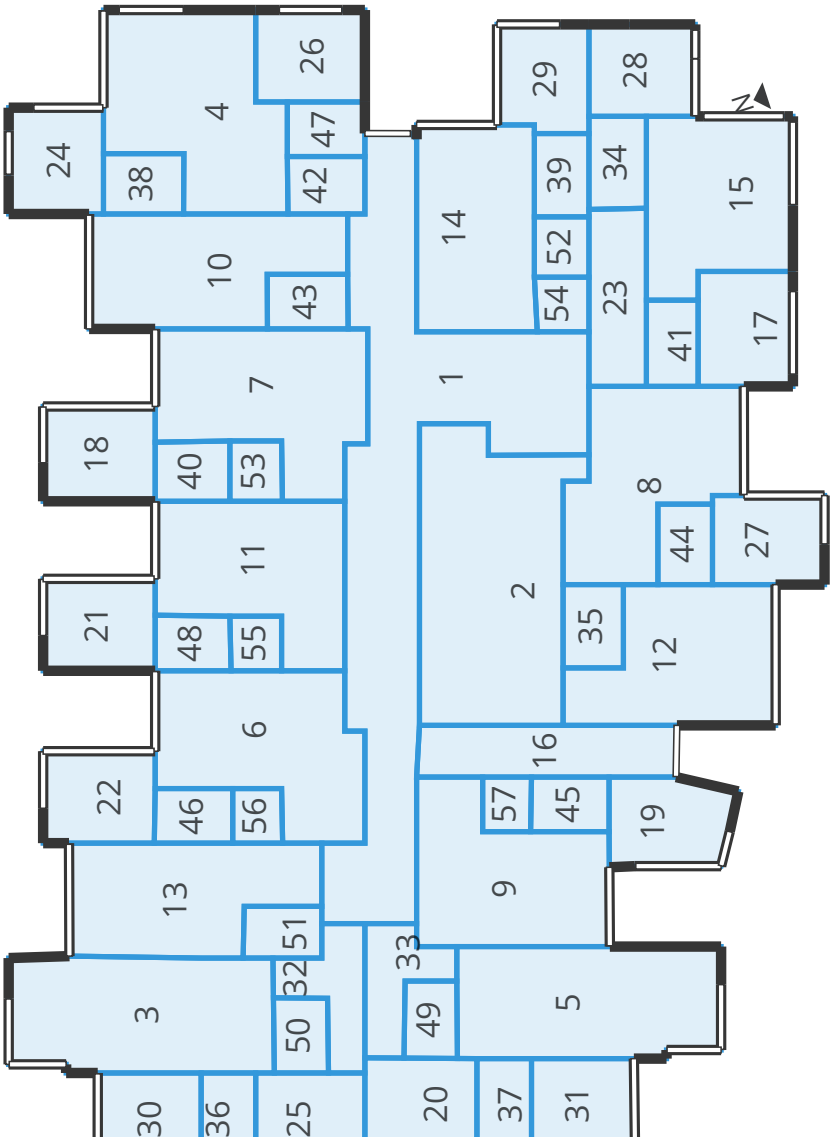
Level 1 - Level 5



Thermal Line

Windows

Level 2 - Level 6



Thermal Line Windows

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