WOOD & GRIEVE ENGINEERS

The Sandstone Precinct

Sustainability Services
NCC/BCA Section J Compliance Report

Revision 4

Prepared for:

Patina
C/- Make Achitects
Timothy Davies

Date:
14/10/2016

Prepared by:

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Project No. 29212-SYD-G
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Revision

REVISION	DATE	COMMENT	APPROVED BY
4	**14/10/2016**	**DA Issue**	**ALK**
3	05/10/2016	Revised Preliminary DA Issue	ALK
2	23/09/2016	For Preliminary DA Issue	ALK
1	03/06/2016	Issued For Information / Lands Building only	ALK

Qualifications to this Report

The following qualifications apply to this report:

- Information has been based on our understanding of the Proposed Building and documentation provided, as noted.
- This report outlines the scope of works required for NCC Section J compliance only.
  The project design team (including the Architect) will be required to review and consider the implications of these recommendations on their design for the project.
  For example:
  - Glazing selections have considered the thermal rating to the glazing and frame configurations only. The design team should also coordinate these recommendations with any specific acoustic, wind, structural, safety (during design and installation) or Architectural Design requirements for a particular project.
  - Different insulation products will have varying spatial allowances. The design team should coordinate the proposed insulation types, with specified R-values required throughout this report.

Disclaimer

This energy model provides an estimate of the base building's energy performance. This estimate is based on a necessarily simplified and idealised version of the building that does not and cannot fully represent all of the intricacies of the building and its operation. As a result, the energy model results only represent an interpretation of the potential performance of the building. No guarantee or warrantee of building performance in practice can be based on energy modelling results alone.

The results generated from this analysis are based on specific criteria outlined in the NCC Volume One and are not considered to be a true representation of the actual operation of the building. The intent of these criteria is to permit the comparison of the estimated annual energy consumption of a Proposed Building against that of a Reference Building and therefore determine if a specific building has the ability to be energy efficient.

The thermal properties described in the following report are to meet the minimum energy efficiency requirements stated by the NCC provisions only. It does not directly account for any requirements for the following aspects:

- Thermal Comfort – Mechanical engineer to confirm any specific requirements for Air-Conditioning Systems
- Vapour Barriers and Condensation – Building environmental consultant and architect to ensure appropriate details for waterproofing
- Impact and Structural – Structural engineer to confirm requirements
- Acoustic requirements – Acoustic engineer to confirm requirements

Revision

File Records

For records the files used in this report are as follows:

- IES Thermal Model:
  - Reference: 29212_Reference_ 6.mit
  - Proposed Model: 29212_Proposed_ 07.mit
- Apache Vista File:
  - Reference: 29212_Reference_6.asp
    Proposed: 29212_Proposed_07.asp
- Reference Glazing Calculators
  - 29212_Lands_Lower Ground.xlsx
  - 29212_ Lands_Ground.xlsx
  - 29212_ Lands_L1.xlsx
  - 29212_ Lands_L2.xlsx
  - 29212_ Lands_L3.xlsx
  - 29212_ Lands_L5.xlsx
  - 29212_ Lands_L6.xlsx
  - 29212_Education_Lower Ground_Retail.xlsx
  - 29212_Education_Lower Ground_Hotel.xlsx
  - 29212_Education_Ground.xlsx
  - 29212_Education_L01.xlsx
  - 29212_Education_L02.xlsx
  - 29212_Education_L03.xlsx
  - 29212_Education_L04.xlsx
  - 29212_Education_L05_20160803.xlsx
  - 29212_Education_L06.xlsx
  - 29212_Education_L07.xlsx
  - 29212_Education_L08.xlsx
  - 29212_Education_L09_20160803.xlsx

- Results File:
  - 29212_JV3_01.xlsm

APPROVED BY:

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Contents

Introduction

Executive Summary

This modelling report has been prepared at the instruction of Timothy Davies of Make Archtiects on behalf of Patina for the proposed hotel development at Bridge St, Sydney. This report:

- Confirms the development complies with the NCC 2015 Volume One Section J requirements for the building envelope. This includes the Class 6 retail tenancy, class 9b function rooms/spaces and class 3 hotel rooms and ancillary spaces of the development from Lower Ground to Level 9. This is across two buildings – known as the "Lands" Building and the "Education" Building.

This report is developed to demonstrate compliance with Section J – Energy Efficiency requirements for Part J1, J2 and J3.

The following table summarises the results of the energy consumption analysis:

Model Revision	Total Energy Consumption (MWh)	Percentage Energy Consumption Comparison	Compliance
Reference Buildings	5,747.5	-	-
Proposed Buildings	5,728.4	99.7%	Compliant

This analysis has been carried out in order to demonstrate that the estimated energy consumption for the development (calculated in accordance with Specification JV) is compliant with the NCC 2015 Volume One Section J Energy Efficiency JV3 – Verification using a Reference Building.

Based on the results outlined above, it can be stated that the Proposed Building design complies with the requirements of Section J Energy Efficiency JV3 – Verification using a Reference Building of the NCC Volume 1.

Climate Zone 5		
NCC Part	**Building Element**	**Total Typical Construction Thermal Performance Requirement**
J1.3	**Roof & Ceiling Construction**	**New items - R 3.2**
J1.5a	**External Wall**	**R 2.3 to Education Building Levels 7, 8 & 9 Existing sandstone walls retained elsewhere**
J1.5b	**Internal Wall (between conditioned and non-conditioned zones)**	**R 1.8**
J1.6	**Exposed Suspended Floor**	**R 2.0**
J2.4	**External Glazing**	**Specific Thermal Values as stated within Section 4.2 and over page**
J3	**Building Sealing**	**Refer Architectural Specification and/or notes on Drawings**
J5, J6, J7, J8	**Services**	**Refer Building Services Specification and Certification for compliance details.**

The following glazing thermal properties will need to be met in order to achieve compliance. Note these are whole of window properties, i.e. glass and frame combined:

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Lands Building:

External Glazing – Thermal properties of the window system including frame		
Zones	**U-value** (W/m^2K)	**SHGC**
Retail (Lower Ground)	3.6	0.64
Hotel New Glazing (to balconies)	3.6	0.64
Level 3 glazed dome (overall average)	1.6	0.15

* The values used for the glazed areas assume double glazed clear, and are incredibly conservative. These are minimum performance values which will be exceeded.

Education Building:

External Glazing – Thermal properties of the window system including frame		
Zones	U-value (W/m^2K)	**SHGC**
Hotel New Glazing	4.25	0.64
Level 5 roof lanterns to pool	6.5	0.70

The values for the typical glazing is based on Virian ComfortHush 12.5mm glazing systems. The Lands Building assumes the existing wooden frames are maintained and upgraded to "as new" condition. The Education building assumes system values with aluminium frames.

Compliance is verified when it is determined that the estimated annual energy consumption of the Proposed Building with its services is not more than the estimated annual energy consumption of a (deemed to satisfy compliant) Reference Building when:-

i. The Proposed Building is modelled with the proposed services; and
ii. The Proposed Building is modelled with the same services as the Reference Building.

Compliance with case (ii) above is demonstrated throughout this report, with all inputs described herein.

Note for the proposed services the relevant services consultants are to provide certification for parts J5, J6, J7 & J8.

Introduction

The information contained in this report has been based on the following information:

- Architectural Drawings prepared by Make dated 06/10/2016 and 14/10/2016, including:
  - SP-DA-G-1500 Proposed Site Plan
  - SP-DA-G-2496 Education Building - Basement Level 03
  - SP-DA-G-2497 Education Building - Basement Level 02
  - SP-DA-G-2498 Lands Building – Lower Ground, Education Building - Basement Level 01
  - SP-DA-G-2499 Lands Building – Ground, Education Building - Lower Ground
  - SP-DA-G-2500 Lands Building – Level 01, Education Building - Ground
  - SP-DA-G-2501 Lands Building – Level 02, Education Building - Level 01
  - SP-DA-G-2502 Lands Building – Level 03, Education Building - Level 02
  - SP-DA-G-2503 Lands Building – Level 04, Education Building - Level 03
  - SP-DA-G-2504 Lands Building – Level 05, Education Building - Level 04
  - SP-DA-G-2505 Lands Building – Level 06, Education Building - Level 05
  - SP-DA-G-2506 Lands Building – Level 07, Education Building - Level 06
  - SP-DA-G-2507 Lands Building – Level 08, Education Building - Level 07
  - SP-DA-G-2508 Lands Building – Level 09, Education Building - Level 08
  - SP-DA-G-2509 Lands Building – Level 10, Education Building - Roof
  - SP-DA-G-2510 Lands Building – Level 11, Education Building - Roof
  - SP-DA-G-2511 Lands Building – Level 12, Education Building - Roof
  - SP-DA-G-2512 Lands Building – Roof, Education Building - Roof
  - SP-DA-G-3200 Lands Building – South, Edication Building – South
  - SP-DA-G-3201 Lands Building – West
  - SP-DA-G-3202 Lands Building – North, Education Building – North
  - SP-DA-G-3203 Education Building – East
  - SP-DA-G-3204 Lands Building – East
  - SP-DA-G-3205 Education Building – West
  - SP-DA-G-3206 Education Building – Courtyard

1. Introduction

This modelling report is for the proposed hotel development at 23-39 Bridge St, Sydney. These two buildings are known as the "Lands" and "Education" Buildings, Sydney. This report sets out the design parameters by which the building has been assessed with respect to the NCC 2015 Volume One compliance.

It is understood that the Client's aim is to meet the following goal:

- Confirm compliance with the Parts J1 to J3 of Section J of the NCC Volume One using Verification Method JV3.

This report / energy analysis should be read in conjunction with all relevant plans and specifications and any supplementary regulatory information.

1.1 Section J of the NCC Volume One

Section J of the NCC Volume One sets energy efficiency requirements for the various classifications of building types while still maintaining acceptable internal environmental conditions for occupants.

The requirements are designed to reduce the use of artificial heating and cooling, improve the energy performance of lighting, conditioning and ventilation, and reduce energy loss through air leakage.

These reductions are achieved by setting specific design criteria by which the building must be designed and built. When these criteria cannot be met the building must prove that it produces a result which is equal or better than the set design criteria, in accordance with a specific verification method known as JV3.

1.2 JV3 Modelling Process

Verification Method JV3 (Verification using a Reference Building) is verified when it is determined that the estimated annual energy consumption of a Proposed Building with its services is not more than that of the estimated annual energy consumption of a Reference Building when:

i. The Proposed Building is modelled with the proposed services, and
ii. The Proposed Building is modelled with the same services as the Reference Building

The following energy modelling simulations are required to be created to enable the building to be assessed in accordance with Verification Method JV3.

<u>Case 1:- Reference Building with Reference Services</u>

The Reference Building represents the Proposed Building layout, with NCC Volume One (minimum) compliant building fabric. The Reference Building has deemed to satisfy HVAC and building services elements in accordance with NCC Volume One Specification JV requirements.

The extent and location of glazing for the Reference Building model is the same as that of the Proposed Building with its roof, shading elements and glazing thermal properties all being compliant to Deemed-to-Satisfy requirements.

<u>Case 2:- Proposed Building with Reference Services</u>

The next energy model is a thermally accurate representation of the Proposed Building. However, this energy model has the Reference Building's services applied to it.

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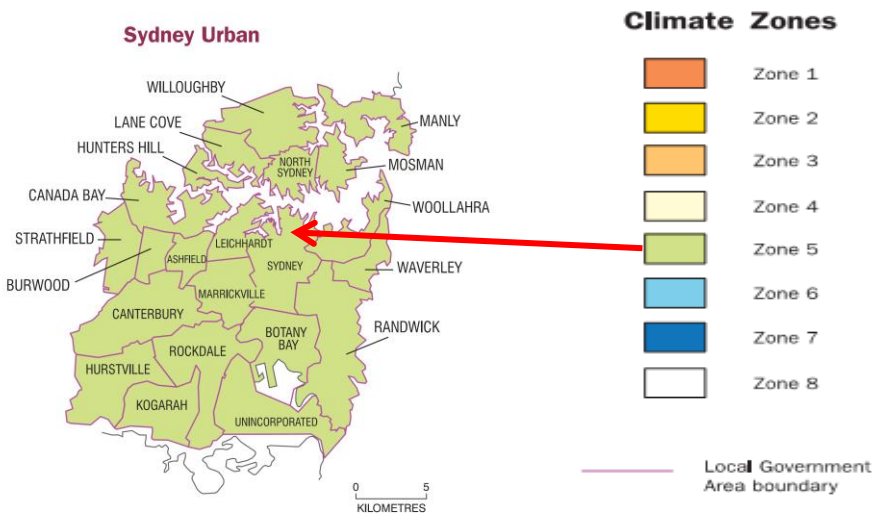
Test Reference Year

All of the above scenarios are modelled against the same set of climatic data, known as a test reference year.
A test reference year (TRY) is a set of measured hourly values for dry temperature, for global, diffuse and direct normal solar radiation, and for wind velocity. The figures nominated are selected from multiple year data sets of observations for a given location and are in sequence, such that the resulting TRY is "typical" for that specific location.

1.3 General Project Information

Property Title	Department of Lands Building & Education Building
Address	23 – 39 Bridge St, Sydney, 2000, NSW
Building Class and Use	It is understood that the buildings for this development have been deemed to have the following NCC classification: • Class 3 (Hotel rooms levels ground to Level 9) • Class 6 (Retail Tenancies – lower ground and ground floor) • Class 9b (function rooms, spa and leisure) • Class 7a (carpark, loading)
Number of storeys	19 across two buildings. Including Basement levels, Lower Ground, Ground and up to Level 9 on the Education building.
Verification Method	This building has been assessed under the NCC Volume One Energy Efficiency JV3 – Verification using a Reference Building
Climate Zone	Climate Zone 5 – Refer to Additional Information in Appendix B.
Name and Version of the Software used in the Analysis	The design of the buildings has been assessed utilising the IES Virtual Environment energy modelling software. This software included the ModelIT, SunCast, Apache, Vista and ApacheHVAC range of tools. The version of the tool used within this modelling report was IES Virtual Environment 2015.2.2.0.



2. Standard Modelling Inputs

The following modelling inputs are kept constant throughout all of the energy models based on NCC Volume One Specification JV simulation requirements.

2.1 Building Form

To ensure uniformity in the assessment the building form must remain the same for all of the building models; including roof geometry, floor plan, number of storeys, ground to lowest floor arrangements and size and location of glazing.

2.2 Internal Loads

The internal loads for both the Proposed and Reference Buildings are as per the design requirements stipulated in the NCC Volume One Section J.

2.2.1 Daily Occupancy and Operating Profile

Occupancy, lighting, equipment and HVAC plant throughout the site were estimated to operate in accordance with the NCC Volume One JV Specifications for the following NCC classifications:

- Class 6 (Café/Retail tenancies)
- Class 3 (Hotel Areas)

These profiles are shown in Appendix C – Occupancy and Operating Profiles.

2.2.2 Lighting Levels

Lighting loads allowances were incorporated into the energy model (see table below):

Zone	Lighting Load (W/m^2)
Hotel Rooms	6
Entry/Lobby	15
Retail Tenancy	18

2.2.3 Lighting Controls

Lights throughout the site were estimated to operate in accordance with the NCC Volume One JV Specification. No control is applied to either the proposed or the reference model.

2.3 Sensible and Latent Internal Heat Gain per Occupant

The following allowances have been made for sensible and latent heat gain per person:

Description	Sensible Heat (W/person)	Latent Heat (W/person)
All Spaces	75	55

Standard Modelling Inputs

2.4 Occupant Density

The following occupant density figures were utilised throughout the model as per the design requirements stipulated in the NCC Volume one Section D, Part D1, Table D1.13.

Zone	Occupant Density (m^2 per person)
Hotel Rooms	10
Entry/Lobby	10
Retail Tenancy	5

2.5 Internal Heat Gains from Appliances and Equipment

The following allowances have been made for sensible heat gain from equipment to all heating and cooling zones throughout the site as per the design requirements stipulated in NCC Volume One Section J, Specification JV, Table 2h:

Application	Internal Sensible Heat Gain Rate (W/m^2)
Hotel Rooms	5
Entry/Lobby	5
Retail Tenancy	5

2.6 Building Services Simulations

2.6.1 Space Temperature Range

In accordance with Specification JV Clause 2 (a) (i) the space temperature being within the range of 18°C DB to 26°C DB for 98% of the plant operation time.

Cooling Load Set-points were designed to operate at 24°CDB.

Heating Load Set-points were designed to operate at 21°CDB.

2.6.2 Availability of Plant

Plant was scheduled to operate in accordance with the Daily Occupancy and Operating Profile outlined above in Section 2.2.1 of this report. All mechanical services plant was assumed to be available for operation during these times.

2.6.3 Mechanical Ventilation Rate – Outside Air

In line with Specification JV and part F4 of the NCC/BCA, the building has been modelled with air rates as per the minimum requirements stipulated in AS 1668.2:

Zone	Fresh Air Rate (L/s/person)
All zones	7.5

2.6.4 Exhaust Ventilation System Operation

All mechanical services exhaust ventilation systems were assumed to run at full speed in accordance with the HVAC operation profile previously outlined within this report. Operationally this allowance will be different as many of the fans will have differential pressure control to allow them to ramp up and down accordingly.

2.6.5 Infiltration Air Change Rate

In accordance with the NCC Volume One 2015 Specification JV, the following allowances have been made for sensible heat gain from equipment to all heating and cooling zones throughout the site:

Extract from NCC Volume One 2015 Section J Energy Efficiency JV3 (d) (i) (F)

“Infiltration values, for a perimeter zone of depth equal to the floor-to-ceiling height: when pressurising plant is operating, 1.0 air changes per hour; and when pressurising plant is not operating, 1.5 air changes per hour.”

2.6.6 Heat Migration

The model generated for the site allowed for all associated internal wall construction types. This included internal stud walls, internal doors and windows where appropriate.

The heat load simulation then calculated the heat flow across all interconnecting zones during the simulation, which in turn was then incorporated into the energy simulation calculations.

2.7 Hot Water Supply

Domestic hot water energy consumption has been excluded from the calculation in accordance with the NCC Volume One 2015 Specification JV3 Part (e), which states;

“Where the annual energy consumption of the hot water supply or lifts and escalators are the same in the Proposed Building and the Reference Building, they may be omitted from the calculation of both the Proposed Building and the Reference Building.”

3. Reference Building with Reference Services (Case 1)

3.1 Building Fabric

The "Deemed-to-Satisfy" requirements for NCC Volume One Section J1 compliance were used to calculate the total thermal performance levels required for the opaque building elements. The following building fabrics were used to model the Reference Building.

Climate Zone 5		
NCC Part	**Building Element**	**Total Construction Thermal Performance Requirement**
J1.3	**Roof & Ceiling Construction**	**R 3.2, for solar absorption <0.4**
J1.5a	**External Wall**	**R 2.3 total, for walls with surface density >220kg/m2**
J1.5b	**Internal Wall (between conditioned and non-conditioned zones)**	**R 1.8**
J1.6	**Exposed Suspended Floor**	**R 2.0**
J1.6	**Slab on Ground**	**No insulation required**

3.2 Glazing

The glazed areas used for the Reference Building were calculated using the NCC Volume One Section J2 Glazing Calculator (Method 2). A maximum allowance for glazing was reached using the calculator based on an assessment of conditioned zones only. These calculators (for retail and "other" i.e. class 6 and class 9b) are appended in Appendix D.

3.3 Roof Lights

All reference building roof lights have been modelled in line with Section "J1.4 Roof Lights" of the NCC 2015. This includes:

Maximum glazed Roof area	5% of floor area
Roof Light Shaft Index*	Less than 0.5
U-Value	3.40
SHGC	0.34

In line with the definition of "Roof Lights" in the NCC, this has been taken as any space that is between 0-70 degrees from the horizontal plane. This is particularly prevalent for the domed glazing on the roof of the Lands building.

*The roof light shaft index is determined by measureing the distance from the centre of the shaft at the roof to the centre of the shaft at the ceiling level and dicvifin it by the average internal dimension of the shaft opening at the ceiling level.

3.4 Heating and Air Conditioning - Reference System

The following attributes were applicable to the Deemed-to-Satisfy HVAC system to the conditioned areas. In line with Part J5, this has the following performance criteria.

Cooling COP:	5.2
Heating Efficiency:	0.83
Cooling Fuel:	Electricity
Heating Fuel:	Gas
Air Supply System:	Zoned supply system with remote fan

4. Proposed Building with Reference Services (Case 2)

4.1 Building Fabric

Overall thermal performance of the building fabric, are shown below:

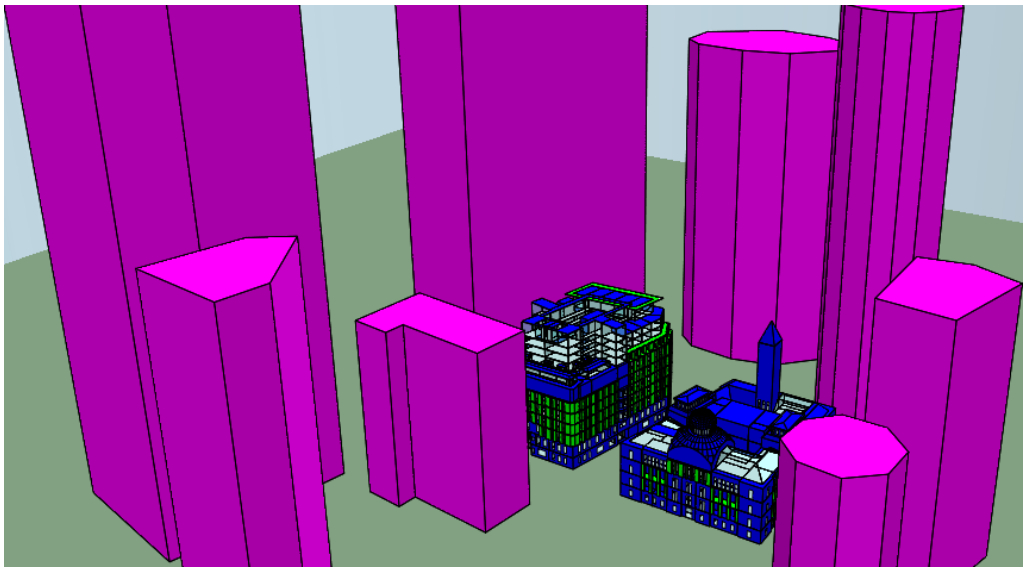
Climate Zone 5		
NCC Part	**Building Element**	**Total Construction Thermal Performance Requirement**
J1.3	**Roof & Ceiling Construction**	**New items - R 3.2**
J1.5a	**External Wall**	**R 2.3 to Education Building Levels 7, 8 & 9 Existing sandstone walls retained elsewhere**
J1.5b	**Internal Wall (between conditioned and non-conditioned zones)**	**R 1.8**
J1.6	**Exposed Suspended Floor**	**R 2.0**
J1.6	**Slab on Ground**	**No Insulation**
J2.4	**External Glazing**	**Specific Thermal Values as stated within Section 4.2 and over page**
J3	**Building Sealing**	**Refer Architectural Specification and/or notes on Drawings**
J5, J6, J7, J8	**Services**	**Refer Building Services Specification and Certification for compliance details.**

4.2 Shading and Glazing

4.2.1 External Shading

External shading was applied to the model for the site from local measurements taken from the local area. The relevant site plan drawings show the surrounding buildings, which have been measured and included.

Where applicable, these shading elements were assumed to be solid in construction and provided a direct reduction to the solar absorbance calculations within the heat load calculations. These results in turn were reflected in the energy estimation calculations.



4.2.2 Glazing Performance

The following table summarises the glazing thermal performance requirements to achieve compliance. Note these are whole of window properties, i.e. glass and frame combined:

Lands Building:

External Glazing – Thermal properties of the window system including frame		
Zones	**U-value** (W/m^2K)	**SHGC**
Retail (Lower Ground)	3.6	0.64
Hotel New Glazing (to balconies)	3.6	0.64
Level 3 glazed dome (in vertical Plane)	4.0	0.50
Level 3 Glazed Dome (in horizontal plane)	4.7	0.50

* The values used for the glazed areas assume double glazed clear, and are incredibly conservative. These are minimum performance values which will be exceeded

Education Building:

External Glazing – Thermal properties of the window system including frame		
Zones	**U-value** (W/m^2K)	**SHGC**
Hotel New Glazing	4.25	0.64
Level 5 roof lanterns to pool	6.5	0.70

The values for the typical glazing is based on Virian ComfortHush 12.5mm glazing systems. The Lands Building assumes the existing wooden frames are maintained and upgraded to “as new” condition. The Education building assumes system values with aluminium frames.

4.3 Heating and Air Conditioning Design Parameters

The following attributes were applicable to the Deemed-to-Satisfy HVAC system to the conditioned areas. In line with Part J5, this has the following performance criteria.

Cooling COP:	5.2	Water cooled chiller with Cooling tower heat rejection
Heating Efficiency:	0.83	Gas fired boiler > 750kW
Cooling Fuel:	Electricity	
Heating Fuel:	Gas	
Air Supply System:	Zoned supply system with remote fan	

5. Model Verification

5.1 Temperature Control

In accordance with Specification JV Clause 2 (a) (i) the space temperature of the Reference Building must be within the range of 18°C DB to 26°C DB for 98% of the plant operation time.

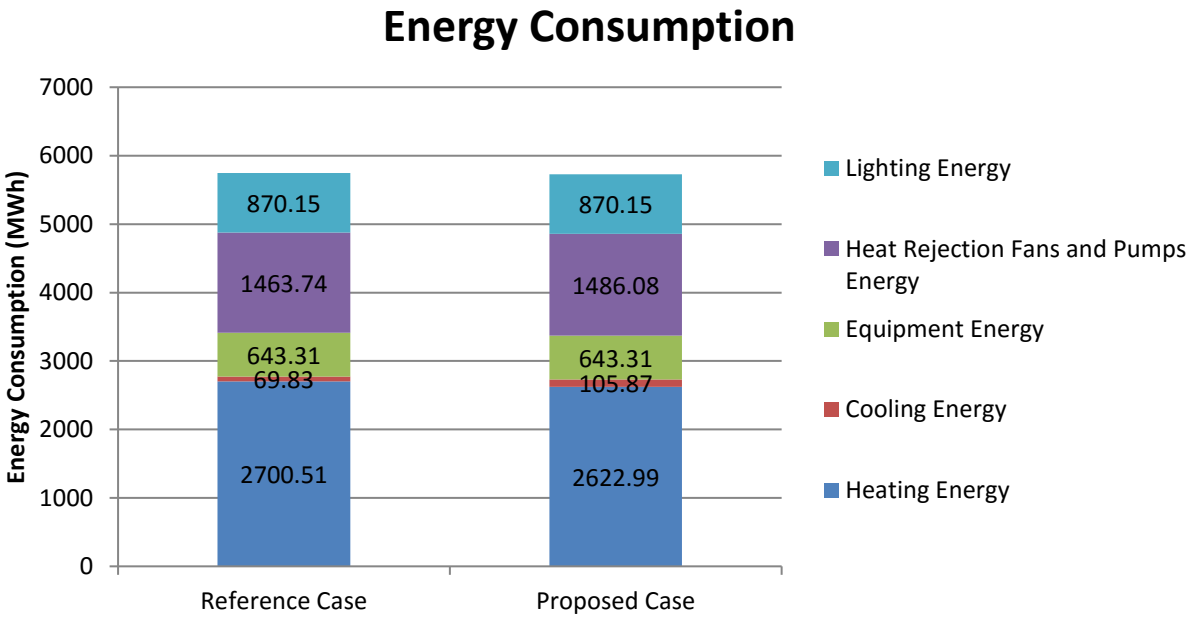
In order to verify this requirement, IES Virtual Environment's Vista analysis software module was utilised to assess the results for each of the nominated heating and cooling zones. A check was carried out to identify the percentage of total hours per annum (between this range) that the space temperature was outside this specified temperature band during the HVAC profile hours (refer to Section 2.2.1 for profiles) . The results of this are noted below.

Location	Air temperature (°C) % hours in range	Air temperature (°C) % hours in range	Air temperature (°C) % hours in range
	< 18.00	18.00 to 26.00	> 26.00
Conditioned Spaces	0	100	0

6. Energy Consumption Results

The following annual energy consumption has been taken from the IES Virtual Environment Vista results file for the site:

Model Revision	Energy Results (MWh)					Total Energy Consumption (MWh)	Compliance
	Heating	Cooling	Equipment	Fans, Pumps and Heat Rejection	Lighting		
Reference	2,700.50	69.83	643.31	1,463.74	870.15	5,747.54	-
Proposed	2,277.63	109.87	643.31	1,488.56	870.15	5,728.41	Compliant



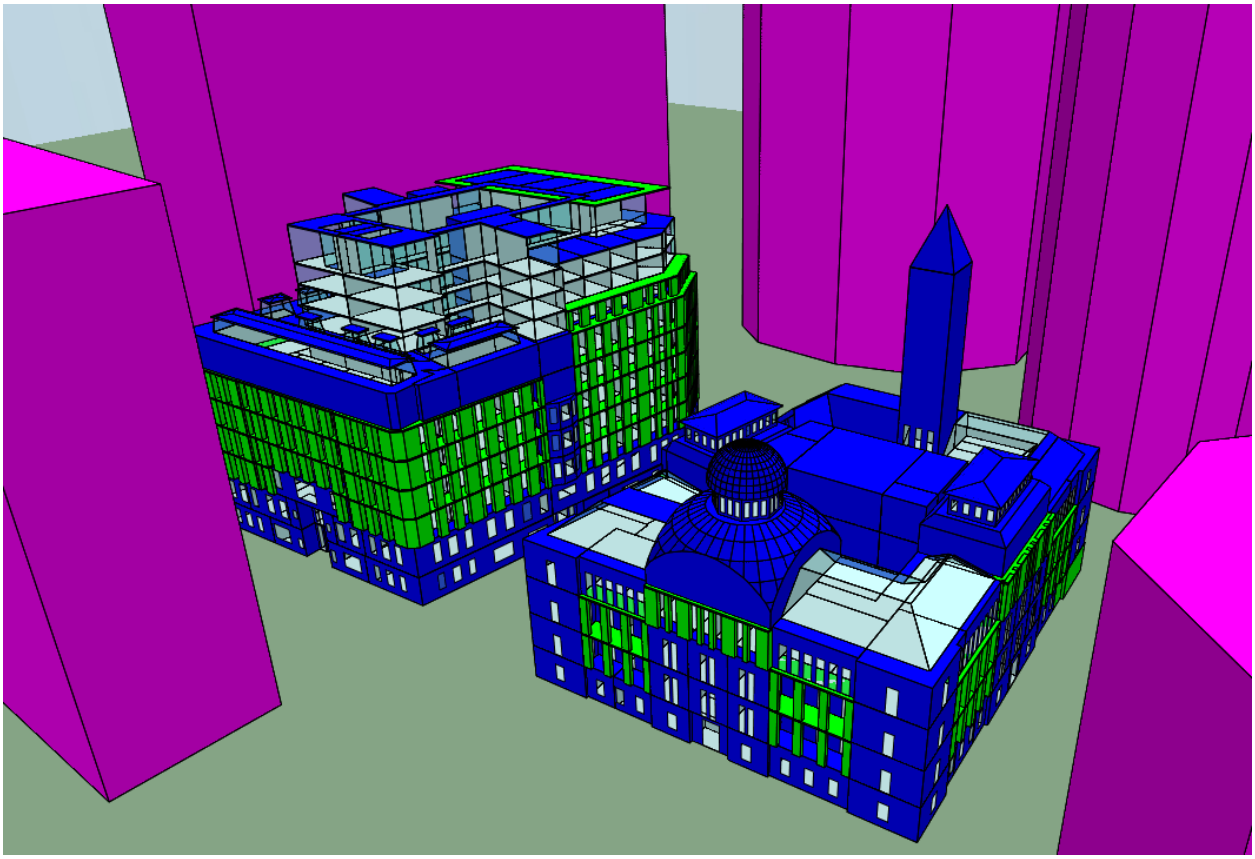
The above results demonstrate the energy consumed by the proposed building, with it's glazing and constructions will consume 99.7% the energy of a building that complies with Deemed-to-Satisfy requirements of the NCC 2015.

7. Conclusion

Case 2 showed the Proposed Building with a building fabric as per the design specification. The building's energy use in the proposed case is less than the energy consumption of the Reference Building and therefore complies with the NCC 2015 Volume One Section JV3 requirements.

It has been demonstrated that the estimated annual energy consumption from the energy analysis meets the requirements of the NCC 2015 Volume One Section J Energy Efficiency JV3 – Verification using a Reference Building.

Appendix A – Energy Model Images



Appendix B – General Construction and Building Sealing

NCC Volume One Section J, J1 Building Fabric
J1.2 – Thermal Construction General

For compliance with Section J1.2 of the NCC 2015, we recommend the following general construction notes to be included in the Architectural Specification or Architectural drawings.

Insulation must comply with AS/NZS 4859.1 and be installed so that it:

- Abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels and the like where the insulation must butt against the member; and
- Forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
- Does not affect the safe or effective operation of a service or fitting.
- Reflective insulation must be installed with:
    - The necessary airspace to achieve the required R-value between a reflective side of the reflective insulation and a building lining or cladding; and
    - The reflective insulation closely fitted against any penetration, door or window opening; and
    - The reflective insulation adequately supported by framing members; and
    - Each adjoining sheet of roll membrane being:
        - Overlapped not less than 50mm; or
        - Taped together

Bulk insulation must be installed so that:

- It maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and
- In a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50mm

J1.3 (d) – Roof and ceiling construction

- A roof that –
    - Is required to achieve a minimum Total R-Value; and
    - has a metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and
    - does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens

  must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the metal sheet roofing and its supporting purlins, metal rafters or metal battens.

J1.5 (c) – Walls

- A wall that –
    - Is required to achieve a minimum Total R-Value; and
    - has a lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to a metal fame; and
    - does not have a wall lining or has a wall lining fixed directly to the same metal frame

  must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the metal sheet roofing and its supporting purlins, metal rafters or metal battens.

J1.6 (a) – Floors

A floor that is part of the envelope of a building, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, including a floor above or below a carpark or a plant room –

- Must achieve the total R-Value specified in table J1.6; and
- With an in-slab or in-screed heating or cooling system, must be insulated around the vertical edge of its perimeter with insulation having an R-Value of not less than 1.0.

J1.6 (b) – Floors

In climate zones 1 to 6, the minimum Total R-Value required in (a) may be reduced by R0.5 provided R0.75 is added to the Total R-Value required for the roof and ceiling construction.

J1.6 (c) – Floors

A concrete slab-on-ground-

- With an in-slab or in-screed heating or cooling system; or
- Located in climate zone 8,

Must have insulation installed around the vertical edge of its perimeter.

J1.6 (d) – Floors

Insulation required by (c) must-

- Have an R-Value of not less than 1.0; and
- Be water resistant; and
- Be continuous from the adjacent finished ground level-
  - To a depth of not less than 300mm; or
  - For the full depth of the vertical edge of the concrete slab-on-ground.

J1.6 (e) – Floors

The requirements of (a)(ii) and (c)(i) do not apply to an in-screed heating or cooling system used solely in a bathroom, amenity area or the like.

NCC Volume One Section J, J3 Building Sealing

J3.2 – Chimneys and Flues

From a review of the current documentation no chimneys or flues of open solid fuel burning appliances were noted and therefore there is no requirement to comply with this section of the standard.

J3.3 – Roof Lights

For compliance with Section J3.3 of the NCC 2015, we recommend the following general notes to be included in the Architectural Specification or Drawings.

A roof light must be sealed, or capable of being sealed, when serving-

- A conditioned space; or
- A habitable room or public area or public area in climate zones 4, 5, 6, 7 and 8.

A roof light that is sealed or capable of being sealed must be constructed with-

- An imperforated ceiling diffuser or the like installed at the ceiling level or internal lining level; or
- A weatherproof seal; or
- A shutter system readily operated either manually, mechanically or electronically by the occupant.

J3.4 – External Windows and Doors

For compliance with Section J3.4 of the NCC 2015, we recommend the following general notes to be included in the Architectural Specification or Drawings.

A seal to restrict air infiltration must be fitted to each edge of all external doors, openable external windows or the like. A seal maybe a foam or rubber compressible strip, fibrous seal or the like.

These requirements do not apply to:

- A window complying with AS 2047; or
- An external louvre door, louvre window, or other such opening; or
- A fire door; or

Appendix B – General Construction and Building Sealing

- A roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security

All doors to the conditioned zone must have a self-closing device.

J3.5 – Exhaust Fans

Any miscellaneous exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditional space. This requirement will be documented by the Mechanical Services consultant.

J3.6 – Construction of roofs, walls and floors

For compliance with Section J3.6 of the NCC 2015, we recommend the following general notes to be included in the Architectural Specification or Drawings.

Roofs, external walls, external floors and any opening such as a window, door or the like must be constructed to minimise air leakage. All Constructions must be:

- Enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
- Sealed by caulking, skirting, architraves, cornices or the like.

These requirements do not apply to openings, grilles and the like required for smoke hazard management.

J3.7 – Evaporative Coolers

For compliance with NCC 2015 Section J3.7, an evaporative cooler must be fitted with a self-closing damper or the like when serving a heated space or a habitable room or a public area of a building in climate zones 4, 5, 6, 7 or 8. Should evaporative coolers be installed in this project, this requirement will be documented by the Mechanical Services consultant.

J8.3 – Facilities for energy monitoring

For compliance with Section J8.3 of the NCC 2015, we recommend the following general notes to be included in the Architectural Specification or Drawings.

A building or sole-occupancy unit with a floor area of more than 500m^2 must have the facility to record the consumption of gas and electricity.

A building with a floor area of more than 2,500m^2 must have the facility to record individually the energy consumption of –

- Air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and
- Artificial lighting; and
- Appliance power; and
- Central hot water supply; and
- Internal transport devices including lifts escalators and travelators where there is more than one serving the building; and
- Other ancillary plant.

A Class 2 building with a floor area of more than 2,500m^2 with less than 500m^2 of common areas is not required to individually record artificial lighting energy consumption.

Appendix C – Occupancy and Operating Profiles

Class 6 Building (Retail Tenancy/Café)

Time Period (Local Standard Time)	Occupancy (Daily)	Artificial Lighting (Daily)	Appliances and Equipment (Daily)	Air-conditioning (Daily)
12:00am to 1:00am	0%	5%	15%	Off
1:00am to 2:00am	0%	5%	15%	Off
2:00am to 3:00am	0%	5%	15%	Off
3:00am to 4:00am	0%	5%	15%	Off
4:00am to 5:00am	0%	5%	15%	Off
5:00am to 6:00am	0%	5%	15%	Off
6:00am to 7:00am	5%	40%	15%	Off
7:00am to 8:00am	5%	40%	40%	On
8:00am to 9:00am	5%	60%	40%	On
9:00am to 10:00am	5%	60%	60%	On
10:00am to 11:00am	20%	90%	60%	On
11:00am to 12:00am	50%	90%	90%	On
12:00pm to 1:00pm	80%	90%	90%	On
1:00pm to 2:00pm	70%	90%	90%	On
2:00pm to 3:00pm	40%	90%	90%	On
3:00pm to 4:00pm	20%	90%	90%	On
4:00pm to 5:00pm	25%	90%	90%	On
5:00pm to 6:00pm	50%	90%	90%	On
6:00pm to 7:00pm	80%	90%	90%	On
7:00pm to 8:00pm	80%	90%	90%	On
8:00pm to 9:00pm	80%	90%	90%	On
9:00pm to 10:00pm	50%	90%	90%	On
10:00pm to 11:00pm	35%	50%	50%	On
11:00pm to 12:00pm	20%	30%	30%	On

The above table is an extract from NCC Volume One Section J, Specification JV, Table 2d Occupancy and Operational profiles of a Class 6 building.

Appendix C – Occupancy and Operating Profiles

Class 3 Building (Hotel)

Time Period (Local Standard Time)	**Occupancy** (Daily)	**Artificial Lighting** (Daily)	**Air-conditioning** (Daily)
12:00am to 1:00am	85%	5%	On
1:00am to 2:00am	85%	5%	On
2:00am to 3:00am	85%	5%	On
3:00am to 4:00am	85%	5%	On
4:00am to 5:00am	85%	5%	On
5:00am to 6:00am	85%	25%	On
6:00am to 7:00am	85%	80%	On
7:00am to 8:00am	85%	80%	On
8:00am to 9:00am	50%	50%	On
9:00am to 10:00am	10%	20%	Off
10:00am to 11:00am	10%	20%	Off
11:00am to 12:00am	10%	20%	Off
12:00pm to 1:00pm	10%	20%	Off
1:00pm to 2:00pm	10%	20%	Off
2:00pm to 3:00pm	10%	20%	Off
3:00pm to 4:00pm	10%	20%	Off
4:00pm to 5:00pm	50%	20%	On
5:00pm to 6:00pm	50%	50%	On
6:00pm to 7:00pm	70%	50%	On
7:00pm to 8:00pm	70%	50%	On
8:00pm to 9:00pm	80%	50%	On
9:00pm to 10:00pm	85%	50%	On
10:00pm to 11:00pm	85%	50%	On
11:00pm to 12:00pm	85%	5%	On

The above table is an extract from NCC Volume One Section J, Specification JV, Table 2g Occupancy and Operational profiles of a Class 3 building. Equipment is a constant 5W/m2.

Appendix D – Glazing Calculators

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-LANDS BUILDING**

Application: **shop display**

Climate zone: **5**

Storey: **Lower Ground**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	453m²		368m²		360m²		675m²		
Option B									n/a
Glazing area (A)	*69.4m²*	.....	*64.5m²*	.....	*55.8m²*	.....	*129m²*		

Number of rows preferred in table below: **23** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Wn01	N		2.40	1.35		8.0	0.80					0.00	1.00	1.00	3.24	8% of 35%
2	Wn02	N		2.40	3.57		8.0	0.80					0.00	1.00	1.00	8.57	20% of 35%
3	Wn03	N		2.40	1.35		8.0	0.80					0.00	1.00	1.00	3.24	8% of 35%
4	Wn04	N		4.15	2.43		8.0	0.80					0.00	1.00	1.00	10.08	24% of 35%
5	Wn05	N		2.40	1.35		8.0	0.80					0.00	1.00	1.00	3.24	8% of 35%
6	Wn06	N		2.40	3.57		8.0	0.80					0.00	1.00	1.00	8.57	20% of 35%
7	Wn07	N		2.40	1.35		8.0	0.80					0.00	1.00	1.00	3.24	8% of 35%
8	Wn08	N		4.95	2.97		8.0	0.80		10.000	4.950	2.02	0.00	0.00	0.19	14.70	2% of 35%
9	Wn09	N		4.95	2.93		8.0	0.80		10.000	4.950	2.02	0.00	0.00	0.19	14.50	2% of 35%
10	We01	E		4.95	5.67		8.0	0.80		10.000	4.950	2.02	0.00	0.00	0.25	28.07	43% of 19%
11	We02	E		4.95	2.96		8.0	0.80		10.000	4.950	2.02	0.00	0.00	0.25	14.65	23% of 19%
12	We03	E		4.95	4.41		8.0	0.80		10.000	4.950	2.02	0.00	0.00	0.25	21.83	34% of 19%
13	Ws01	S		4.95	3.16		8.0	0.80		10.000	4.950	2.02	0.00	0.64	0.54	15.64	27% of 31%
14	Ws02	S		4.95	4.45		8.0	0.80					0.00	1.00	1.00	22.03	40% of 31%
15	Ws03	S		4.95	3.66		8.0	0.80					0.00	1.00	1.00	18.12	33% of 31%
16	Ww01	W		2.40	1.36		8.0	0.80					0.00	1.00	1.00	3.26	4% of 41%
17	Ww02	W		2.40	4.88		8.0	0.80					0.00	1.00	1.00	11.71	14% of 41%
18	Ww03	W		2.40	1.57		8.0	0.80					0.00	1.00	1.00	3.77	5% of 41%
19	Ww04	W		4.15	2.52		8.0	0.80					0.00	1.00	1.00	10.46	13% of 41%
20	Ww05	W		2.40	1.57		8.0	0.80					0.00	1.00	1.00	3.77	5% of 41%
21	Ww06	W		2.40	3.75		8.0	0.80					0.00	1.00	1.00	9.00	11% of 41%
22	Ww07	W		4.95	4.32		8.0	0.80		10.000	4.950	2.02	0.00	0.00	0.26	21.38	12% of 41%
23	Ww08	W		4.95	13.28		8.0	0.80		10.000	4.950	2.02	0.00	0.00	0.26	65.74	37% of 41%

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-LANDS BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **Ground**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	482m²		442m²		504m²		433m²		
Option B									n/a
Glazing area (A)	*122m²*	.....	*117m²*	.....	*125m²*	.....	*132m²*		

Number of rows preferred in table below: **42** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Wn01	N		3.20	1.21		8.0	0.67					0.00	1.00	1.00	3.87	7% of 99%
2	Wn02	N		5.10	3.66		8.0	0.67		device		2.00	0.00	0.00	0.19	18.67	1% of 99%
3	Wn03	N		4.10	4.80		8.0	0.67					0.00	1.00	1.00	19.68	35% of 99%
4	Wn04	N		5.10	3.66		8.0	0.67		device		2.00	0.00	0.00	0.19	18.67	1% of 99%
5	Wn05	N		3.20	1.21		8.0	0.67					0.00	1.00	1.00	3.87	7% of 99%
6	Wn06	N		5.10	2.61		8.0	0.67					0.00	1.00	1.00	13.31	24% of 99%
7	Wn07	N		5.10	2.61		8.0	0.67					0.00	1.00	1.00	13.31	24% of 99%
8	Wn08	N		5.10	1.20		8.0	0.67		device		2.00	0.00	0.00	0.19	6.12	0.4% of 99%
9	Wn09	N		5.10	1.80		8.0	0.67		device		2.00	0.00	0.00	0.19	9.18	1% of 99%
10	Wn10	N		5.10	1.22		8.0	0.67		device		2.00	0.00	0.00	0.19	6.22	0.4% of 99%
11	Wn11	N		5.10	1.80		8.0	0.67		device		2.00	0.00	0.00	0.19	9.18	1% of 99%
12	We01	E		3.30	1.22		8.0	0.56					0.00	1.00	1.00	4.03	6% of 99%
13	We02	E		5.10	5.40		8.0	0.56		device		2.00	0.00	0.00	0.25	27.54	13% of 99%
14	We03	E		4.20	1.64		8.0	0.56					0.00	1.00	1.00	6.89	11% of 99%
15	We04	E		5.00	2.18		8.0	0.56		device		2.00	0.00	0.00	0.25	10.90	5% of 99%
16	We05	E		4.20	1.64		8.0	0.56					0.00	1.00	1.00	6.89	11% of 99%
17	We06	E		5.10	4.88		8.0	0.56		device		2.00	0.00	0.00	0.25	24.89	11% of 99%
18	We07	E		3.30	1.53		8.0	0.56					0.00	1.00	1.00	5.05	8% of 99%
19	We08	E		5.10	1.22		8.0	0.56		device		2.00	0.00	0.00	0.25	6.22	3% of 99%
20	We09	E		5.10	1.22		8.0	0.56		device		2.00	0.00	0.00	0.25	6.22	3% of 99%
21	We10	E		5.10	1.17		8.0	0.56					0.00	1.00	1.00	5.97	10% of 99%
22	We11	E		5.10	2.36		8.0	0.56					0.00	1.00	1.00	12.04	19% of 99%
23	Ws01	S		3.10	1.53		5.9	0.70					0.00	1.00	1.00	4.74	4% of 100%
24	Ws02	S		3.80	2.84		5.9	0.70					0.00	1.00	1.00	10.79	9% of 100%
25	Ws03	S		5.00	2.45		5.9	0.70		0.700	5.000	0.14	0.00	0.96	0.93	12.25	10% of 100%

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
26	Ws04	S		3.80	2.84		5.9	0.70					0.00	1.00	1.00	10.79	9% of 100%
27	Ws05	S		3.10	1.53		5.9	0.70					0.00	1.00	1.00	4.74	4% of 100%
28	Ws06	S		5.10	2.61		5.9	0.70					0.00	1.00	1.00	13.31	11% of 100%
29	Ws07	S		5.10	4.88		5.9	0.70					0.00	1.00	1.00	24.89	20% of 100%
30	Ws08	S		5.10	3.66		5.9	0.70					0.00	1.00	1.00	18.67	15% of 100%
31	Ws09	S		5.10	1.20		5.9	0.70		device		2.00	0.00	0.64	0.54	6.12	5% of 100%
32	Ws10	S		5.10	1.80		5.9	0.70		device		2.00	0.00	0.64	0.54	9.18	7% of 100%
33	Ws11	S		5.10	1.90		5.9	0.70		device		2.00	0.00	0.64	0.54	9.69	8% of 100%
34	Ww01	W		3.20	1.21		8.0	0.22					0.00	1.00	1.00	3.87	3% of 99%
35	Ww02	W		5.10	7.56		8.0	0.22		device		2.00	0.00	0.00	0.26	38.53	22% of 99%
36	Ww03	W		4.15	5.01		8.0	0.22					0.00	1.00	1.00	20.79	18% of 99%
37	Ww04	W		5.10	5.40		8.0	0.22					0.00	1.00	1.00	27.54	24% of 99%
38	Ww05	W		3.20	1.53		8.0	0.22					0.00	1.00	1.00	4.90	4% of 99%
39	Ww06	W		5.10	2.36		8.0	0.22					0.00	1.00	1.00	12.04	11% of 99%
40	Ww07	W		5.10	2.30		8.0	0.22					0.00	1.00	1.00	11.73	10% of 99%
41	Ww08	W		5.10	1.22		8.0	0.22		device		2.00	0.00	0.00	0.26	6.22	4% of 99%
42	Ww09	W		5.10	1.18		8.0	0.22		device		2.00	0.00	0.00	0.26	6.02	3% of 99%

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters.
While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all.
Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-LANDS BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L1**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	520m²		473m²		544m²		464m²		
Option B									n/a
Glazing area (A)	*130m²*	.....	*119m²*	.....	*155m²*	.....	*140m²*		

Number of rows preferred in table below: **42** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Wn01	N		3.20	1.21		8.0	0.69					0.00	1.00	1.00	3.87	7% of 100%
2	Wn02	N		5.50	3.66		8.0	0.69		device		2.00	0.00	0.00	0.19	20.13	1% of 100%
3	Wn03	N		4.10	4.80		8.0	0.69					0.00	1.00	1.00	19.68	33% of 100%
4	Wn04	N		5.50	3.66		8.0	0.69		device		2.00	0.00	0.00	0.19	20.13	1% of 100%
5	Wn05	N		3.20	1.21		8.0	0.69					0.00	1.00	1.00	3.87	7% of 100%
6	Wn06	N		5.50	2.61		8.0	0.69					0.00	1.00	1.00	14.36	24% of 100%
7	Wn07	N		5.50	2.61		8.0	0.69					0.00	1.00	1.00	14.36	24% of 100%
8	Wn08	N		5.50	1.20		8.0	0.69		device		2.00	0.00	0.00	0.19	6.60	0.4% of 100%
9	Wn09	N		5.50	1.80		8.0	0.69		device		2.00	0.00	0.00	0.19	9.90	1% of 100%
10	Wn10	N		5.50	1.22		8.0	0.69		device		2.00	0.00	0.00	0.19	6.71	0.4% of 100%
11	Wn11	N		5.50	1.80		8.0	0.69		device		2.00	0.00	0.00	0.19	9.90	1% of 100%
12	We01	E		3.30	1.22		8.0	0.54					0.00	1.00	1.00	4.03	6% of 99%
13	We02	E		5.50	5.40		8.0	0.54		device		2.00	0.00	0.00	0.25	29.70	12% of 99%
14	We03	E		4.20	4.96		8.0	0.54					0.00	1.00	1.00	20.83	30% of 99%
15												ROW SKIPPED (OK if intentional)					
16												ROW SKIPPED (OK if intentional)					
17	We04	E		5.50	4.88		8.0	0.54		device		2.00	0.00	0.00	0.25	26.84	11% of 99%
18	We05	E		3.30	1.53		8.0	0.54					0.00	1.00	1.00	5.05	7% of 99%
19	We06	E		5.50	1.22		8.0	0.54		device		2.00	0.00	0.00	0.25	6.71	3% of 99%
20	We07	E		5.50	1.22		8.0	0.54		device		2.00	0.00	0.00	0.25	6.71	3% of 99%
21	We08	E		5.50	1.17		8.0	0.54					0.00	1.00	1.00	6.44	9% of 99%
22	We09	E		5.50	2.36		8.0	0.54					0.00	1.00	1.00	12.98	19% of 99%
23	Ws01	S		3.10	1.53		5.3	0.80					0.00	1.00	1.00	4.74	3% of 99%
24	Ws02	S		4.20	13.51		5.3	0.80					0.00	1.00	1.00	56.74	37% of 99%
25												ROW SKIPPED (OK if intentional)					

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
26												ROW SKIPPED (OK if intentional)					
27	Ws03	S		3.10	1.53		5.3	0.80					0.00	1.00	1.00	4.74	3% of 99%
28	Ws04	S		5.50	2.61		5.3	0.80					0.00	1.00	1.00	14.36	9% of 99%
29	Ws05	S		5.50	4.88		5.3	0.80					0.00	1.00	1.00	26.84	18% of 99%
30	Ws06	S		5.50	3.66		5.3	0.80					0.00	1.00	1.00	20.13	13% of 99%
31	Ws07	S		5.50	1.20		5.3	0.80		device		2.00	0.00	0.64	0.54	6.60	4% of 99%
32	Ws08	S		5.50	1.80		5.3	0.80		device		2.00	0.00	0.64	0.54	9.90	6% of 99%
33	Ws09	S		5.50	1.90		5.3	0.80		device		2.00	0.00	0.64	0.54	10.45	6% of 99%
34	Ww01	W		3.20	1.21		8.0	0.23					0.00	1.00	1.00	3.87	3% of 100%
35	Ww02	W		5.50	7.56		8.0	0.23		device		2.00	0.00	0.00	0.26	41.55	22% of 100%
36	Ww03	W		4.15	5.01		8.0	0.23					0.00	1.00	1.00	20.79	17% of 100%
37	Ww04	W		5.50	5.40		8.0	0.23					0.00	1.00	1.00	29.70	25% of 100%
38	Ww05	W		3.20	1.53		8.0	0.23					0.00	1.00	1.00	4.90	4% of 100%
39	Ww06	W		5.50	2.36		8.0	0.23					0.00	1.00	1.00	12.98	11% of 100%
40	Ww07	W		5.50	2.30		8.0	0.23					0.00	1.00	1.00	12.65	11% of 100%
41	Ww08	W		5.50	1.22		8.0	0.23		device		2.00	0.00	0.00	0.26	6.71	4% of 100%
42	Ww09	W		5.50	1.18		8.0	0.23		device		2.00	0.00	0.00	0.26	6.49	3% of 100%

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if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-LANDS BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L2**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	452m²		434m²		458m²		429m²		
Option B									n/a
Glazing area (A)	*168m²*	.....	*177m²*	.....	*172m²*	.....	*186m²*		

Number of rows preferred in table below: **26** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element			Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)		Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Wn01		N		3.60	1.38		8.0	0.48					0.00	1.00	1.00	4.97	6% of 99%
2	Wn02		N		3.55	6.00		8.0	0.48					0.00	1.00	1.00	21.30	27% of 99%
3	Wn03		N		5.30	16.58		8.0	0.48		device		2.00	0.00	0.00	0.19	87.87	
4	Wn04		N		3.55	6.00		8.0	0.48					0.00	1.00	1.00	21.30	27% of 99%
5	Wn05		N		3.60	1.38		8.0	0.48					0.00	1.00	1.00	4.97	6% of 99%
6	Wn06		N		5.30	2.61		8.0	0.48					0.00	1.00	1.00	13.83	17% of 99%
7	Wn07		N		5.30	2.58		8.0	0.48					0.00	1.00	1.00	13.67	17% of 99%
8	We01		E		3.67	1.38		8.0	0.31					0.00	1.00	1.00	5.06	5% of 99%
9	We02		E		3.50	8.00		8.0	0.31					0.00	1.00	1.00	28.00	25% of 99%
10	We03		E		5.30	17.30		8.0	0.31		device		2.00	0.00	0.00	0.25	91.69	24% of 99%
11	We04		E		3.50	8.00		8.0	0.31					0.00	1.00	1.00	28.00	25% of 99%
12	We05		E		3.65	1.38		8.0	0.31					0.00	1.00	1.00	5.04	5% of 99%
13	We06		E		5.30	1.18		8.0	0.31					0.00	1.00	1.00	6.25	6% of 99%
14	We07		E		5.30	2.36		8.0	0.31					0.00	1.00	1.00	12.51	11% of 99%
15	Ws01		S		3.50	1.38		4.3	0.80					0.00	1.00	1.00	4.83	3% of 99%
16	Ws02		S		5.30	24.30		4.3	0.80		device		2.00	0.00	0.64	0.54	128.79	74% of 99%
17	Ws03		S		3.50	1.38		4.3	0.80					0.00	1.00	1.00	4.83	3% of 99%
18	Ws04		S		5.30	2.61		4.3	0.80					0.00	1.00	1.00	13.83	8% of 99%
19	Ws05		S		5.30	3.66		4.3	0.80					0.00	1.00	1.00	19.40	12% of 99%
20	Ww01		W		3.64	1.36		6.3	0.15					0.00	1.00	1.00	4.95	3% of 100%
21	Ww02		W		3.45	8.00		6.3	0.15					0.00	1.00	1.00	27.60	18% of 100%
22	Ww03		W		5.30	18.08		6.3	0.15		device		2.00	0.00	0.00	0.26	95.82	42% of 100%
23	Ww04		W		3.40	8.00		6.3	0.15					0.00	1.00	1.00	27.20	18% of 100%
24	Ww05		W		3.64	1.37		6.3	0.15					0.00	1.00	1.00	4.99	3% of 100%
25	Ww06		W		5.30	2.40		6.3	0.15					0.00	1.00	1.00	12.72	8% of 100%

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-LANDS BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L3**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	370m²		277m²		361m²		284m²		
Option B									n/a
Glazing area (A)	*129m²*	.....	*116m²*	.....	*66.3m²*	.....	*89.5m²*		

Number of rows preferred in table below: **13** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Wn01	N		3.50	17.90		8.0	0.30					0.00	1.00	1.00	62.65	48% of 99%
2	Wn02	N		3.50	17.10		8.0	0.30					0.00	1.00	1.00	59.85	46% of 99%
3	Wn03	N		4.00	0.90		8.0	0.30					0.00	1.00	1.00	3.60	3% of 99%
4	Wn04	N		3.50	0.90		8.0	0.30					0.00	1.00	1.00	3.15	2% of 99%
5	We01	E		3.50	21.03		8.0	0.14					0.00	1.00	1.00	73.62	63% of 73%
6	We02	E		3.50	6.65		8.0	0.14					0.00	1.00	1.00	23.28	20% of 73%
7	We03	E		3.50	5.50		8.0	0.14					0.00	1.00	1.00	19.25	17% of 73%
8	Ws01	S		3.50	8.95		7.8	0.80					0.00	1.00	1.00	31.33	47% of 100%
9	Ws02	S		3.50	5.20		7.8	0.80					0.00	1.00	1.00	18.20	27% of 100%
10	Ws03	S		3.50	2.40		7.8	0.80					0.00	1.00	1.00	8.40	13% of 100%
11	Ws04	S		3.50	2.40		7.8	0.80					0.00	1.00	1.00	8.40	13% of 100%
12	Ww01	W		3.50	20.10		4.3	0.24					0.00	1.00	1.00	70.35	79% of 100%
13	Ww02	W		3.50	5.46		4.3	0.24					0.00	1.00	1.00	19.12	21% of 100%

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if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-LANDS BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L5**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	37.7m²		76.3m²		36.5m²		76.3m²		
Option B									n/a
Glazing area (A)	*15.4m²*	.....	*34.7m²*	.....	*15.4m²*	.....	*34.7m²*		

Number of rows preferred in table below: **8** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Wn01	N		2.50	3.08		8.0	0.29		0.600	3.000	0.20	0.50	0.99	0.93	7.70	50% of 97%
2	Wn02	N		2.50	3.08		8.0	0.29		0.600	3.000	0.20	0.50	0.99	0.93	7.70	50% of 97%
3	We01	E		2.50	6.93		8.0	0.18		0.600	3.000	0.20	0.50	0.98	0.96	17.33	50% of 97%
4	We02	E		2.50	6.93		8.0	0.18		0.600	3.000	0.20	0.50	0.98	0.96	17.33	50% of 97%
5	Ws01	S		2.50	3.08		3.8	0.80		0.600	3.000	0.20	0.50	0.98	0.96	7.70	50% of 98%
6	Ws02	S		2.50	3.08		3.8	0.80		0.600	3.000	0.20	0.50	0.98	0.96	7.70	50% of 98%
7	Ww01	W		2.50	6.93		2.9	0.18		0.600	3.000	0.20	0.50	0.98	0.95	17.33	50% of 100%
8	Ww02	W		2.50	6.93		2.9	0.18		0.600	3.000	0.20	0.50	0.98	0.95	17.33	50% of 100%

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-LANDS BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L6**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	10.1m²	10.2m²	9.92m²	10.1m²	10.4m²	10.2m²	9.76m²	10.4m²	
Option B									n/a
Glazing area (A)	*3.6m²*	*3.6m²*	*3.6m²*	*3.6m²*	*3.6m²*	*3.6m²*	*3.6m²*	*3.6m²*	

Number of rows preferred in table below: **8** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Wn	N		2.00	1.80		8.0	0.30		0.500	2.800	0.18	0.80	1.00	0.97	3.60	100% of 97%
2	Wne	NE		2.00	1.80		8.0	0.23		0.500	2.800	0.18	0.80	1.00	0.98	3.60	100% of 96%
3	We	E		2.00	1.80		8.0	0.22		0.500	2.800	0.18	0.80	0.99	0.98	3.60	100% of 98%
4	Wse	SE		2.00	1.80		3.3	0.27		0.500	2.800	0.18	0.80	0.99	0.98	3.60	100% of 99%
5	Ws	S		2.00	1.80		4.4	0.70		0.500	2.800	0.18	0.80	0.99	0.98	3.60	100% of 100%
6	Wsw	SW		2.00	1.80		3.3	0.39		0.500	2.800	0.18	0.80	0.99	0.98	3.60	100% of 100%
7	Ww	W		2.00	1.80		3.3	0.22		0.500	2.800	0.18	0.80	0.99	0.98	3.60	100% of 100%
8	Wnw	NW		2.00	1.80		8.0	0.28		0.500	2.800	0.18	0.80	0.99	0.98	3.60	100% of 99%

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if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **shop display**

Climate zone: **5**

Storey: **Lower Ground**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A					40.3m²	53.4m²	77.3m²		
Option B									n/a
Glazing area (A)					*11.6m²*	*13m²*	*19m²*		

Number of rows preferred in table below: **9** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance				P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)			P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWs01	S		2.79	4.16		8.0	0.80						0.00	1.00	1.00	11.61	100% of 58%
2	EWsw01	SW		2.79	1.16		8.0	0.80						0.00	1.00	1.00	3.24	25% of 57%
3	EWsw02	SW		2.79	1.16		8.0	0.80						0.00	1.00	1.00	3.24	25% of 57%
4	EWsw03	SW		2.79	1.16		8.0	0.80						0.00	1.00	1.00	3.24	25% of 57%
5	EWsw04	SW		2.79	1.17		8.0	0.80						0.00	1.00	1.00	3.26	25% of 57%
6	EWw01	W		2.28	1.35		8.0	0.80						0.00	1.00	1.00	3.08	16% of 81%
7	EWw02	W		2.28	1.49		8.0	0.80						0.00	1.00	1.00	3.40	18% of 81%
8	EWw03	W		2.80	1.34		8.0	0.80						0.00	1.00	1.00	3.75	20% of 81%
9	EWw04	W		2.50	3.50		8.0	0.80						0.00	1.00	1.00	8.75	46% of 81%

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if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **Lower Ground**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	196m²		137m²				149m²		
Option B									n/a
Glazing area (A)	*54.2m²*	.....	*23.8m²*	.....	.....	.....	*41.5m²*		

Number of rows preferred in table below: **24** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		2.50	1.04		8.0	0.35					0.00	1.00	1.00	2.60	5% of 100%
2	EWn02	N		2.50	1.35		8.0	0.35					0.00	1.00	1.00	3.38	6% of 100%
3	EWn03	N		2.50	1.04		8.0	0.35					0.00	1.00	1.00	2.60	5% of 100%
4	EWn04	N		2.50	3.50		8.0	0.35					0.00	1.00	1.00	8.75	16% of 100%
5	EWn05	N		2.00	0.89		8.0	0.35					0.00	1.00	1.00	1.78	3% of 100%
6	EWn06	N		4.50	0.88		8.0	0.35					0.00	1.00	1.00	3.96	7% of 100%
7	EWn07	N		4.50	1.82		8.0	0.35					0.00	1.00	1.00	8.19	15% of 100%
8	EWn08	N		4.50	0.94		8.0	0.35					0.00	1.00	1.00	4.21	8% of 100%
9	EWn09	N		1.60	0.88		8.0	0.35					0.00	1.00	1.00	1.41	3% of 100%
10	EWn10	N		2.50	3.50		8.0	0.35					0.00	1.00	1.00	8.75	16% of 100%
11	EWn11	N		2.50	1.04		8.0	0.35					0.00	1.00	1.00	2.60	5% of 100%
12	EWn12	N		2.50	1.35		8.0	0.35					0.00	1.00	1.00	3.38	6% of 100%
13	EWn13	N		2.50	1.04		8.0	0.35					0.00	1.00	1.00	2.60	5% of 100%
14	EWe01	E		2.25	3.52		8.0	0.46					0.00	1.00	1.00	7.92	33% of 99%
15	EWe02	E		2.25	3.52		8.0	0.46					0.00	1.00	1.00	7.92	33% of 99%
16	EWe03	E		2.25	3.52		8.0	0.46					0.00	1.00	1.00	7.92	33% of 99%
17	EWw05	W		4.50	0.92		8.0	0.22		1.700	4.500	0.38	0.00	0.81	0.74	4.12	9% of 99%
18	EWw06	W		4.50	1.89		8.0	0.22		1.700	4.500	0.38	0.00	0.81	0.74	8.51	18% of 99%
19	EWw07	W		4.50	0.92		8.0	0.22		1.700	4.500	0.38	0.00	0.81	0.74	4.12	9% of 99%
20	EWw08	W		2.35	3.47		8.0	0.22					0.00	1.00	1.00	8.15	21% of 99%
21	EWw09	W		2.35	3.45		8.0	0.22					0.00	1.00	1.00	8.11	21% of 99%
22	EWw10	W		2.50	1.04		8.0	0.22					0.00	1.00	1.00	2.60	7% of 99%
23	EWw11	W		2.50	1.32		8.0	0.22					0.00	1.00	1.00	3.30	8% of 99%
24	EWw12	W		2.50	1.04		8.0	0.22					0.00	1.00	1.00	2.60	7% of 99%

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **Ground**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	281m²		364m²		249m²	53.2m²	408m²		
Option B									n/a
Glazing area (A)	*134m²*	.....	*179m²*	.....	*78.4m²*	*14.6m²*	*213m²*		

Number of rows preferred in table below: **35** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element			Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)		Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01		N		3.00	1.17		8.0	0.26					0.00	1.00	1.00	3.51	3% of 95%
2	EWn02		N		2.94	1.48		8.0	0.26					0.00	1.00	1.00	4.35	4% of 95%
3	EWn03		N		2.94	1.17		8.0	0.26					0.00	1.00	1.00	3.44	3% of 95%
4	EWn04		N		2.94	1.48		8.0	0.26					0.00	1.00	1.00	4.35	4% of 95%
5	EWn05		N		2.94	1.48		8.0	0.26					0.00	1.00	1.00	4.35	4% of 95%
6	EWn06		N		1.33	0.87		8.0	0.26					0.00	1.00	1.00	1.16	1% of 95%
7	EWn07		N		4.80	3.54		8.0	0.26		2.450	4.800	0.51	0.00	0.75	0.53	16.99	2% of 95%
8	EWn08		N		1.33	0.87		8.0	0.26					0.00	1.00	1.00	1.16	1% of 95%
9	EWn09		N		2.94	1.49		8.0	0.26					0.00	1.00	1.00	4.38	4% of 95%
10	EWn10		N		3.00	1.48		8.0	0.26					0.00	1.00	1.00	4.44	4% of 95%
11	EWn11		N		3.03	1.18		8.0	0.26					0.00	1.00	1.00	3.58	3% of 95%
12	EWn12		N		3.03	1.47		8.0	0.26					0.00	1.00	1.00	4.45	4% of 95%
13	EWn13		N		3.03	1.18		8.0	0.26					0.00	1.00	1.00	3.58	3% of 95%
14	EWn14		N		4.80	15.48		8.0	0.26					0.00	1.00	1.00	74.30	62% of 95%
15	EWe01		E		3.05	12.47		8.0	0.16					0.00	1.00	1.00	38.03	21% of 98%
16	EWe02		E		3.06	2.41		8.0	0.16					0.00	1.00	1.00	7.37	4% of 98%
17	EWe03		E		3.10	2.77		8.0	0.16					0.00	1.00	1.00	8.59	5% of 98%
18	EWe04		E		3.05	6.07		8.0	0.16					0.00	1.00	1.00	18.51	10% of 98%
19	EWe05		E		4.80	6.90		8.0	0.16					0.00	1.00	1.00	33.12	19% of 98%
20	EWe06		E		4.80	15.25		8.0	0.16					0.00	1.00	1.00	73.19	41% of 98%
21	EWs01		S		3.05	6.64		4.8	0.80					0.00	1.00	1.00	20.25	26% of 99%
22	EWs02		S		4.80	3.05		4.8	0.80					0.00	1.00	1.00	14.64	19% of 99%
23	EWs03		S		3.05	6.64		4.8	0.80					0.00	1.00	1.00	20.25	26% of 99%
24	EWs04		S		4.80	4.84		4.8	0.80					0.00	1.00	1.00	23.23	30% of 99%
25	EWsw01		SW		3.05	4.80		2.6	0.80					0.00	1.00	1.00	14.64	100% of 99%

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
26	EWw01	W		2.94	1.38		2.0	0.16					0.00	1.00	1.00	4.06	2% of 100%
27	EWw02	W		3.05	1.54		2.0	0.16					0.00	1.00	1.00	4.70	2% of 100%
28	EWw03	W		2.94	1.38		2.0	0.16					0.00	1.00	1.00	4.06	2% of 100%
29	EWw04	W		3.05	6.64		2.0	0.16					0.00	1.00	1.00	20.25	10% of 100%
30	EWw05	W		1.50	3.40		2.0	0.16					0.00	1.00	1.00	5.10	2% of 100%
31	EWw06	W		3.03	2.94		2.0	0.16					0.00	1.00	1.00	8.91	4% of 100%
32	EWw07	W		3.05	2.96		2.0	0.16					0.00	1.00	1.00	9.03	4% of 100%
33	EWw08	W		3.04	2.65		2.0	0.16					0.00	1.00	1.00	8.06	4% of 100%
34	EWw09	W		3.14	1.17		2.0	0.16					0.00	1.00	1.00	3.67	2% of 100%
35	EWw10	W		4.80	30.20		2.0	0.16					0.00	1.00	1.00	144.94	68% of 100%

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

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if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L1**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	261m²		310m²		234m²	50.9m²	321m²	9.41m²	
Option B									n/a
Glazing area (A)	*195m²*	.....	*274m²*	.....	*171m²*	*40.9m²*	*304m²*	*2.6m²*	

Number of rows preferred in table below: **19** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		4.50	12.46		8.0	0.31		device		2.00	0.00	0.00	0.19	56.07	
2	EWn02	N				21.59	8.0	0.31					0.00	1.00	1.00	21.59	25% of 100%
3	EWn03	N		4.50	11.51		8.0	0.31		device		2.00	0.00	0.00	0.19	51.80	
4	EWn04	N		4.50	14.66		8.0	0.31					0.00	1.00	1.00	65.97	75% of 100%
5	EWe01	E		4.50	23.86		8.0	0.23		device		2.00	0.00	0.00	0.25	107.37	28% of 99%
6	EWe02	E		4.50	5.49		8.0	0.23		device		2.00	0.00	0.00	0.25	24.71	7% of 99%
7	EWe03	E		2.92	4.53		8.0	0.23					0.00	1.00	1.00	13.23	12% of 99%
8	EWe04	E		4.50	18.06		8.0	0.23		device		2.00	0.00	0.00	0.25	81.27	22% of 99%
9	EWe05	E		4.50	6.37		8.0	0.23					0.00	1.00	1.00	28.67	26% of 99%
10	EWe06	E		4.50	4.27		8.0	0.23		device		2.00	0.00	0.00	0.25	19.22	5% of 99%
11	EWs01	S		4.50	3.42		2.7	0.80					0.00	1.00	1.00	15.39	10% of 100%
12	EWs02	S		4.50	34.49		2.7	0.80		device		2.00	0.00	0.64	0.54	155.21	90% of 100%
13	EWsw01	SW		2.50	1.04		2.1	0.10					0.00	1.00	1.00	2.60	7% of 99%
14	EWsw02	SW		4.50	8.50		2.1	0.10		device		2.00	0.00	0.39	0.34	38.25	93% of 99%
15	EWw01	W		4.50	21.63		2.8	0.08		device		2.00	0.00	0.00	0.26	97.34	27% of 99%
16	EWw02	W		2.50	1.52		2.8	0.08					0.00	1.00	1.00	3.80	2% of 99%
17	EWw03	W		4.50	21.86		2.8	0.08		device		2.00	0.00	0.00	0.26	98.37	27% of 99%
18	EWw04	W		4.50	23.24		2.8	0.08					0.00	1.00	1.00	104.58	45% of 99%
19	EWnw01	NW		2.50	1.04		8.0	0.33					0.00	1.00	1.00	2.60	100% of 99%

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L02**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	252m²		278m²		231m²	47.3m²	274m²	9.8m²	
Option B									n/a
Glazing area (A)	*231m²*	.....	*257m²*	.....	*213m²*	*40.7m²*	*268m²*	*2.6m²*	

Number of rows preferred in table below: **17** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance				P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)			P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		4.30	38.65		8.0	0.37			device		2.00	0.00	0.00	0.19	166.20	
2	EWn02	N		4.30	15.05		8.0	0.37						0.00	1.00	1.00	64.72	100% of 100%
3	EWe01	E		4.30	24.40		8.0	0.21			device		2.00	0.00	0.00	0.25	104.92	28% of 100%
4	EWe02	E		4.30	5.87		8.0	0.21			device		2.00	0.00	0.00	0.25	25.24	7% of 100%
5	EWe03	E		2.50	4.58		8.0	0.21						0.00	1.00	1.00	11.45	11% of 100%
6	EWe04	E		4.30	18.33		8.0	0.21			device		2.00	0.00	0.00	0.25	78.82	21% of 100%
7	EWe05	E		4.30	4.19		8.0	0.21						0.00	1.00	1.00	18.01	17% of 100%
8	EWe06	E		4.30	4.28		8.0	0.21						0.00	1.00	1.00	18.42	17% of 100%
9	EWs01	S		4.30	14.99		2.3	0.80						0.00	1.00	1.00	64.45	34% of 100%
10	EWs02	S		4.30	34.56		2.3	0.80			device		2.00	0.00	0.64	0.54	148.61	66% of 100%
11	EWsw01	SW		2.50	1.04		1.8	0.22						0.00	1.00	1.00	2.60	9% of 100%
12	EWsw02	SW		4.30	8.85		1.8	0.22			device		2.00	0.00	0.39	0.34	38.06	91% of 100%
13	EWw01	W		4.30	21.89		2.8	0.08			device		2.00	0.00	0.00	0.26	94.13	30% of 99%
14	EWw02	W		2.50	1.52		2.8	0.08						0.00	1.00	1.00	3.80	2% of 99%
15	EWw03	W		4.30	22.14		2.8	0.08			device		2.00	0.00	0.00	0.26	95.18	30% of 99%
16	EWw04	W		4.30	17.52		2.8	0.08						0.00	1.00	1.00	75.35	38% of 99%
17	EWnw01	NW		2.50	1.04		8.0	0.34						0.00	1.00	1.00	2.60	100% of 99%

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if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L03**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	246m²		272m²		226m²	46.2m²	268m²	9.58m²	
Option B									n/a
Glazing area (A)	*226m²*	.....	*251m²*	.....	*208m²*	*39.8m²*	*262m²*	*2.6m²*	

Number of rows preferred in table below: **17** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance				P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)			P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		4.20	38.65		8.0	0.37			device		2.00	0.00	0.00	0.19	162.33	
2	EWn02	N		4.20	15.05		8.0	0.37						0.00	1.00	1.00	63.22	100% of 100%
3	EWe01	E		4.20	24.40		8.0	0.20			device		2.00	0.00	0.00	0.25	102.48	28% of 97%
4	EWe02	E		4.20	5.87		8.0	0.20			device		2.00	0.00	0.00	0.25	24.65	7% of 97%
5	EWe03	E		2.50	4.58		8.0	0.20						0.00	1.00	1.00	11.45	11% of 97%
6	EWe04	E		4.20	18.33		8.0	0.20			device		2.00	0.00	0.00	0.25	76.99	21% of 97%
7	EWe05	E		4.20	4.19		8.0	0.20						0.00	1.00	1.00	17.59	17% of 97%
8	EWe06	E		4.20	4.28		8.0	0.20						0.00	1.00	1.00	18.00	17% of 97%
9	EWs01	S		4.20	14.99		2.3	0.80						0.00	1.00	1.00	62.95	34% of 100%
10	EWs02	S		4.20	34.56		2.3	0.80			device		2.00	0.00	0.64	0.54	145.15	66% of 100%
11	EWsw01	SW		2.50	1.04		1.9	0.10						0.00	1.00	1.00	2.60	8% of 96%
12	EWsw02	SW		4.20	8.85		1.9	0.10			device		2.00	0.00	0.39	0.34	37.17	92% of 96%
13	EWw01	W		4.20	21.89		2.4	0.10			device		2.00	0.00	0.00	0.26	91.94	29% of 100%
14	EWw02	W		2.50	1.52		2.4	0.10						0.00	1.00	1.00	3.80	2% of 100%
15	EWw03	W		4.20	22.14		2.4	0.10			device		2.00	0.00	0.00	0.26	92.97	29% of 100%
16	EWw04	W		4.20	17.52		2.4	0.10						0.00	1.00	1.00	73.60	40% of 100%
17	EWnw01	NW		2.50	1.04		8.0	0.34						0.00	1.00	1.00	2.60	100% of 99%

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if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L04**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	246m²		272m²		226m²	37.2m²	284m²		
Option B									n/a
Glazing area (A)	*226m²*	.....	*251m²*	.....	*208m²*	*37.2m²*	*259m²*		

Number of rows preferred in table below: **14** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		4.20	38.65		8.0	0.37		device		2.00	0.00	0.00	0.19	162.33	
2	EWn02	N		4.20	15.05		8.0	0.37					0.00	1.00	1.00	63.22	100% of 100%
3	EWe01	E		4.20	24.40		8.0	0.23		device		2.00	0.00	0.00	0.25	102.48	32% of 99%
4	EWe02	E		4.20	5.87		8.0	0.23		device		2.00	0.00	0.00	0.25	24.65	8% of 99%
5	EWe03	E		2.50	4.58		8.0	0.23					0.00	1.00	1.00	11.45	12% of 99%
6	EWe04	E		4.20	18.33		8.0	0.23		device		2.00	0.00	0.00	0.25	76.99	24% of 99%
7	EWe05	E		4.20	4.19		8.0	0.23		device		2.00	0.00	0.00	0.25	17.59	5% of 99%
8	EWe06	E		4.20	4.28		8.0	0.23					0.00	1.00	1.00	18.00	19% of 99%
9	EWs01	S		4.20	14.99		2.3	0.80					0.00	1.00	1.00	62.95	34% of 100%
10	EWs02	S		4.20	34.56		2.3	0.80		device		2.00	0.00	0.64	0.54	145.15	66% of 100%
11	EWsw01	SW		4.20	8.85		1.5	0.13		device		2.00	0.00	0.39	0.34	37.17	100% of 91%
12	EWw01	W		4.20	21.89		3.0	0.08		device		2.00	0.00	0.00	0.26	91.94	30% of 99%
13	EWw02	W		4.20	22.14		3.0	0.08					0.00	1.00	1.00	92.97	46% of 99%
14	EWw03	W		4.20	17.52		3.0	0.08		device		2.00	0.00	0.00	0.26	73.60	24% of 99%

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L05**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	433m²		399m²		349m²	44.3m²	403m²		
Option B									n/a
Glazing area (A)	*166m²*	.....	*230m²*	.....	*292m²*	*44.3m²*	*253m²*		

Number of rows preferred in table below: **55** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element			Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)		Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01		N		5.00	15.05		8.0	0.28					0.00	1.00	1.00	75.26	45% of 98%
2	EWn02		N		1.40	36.72		8.0	0.28					0.00	1.00	1.00	51.41	31% of 98%
3	EWn03		N		1.40	3.47		8.0	0.28					0.00	1.00	1.00	4.86	3% of 98%
4	EWn04		N		1.40	3.47		8.0	0.28					0.00	1.00	1.00	4.86	3% of 98%
5	EWn05		N		1.40	3.47		8.0	0.28					0.00	1.00	1.00	4.86	3% of 98%
6	EWn06		N		1.40	4.48		8.0	0.28					0.00	1.00	1.00	6.27	4% of 98%
7	EWn07		N		1.40	3.40		8.0	0.28					0.00	1.00	1.00	4.76	3% of 98%
8	EWn08		N		1.40	3.35		8.0	0.28					0.00	1.00	1.00	4.69	3% of 98%
9	EWn09		N		1.40	3.34		8.0	0.28					0.00	1.00	1.00	4.68	3% of 98%
10	EWn10		N		1.40	1.75		8.0	0.28					0.00	1.00	1.00	2.45	1% of 98%
11	EWn11		N		1.40	1.72		8.0	0.28					0.00	1.00	1.00	2.41	1% of 98%
12	EWe01		E		5.00	5.87		8.0	0.25		device		2.00	0.00	0.00	0.25	29.34	7% of 100%
13	EWe02		E		2.50	4.53		8.0	0.25					0.00	1.00	1.00	11.33	9% of 100%
14	EWe03		E		5.00	18.33		8.0	0.25		device		2.00	0.00	0.00	0.25	91.66	21% of 100%
15	EWe04		E		5.00	4.19		8.0	0.25					0.00	1.00	1.00	20.94	16% of 100%
16	EWe05		E		5.00	4.28		8.0	0.25		device		2.00	0.00	0.00	0.25	21.42	5% of 100%
17	EWe06		E		1.40	4.37		8.0	0.25					0.00	1.00	1.00	6.12	5% of 100%
18	EWe07		E		1.40	2.00		8.0	0.25					0.00	1.00	1.00	2.80	2% of 100%
19	EWe08		E		1.40	2.00		8.0	0.25					0.00	1.00	1.00	2.80	2% of 100%
20	EWe09		E		1.40	2.00		8.0	0.25					0.00	1.00	1.00	2.80	2% of 100%
21	EWe10		E		1.40	12.12		8.0	0.25					0.00	1.00	1.00	16.97	13% of 100%
22	EWe11		E		1.40	3.69		8.0	0.25					0.00	1.00	1.00	5.17	4% of 100%
23	EWe12		E		1.40	3.77		8.0	0.25					0.00	1.00	1.00	5.28	4% of 100%
24	EWe13		E		1.40	3.01		8.0	0.25					0.00	1.00	1.00	4.21	3% of 100%
25	EWe14		E		1.40	2.97		8.0	0.25					0.00	1.00	1.00	4.16	3% of 100%

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
26	EWe15	E		1.40	3.43		8.0	0.25					0.00	1.00	1.00	4.80	4% of 100%
27	EWs01	S		5.00	14.99		2.3	0.80					0.00	1.00	1.00	74.94	28% of 95%
28	EWs02	S		5.00	34.56		2.3	0.80		device		2.00	0.00	0.64	0.54	172.80	55% of 95%
29	EWs03	S		1.40	3.47		2.3	0.80					0.00	1.00	1.00	4.86	2% of 95%
30	EWs04	S		1.40	3.47		2.3	0.80					0.00	1.00	1.00	4.86	2% of 95%
31	EWs05	S		1.40	3.47		2.3	0.80					0.00	1.00	1.00	4.86	2% of 95%
32	EWs06	S		1.40	3.47		2.3	0.80					0.00	1.00	1.00	4.86	2% of 95%
33	EWs07	S		1.40	4.48		2.3	0.80					0.00	1.00	1.00	6.27	2% of 95%
34	EWs08	S		1.40	3.40		2.3	0.80					0.00	1.00	1.00	4.76	2% of 95%
35	EWs09	S		1.40	3.35		2.3	0.80					0.00	1.00	1.00	4.69	2% of 95%
36	EWs10	S		1.40	3.34		2.3	0.80					0.00	1.00	1.00	4.68	2% of 95%
37	EWs11	S		1.40	1.75		2.3	0.80					0.00	1.00	1.00	2.45	1% of 95%
38	EWs12	S		1.40	1.72		2.3	0.80					0.00	1.00	1.00	2.41	1% of 95%
39	EWsw01	SW		5.00	8.85		1.7	0.10		device		2.00	0.00	0.39	0.34	44.25	100% of 100%
40	EWw01	W		5.00	22.14		4.2	0.10		device		2.00	0.00	0.00	0.26	110.68	34% of 99%
41	EWw02	W		5.00	17.52		4.2	0.10					0.00	1.00	1.00	87.62	40% of 99%
42	EWw03	W		1.40	4.37		4.2	0.10					0.00	1.00	1.00	6.12	3% of 99%
43	EWw04	W		1.40	2.00		4.2	0.10					0.00	1.00	1.00	2.80	1% of 99%
44	EWw05	W		1.40	2.00		4.2	0.10					0.00	1.00	1.00	2.80	1% of 99%
45	EWw06	W		1.40	2.00		4.2	0.10					0.00	1.00	1.00	2.80	1% of 99%
46	EWw07	W		1.40	12.12		4.2	0.10					0.00	1.00	1.00	16.97	8% of 99%
47	EWw08	W		1.40	3.69		4.2	0.10					0.00	1.00	1.00	5.17	2% of 99%
48	EWw09	W		1.40	3.77		4.2	0.10					0.00	1.00	1.00	5.28	2% of 99%
49	EWw10	W		1.40	3.01		4.2	0.10					0.00	1.00	1.00	4.21	2% of 99%
50	EWw11	W		1.40	2.97		4.2	0.10					0.00	1.00	1.00	4.16	2% of 99%
51	EWw12	W		1.40	3.43		4.2	0.10					0.00	1.00	1.00	4.80	2% of 99%
52																	
53																	
54																	
55																	

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters.
While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all.
Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L06**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	174m²		130m²		136m²	30.1m²	200m²		
Option B									n/a
Glazing area (A)	*174m²*	.....	*116m²*	.....	*22m²*	*30.1m²*	*166m²*		

Number of rows preferred in table below: **15** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		3.00	10.82		8.0	0.18					0.00	1.00	1.00	32.45	19% of 100%
2	EWn02	N		3.00	20.77		8.0	0.18					0.00	1.00	1.00	62.31	36% of 100%
3	EWn03	N		3.00	10.78		8.0	0.18					0.00	1.00	1.00	32.33	19% of 100%
4	EWn04	N		3.00	15.55		8.0	0.18					0.00	1.00	1.00	46.65	27% of 100%
5	EWe01	E		3.00	14.05		8.0	0.09					0.00	1.00	1.00	42.16	36% of 100%
6	EWe02	E		3.00	5.38		8.0	0.09					0.00	1.00	1.00	16.15	14% of 100%
7	EWe03	E		2.00	4.44		8.0	0.09					0.00	1.00	1.00	8.88	8% of 100%
8	EWe04	E		3.00	6.34		8.0	0.09					0.00	1.00	1.00	19.02	16% of 100%
9	EWe05	E		3.00	9.79		8.0	0.09					0.00	1.00	1.00	29.37	25% of 100%
10	EWs01	S		2.00	11.00		8.0	0.80					0.00	1.00	1.00	22.00	100% of 91%
11	EWsw01	SW		3.00	10.04		1.5	0.07					0.00	1.00	1.00	30.12	100% of 99%
12	EWw01	W		3.00	15.39		3.4	0.05					0.00	1.00	1.00	46.17	28% of 100%
13	EWw02	W		3.00	5.69		3.4	0.05					0.00	1.00	1.00	17.06	10% of 100%
14	EWw03	W		3.00	10.20		3.4	0.05					0.00	1.00	1.00	30.60	18% of 100%
15	EWw04	W		3.00	24.17		3.4	0.05					0.00	1.00	1.00	72.50	44% of 100%

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L07**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	174m²		156m²		158m²	28.8m²	200m²		
Option B									n/a
Glazing area (A)	*174m²*	.....	*156m²*	.....	*147m²*	*28.8m²*	*200m²*		

Number of rows preferred in table below: **16** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element			Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)		Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01		N		3.00	10.82		8.0	0.18					0.00	1.00	1.00	32.45	19% of 100%
2	EWn02		N		3.00	20.77		8.0	0.18					0.00	1.00	1.00	62.31	36% of 100%
3	EWn03		N		3.00	10.78		8.0	0.18					0.00	1.00	1.00	32.33	19% of 100%
4	EWn04		N		3.00	15.55		8.0	0.18					0.00	1.00	1.00	46.65	27% of 100%
5	EWe01		E		3.00	14.05		8.0	0.08					0.00	1.00	1.00	42.16	27% of 100%
6	EWe02		E		3.00	5.38		8.0	0.08					0.00	1.00	1.00	16.15	10% of 100%
7	EWe03		E		3.00	16.54		8.0	0.08					0.00	1.00	1.00	49.62	32% of 100%
8	EWe04		E		3.00	6.34		8.0	0.08					0.00	1.00	1.00	19.02	12% of 100%
9	EWe05		E		3.00	9.79		8.0	0.08					0.00	1.00	1.00	29.37	19% of 100%
10	EWs01		S		3.00	17.05		2.0	0.80					0.00	1.00	1.00	51.15	35% of 94%
11	EWs02		S		3.00	32.03		2.0	0.80					0.00	1.00	1.00	96.09	65% of 94%
12	EWsw01		SW		3.00	9.60		1.2	0.12					0.00	1.00	1.00	28.81	100% of 98%
13	EWw01		W		3.00	15.39		1.2	0.08					0.00	1.00	1.00	46.17	23% of 100%
14	EWw02		W		3.00	5.69		1.2	0.08					0.00	1.00	1.00	17.06	9% of 100%
15	EWw03		W		3.00	21.47		1.2	0.08					0.00	1.00	1.00	64.41	32% of 100%
16	EWw04		W		3.00	24.17		1.2	0.08					0.00	1.00	1.00	72.50	36% of 100%

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L07**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	185m²		172m²		169m²	30.7m²	213m²		
Option B									n/a
Glazing area (A)	*174m²*	.....	*161m²*	.....	*147m²*	*28.8m²*	*200m²*		

Number of rows preferred in table below: **16** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		3.00	10.82		8.0	0.18					0.00	1.00	1.00	32.45	19% of 94%
2	EWn02	N		3.00	20.77		8.0	0.18					0.00	1.00	1.00	62.31	36% of 94%
3	EWn03	N		3.00	10.78		8.0	0.18					0.00	1.00	1.00	32.33	19% of 94%
4	EWn04	N		3.00	15.55		8.0	0.18					0.00	1.00	1.00	46.65	27% of 94%
5	EWe01	E		3.00	14.05		8.0	0.08					0.00	1.00	1.00	42.16	26% of 93%
6	EWe02	E		3.00	5.38		8.0	0.08					0.00	1.00	1.00	16.15	10% of 93%
7	EWe03	E		3.00	18.04		8.0	0.08					0.00	1.00	1.00	54.11	34% of 93%
8	EWe04	E		3.00	6.34		8.0	0.08					0.00	1.00	1.00	19.02	12% of 93%
9	EWe05	E		3.00	9.79		8.0	0.08					0.00	1.00	1.00	29.37	18% of 93%
10	EWs01	S		3.00	17.05		2.2	0.80					0.00	1.00	1.00	51.15	35% of 100%
11	EWs02	S		3.00	32.03		2.2	0.80					0.00	1.00	1.00	96.09	65% of 100%
12	EWsw01	SW		3.00	9.60		1.4	0.12					0.00	1.00	1.00	28.81	100% of 100%
13	EWw01	W		3.00	15.39		1.5	0.08					0.00	1.00	1.00	46.17	23% of 100%
14	EWw02	W		3.00	5.69		1.5	0.08					0.00	1.00	1.00	17.06	9% of 100%
15	EWw03	W		3.00	21.47		1.5	0.08					0.00	1.00	1.00	64.41	32% of 100%
16	EWw04	W		3.00	24.17		1.5	0.08					0.00	1.00	1.00	72.50	36% of 100%

if inputs are valid

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014)

Building name/description: **SANDSTONE PRECINCT-EDUCATION BUILDING**

Application: **Class 3**

Climate zone: **5**

Storey: **L09**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	356m²		321m²		355m²		396m²		
Option B									n/a
Glazing area (A)	*356m²*	.....	*321m²*	.....	*355m²*	.....	*396m²*		

Number of rows preferred in table below: **30** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance		P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	EWn01	N		5.00	10.82		8.0	0.20				0.00	1.00	1.00	54.08	22% of 91%
2	EWn02	N		5.00	20.77		8.0	0.20				0.00	1.00	1.00	103.84	42% of 91%
3	EWn03	N		5.00	10.78		8.0	0.20				0.00	1.00	1.00	53.88	22% of 91%
4	EWn04	N		5.00	2.99		8.0	0.20	2.000	5.000	0.40	0.00	0.86	0.61	14.93	0.4% of 91%
5	EWn05	N		5.00	15.64		8.0	0.20	2.000	5.000	0.40	0.00	0.86	0.61	78.19	2% of 91%
6	EWn06	N		5.00	4.75		8.0	0.20	2.000	5.000	0.40	0.00	0.86	0.61	23.74	1% of 91%
7	EWn07	N		5.00	2.76		8.0	0.20				0.00	1.00	1.00	13.80	6% of 91%
8	EWn07	N		5.00	2.76		8.0	0.20				0.00	1.00	1.00	13.80	6% of 91%
9	EWe01	E		5.00	14.05		8.0	0.08				0.00	1.00	1.00	70.26	23% of 95%
10	EWe02	E		5.00	5.38		8.0	0.08				0.00	1.00	1.00	26.91	9% of 95%
11	EWe03	E		5.00	1.83		8.0	0.08				0.00	1.00	1.00	9.16	3% of 95%
12	EWe04	E		5.00	5.22		8.0	0.08				0.00	1.00	1.00	26.09	9% of 95%
13	EWe05	E		5.00	10.38		8.0	0.08	2.000	5.000	0.40	0.00	0.79	0.72	51.88	12% of 95%
14	EWe06	E		5.00	6.34		8.0	0.08				0.00	1.00	1.00	31.71	10% of 95%
15	EWe07	E		5.00	10.38		8.0	0.08				0.00	1.00	1.00	51.88	17% of 95%
16	EWe08	E		5.00	5.29		8.0	0.08				0.00	1.00	1.00	26.45	9% of 95%
17	EWe09	E		5.00	5.29		8.0	0.08				0.00	1.00	1.00	26.45	9% of 95%
18	EWs01	S		5.00	10.85		2.0	0.80				0.00	1.00	1.00	54.26	16% of 95%
19	EWs02	S		5.00	17.05		2.0	0.80				0.00	1.00	1.00	85.25	26% of 95%
20	EWs03	S		5.00	10.14		2.0	0.80				0.00	1.00	1.00	50.72	15% of 95%
21	EWs04	S		5.00	27.35		2.0	0.80	3.000	5.000	0.60	0.00	0.81	0.74	136.73	35% of 95%
22	EWs05	S		5.00	2.76		2.0	0.80				0.00	1.00	1.00	13.80	4% of 95%
23	EWs06	S		5.00	2.76		2.0	0.80				0.00	1.00	1.00	13.80	4% of 95%
24	EWw01	W		5.00	15.39		1.3	0.08				0.00	1.00	1.00	76.95	20% of 100%
25	EWw02	W		5.00	5.14		1.3	0.08				0.00	1.00	1.00	25.69	7% of 100%

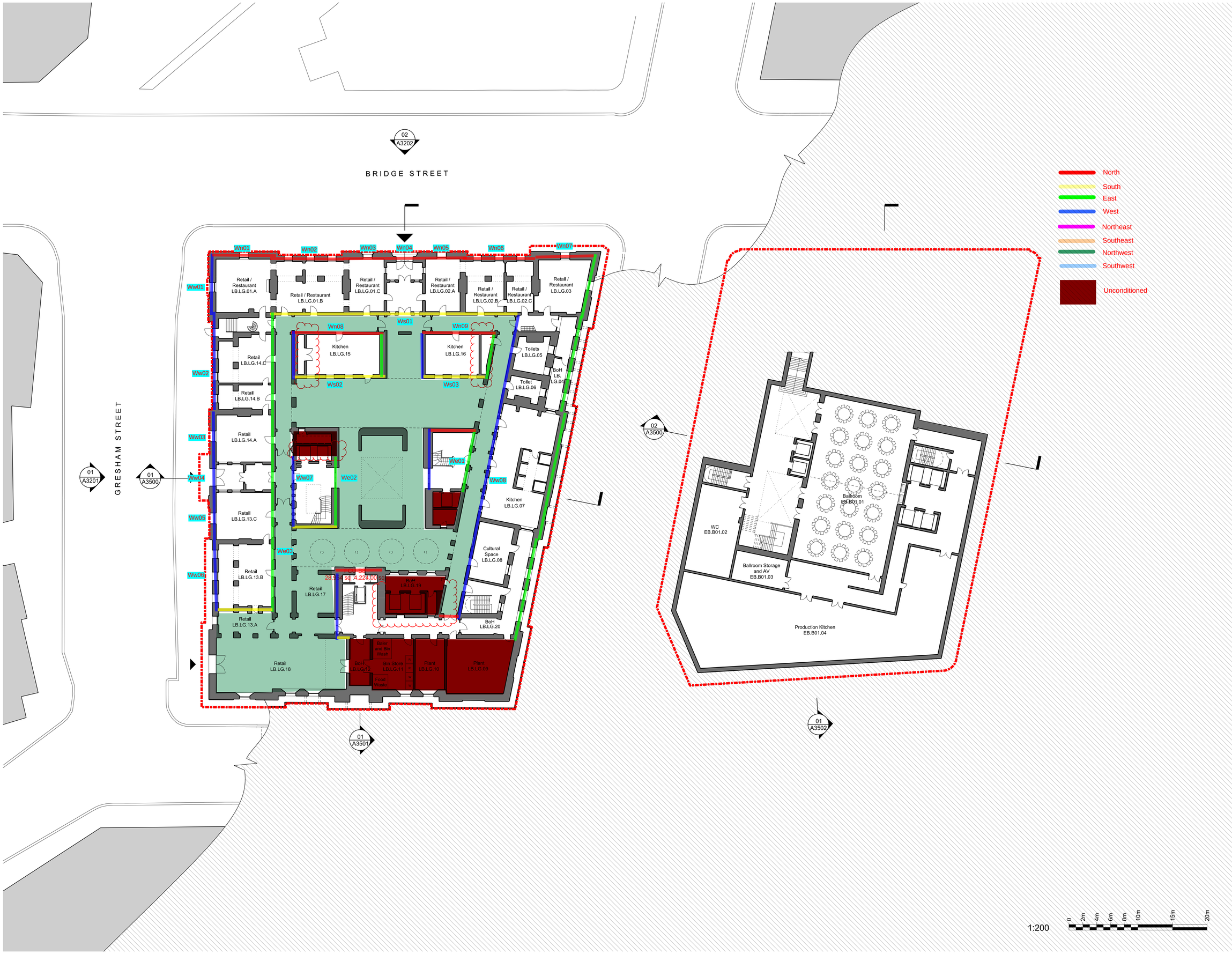
GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance			P&H or device		Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m^2)	Total System U-Value (AFRC)	Total System SHGC (AFRC)		P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m^2)	Element share of % of allowance used
26	EWw03	W		5.00	12.93		1.3	0.08					0.00	1.00	1.00	64.67	17% of 100%
27	EWw04	W		5.00	10.38		1.3	0.08		2.000	5.000	0.40	0.00	0.80	0.72	51.88	11% of 100%
28	EWw05	W		5.00	24.78		1.3	0.08					0.00	1.00	1.00	123.90	32% of 100%
29	EWw06	W		5.00	5.29		1.3	0.08					0.00	1.00	1.00	26.45	7% of 100%
30	EWw07	W		5.00	5.29		1.3	0.08					0.00	1.00	1.00	26.45	7% of 100%

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

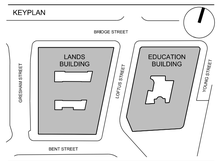
The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters.
While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all.
Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid

Appendix E – Insulation Mark-up



KEYPLAN



GENERAL NOTES

1. DIMENSIONS ARE IN MILLIMETERS UNO.
2. DO NOT SCALE OFF DRAWING.
3. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE PROCEEDING.
4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Key

- Site Boundary
- Primary entrance
- Secondary entrance
- Staff entrance

1:200

0 2m 4m 6m 8m 10m 15m 20m

ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

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TRISTAR SANDSTONE

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SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

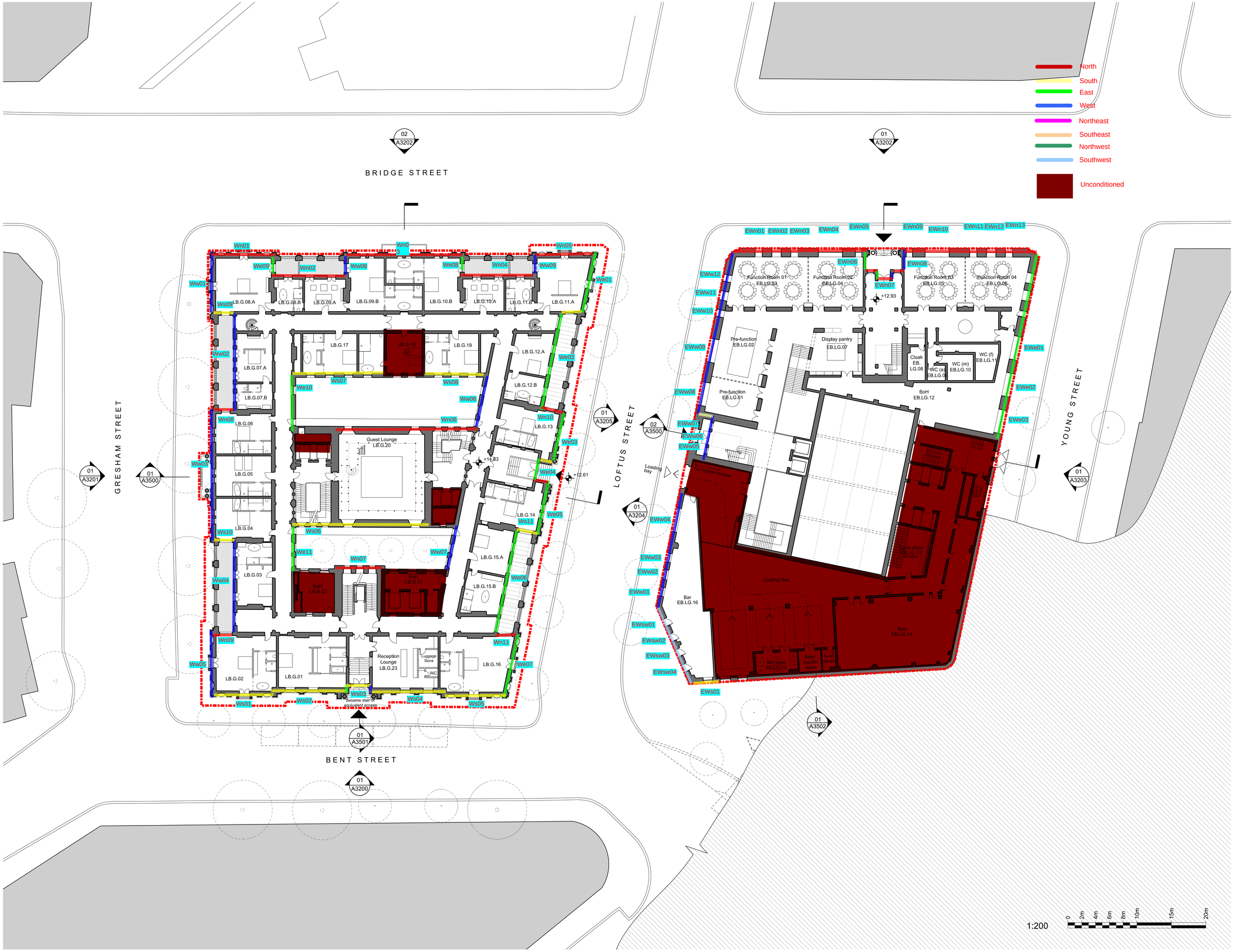
DEVELOPMENT APPLICATION

DRAWING

Proposed Plans

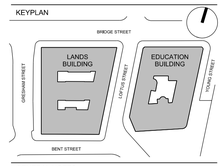
Lands Building- Lower Ground
Education Building-
Basement Level 01

DRAWING NUMBER	ISSUE
SP-DA-G-2498	**01**



North
South
East
West
Northeast
Southeast
Northwest
Southwest
Unconditioned

KEYPLAN



GENERAL NOTES

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Lands Building Key Count: 19

Key

- Site Boundary
- Primary entrance
- Secondary entrance
- Staff entrance
- Accessible room

ISSUE	DESCRIPTION	DATE
02	For Development Application	14.10.16
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

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PROJECT
SANDSTONE PRECINCT
23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER 1166

SCALE 1:200 @B1 | DRAWN MR | CHECKED RM

STATUS
DEVELOPMENT APPLICATION

DRAWING
Proposed Plans

Lands Building- Ground
Education Building- Lower Ground

DRAWING NUMBER **SP-DA-G-2499** | ISSUE **02**

1:200

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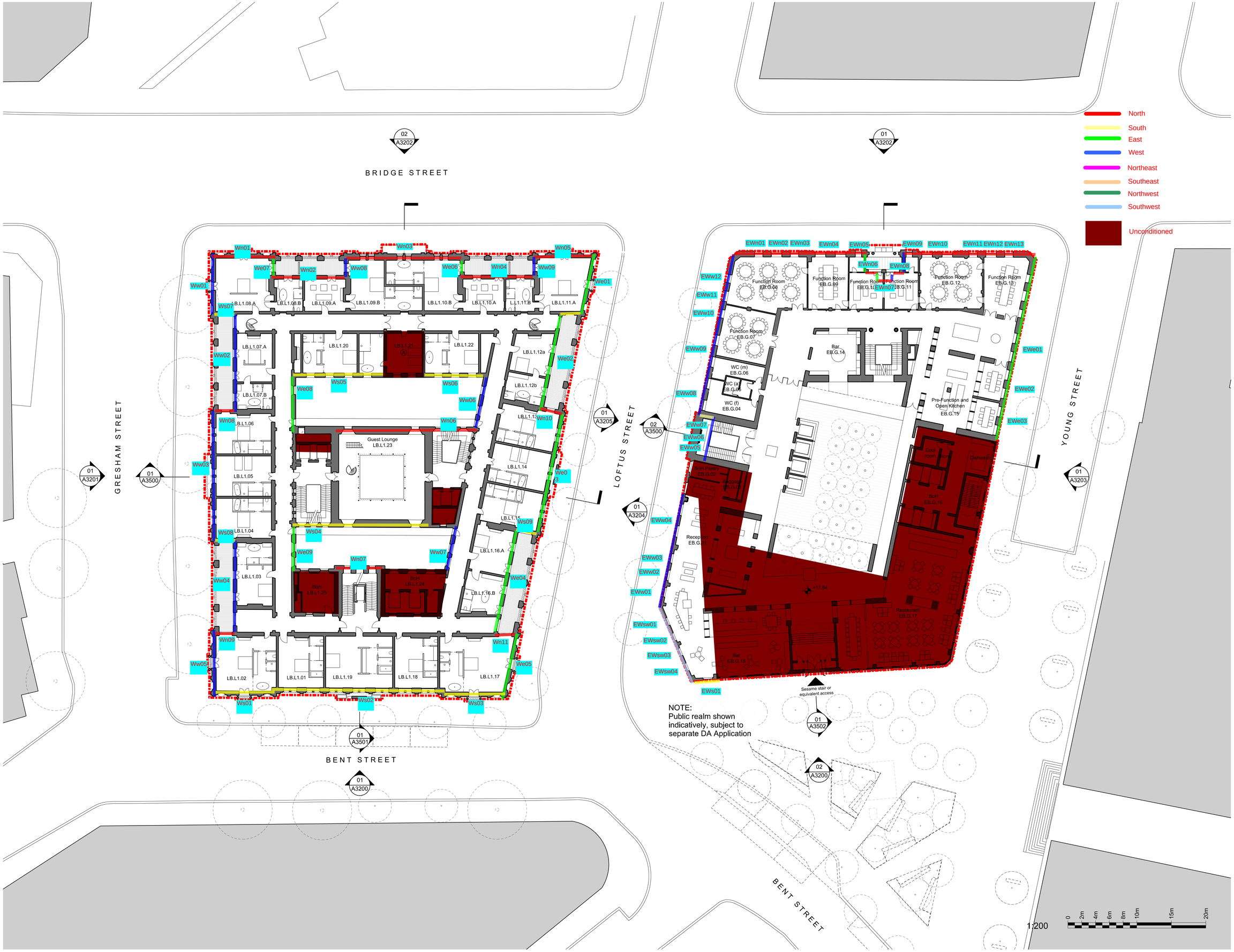
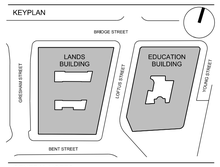


North
South
East
West
Northeast
Southeast
Northwest
Southwest
Unconditioned

KEYPLAN



GENERAL NOTES

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4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Lands Building Key Count: 22

Key

- Site Boundary
- Primary entrance
- Secondary entrance
- Staff entrance
- (A) Accessible room

ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

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23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER 1166

SCALE 1:200 @B1 | DRAWN MR | CHECKED RM

STATUS
DEVELOPMENT APPLICATION

DRAWING
Proposed Plans

Lands Building- Level 01
Education Building- Ground

DRAWING NUMBER **SP-DA-G-2500** | ISSUE **01**

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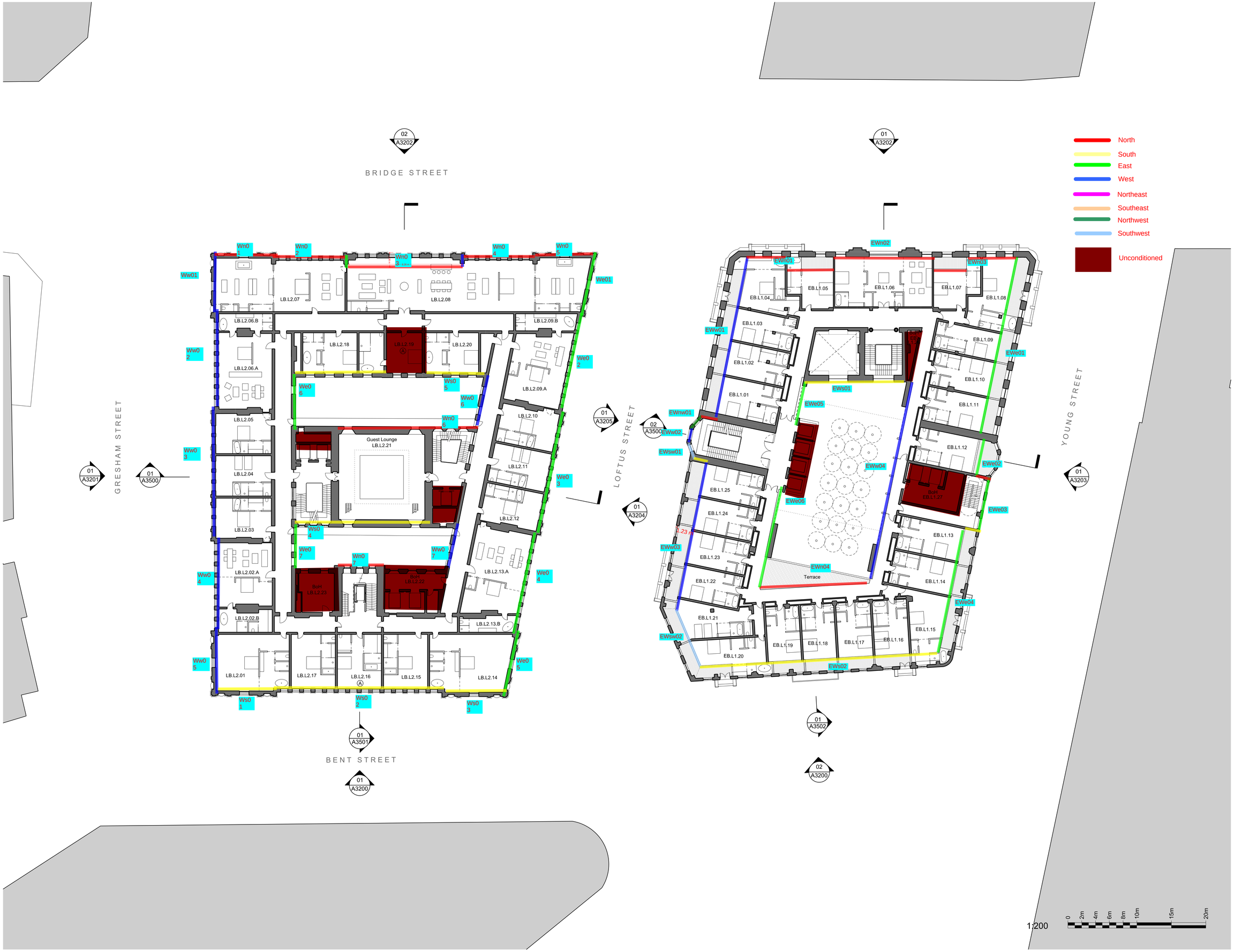

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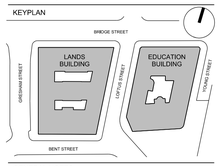

GENERAL NOTES

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4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Lands Building Key Count: 20

Education Building Key Count: 25

Key

Ⓐ Accessible room

ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

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SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

DEVELOPMENT APPLICATION

DRAWING

Proposed Plans

Lands Building- Level 02
Education Building- Level 01

1:200

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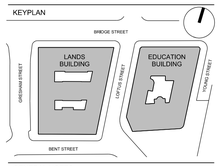
DRAWING NUMBER	ISSUE
SP-DA-G-2501	**01**

KEYPLAN



GENERAL NOTES

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4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Education Building Key Count: 31

Key

Ⓐ Accessible room

01	For Development Application	06.10.16
00	Draft for comment	02.09.16
ISSUE	DESCRIPTION	DATE

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TRISTAR SANDSTONE

PROJECT

SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

DEVELOPMENT APPLICATION

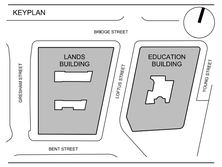
DRAWING

Proposed Plans

Lands Building- Level 03
Education Building- Level 02

DRAWING NUMBER	ISSUE
SP-DA-G-2502	**01**

KEYPLAN



GENERAL NOTES

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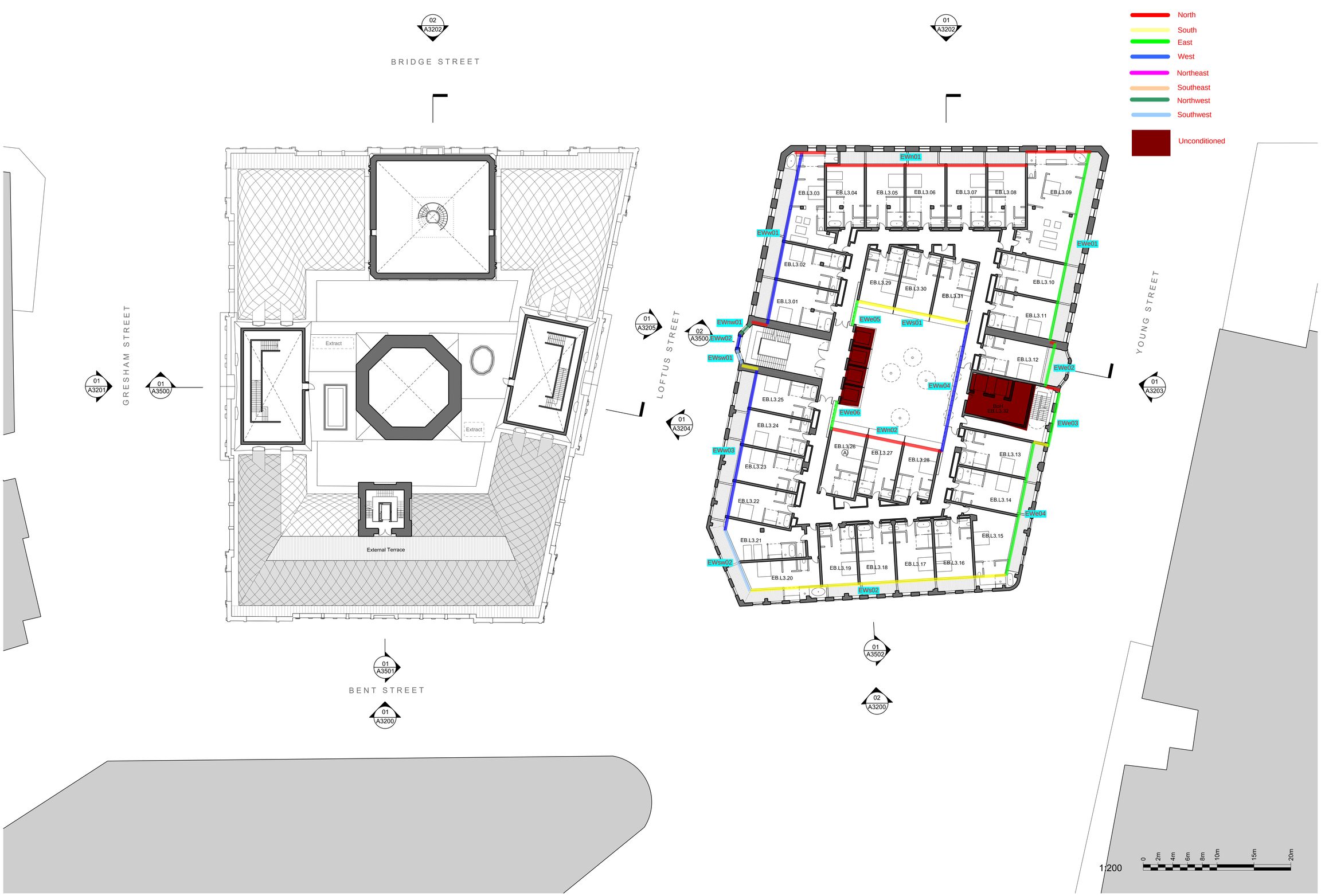
4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Education Building Key Count: 31

Key

Ⓐ Accessible room



ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

DESIGN ARCHITECT

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TRISTAR SANDSTONE

PROJECT

SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

DEVELOPMENT APPLICATION

DRAWING

Proposed Plans

Lands Building- Level 04
Education Building- Level 03

DRAWING NUMBER	ISSUE
SP-DA-G-2503	01

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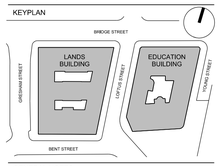
KEYPLAN



GENERAL NOTES

1. DIMENSIONS ARE IN MILLIMETERS UNO.
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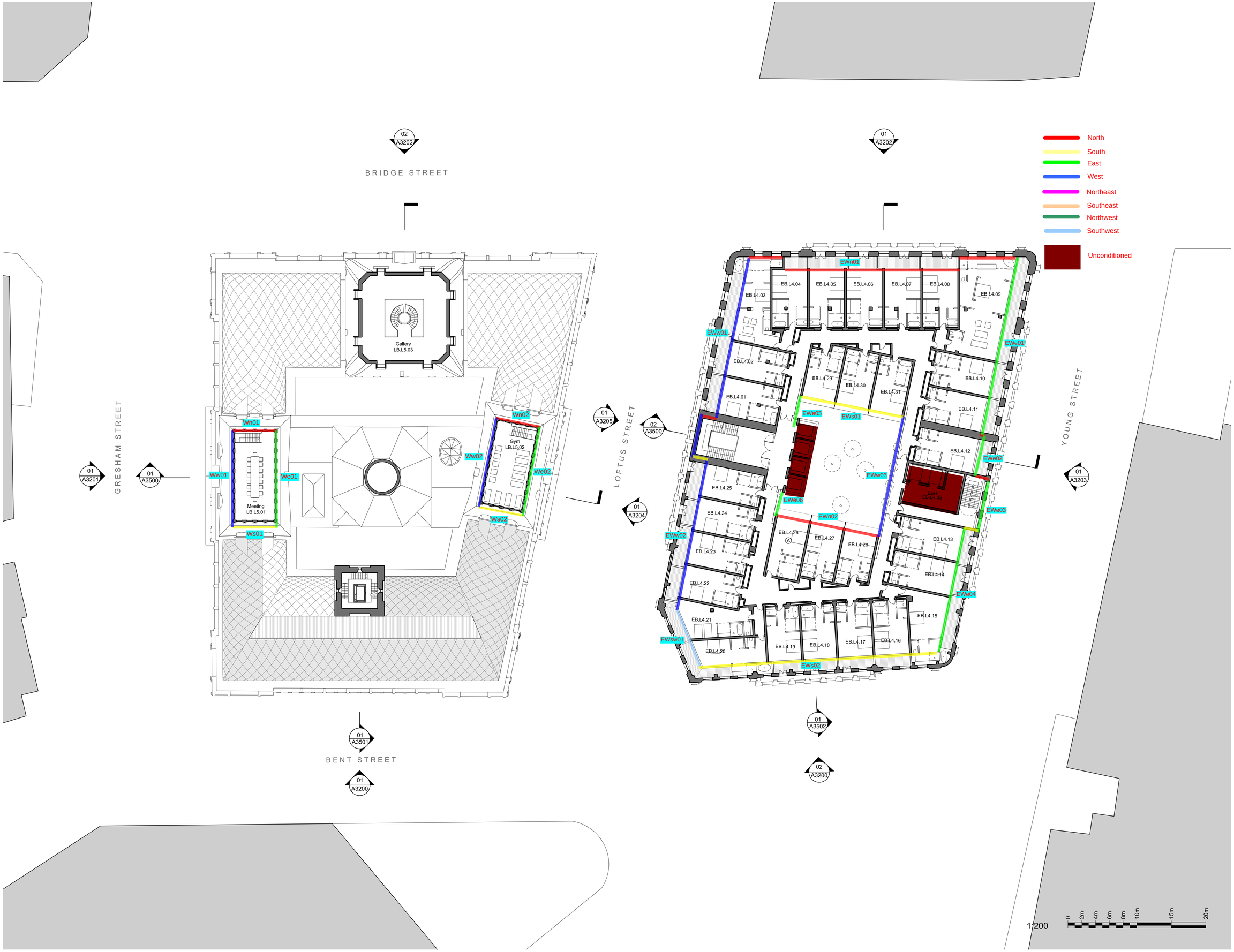
Education Building Key Count: 31

Key

Ⓐ Accessible room



ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

DESIGN ARCHITECT

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23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

DEVELOPMENT APPLICATION

DRAWING

Proposed Plans

Lands Building- Level 05
Education Building- Level 04

1:200

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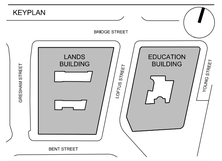
DRAWING NUMBER	ISSUE
SP-DA-G-2504	**01**

KEYPLAN



GENERAL NOTES

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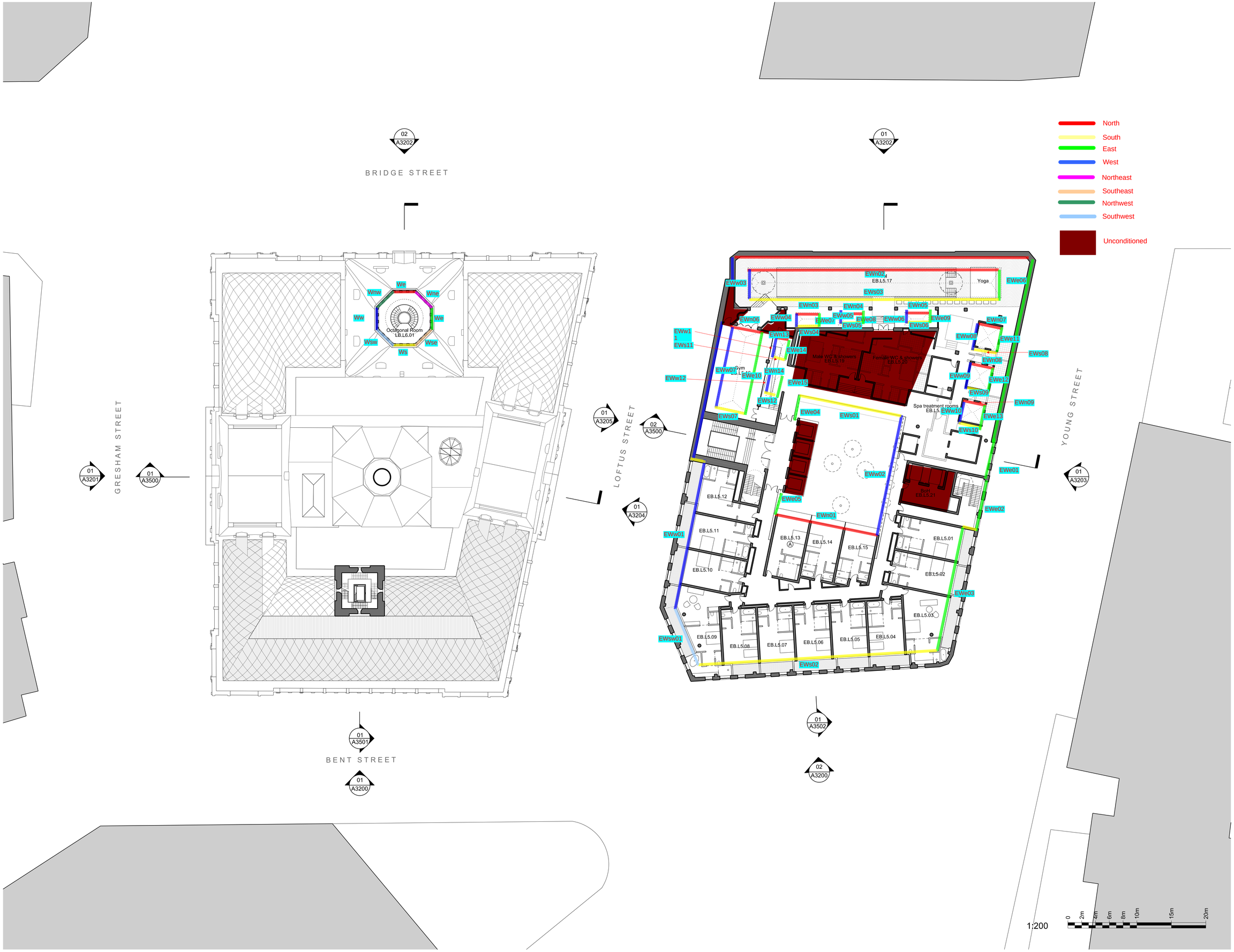
2. DO NOT SCALE OFF DRAWING.
3. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE PROCEEDING.
4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Education Building Key Count: 15

Key

Ⓐ Accessible room



ISSUE	DESCRIPTION	DATE
02	For Development Application	14.10.16
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

DESIGN ARCHITECT

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PROJECT

SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

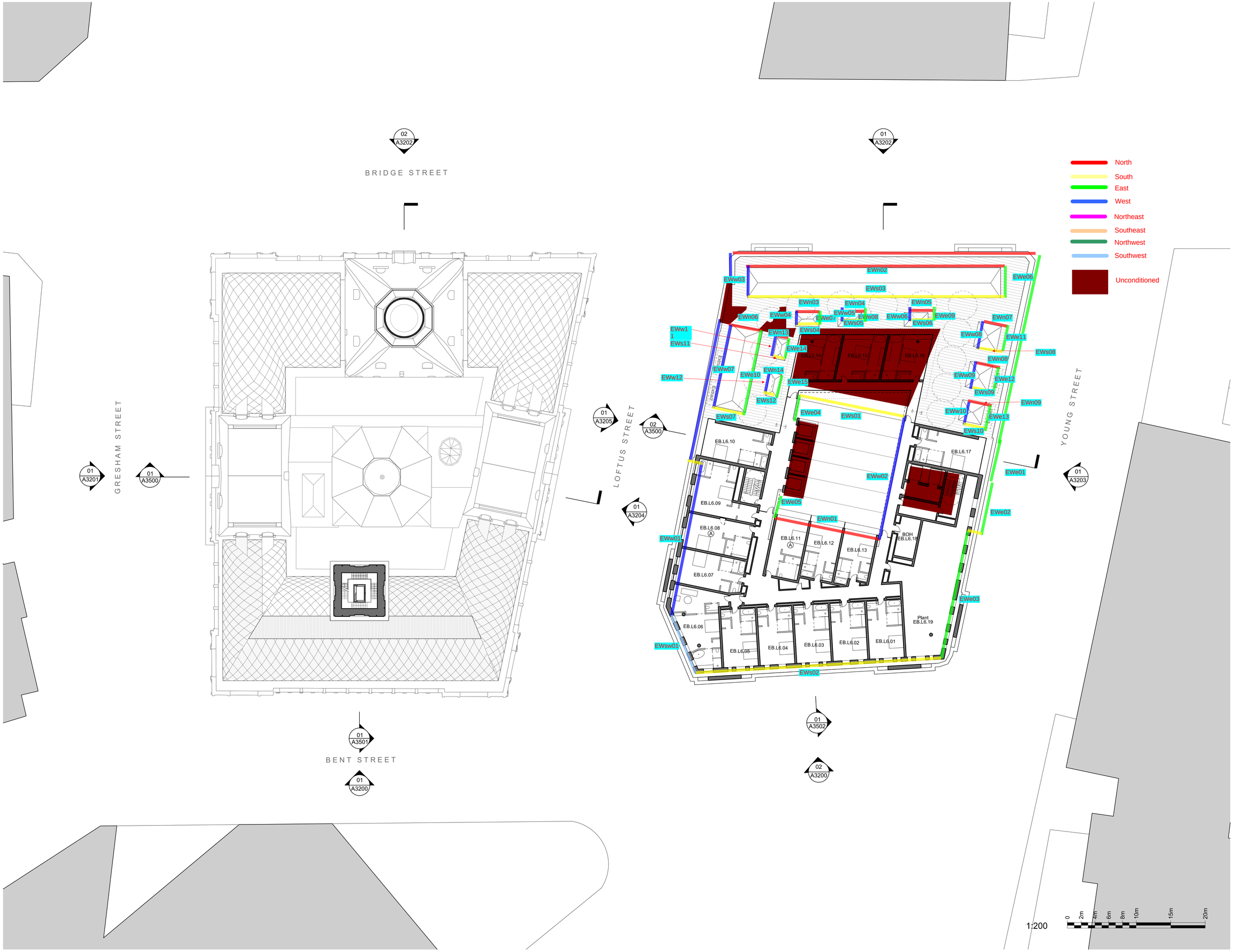
DEVELOPMENT APPLICATION

DRAWING

Proposed Plans

Lands Building- Level 06
Education Building- Level 05

DRAWING NUMBER	ISSUE
SP-DA-G-2505	**02**



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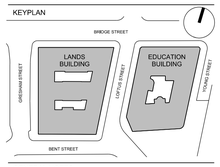

GENERAL NOTES

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Education Building Key Count: 17

Key

Ⓐ Accessible room

ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

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EXECUTIVE ARCHITECT

Ridley

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TRISTAR SANDSTONE

PROJECT

SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE 1:200 @B1

DRAWN MR CHECKED RM

STATUS

DEVELOPMENT APPLICATION

DRAWING

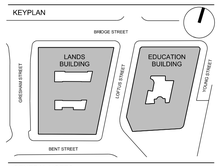
Proposed Plans

Lands Building- Level 07
Education Building- Level 06

DRAWING NUMBER **SP-DA-G-2506**

ISSUE **01**

KEYPLAN



GENERAL NOTES

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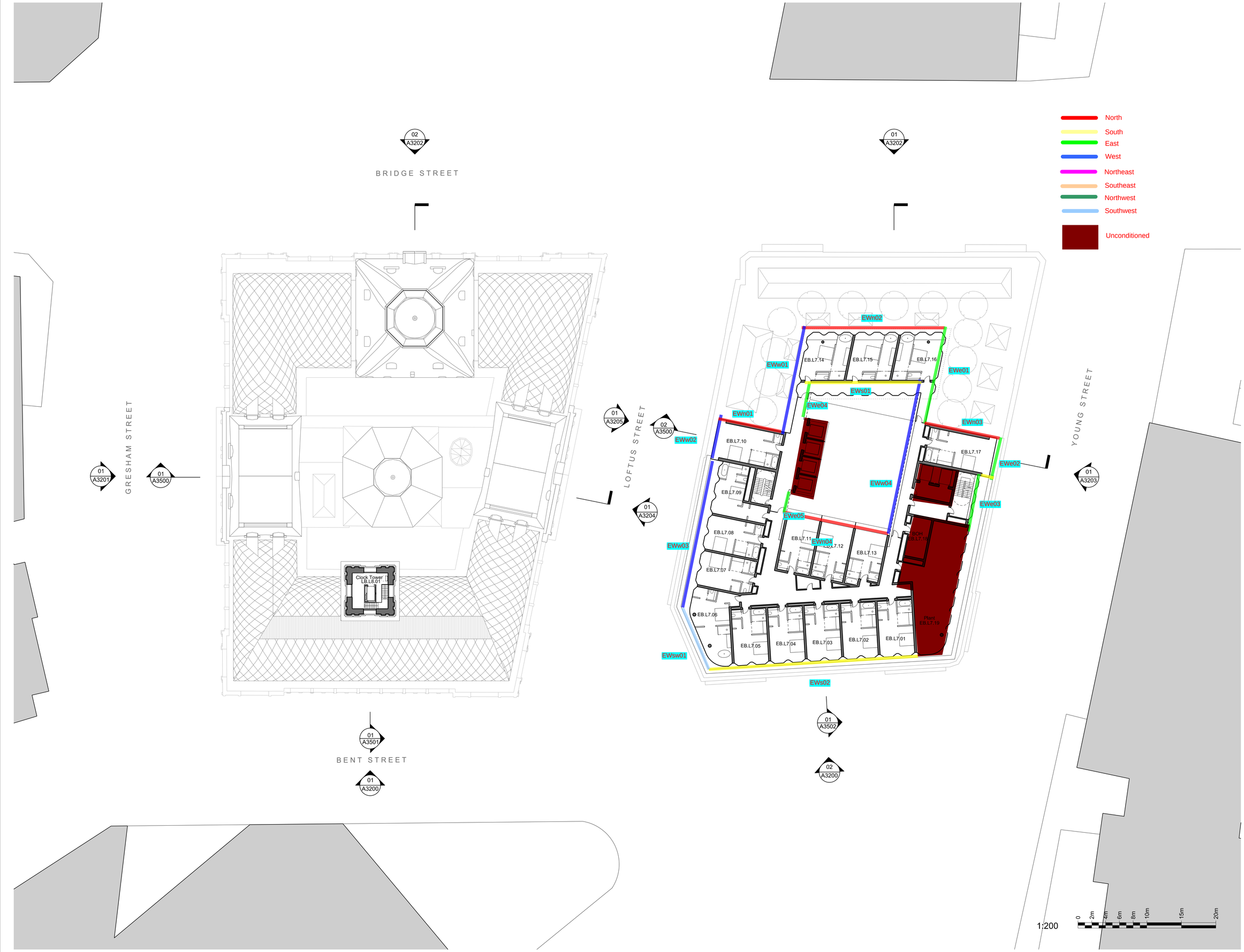
4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Education Building Key Count: 17



ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

DESIGN ARCHITECT

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Ridley

INTERIOR DESIGNER

B A R

CLIENT

TRISTAR SANDSTONE

PROJECT

SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

DEVELOPMENT APPLICATION

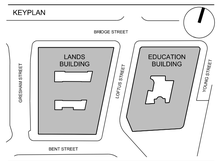
DRAWING

Proposed Plans

Lands Building- Level 08
Education Building- Level 07

DRAWING NUMBER	ISSUE
SP-DA-G-2507	**01**

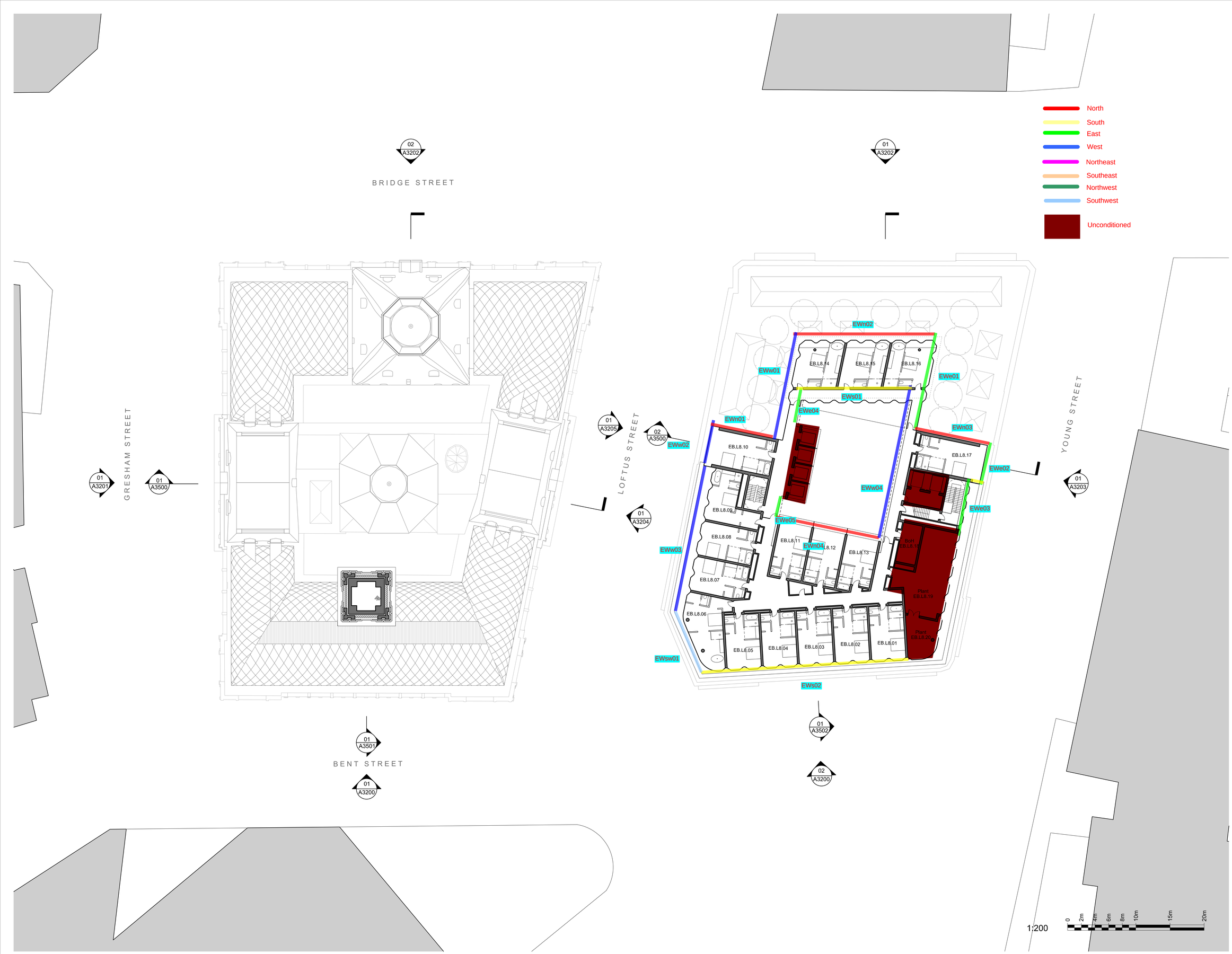
KEYPLAN



GENERAL NOTES

1. DIMENSIONS ARE IN MILLIMETERS UNO.
2. DO NOT SCALE OFF DRAWING.
3. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE PROCEEDING.
4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Education Building Key Count: 17



ISSUE	DESCRIPTION	DATE
01	For Development Application	06.10.16
00	Draft for comment	02.09.16

DESIGN ARCHITECT

make

EXECUTIVE ARCHITECT

Ridley

INTERIOR DESIGNER

B A R

CLIENT

TRISTAR SANDSTONE

PROJECT

SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE 1:200 @B1

DRAWN MR CHECKED RM

STATUS

DEVELOPMENT APPLICATION

DRAWING

Proposed Plans

Lands Building- Level 09
Education Building- Level 08

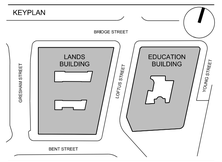
1:200

0 2m 4m 6m 8m 10m 15m 20m

DRAWING NUMBER **SP-DA-G-2508**

ISSUE **01**

KEYPLAN



GENERAL NOTES

1. DIMENSIONS ARE IN MILLIMETERS UNO.
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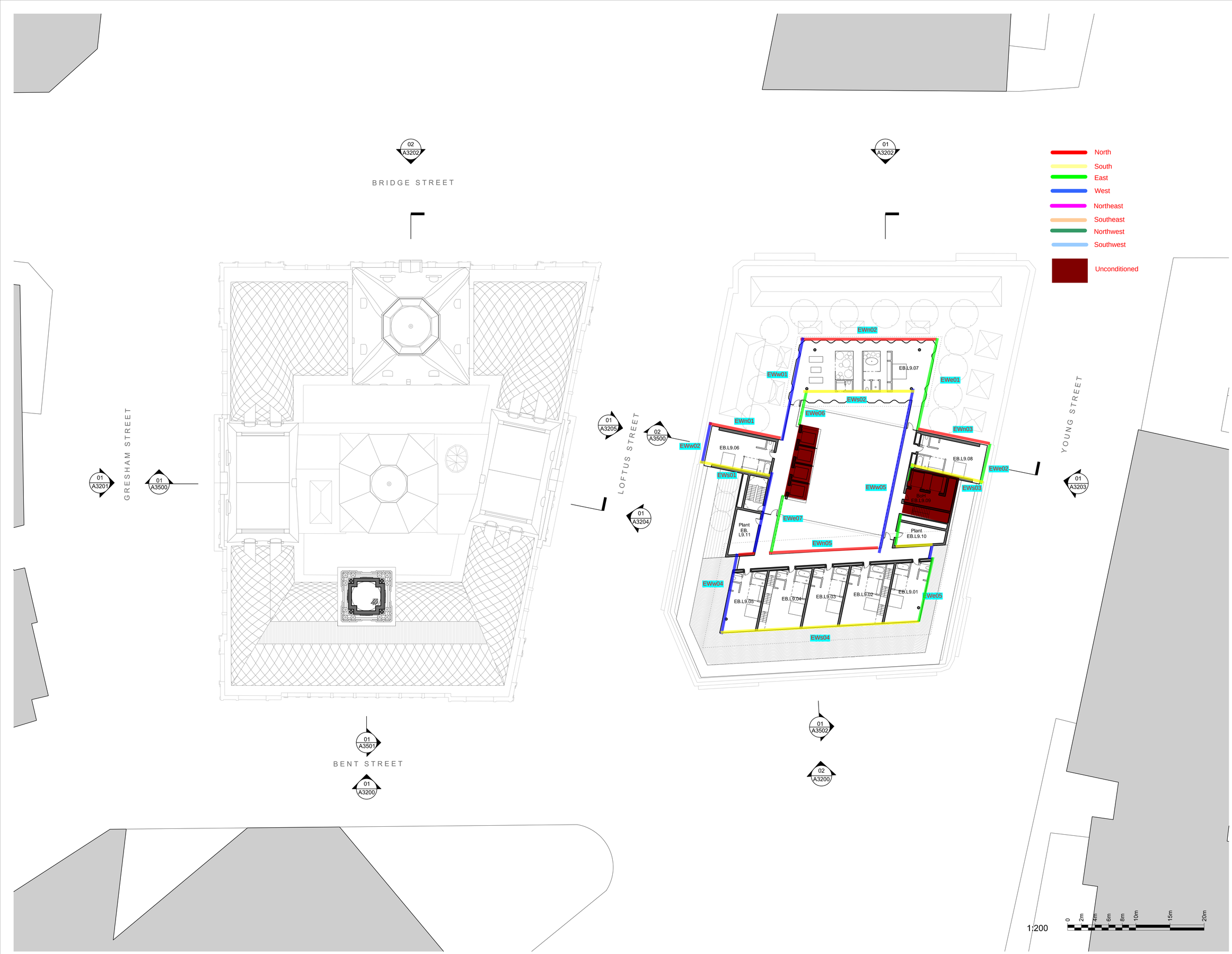
3. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE PROCEEDING.
4. ALL DISCREPANCIES TO BE NOTIFIED IN WRITING TO RIDLEY CONSOLIDATED GROUP PTY LIMITED ("RIDLEY" AND MAKE)

Education Building Key Count: 8



01	For Development Application	06.10.16
00	Draft for comment	02.09.16
ISSUE	DESCRIPTION	DATE

DESIGN ARCHITECT

make

EXECUTIVE ARCHITECT

Ridley

INTERIOR DESIGNER

B A R

CLIENT

TRISTAR SANDSTONE

PROJECT

SANDSTONE PRECINCT

23-39 Bridge Street, Sydney 2000, Australia

PROJECT NUMBER **1166**

SCALE	DRAWN	CHECKED
1:200 @B1	MR	RM

STATUS

DEVELOPMENT APPLICATION

DRAWING

Proposed Plans

Lands Building- Level 10
Education Building- Level 09

1:200

0 2m 4m 6m 8m 10m 15m 20m

DRAWING NUMBER	ISSUE
SP-DA-G-2509	**01**