

# AGENDA



## Meeting of the Strategic Planning Committee of Council

Under Section 89 of the Local Government Act 1989, Council may resolve that the Meeting be closed to members of the public if the Meeting is discussing any of the following issues Personnel Matters, Personal Hardship of any resident or ratepayer, Industrial Matters, Contractual Matters, Proposed Developments, Legal Advice, Matters affecting security of Council property, any other matter which the Council or Special Committee considers would prejudice the Council or any person.

To be held at the

Civic Centre

511 Burwood Highway

Wantirna South

On

Monday 9 September 2019 at 7:00 pm

**Order of Business**

- 1 Apologies And Requests For Leave Of Absence.....3
- 2 Declarations Of Conflict Of Interest.....3
- 3 Confirmation Of Minutes.....3
- 4 Considering And Ordering Upon Officers’ Reports.....4
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- 8 Confidential Items.....207

Tony Doyle  
Chief Executive Officer

**1 Apologies and Requests for Leave of Absence**

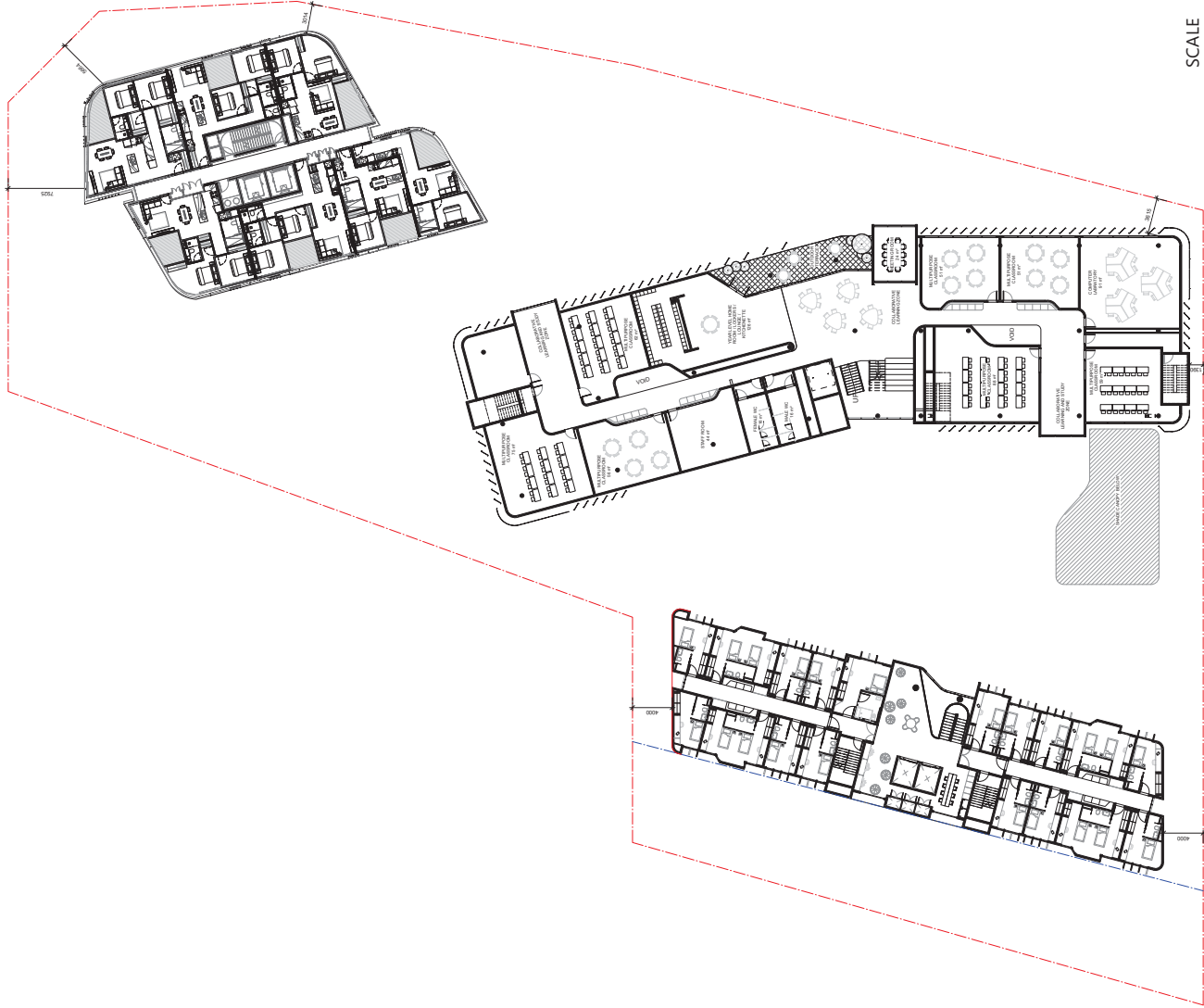
**2 Declarations of Conflict of Interest**

**3 Confirmation of Minutes**

Confirmation of Minutes of Strategic Planning Committee Meeting on Monday 12 August 2019

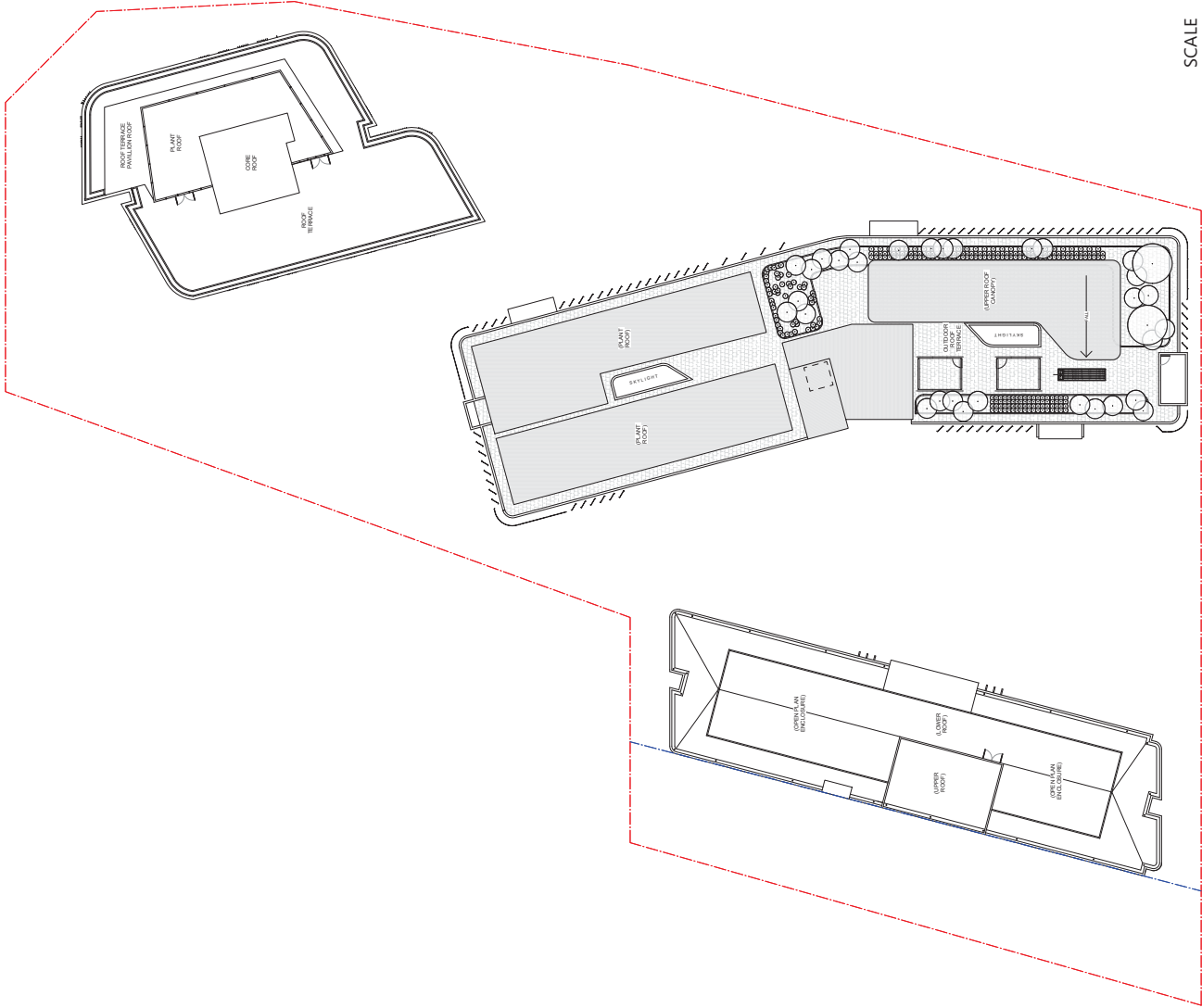






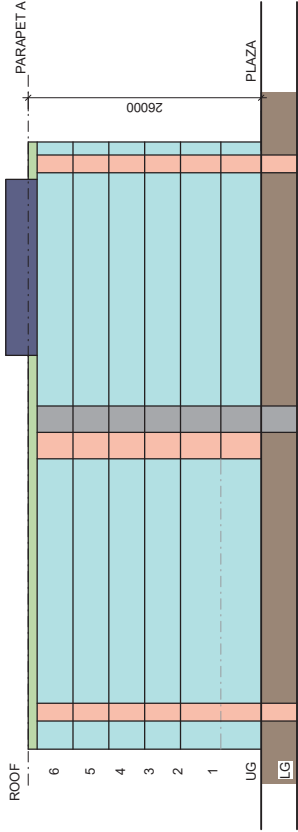
**NOTE**  
 PLAN AMENDED TO REFLECT CHANGE IN  
 APARTMENT MIX TO LEVELS 1-9.

SCALE — 1:500 @ A3



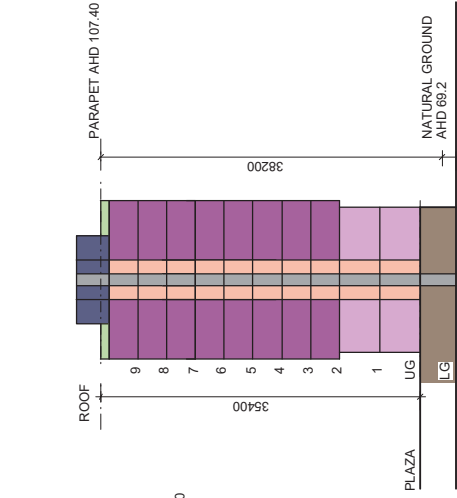
SCALE — 1:500 @ A3





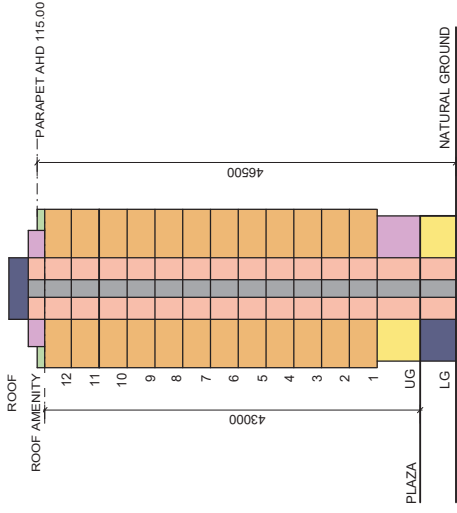
**IMPERIAL GRAMMAR SCHOOL:  
06 LEVELS:**

LOWER GROUND FLOOR: CARPARK  
 UPPER GROUND FLOOR - LEVEL 04: EDUCATION / ROOFTOP TERRACE  
 LEVEL 05: PLANT  
**TOTAL AREA: 10020m<sup>2</sup>**



**BOARDING ACCOMMODATION:  
10 LEVELS:**

LOWER GROUND FLOOR: CARPARK  
 UPPER GROUND FLOOR + LEVEL 1: COMMON FACILITIES  
 ROOF: PLANT DECK  
 LEVEL 2 - 9: STUDENT BOARDING ROOMS:  
 NUMBER PER LEVEL:  
**TOTAL: 160**  
 LEVEL 2 - 9 STUDENT MENTOR ROOMS:  
 NUMBER PER LEVEL:  
**TOTAL: 16**

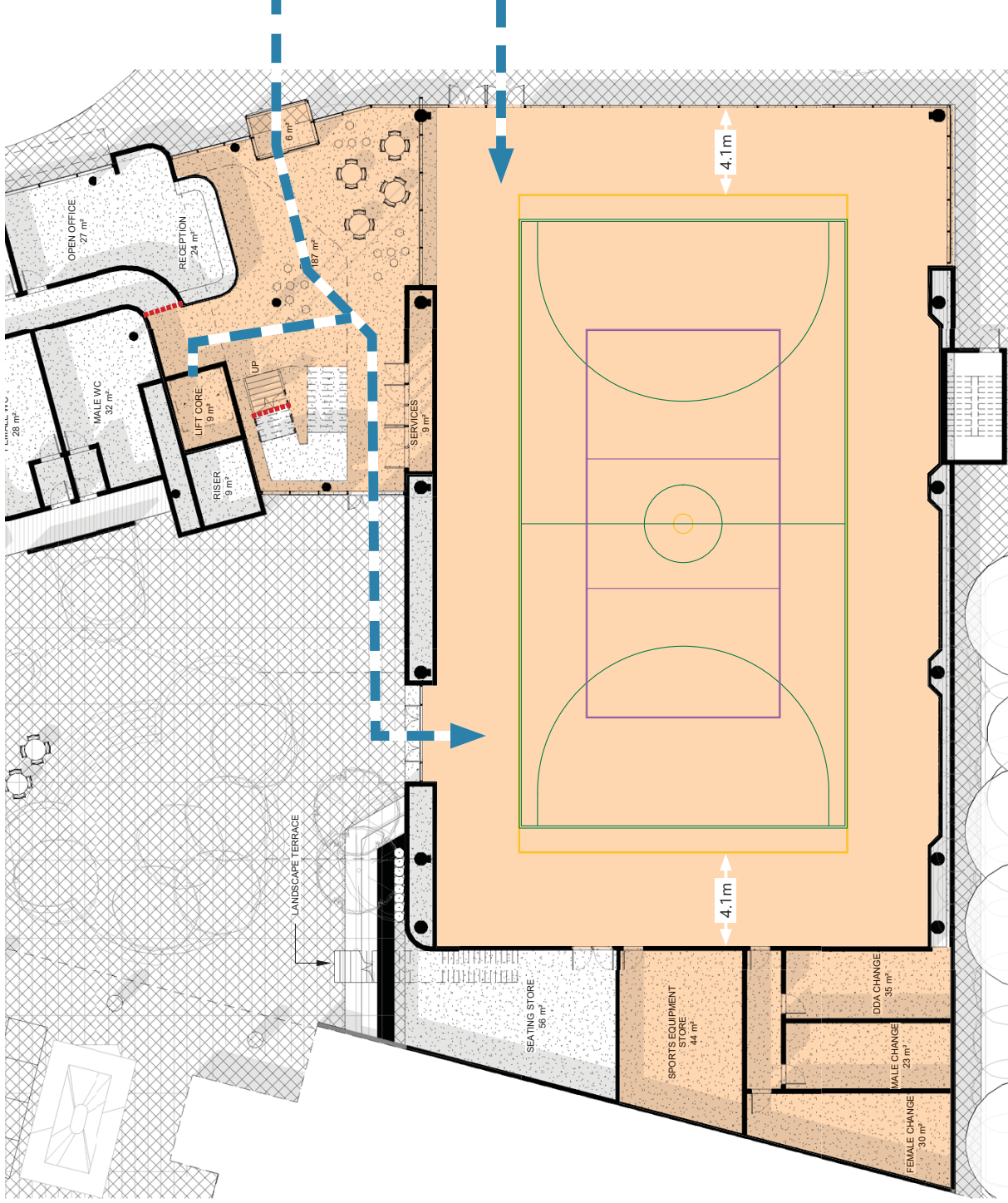


**RESIDENTIAL TOWER:  
12 LEVELS:**

LOWER GROUND FLOOR: CARPARKING/PLANT/ LOBBY/RETAIL  
 UPPER GROUND FLOOR : OFFICE/GYM/END OF TRIP  
 ROOF: COMMUNAL TERRACE  
 LEVEL 01 - 9 RESIDENTIAL:  
 1 BED 1 BATH: 18 26%  
 2 BED 1 BATH: 27 33.3%  
 2 BED 2 BATH: 18 37%  
 LEVEL 10 - 12 RESIDENTIAL:  
 1 BED 1 BATH: 3 26%  
 2 BED 2 BATH: 12 37%  
 3 BED 3 BATH: 3 3.7%  
**TOTAL APARTMENTS: 81**

PERCENTAGES REFLECT MIX OF APARTMENT TYPE THROUGHOUT APARTMENT BUILDING.

**NOTE**  
 5% OF APARTMENTS TO BE SOLD OR LEASED TO A REGISTERED HOUSING PROVIDER.

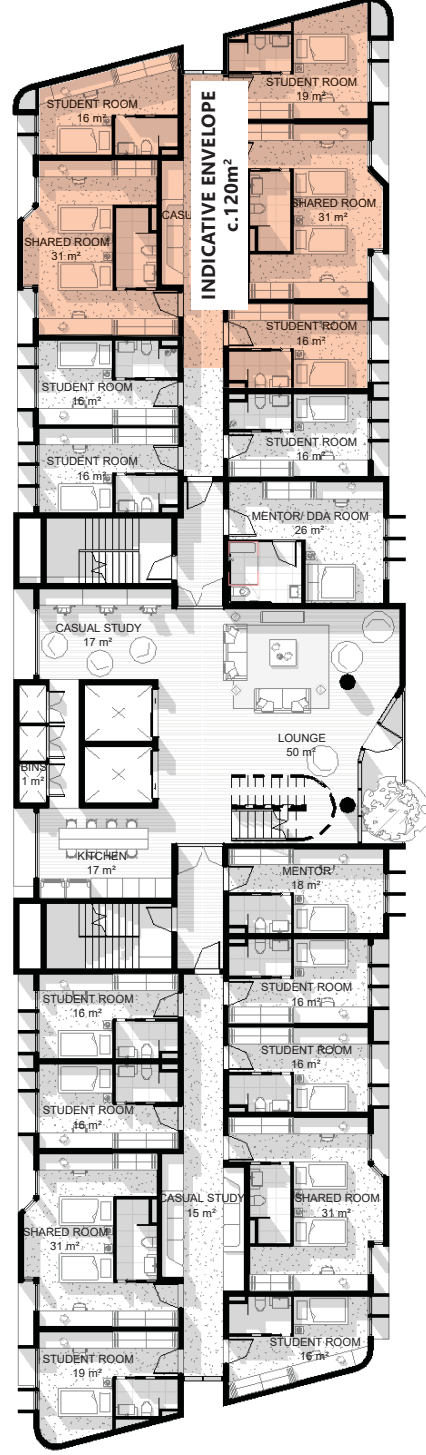


**NOTES**  
**GENERAL**  
 THE ZONE SHADED HERE IS THAT WHICH THE OPERATORS OF IMPERIAL GRAMMAR SCHOOL INTEND TO PROVIDE FOR COMMUNITY USAGE, SUBJECT TO FURTHER AGREEMENT AND OPERATIONAL SPECIFICS, AS WELL AS THE SPORTS SHOWN IN LINE-MARKING FORM HERE, THE SPACE CAN ACCOMMODATE SEVERAL TABLE TENNIS, SOCIAL BADMINTON OR VOLLEYBALL COURTS.

**ACCESS**  
 THE SPACE SHADED EXTENDS BEYOND THE MULTI-PURPOSE / SPORTS COURT TO THE EXTENT THAT IS REQUIRED TO PROVIDE ADEQUATE AMENITIES, AS WELL AS UNIVERSAL (LIFT) ACCESS FROM THE PARKING AREA BELOW. STRIPED ARROWS INDICATE LIKELY AND POSSIBLE PATHS OF ARRIVAL.

**SIZING / SAFETY**  
 LINES FOR THREE MAJOR COMPETITION SPORTS ARE SHOWN HERE MARKED IN YELLOW (NETBALL), GREEN (BASKETBALL) AND PURPLE (VOLLEYBALL). THE VOLLEYBALL COURT ESTABLISHES THE CRITICAL MINIMUM DIMENSIONS FOR THE HALL; NETBALL AUSTRALIA SPECIFIES CLEAR SPACE OF 3.05m FOR RUN-OFF TO THE PERIMETER OF THE COURT. AN ADDITIONAL 1m BUFFER IS PROVIDED AT EACH COURT END, BEYOND STANDARD COMPETITION CLEARANCE REQUIREMENTS.

UPPER GROUND LEVEL PLAN (PARTIAL) — NOT TO SCALE



TYPICAL LOWER BOARDING PLAN — 1:200 @ A3

**NOTES**  
**SPECIFIC ACCOMODATION**  
 THE SHADED REGION SHOWN REPRESENTS A POSSIBLE ENVELOPE TO BE REDESIGNED FROM THE CURRENT PLAN, SHOULD A LEADERSHIP FIGURE AND THEIR FAMILY BE REQUIRED TO LIVE ON-SITE TO PROVIDE A PARTICULAR MODEL OF PASTORAL CARE.

THE ENVELOPE SHOWN REPRESENTS APPROXIMATELY 120m<sup>2</sup> WHICH WOULD BE PROVIDED TO ACCOMODATE A FAMILY OF 4-5 MEMBERS.

THE BUILDING'S GRID HAS FLEXIBILITY BUILT-IN TO ACCOMODATE VARIOUS MODELS AS NECESSITATED BY THE OPERATOR. THE LAYOUT MOST SUITABLE TO SUPPORT PASTORAL CARE WILL BE SELECTED IN CONSULTATION WITH THE OPERATOR.

IN THE CONFIGURATION INDICATED HERE, THERE WOULD BE ONE MENTOR IN ADDITION TO THE FAMILY ON THE CHOSEN LEVEL, PROVIDING PASTORAL CARE AND SUPERVISION FOR THAT LEVEL IN THE FORM OF 1 MENTOR PLUS THE LEADER OF BOARDING AND THEIR FAMILY. IN NO CASE WOULD THERE BE A NET REDUCTION IN MENTORS PER LEVEL.





FLOORS CONNECTED IN PAIRS BY STAIR IN VOID

TYPICAL LOWER BOARDING PLAN — 1:200 @ A3

TYPICAL UPPER BOARDING PLAN — 1:200 @ A3

NB: MALE + FEMALE WINGS SHOWN ALTERNATING TO THE NORTH AND SOUTH WINGS TO DEMONSTRATE THE MODEL'S FLEXIBILITY.

**NOTES**  
 GENERAL DELIVERED IN PAIRS OF LEVELS, THE DESIGN OF THE BOARDING ACCOMMODATION HAS THE SAFETY AND MENTAL WELLBEING OF STUDENTS AS ITS PRIME CONCERN. AS SUCH, CO-EDUCATIONAL COMMUNAL SPACES ARE PROVIDED THROUGHOUT THE BUILDING IN DIFFERENT SCALES AND SETTINGS.

THE DELINEATION OF GENDERED SPACE IS IMPORTANT IN PLANNING AND OPERATING THE BOARDING TOWER, BUT IS RESERVED FOR THE SMALLEST UNIT OF SPATIAL SEPARATION - IN THE FORM OF THE LIVING 'WINGS' SHOWN AT LEFT IN BLUE AND GREEN.

ALLOCATED BY KEYCARD PROGRAMMING. ACCESS TO EACH PAIR OF FLOORS WILL BE LIMITED TO THOSE STUDENTS RESIDING ON THOSE FLOORS. SECURED AT THE POINTS OF VERTICAL CIRCULATION SHOWN DASHED IN ORANGE.

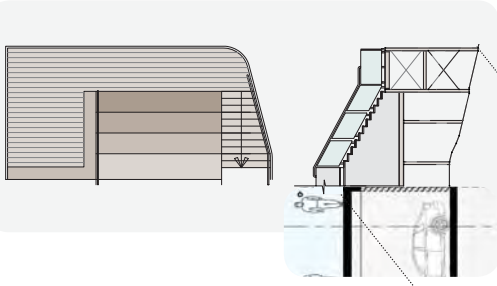
WITHIN EACH FLOOR, MENTOR ROOMS ARE LOCATED AT THE ENTRANCE TO EACH SLEEPING WING, PROVIDING A SURVEILLANCE AND CARE ELEMENT TO THE SECURITY ARRANGEMENT. ONLY THE TEN RESIDENT STUDENTS WILL HAVE ACCESS BY CARD TO EACH WING, WITH ACCESS ALSO POSSIBLE BY MENTORS FOR USE IN THE EVENT OF AN INCIDENT. FOR PASTORAL CARE REASONS, IT IS NOT ANTICIPATED THAT INDIVIDUAL STUDENT ROOMS WILL BE LOCKABLE.

BY PROVIDING ELECTRONIC KEYCARD ACCESS, FLEXIBILITY IS PROVIDED TO ACCOMMODATE A BROAD VARIETY OF CONFIGURATIONS AND TO ACCOMMODATE SPECIAL CASES - STUDENTS REQUIRING SPECIAL CARE FOR EXAMPLE - AND TO THE SPECIFIC NEEDS OF DIFFERENT OPERATORS.

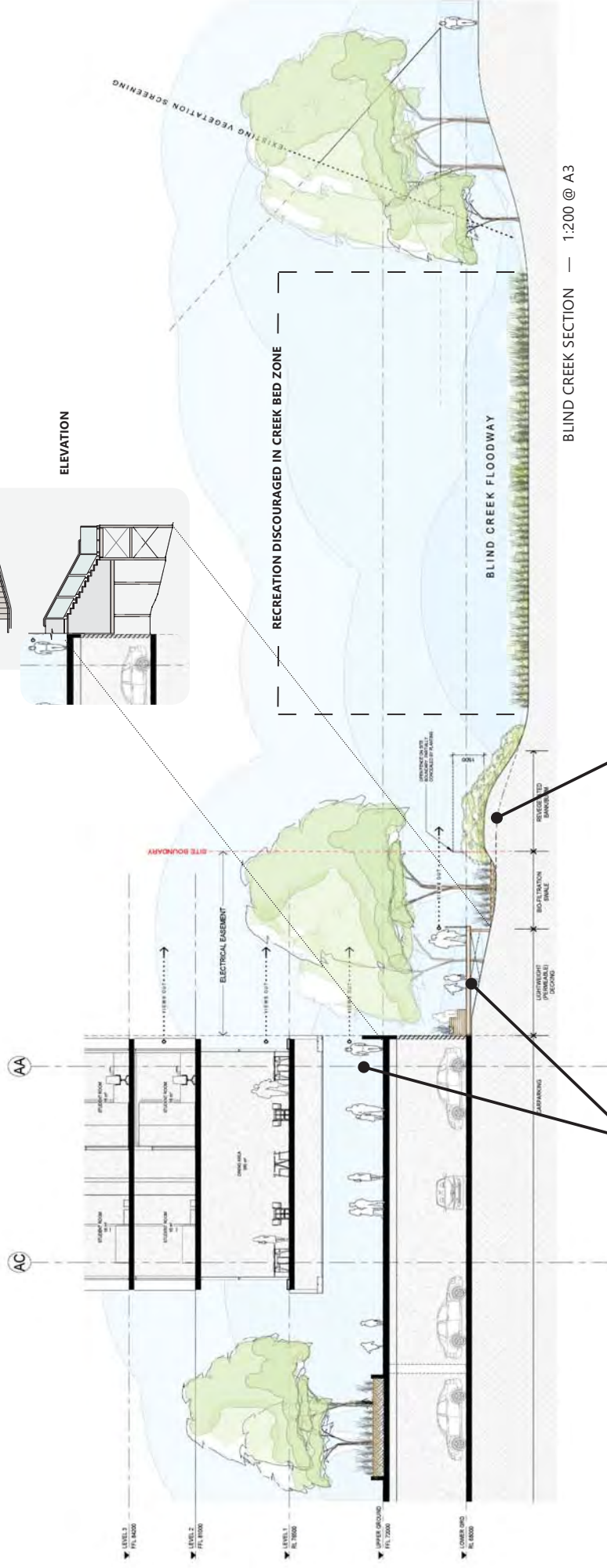
THE SAFE AND POSITIVE OPERATION OF THE SCHOOL IS FACILITATED BY THE PHYSICAL SECURITY AND PASTORAL MODELS OPERATING IN TANDEM.

**INCREASED DECK CONNECTION**  
 SUBJECT TO APPROVAL BY AUSNET (POWER SUPPLY AUTHORITY), A LARGER (10m LONG) DECK PIECE IS PROPOSED AS A TEMPORARY / DEMOUNTABLE STRUCTURE TO PROVIDE A CLOSER CONNECTION TO THE CREEK ENVIRON, DIRECTLY INTERFACING WITH THE UPPER GROUND LEVEL.

PLAN



ELEVATION



BLIND CREEK SECTION — 1:200 @ A3

**URBAN MEETS BLIND CREEK**  
 THE BLIND CREEK PROVIDES A GENUINE VISUAL AND AURAL RESPIRE TO THE CHARACTER OF THE MAJOR ROADS TO THE SITE'S EAST AND NORTH. THE SENSE OF OPENNESS OF THE SCHOOL'S MAIN OUTDOOR PLAY SPACE IS AUGMENTED BY ITS VIEWS ONTO THE CREEK CORRIDOR AND ACCOMPANYING DENSE VEGETATION OF MATURE EUCALYPTS. A DECK AT LOWER GROUND LEVEL IN THE EASEMENT ZONE AS WELL AS OPEN AIR AND COVERED PLAY SPACES AT UPPER GROUND LEVEL CATER FOR BOTH ACTIVE AND CONTEMPLATIVE RECREATION TAKING IN THE CREEK VIEW.

**VEGETATION BEYOND THE SITE**

FOLLOWING RECOMMENDATIONS ON THE NATURE OF EXISTING VEGETATION, IT IS PROPOSED THAT THE SCHOOL AND/OR BOARDING OPERATOR BECOME RESPONSIBLE TO REPLANT AND MAINTAIN A REGION OF THE BLIND CREEK INTERFACE BETWEEN THE TITLE BOUNDARY AND THE CREEK'S TOP OF BANK. WHILE THIS PROCESS HAS MANY BENEFITS, IT IS CONTEMPLATED HEREIN PRIMARILY TO MITIGATE SAFETY RISKS AND INCREASE VISIBILITY OF PERSONS MOVING IN THE AREA.

THIS PROCESS WOULD TAKE GUIDANCE FROM THE MELBOURNE WATER PUBLICATION 'PLANTING NEAR SEWERS, DRAINS AND WATER MAINS GUIDE' VERSION 4, FEBRUARY 2019, IN LIEU OF A SPECIFIC STRATEGY FOR THIS AREA OF THE BLIND CREEK CORRIDOR.





Document 4.3.2

Street Setback  
16.5m

Boundary Setback  
6m

Street Setback  
7.6m

Boundary Setback  
3m

**NOTES**

THE PROPOSED DEVELOPMENT PROVIDES TWICE THE SETBACK TO ITS BOUNDARY THAN THE NEIGHBOURING KUBIX BUILDING. THIS RESULTS IN AN EFFECTIVE STREET SETBACK MORE THAN TWICE THAT OF KUBIX.

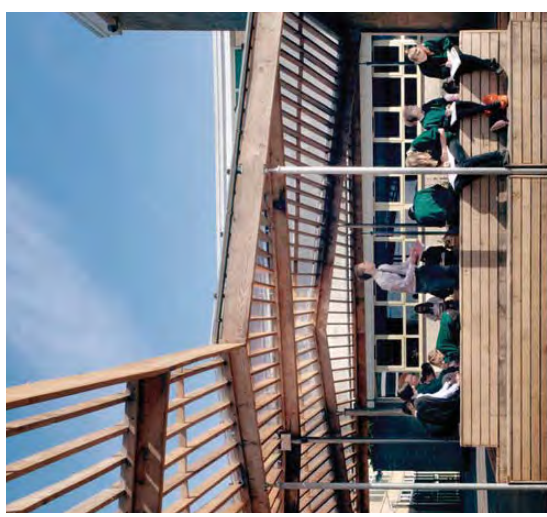


Achieving substantial and functional outdoor space is integral to the well being and health of students, and is a challenge to achieve when designing any vertical school on a modest site. In addition to the rooftop gardens and terraces elsewhere in the school, staggered terraces with a direct visual connection to the Blind Creek have been introduced. These educational settings serve to draw vegetation through the site from the West and to soften the edge of the development where it abuts the corridor.

The security of the precinct and of the school through CPTID principles has also been a key focus of this initial learning landscape. In addition to the passive surveillance provided by users of the school and by the staff and students of the boarding residences, the vegetation to the edge of the creek has been taken into consideration. Reducing planting height along a region of the corridor in line with Melbourne Water's guidelines for planting along an asset has the effect of removing spaces which may have facilitated anti-social or dangerous behaviour. A secure edge to the school is also proposed to control entry and is to be managed by the school and boarding staff.



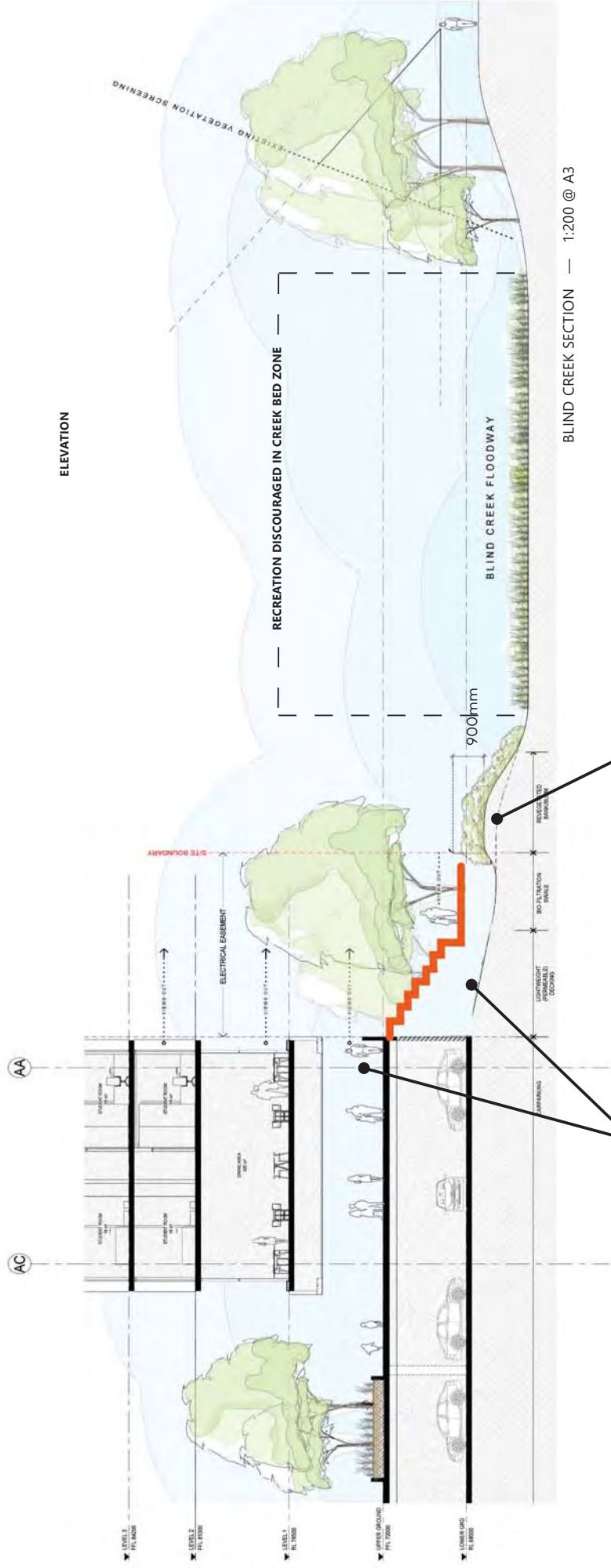






**INCREASED DECK CONNECTION**

Subject to approval by ausnet (power authority), a larger (10m long) deck-piece is proposed as a temporary / demountable structure to provide a closer connection to the creek environ, directly interfacing with the upper ground level.



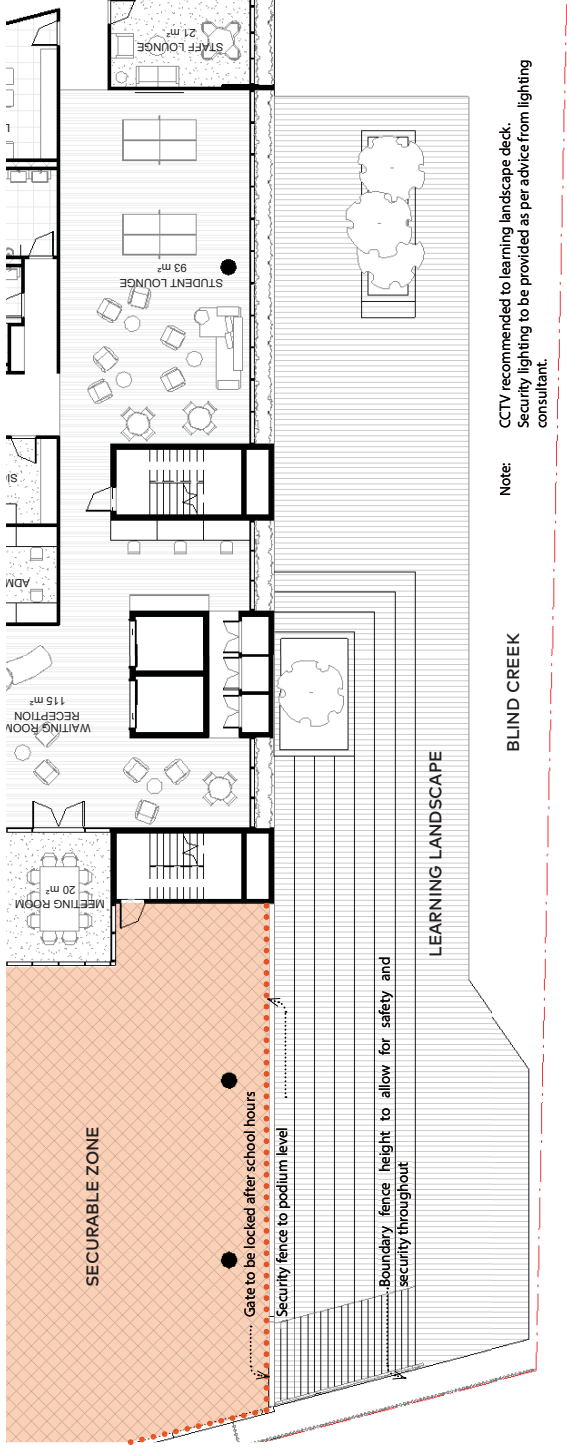
**URBAN MEETS BLIND CREEK**

The blind creek provides a genuine visual and aural respite to the character of the major roads to the site's east and north. The sense of openness of the school's main outdoor play space is augmented by its views onto the creek corridor and accompanying dense vegetation of mature eucalypts. A deck at lower ground level in the easement zone as well as open air and covered play spaces at upper ground level cater for both active and contemplative recreation taking in the creek view.

**VEGETATION BEYOND THE SITE**

Following recommendations on the nature of existing vegetation, it is proposed that the school and/or boarding operator take responsibility for replanting and maintaining a region of the blind creek interface between the title boundary and the creek's top of bank. While this process has many benefits, it is contemplated herein primarily to mitigate safety risks and increase visibility of persons moving in the area.

This process would take guidance from the Melbourne water publication 'planting near sewers, drains and water mains guide' version 4, february 2019, in lieu of a specific strategy for this area of the blind creek corridor.

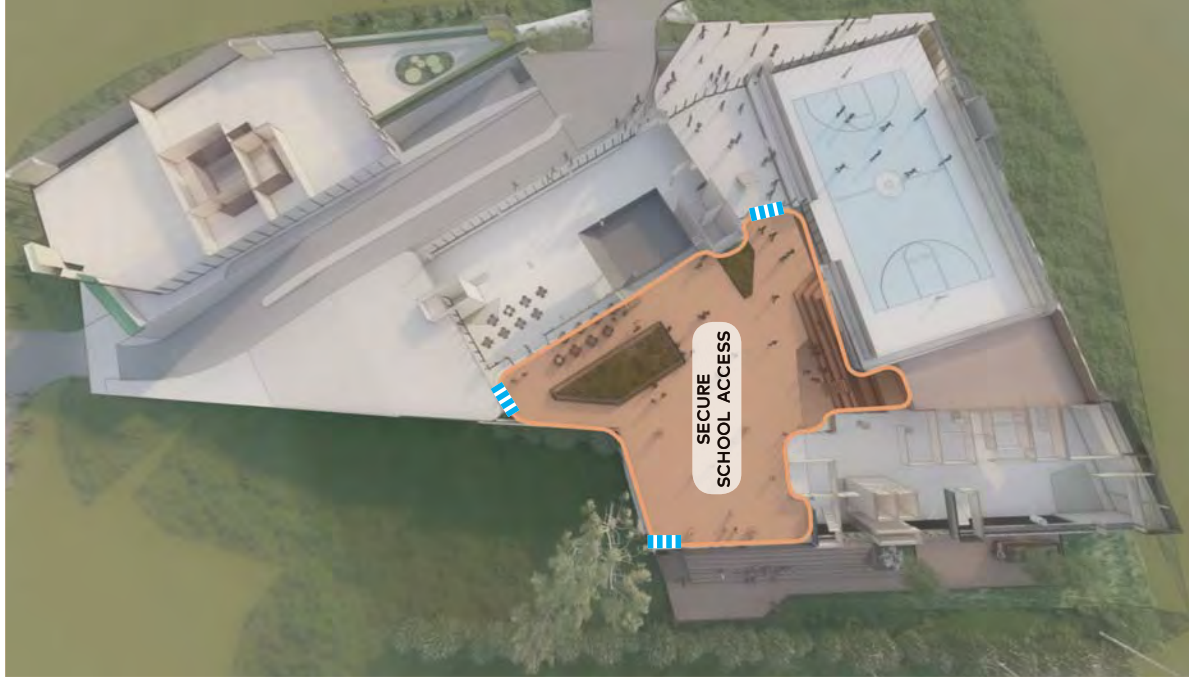
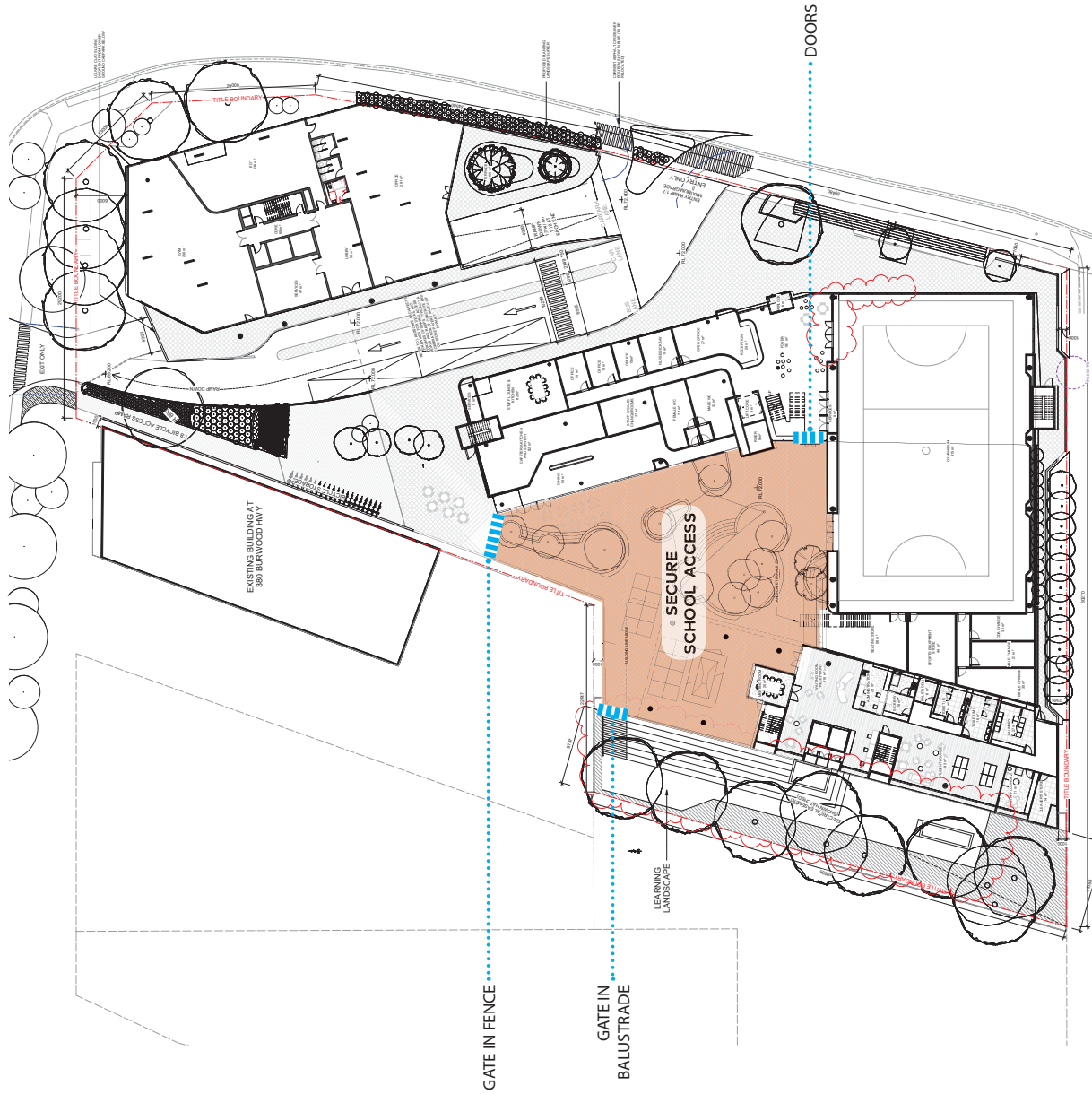


Upper Ground Plan 1:200 @A3





Overall site Secure External Landscaped Zone



Secure Point

# IMPERIAL GRAMMAR SCHOOL

## KNOX CITY CAMPUS

### Community Offering Management Plan



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**ACCESS AND SECURITY ..... 3**

**MANAGEMENT AND OPERATIONS..... 4**

WITHOUT PREJUDICE

## EXECUTIVE SUMMARY

As part of the Imperial Grammar School (IGS) proposal the School has offered a number of Community Benefits that are associated with the Knox City Campus.

This primarily consists of allowing Council and Community Groups access to several facilities that the School offers. These areas include but are not limited to:

- Sports Hall
- Equipment Store
- Change Rooms & Bathrooms
- Library
- Lecture Theatre
- Study Lounge
- Conference Room

This Management Plan is accompanied by a set of plans and diagrams prepared by COX Architects which illustrates the various components of the community benefits associated with the IGS proposal.

## ACCESS AND SECURITY

As shown in the plans prepared by COX, community access is limited to the Ground and First level of the School building in order to make security as functional and efficient as possible.

There is a clear delineation between 'public access' areas and 'secure school access' areas in order to avoid any crossover between the end users.

Whilst it is envisaged that many community members using the facilities will arrive by public transport or other methods of transport, on site parking will be available as the School will not be using the facilities at the same time as the general public.



## MANAGEMENT AND OPERATIONS

In regards to the Management and Operations of the communal facilities, it is proposed that the School will facilitate a booking system that is available to Knox City Council and any other Community Groups for the various facilities.

The School will ensure that there are no clashes between the various users throughout the School and calendar year. It is important to note that whilst it is intended that the communal facilities are available to Council and Community Groups as much as possible, the School retains the right to reserve these spaces for after hours functions or examinations as required.

As the School is managing and operating the community facilities, it will therefore be the School's responsibility to coordinate access with Council and Community Groups to ensure no clashes between the Community and the School users.

The School will allocate staff and operations managers that will work closely with Council and Community Group staff to ensure the community facilities are available for social and active events, such as the following:

### **Sports Hall, Equipment Store, Change Rooms & Bathrooms**

- Indoor Soccer
- Basketball
- Volleyball
- Badminton
- Forums / Expositions / Other Events that may be suitable

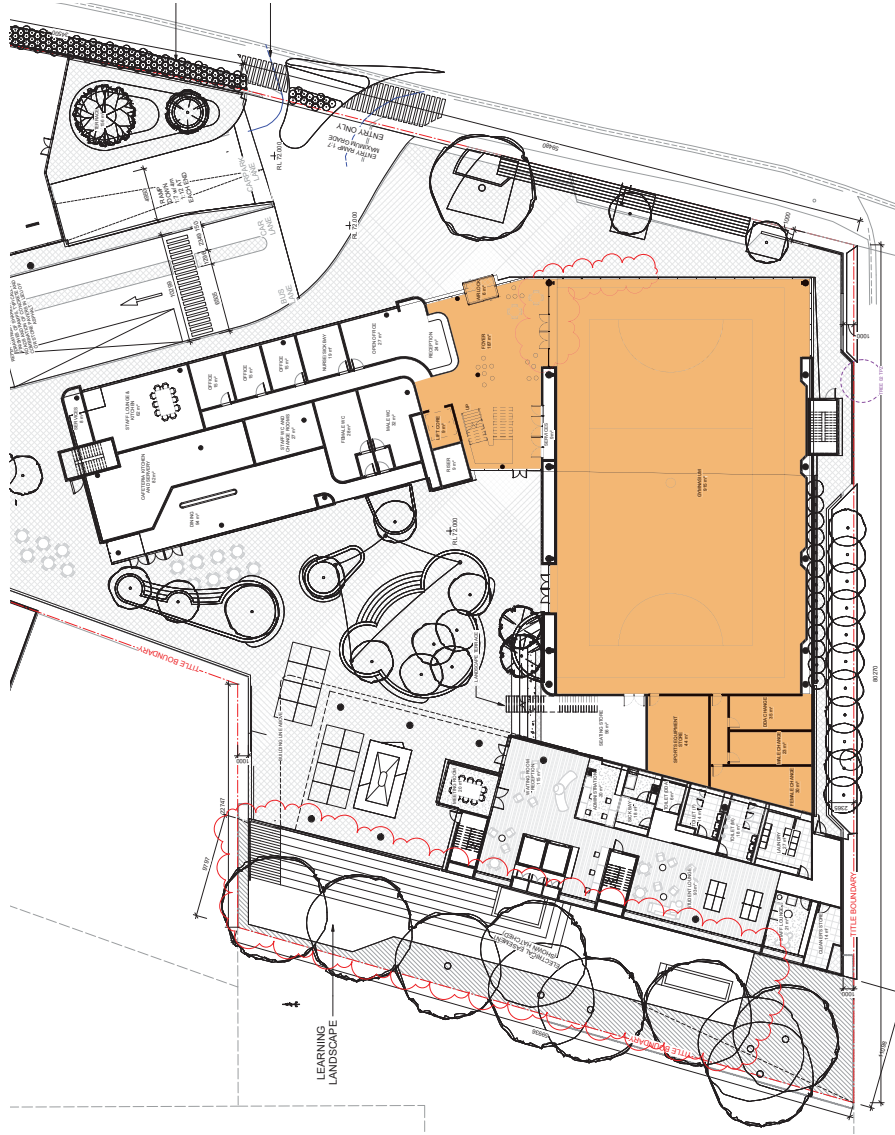
### **Library, Lecture Theatre, Study Lounge, Conference Room**

- Meetings
- Presentations
- Other Council and/or Community Group events that may be suitable

Whilst the School will allocate staff and implement systems that will make these facilities available to Council, Community Groups and the general public, it is not envisaged that the School supplies ongoing use of equipment or organises various events or competitions at the request of Council or the Community Groups.

The School is essentially providing a platform and access to top of the range facilities in order for Council and Community Groups to offer these facilities to the general public and manage these events as required.

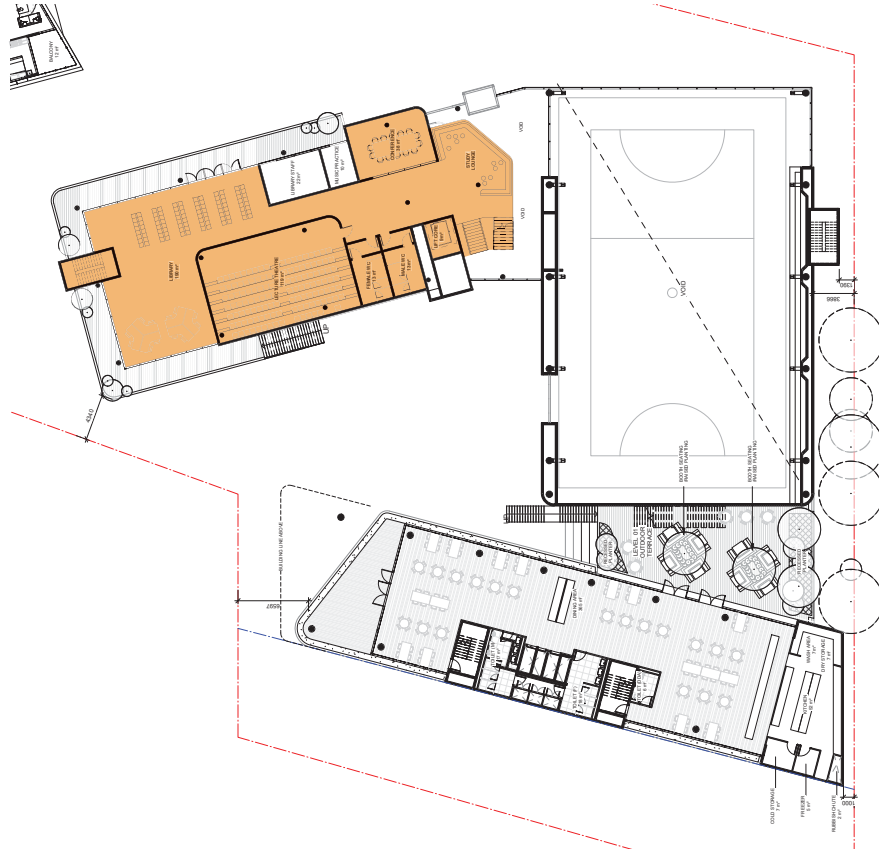
PARTIAL UPPER GROUND FLOOR PLAN  
 1:500 @ A3



**Facilities Available - Upper Ground Floor**

- Foyer
- Sports Hall
- Equipment Store
- Change rooms

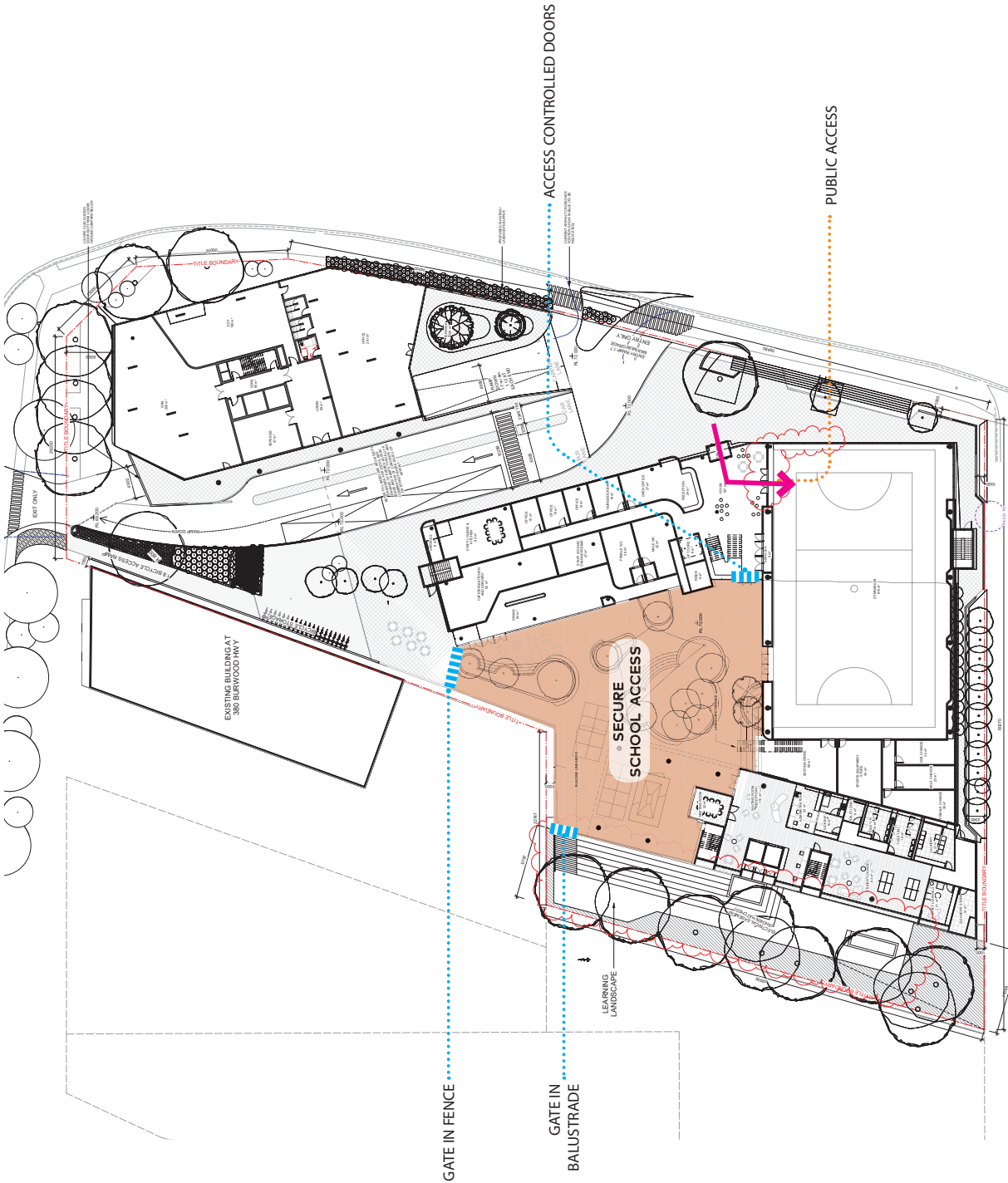
PARTIAL FIRST FLOOR PLAN  
 1:500 @ A3



**Level One**

- Library
- Lecture Theatre
- Conference Room
- Study Lounge
- Bathrooms

Accessible to public as per management plan



As part of this proposal the Client has offered a number of Community Benefits that are associated with the School. This primarily consists of allowing access to several facilities that the School offers, as summarised herein. These areas include but are not limited to:

- Sports Hall
- Equipment Store
- Change Rooms & Bathrooms
- Library
- Lecture Theatre
- Study Lounge
- Conference Room

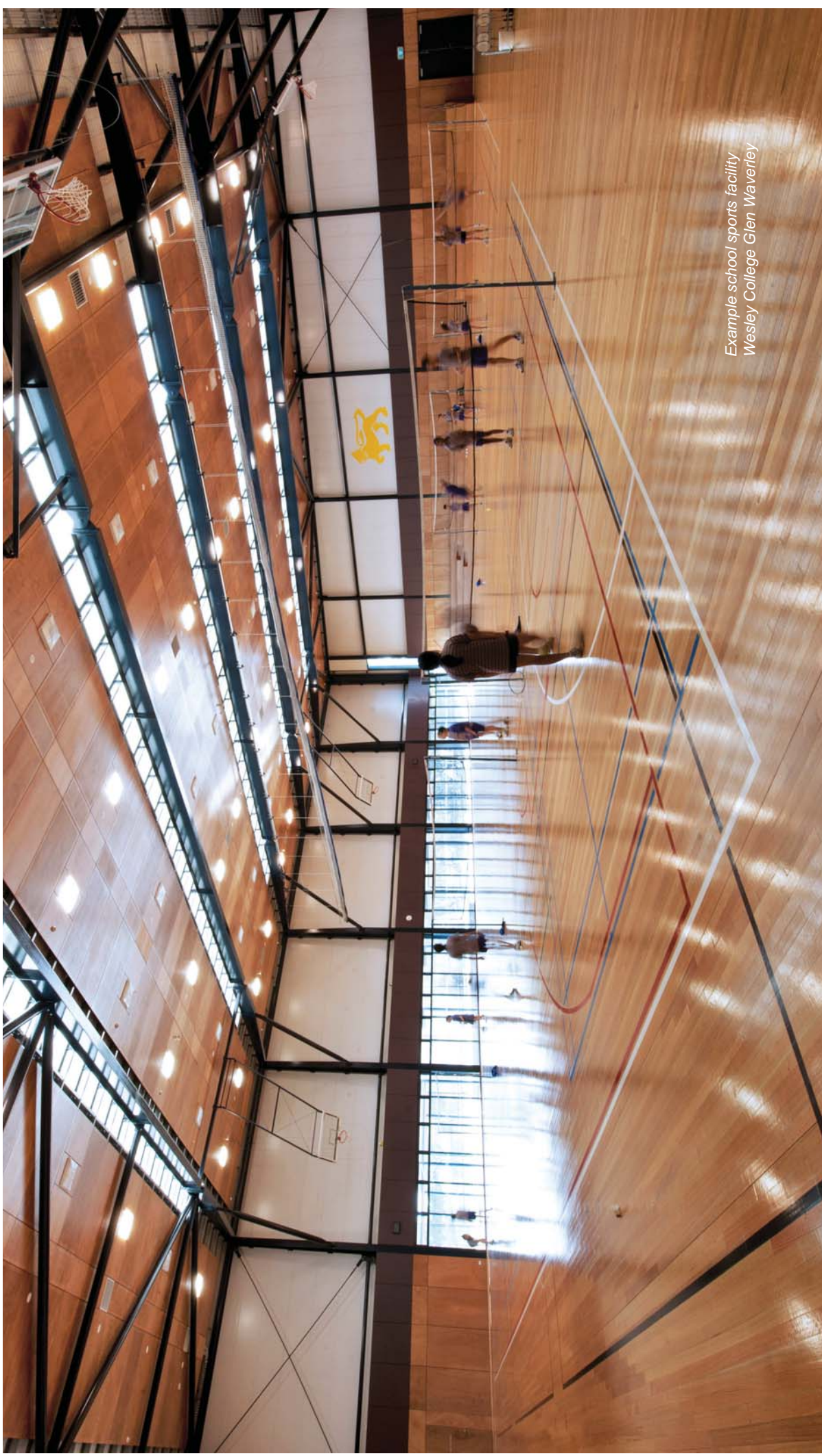
There is restricted access to the Ground and First level of the School building in order to make access and security as functional and efficient as possible. As shown on the diagram, there is a clear delineation between 'public access' areas and 'secure school access' areas in order to provide separation between user groups.

Regarding the management and operation of the areas, it is proposed that the school will facilitate a booking system that is available to Knox City Council and the school will ensure that there are no clashes between the various users throughout the School and calendar year.

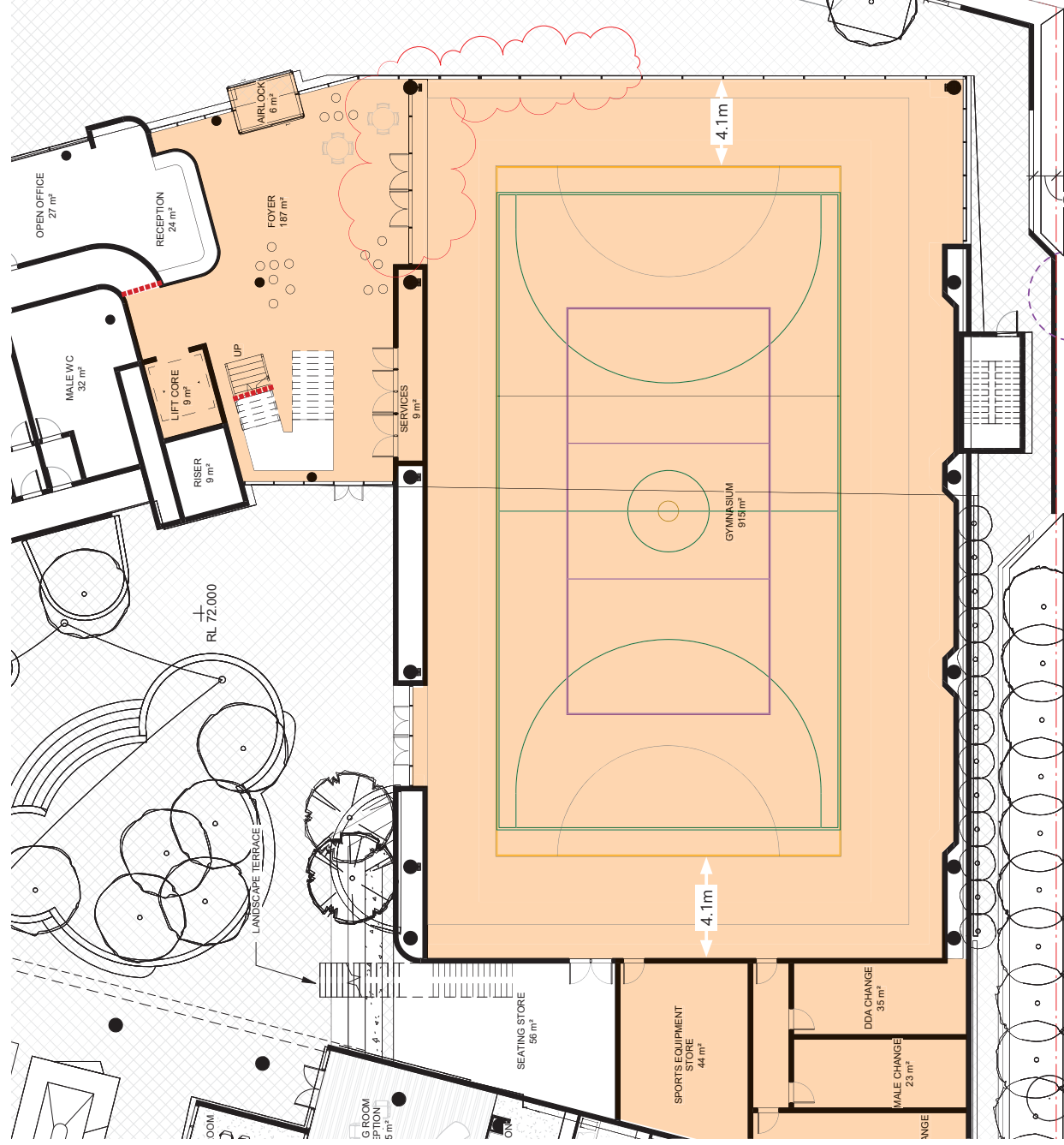


Secure Point





Example school sports facility  
Wesley College Glen Waverley



**NOTES**

**SIZING / SAFETY**

Lines for three major competition sports are shown here marked in yellow (netball), green (basketball) and purple (volleyball). The volleyball court establishes the critical minimum dimensions for the hall; netball Australia specifies clear space of 3.05M for run-off to the perimeter of the court. An additional 1m buffer is provided at each court end, beyond standard competition clearance requirements.

UPPER GROUND LEVEL PLAN (PARTIAL)  
 NOT TO SCALE



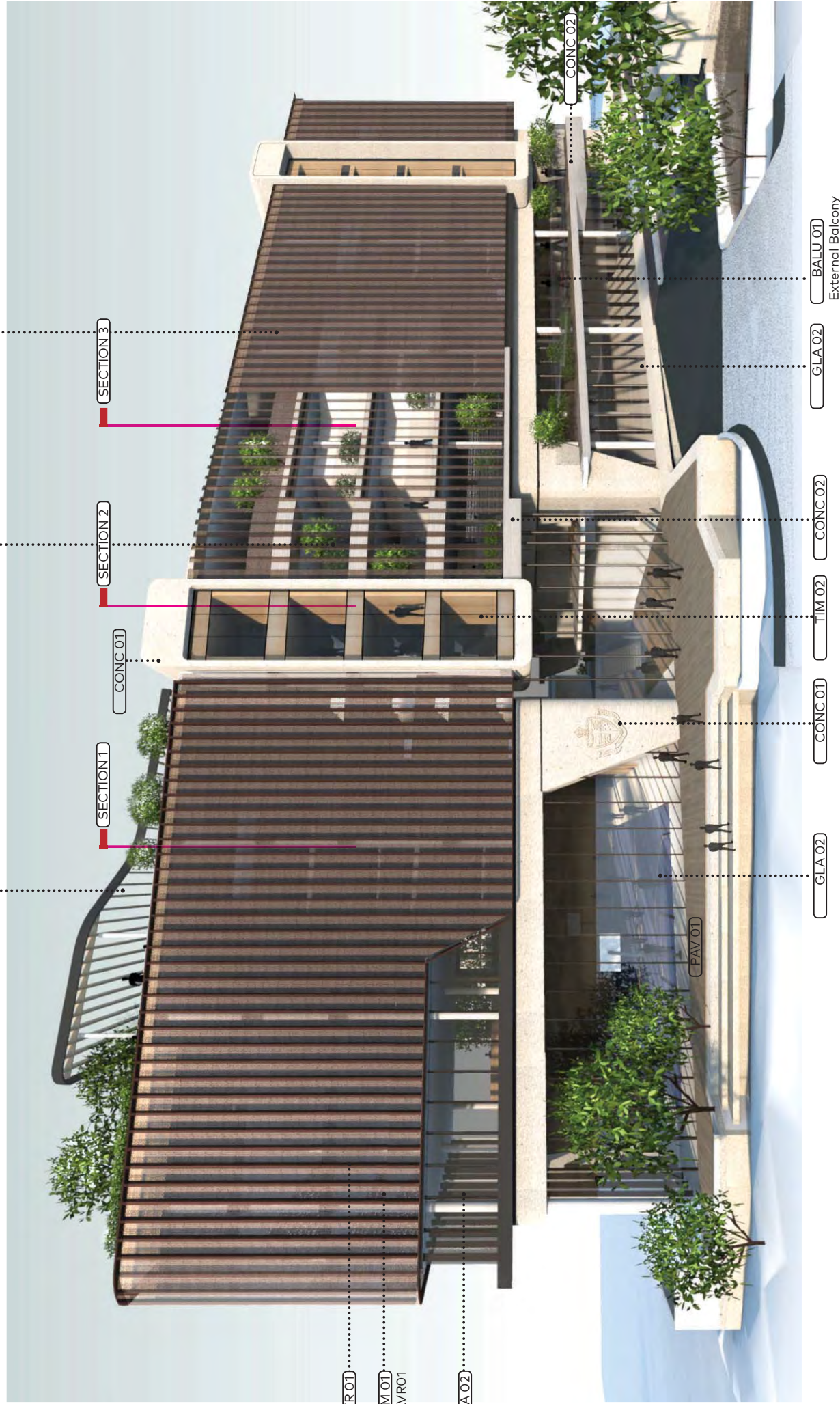
This document illustrates the facade strategy in accordance with the plans prepared by COX architecture dated 24 June 2019. It is designed to provide more clarity as to the design approach where materiality and detailing are considered.

While there is a consistency of materials across the development, each building has its own identity in keeping with the program contained within. Where possible, and particularly regarding the school, volumes of the interior are expressed on the outside, with different zones, such as vertical circulation, receiving different material treatments.

The significant environmental challenges of the site also find expression on the facade of each building with the facade addressing traffic noise and various vistas. Throughout the development, shading and passive sustainable design contribute significantly to the architectural expression with large areas of aluminium louvres providing privacy, shading and facade articulation.







LVR 01

ALUM 01  
Behind LVR01

GLA 02

TIM 01

SECTION 1

SECTION 2

SECTION 3

LVR 01

BALU 01

CONC 01

CONC 02

GLA 02

CONC 01

TIM 02

CONC 02

GLA 02

BALU 01

External Balcony

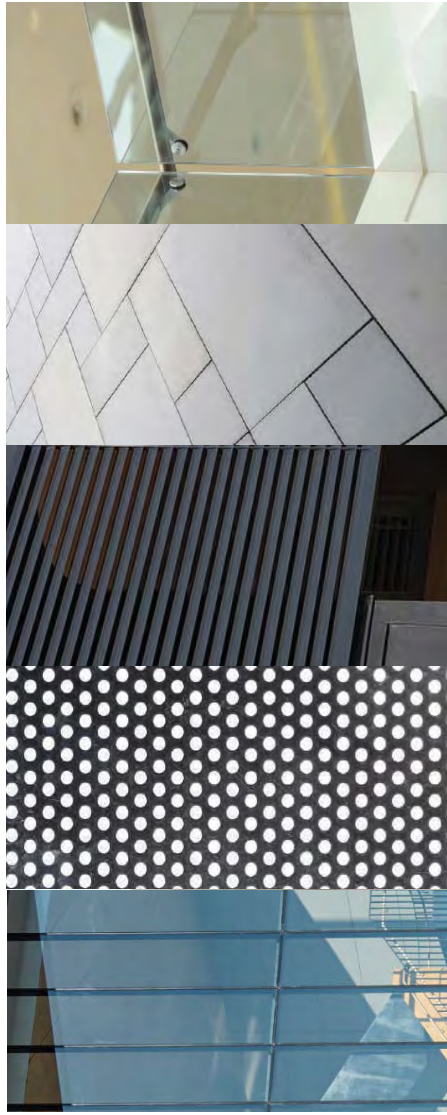
PAV 01

**04 | Facade Types and Finish**

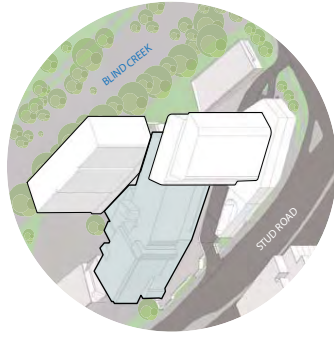
School



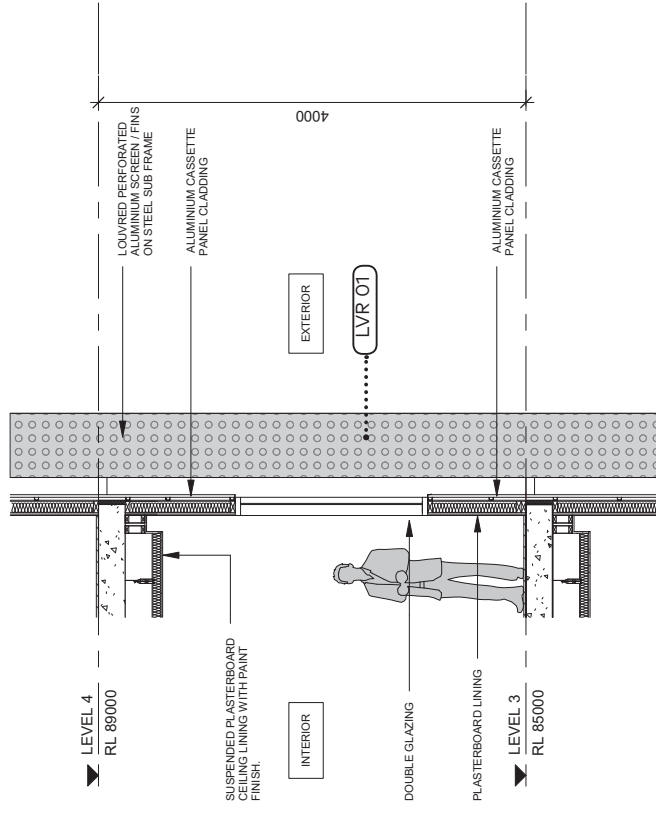
TIM 01	TIM 02	ALUM 01	CONC 01	CONC 02
Timber Structure	Timber Board Finish (Internal)	Metal Deck cladding	Coloured Precast Concrete	Textured Precast Concrete



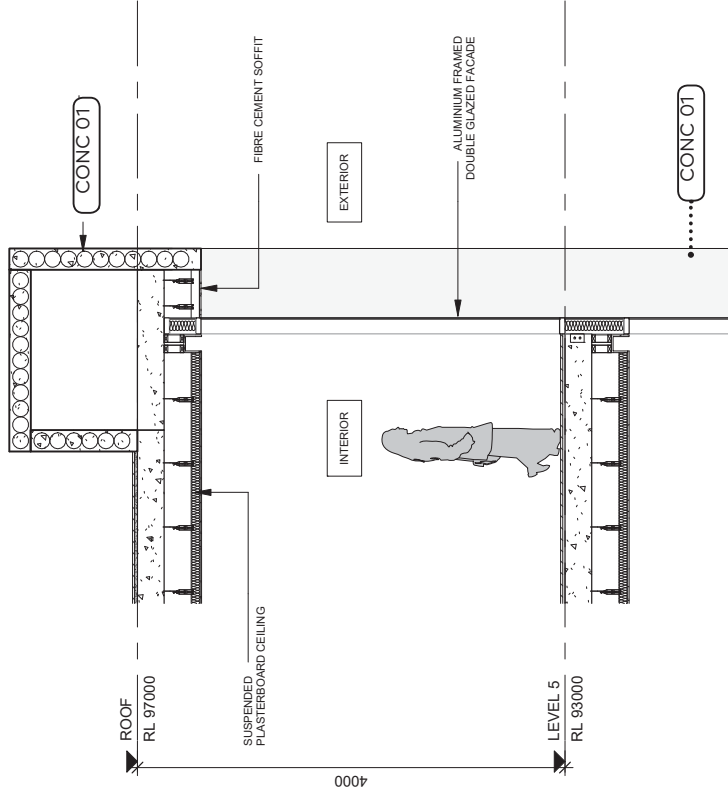
GLA 02	LVR 01	LVR 02	PAV 02	BALU 01
Clear glass Window Wall Facade	Perforated Aluminum Screen/fins	Aluminum Plant Louver	Concrete Paving (various colours)	Glass Balustrade



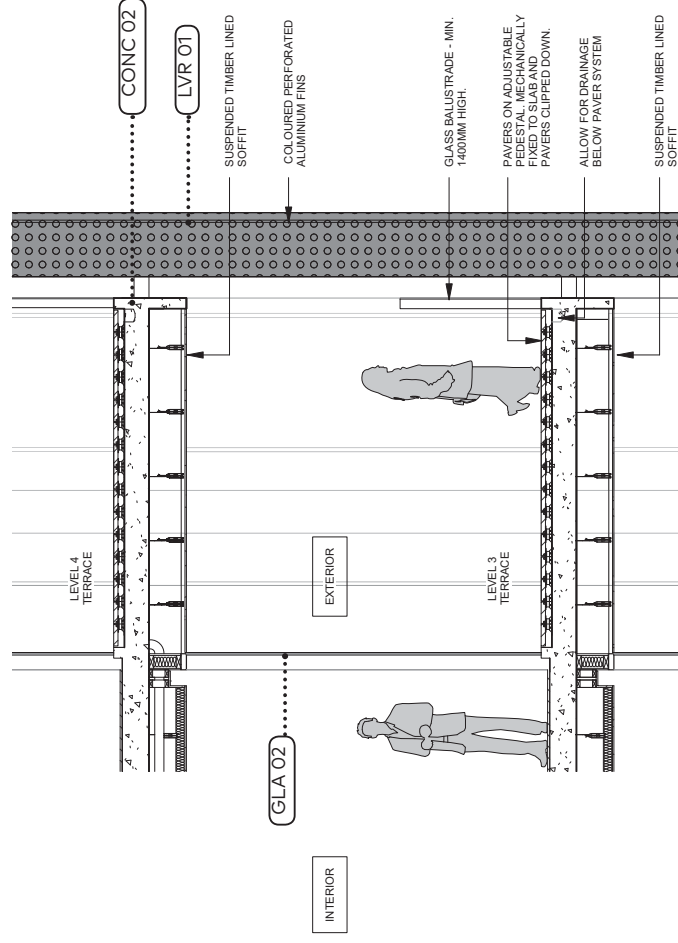




**Section 1 - School**  
**Typical School Glazing**  
**1:50 @ A3**



**Section 2 - School**  
 Typical stair facade detail  
 coloured concrete facade with window wall glazing  
 1:50 @ A3



**Section 3 - School**  
 Typical Outdoor  
 Terrace + Glazing  
 1:50 @ A3



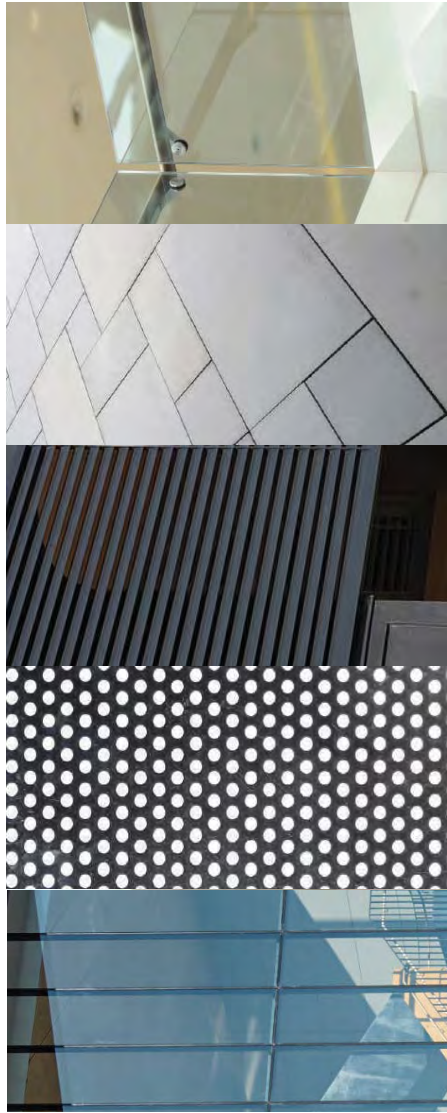


Note: CONC 02 to have varying coloured finish

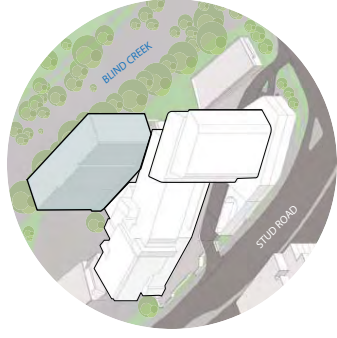




TIM 01	TIM 02	ALUM 01	CONC 01	CONC 02
Timber Structure	Timber Board Finish (Internal)	Metal Deck cladding	Coloured Precast Concrete	Textured Precast Concrete

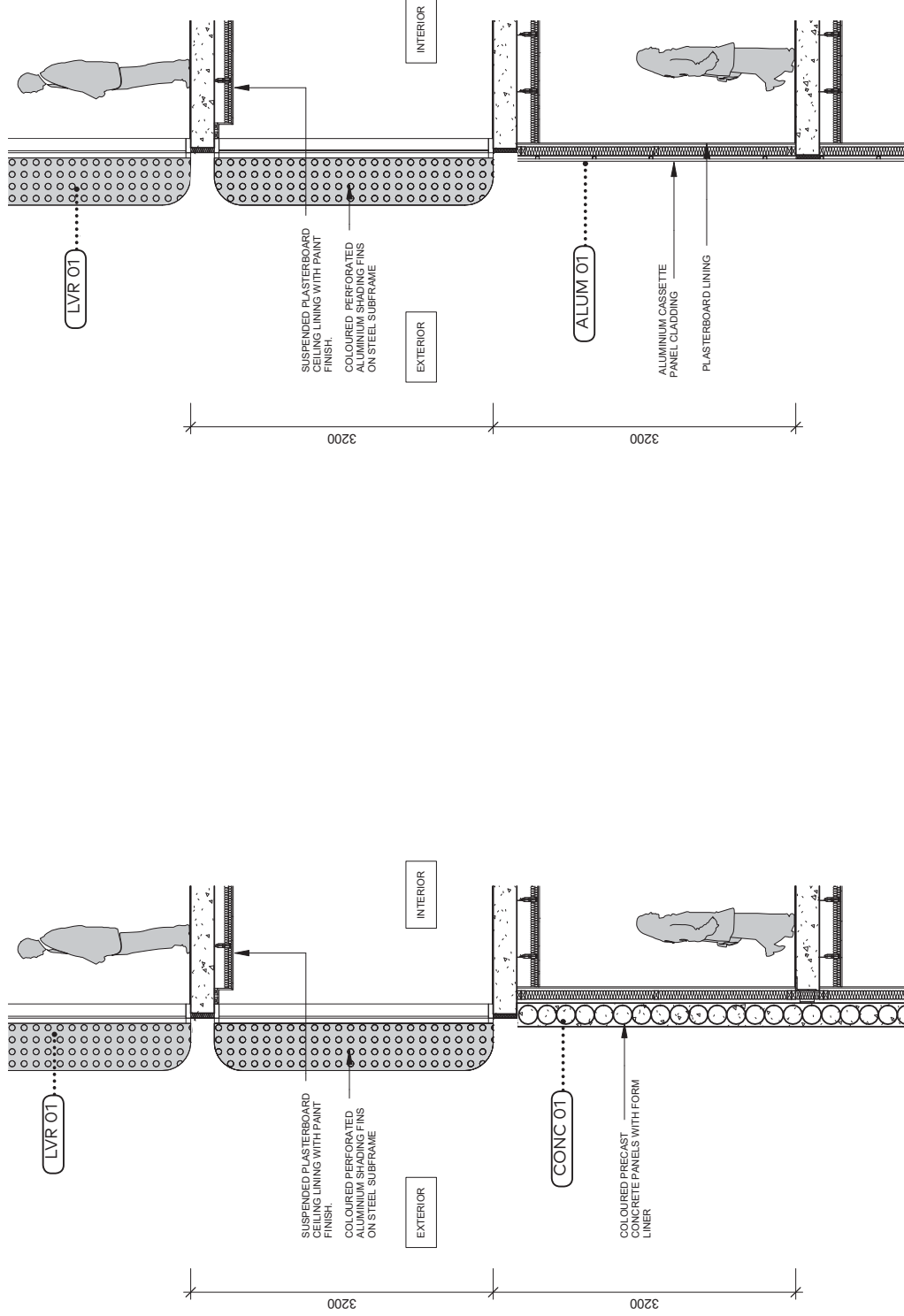


GLA 02	LVR 01	LVR 02	PAV 02	BALU 01
Clear glass Window Wall Facade	Perforated Aluminum Screen/fins	Aluminum Plant Louver	Concrete Paving (various colours)	Glass Balustrade













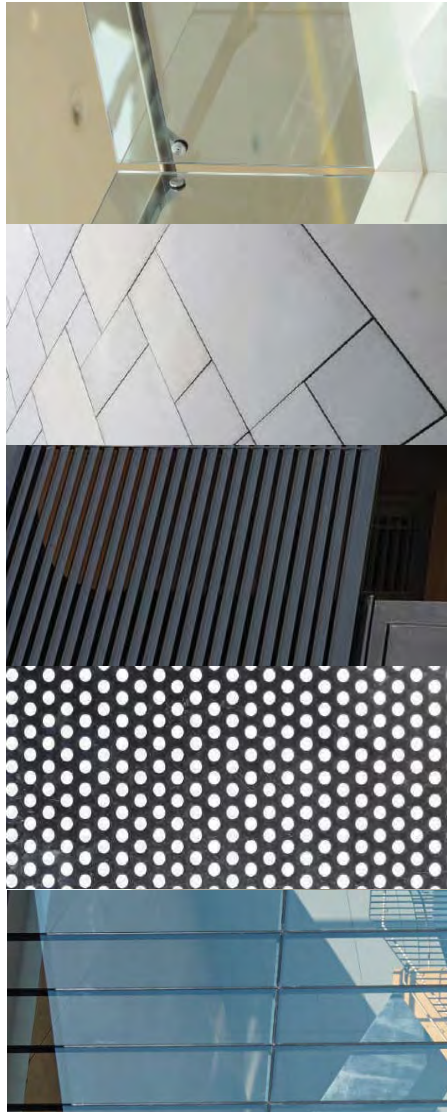
**PCT 01**  
Metal shade fin  
(various colours)

**TIM 02**  
Timber Board Finish  
(Internal)

**ALUM 01**  
Metal Deck  
cladding

**CONC 01**  
Coloured Precast  
Concrete

**CONC 02**  
Textured Precast  
Concrete



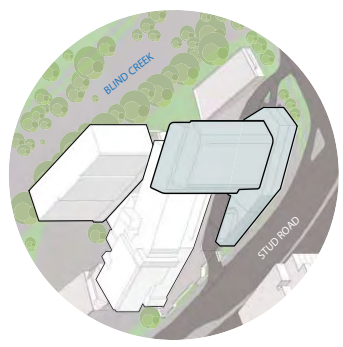
**GLA 02**  
Clear glass  
Window Wall Facade

**LVR 01**  
Perforated  
Aluminum  
Screen/fins

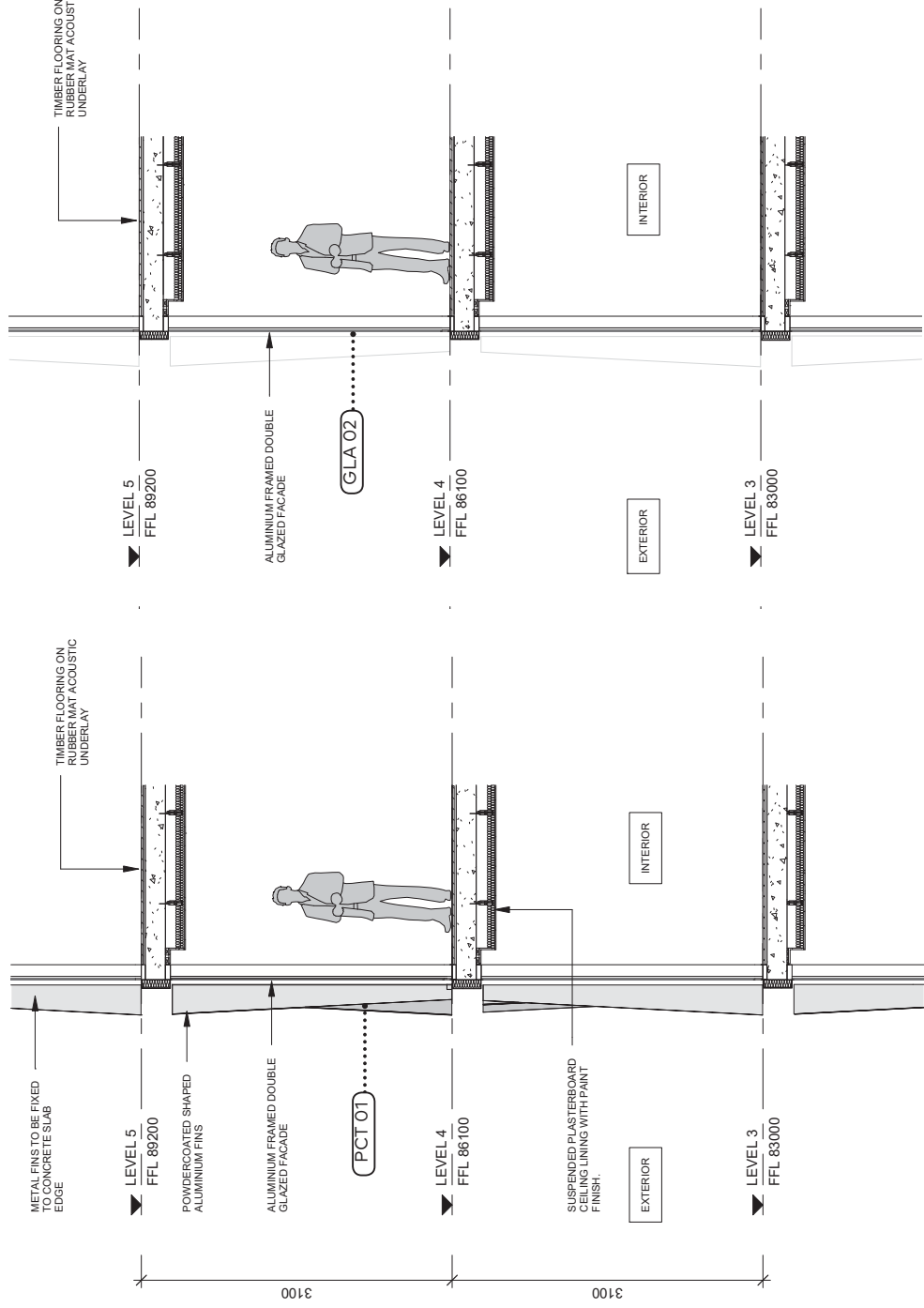
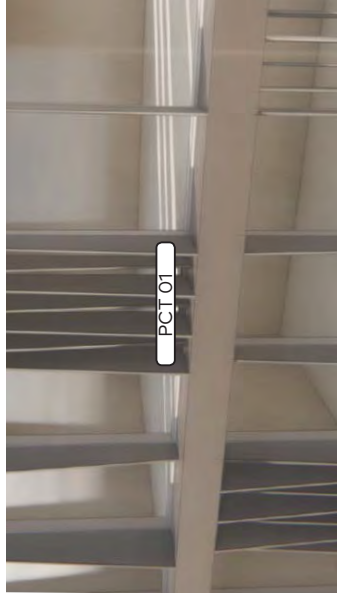
**LVR 02**  
Aluminum  
Plant Louver

**PAV 02**  
Concrete Paving  
(various colours)

**BALU 01**  
Glass  
Balustrade



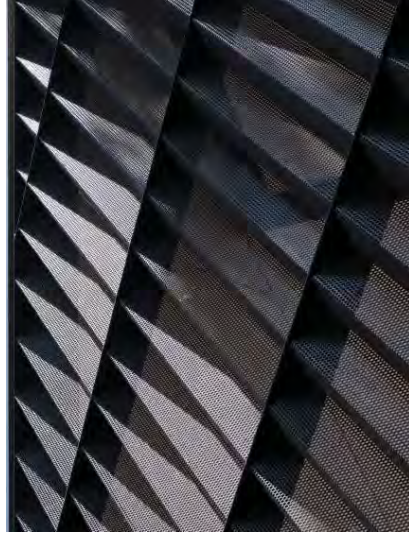
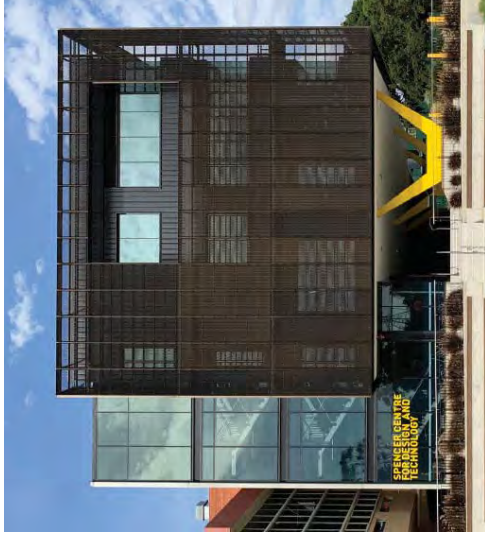






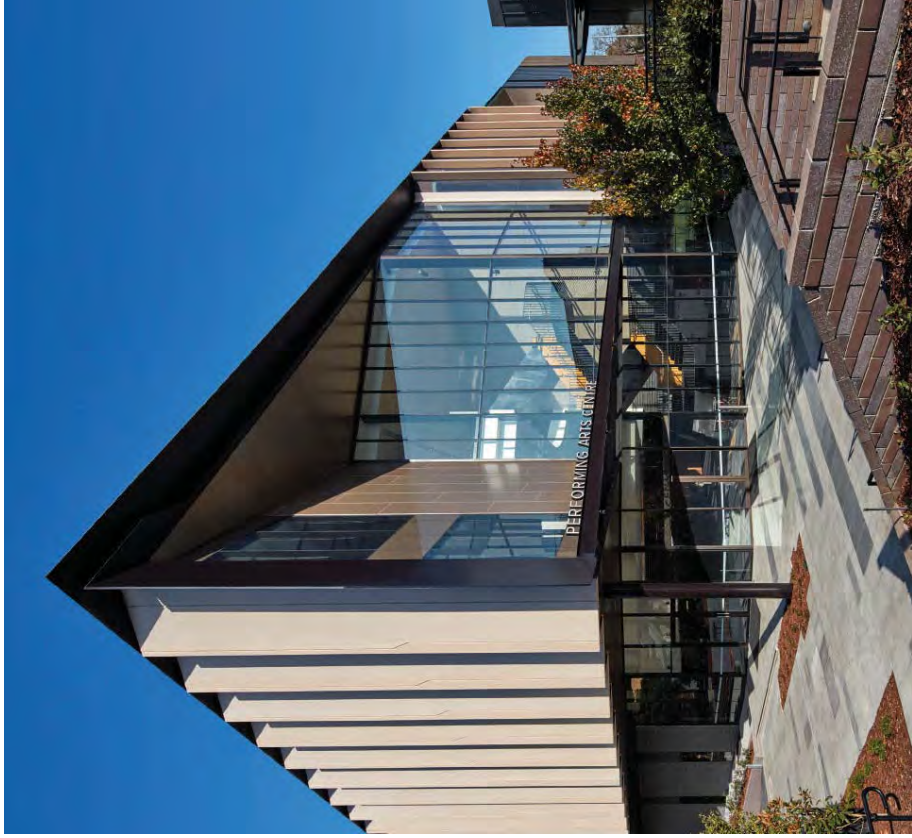
**Presbyterian Ladies College**  
- Folded perforated sheet screen  
- Clear glass, window wall facade

**Scotch College**  
- expanded mesh sheet screen  
- Clear glass, window wall facade



**Wesley College**  
- Perforated sheet screen  
- Tinted glass, window wall facade





**Presbyterian Ladies College**  
 - Coloured precast concrete  
 - Clear glass, window wall facade



**Presbyterian Ladies College**  
 - window wall facade - stair circulation



**Wesley College**  
 - Concrete pavers  
 - Timber linings



**Presbyterian Ladies College**  
 - Precast concrete  
 - Aluminium panels



**Scotch College**  
 - Roof top teaching spaces  
 - Concrete pavers  
 - Metal framing





**Adelaide Botanic High School**  
- Metal Shade Fin



**St Thomas More College**  
- Perforated sheet screen  
-Pre Cast Concrete

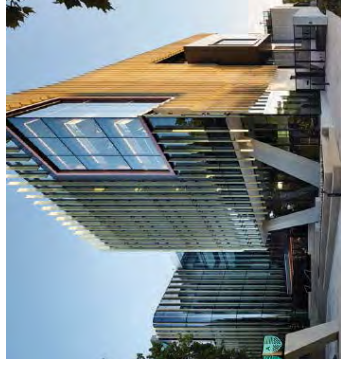




**Wesley College ' Learning in Residence'**  
 - Timber Screen



**Wesley College ' Learning in Residence'**  
 -window wall facade



**Adelaide Botanic High School**  
 - Metal Shade Fin



**Sir Louis Matheson Library**  
 - Window Wall Facade  
 - Aluminium fins



**Wesley College ' Learning in Residence'**  
 -Aluminium Clad





**WARNING**  
 BEWARE OF UNDERGROUND SERVICES  
 ANY WORK TO BE UNDERTAKEN SHOULD  
 SHOW AN APPROPRIATE DIG AND TEST REPORT  
 WHICH SHOULD BE PRESENT ON SITE.

**PRELIMINARY PLAN**  
 FOR DISCUSSION  
 PURPOSES ONLY

390 BURWOOD HIGHWAY - WANTRINA SOUTH  
 STUD ROAD  
 KNOX CITY  
 FUNCTIONAL LAYOUT PLAN

SCALE 1:500 (A3)  
 0 2.5 5 7.5 10  
 SHEET No. G239993-01



DESIGNED	R CARBARRS	24 OCT 2018
CHECKED/APPROVED	M O'SHEA	24 OCT 2018
FILE NAME	G239993-01-01.dgn	

**GENERAL NOTES**

1. BASED ON APPROVED PROY CLIENT 180620-Wantrina South-A21-01(DMO) AND AERIAL PHOTOGRAPH
2. ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3. MAIN ROAD - STUD ROAD (SPEED ZONE 80km/h)
4. ALL PROPOSED FOOTPATHS AND PAVEMENT CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.2.2009

ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	FUNCTIONAL LAYOUT PLAN	24 OCT 2018
B	INCLUSION OF LEFT-OUT EXIT ONTO STUD ROAD	27 MAY 2019



**VEHICLE USED IN SIMULATION**  
 (VEHICLE SPEED = 50km/h)  
 5.00  
 0.00 3.00  
 99th percentile  
 (ASNZS 2890.1-2004)  
 meters  
 Wheel : 1.00  
 Track : 1.84  
 Lock to lock Time : 0.50  
 Steering Angle : 0.50

**LEGEND**  
 FRONT WHEELS  
 REAR WHEELS  
 BODY CLEARANCE

**WARNING**  
 BEWARE OF UNDERGROUND SERVICES  
 (e.g. gas, water, sewer, etc.)  
 shown are approximate only and their exact  
 position could be present on site.

**PRELIMINARY PLAN**  
 FOR DISCUSSION  
 PURPOSES ONLY

390 BURWOOD HIGHWAY - WANTRINA SOUTH  
 STUD ROAD  
 KNOX CITY  
 FUNCTIONAL LAYOUT PLAN

SCALE 1:500 (A3)  
 0 2.5 5 7.5 10  
 SHEET No. G23993-01  
 DWG No. G23993-01



DESIGNED  
 R. CARBARRS 24 OCT 2018

CHECKED/APPROVED  
 M. O'SHEA 24 OCT 2018  
 FILE NAME  
 G23993-01-01.dgn

**GENERAL NOTES**  
 1. BASED ON APPROVED PROY. CLIENT 180620-Wantrina South-A21-01(DWG) AND AERIAL PHOTOGRAPH  
 2. ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL  
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ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	FUNCTIONAL LAYOUT PLAN	24 OCT 2018
B	INCLUSION OF LEFT-OUT EXIT ONTO STUD ROAD	27 MAY 2019



**LEGEND**

- FRONT WHEELS
- REAR WHEELS
- VEHICLE TRACK
- BODY CLEARANCE

**VEHICLE USED IN SIMULATION**  
(VEHICLE SPEED = 50km/h)

6.40m  
1.62m  
3.80m  
6.4m SRV  
width : 2.30m  
Lock to lock time : 6.0s  
Steering angle : 1.500

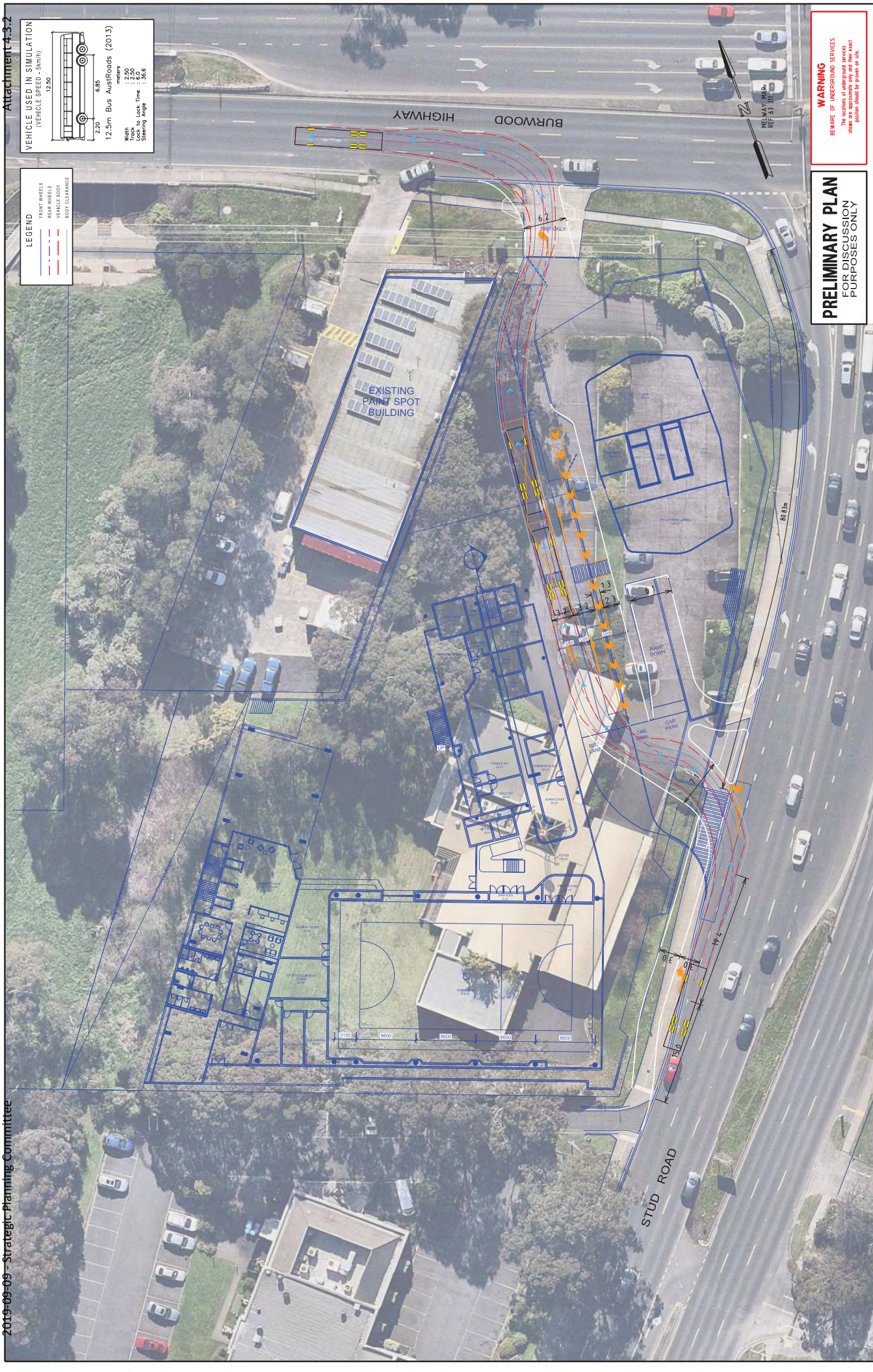
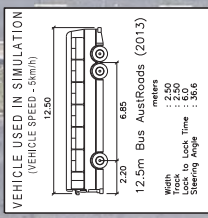
**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
The location of underground services is not shown and is approximate only and their exact position could be present on site.

**PRELIMINARY PLAN**  
FOR DISCUSSION  
PURPOSES ONLY

ISSUE	ISSUE DESCRIPTION	ISSUE DATE	GENERAL NOTES	DESIGNED	FILE NAME	SCALE	SHEET No.	DWG No.
A	FUNCTIONAL LAYOUT PLAN	24 OCT 2018	1. BASED ON APPROVED PROY. CLIENT 180620-Wantrina South-A21-01(DMO) AND AERIAL PHOTOGRAPH 2. ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL 3. MAIN ROAD = STUD ROAD (SPEED ZONE 80km/h)	R. CARBARRS	G23993-01-01.dgn	0 2.5 5 7.5 10	18	G23993-01
B	INCLUSION OF LEFT-OUT EXIT ONTO STUD ROAD	27 MAY 2019	4. ALL PROPOSED FOOTPATHS AND PARK CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.2.2005	M. O'SHEA				







**PRELIMINARY PLAN**  
FOR DISCUSSION  
PURPOSES ONLY

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
The location of underground services is not shown and is approximate only and their exact position should be proven on site.

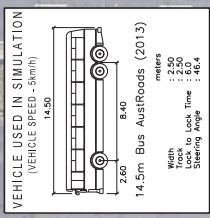
ISSUE	ISSUE DESCRIPTION	ISSUE DATE	GENERAL NOTES	DESIGNED	CHECKED/APPROVED
A	FUNCTIONAL LAYOUT PLAN	24 OCT 2018	GENERAL NOTES 1. BASED ON APPROVED PROY CLIENT 180620-Wantrina South-A21-01(DMO) AND AERIAL PHOTOGRAPH 2. ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL 3. MAIN ROAD & STUD ROAD (SPEED ZONE 80km/h) 4. ALL PROPOSED FOOTPATHS AND PARK CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.2.2009	R CARBARRS	24 OCT 2018
B	INCLUSION OF LEFT-OUT EXIT ONTO STUD ROAD	27 MAY 2019		H O'SHEA	24 OCT 2018
				FILE NAME	G23993-01-01.dgn
					G23993-01

390 BURWOOD HIGHWAY - WANTRINA SOUTH  
STUD ROAD  
KNOX CITY  
FUNCTIONAL LAYOUT PLAN

SCALE 1:500 (A3)  
0 2.5 5 7.5 10  
SHEET No. G23993-01







**PRELIMINARY PLAN**  
FOR DISCUSSION  
PURPOSES ONLY

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
This plan is a preliminary design and does not show any underground services and their exact positions should be checked on site.

ISSUE	ISSUE DESCRIPTION	ISSUE DATE	GENERAL NOTES	DESIGNED	CHECKED/APPROVED
A	FUNCTIONAL LAYOUT PLAN	24 OCT 2018	<p><b>GENERAL NOTES</b></p> <p>1. BASED ON APPROVED PROY CLIENT 180620-Wantrina South-A21-01(DMO) AND AERIAL PHOTOGRAPH</p> <p>2. ALL DIMENSIONS ARE TO FACE OF KERB &amp; CHANNEL</p> <p>3. MAIN ROAD - STUD ROAD (SPEED ZONE 80km/h)</p> <p>4. ALL PROPOSED FOOTPATHS AND PARK CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.2.2009</p>	R CARBARRS	24 OCT 2018
B	INCLUSION OF LEFT-OUT EXIT ONTO STUD ROAD	27 MAY 2019		M O'SHEA	24 OCT 2018
				FILE NAME	G23993-01-01.dgn
					186 of 207

**TraffixGroup**  
Traffic Engineers and Transport Planners  
Suite 04/31 Burke Road TEL: (03) 9822-8888  
www.traffixgroup.com.au

390 BURWOOD HIGHWAY - WANTRINA SOUTH  
STUD ROAD  
KNOX CITY  
FUNCTIONAL LAYOUT PLAN  
SCALE 1:500 (A3) 0 2.5 5 7.5 10 SHEET No. G23993-01 DWG No. G23993-01

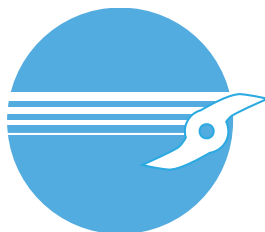


**OROS WS**

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# **390 Burwood Highway, Wantirna South**

## **Desktop Pedestrian Level Wind Assessment**



**GWTS**

**Document No.**

**GWTS-DPR-10210-2019-0**

<b>Client:</b> OROS WS ABN: 62 543 099 093 <b>Prepared For:</b> VIAPAC GROUP  222 Rosslyn Street, West Melbourne, VIC 3003  <b>Contact:</b> Daniel Stiller ☎ (03) 9600 0282 <b>Email:</b> <a href="mailto:daniel.stiller@viapacgroup.com">daniel.stiller@viapacgroup.com</a>	<b>Prepared By:</b> Global Wind Technology Services Pty Ltd ABN 17 125 364 794  505, 434 St Kilda Road, Melbourne, VIC 3004  ☎ (03) 9939 9490 <b>Email:</b> <a href="mailto:info@gwts.com.au">info@gwts.com.au</a>
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<b>Project Category:</b> ST-CL-PD-FV	<b>Document No:</b> GWTS-DPR-10210-2019-0
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<b>Prepared By:</b> Michael Swaney	<b>Date:</b> 12 <sup>th</sup> June, 2019
<b>Released By:</b> Seifu Bekele	<b>Date:</b> 12 <sup>th</sup> June, 2019
<b>Revision History</b> <b>Revision No:</b> <p style="text-align: center;">0</p>	<b>Comments:</b> <p style="text-align: center;">Draft Report</p>

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## EXECUTIVE SUMMARY

GWTS has been commissioned by OROS WS to perform an assessment of pedestrian level winds for the proposed 390 Burwood Highway developments in Wantirna South.

This study was conducted by GWTS to help in achieving a greater understanding of the wind conditions and environment of the proposed development. GWTS investigated the wind environment around the proposed development by considering its form and exposure, the nearby existing developments, the local wind climate, the proposed use of ground level areas in and adjacent to the proposed development.

A summary of the study is as follows:

- Minor increases in wind speeds were predicted to occur within the pedestrian level wind environment as a result of the proposed development.
- Wind speeds are predicted to approach or marginally exceed the limit for the recommended criteria in some locations and recommendations have been made where necessary.

The following recommendations were made:

- Use of dense vegetation around the ground floor outdoor dining area
- Minimum balustrade heights on the level 1 outdoor dining terrace
- Minimum balustrade heights on the level 2 outdoor dining terrace and outdoor biology classroom
- Minimum balustrade heights on the rooftop terrace areas on the Residential Tower and Imperial Grammar School
- Minimum balustrade heights on the level 1 terraces of the Boarding Accommodation and Imperial Grammar School developments
- Fixing of lightweight items on balcony/terrace areas

**Please note that this is an opinion statement and is not based on wind tunnel testing.**



# 1. INTRODUCTION

## 1.1 Geometry of Proposed Development

As illustrated in Figure 1, the proposed building site consists of three separate developments; one school and two residences.

The 6 level Imperial Grammar School is located in the southern pocket of the site. It is L-shaped in form and shares a level 1 outdoor terrace with the Boarding Accommodation development.

The 10 level Boarding Accommodation is located in the western pocket of the site and is rectangular in form with a dominant NE-SW axis.

The uniquely shaped 12 level Residential Tower is located in the north eastern pocket with a dominant NW-SE axis.

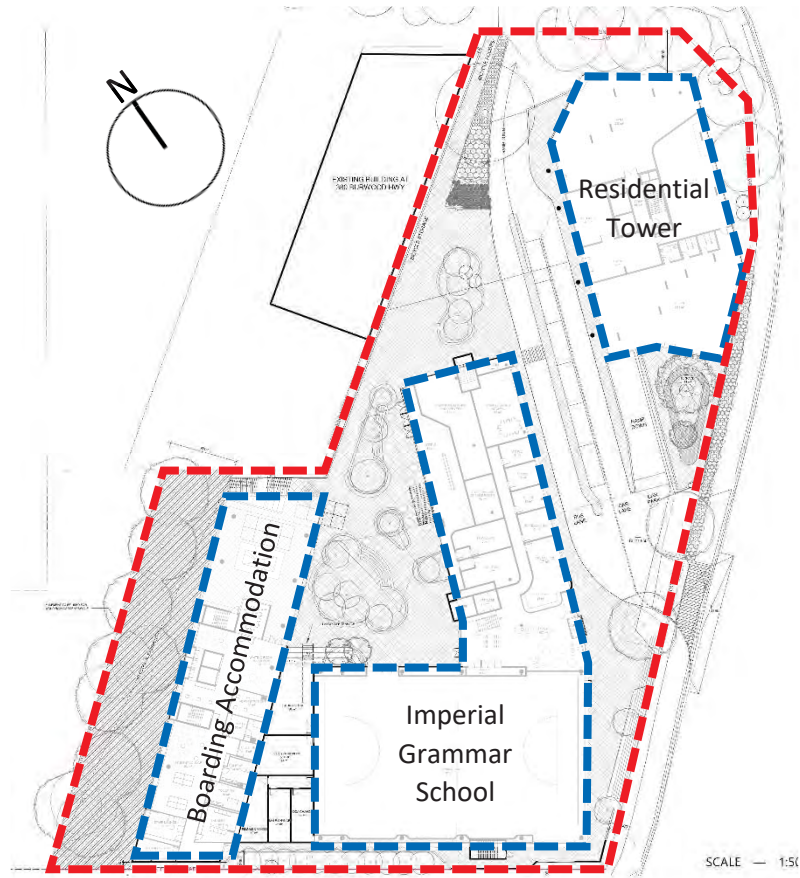


Figure 1: Plan view of the proposed developments

Figure 2 are the top level parapet heights of the buildings from lower ground level. As illustrated below, the Boarding Accommodation building is 48.9m in height, the Imperial Grammar School is 29.5m in height and the Residential Tower is 46.5m in height.



Figure 2: West elevation of the proposed development



## 1.2 Building and Site Surroundings

The site is bound by Burwood Highway to the north, Stud Road to the east, the low-rise Wantirna Club development to the south and Blind Creek and an existing low-rise development to the west. A close-up view of the site is shown in Figure 3.



Figure 3: Location of proposed development

A satellite photograph of the project site and surrounding terrain is shown in Figure 4. The surrounding topography within a 2.8km radius, including a 930m lag distance from the site, consists mainly of low to mid-rise developments. As illustrated in Figure 4, the upstream terrain beyond the terrain immediately upwind of the site is modelled as an approaching wind Terrain Category 3 in accordance with AS/NZS 1170.2: 2011.



Figure 4: Satellite image of the site and surrounding terrain



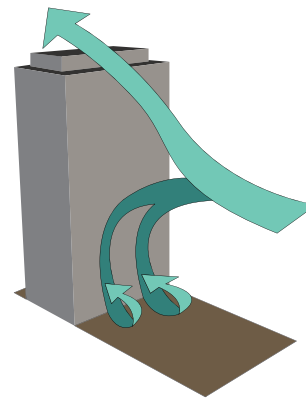
## 1.3 Environmental Wind Effects

### 1.3.1 Atmospheric Boundary Layer

As wind flows over the earth, it encounters various roughness elements and terrain such as water, forests, houses and buildings. To varying degrees, these elements reduce the mean wind speed at low elevations and increase air turbulence. The wind above these obstructions travels with un-attenuated velocity, driven by atmospheric pressure gradients. The resultant increase in wind speed with height is known as a wind velocity profile. The terminology used to describe the wind flow patterns around the proposed development is based on the aerodynamic mechanism, direction and nature of the wind flow. Typical flow patterns are defined and illustrated below.

### 1.3.2 Downwash

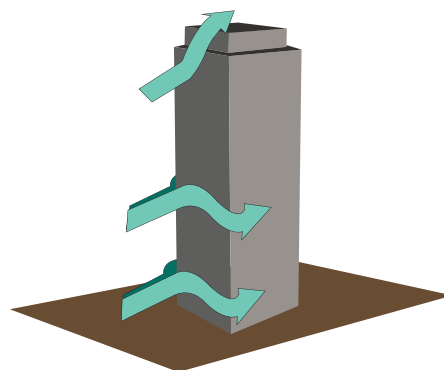
The flow of air down the exposed face of a Tower. A tall Tower can deflect a fast moving wind at higher elevations downwards.



A. Downwash

### 1.3.3 Corner Accelerations

When wind flows around the corner of a building it tends to accelerate in a similar manner to airflow over the top of an airplane wing.



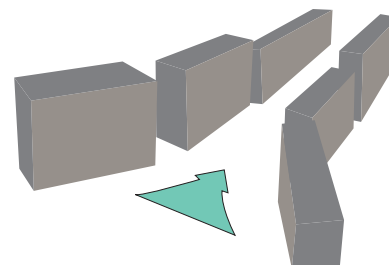
B. Corner Accelerations

### 1.3.4 Flow separation

When wind flowing along a surface suddenly detaches from that surface and the resultant energy dissipation produces increased turbulence in the flow.

### 1.3.5 Flow Channeling

The well-known “street canyon” effect occurs when a large volume of air is funnelled through a constricted pathway. To maintain flow continuity the wind must speed up as it passes through the constriction.



C. Channel Flow

### 1.3.6 Direct Exposure

A location with little upstream shielding for a wind direction of interest. The location will be exposed to the unabated mean wind and gust velocity. Piers and open water frontage may have such exposure.

## 2. WIND CLIMATE

The Melbourne region mean and gust wind speeds have been recorded at Tullamarine airport for over 40 years. These data have been analysed and the directional probability distribution of wind speeds have been determined. The directional distribution of hourly mean wind speed at the gradient height, with a probability of occurring approximately once per year day time (i.e. 1 year return period, probability level 0.001) is shown in Figure 5.

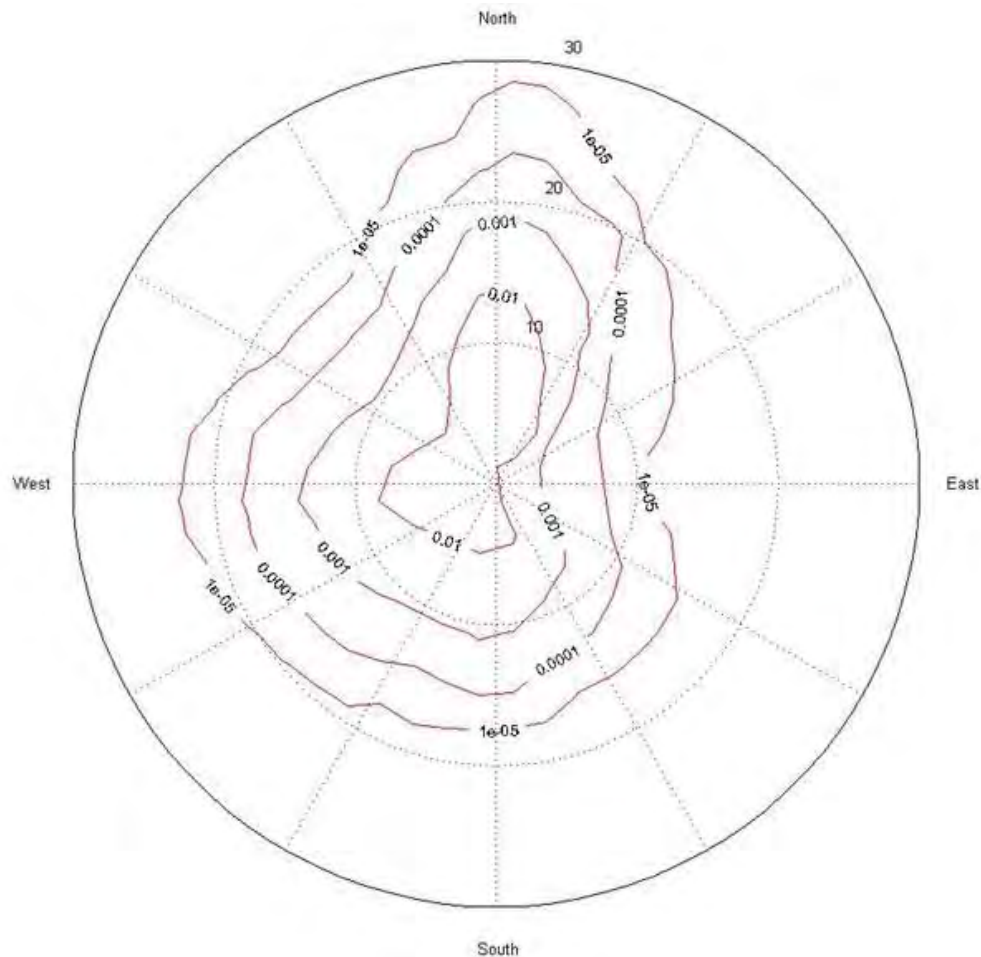


Figure 5: Probability contours of the winds at the gradient height for Melbourne Int. Airport (Station 086282), 1970 – 2010

## 3. ASSESSMENT CRITERIA

The assessment criteria used to analyse wind comfort and safety are based on mean wind speeds and gust equivalent mean wind speeds (comfort) and 3 second gust wind speeds (safety), as currently practiced in Melbourne Central City.

The safety criterion is based on gust wind speeds of infrequent occurrence (e.g. once a year) while the comfort criteria is based on frequently occurring winds (e.g. winds that occur for 80% of the time). Sets of annual maximum peak 3-second gust velocities, mean wind velocities (hourly mean wind speed) and the gust equivalent mean velocities (3 second gust / 1.85) are derived from meteorological data for the geographical location under consideration, for all wind directions to be assessed. For all of these possible wind directions and speeds, the regions where each of the wind speed criteria may be exceeded are then considered. Table 1 displays the safety and comfort criteria respectively.



Most people will consider a site unacceptable for a given activity if the mean and/or gust velocities in that area during the annual maximum wind event exceeds the annual maximum wind speed criterion for that activity. The site would also be likely to be considered excessively windy for that activity during more moderate winds. The threshold wind speed criteria are as follows:

Table 1: Wind Comfort and Safety Gust Criteria for Melbourne Central City	
SAFETY CRITERIA	
Annual maximum 3 second gust speed with an annual probability of exceedance of 0.01%	Result on perceived pedestrian comfort
>20m/s	Unsafe (frail pedestrians knocked over)
COMFORT CRITERIA	
Maximum of: 1. Hourly mean wind speed 2. Gust equivalent mean speed (3 second gust wind speed divided by 1.85), for winds occurring 80% of the time.	Result on perceived pedestrian comfort
<5 m/s	Acceptable for walking (steady steps for most pedestrians)
<4 m/s	Acceptable for standing (window shopping, vehicle drop off, queuing)
<3 m/s	Acceptable for sitting (outdoor cafés, pool area, gardens)

### 3.1 Recommended Comfort Criteria for Typical High/Mid-rise Development Areas Building and Site Surroundings

Table 2 lists the specific areas adjacent to the development and the corresponding recommended criteria. The assessment areas are also shown from Figure 6 to Figure 10 with the recommended criteria overlaid.

Table 2: Recommended application of criteria	
Area	Recommended Criteria
Public Footpaths	Recommended to fulfil walking
Building Entrances	Recommended to fulfil standing
Balconies, Podium roof, Roof Terraces	Recommended to fulfil walking ( <i>refer to the discussion below</i> )

### 3.2 Discussion on Recommended Criteria for Balconies and Terrace Areas

Balconies and terrace areas may not be intended for use all the time. People should be safe and comfortable to walk around these areas or decide whether to use the area for other recreation activities. Therefore, the walking criterion can be applied to the area since;

- The use of these areas is optional.
- The use of these areas can be avoided during a high wind events and
- These areas are not public spaces and their use is not required all the time.

It is likely to be difficult to achieve wind conditions meeting a more stringent criterion than the walking criterion on the balcony areas of the proposed development due to their exposure and the form and proximity of adjacent developments.

The walking criterion is recommended as the minimum requirement for these areas. However, it should be noted that meeting the walking criterion on elevated recreation areas will not guarantee that occupants will find wind conditions in these areas acceptable.

In our experience it is preferable that outdoor recreation areas should meet the criterion for sitting comfort in order that the majority of reasonable people consider such areas acceptable for their intended use from a wind point-of-view. Wind conditions that exceed the sitting criterion will tend to result in a perceived reduction in amenity of the area. This perception may be due to:

- the cooling effect of the wind on the human body (particularly for pool deck areas),
- it being impractical to have lightweight items such as towels, serviettes, newspapers, lightweight furniture (eg. plastic banana lounges) in these areas and
- difficulty hearing others speak.

Wind conditions meeting the criterion for walking may still result in the following adverse effects whilst the balconies/terraces are unoccupied:

- the removal of lightweight furniture during storms.

### 3.3 Intended Use of Ground Level Areas

The main building entrances of the proposed developments are highlighted in orange in Figure 6. It is recommended that the criterion for standing be satisfied for this area.

Public footpaths adjacent to or in close proximity to the proposed development are highlighted in red in Figure 6. It is recommended that the walking criterion be satisfied for these areas.

Outdoor seating and outdoor dining areas are located on the ground floor and levels 1 and 2 as highlighted in blue from Figure 6 to Figure 8 . It is recommended that the sitting criterion be satisfied for these areas.

Balconies and terrace areas of the proposed development are highlighted in red from Figure 6 to Figure 10. It is recommended that the criterion for walking be satisfied for this area (see discussion in Section 3.2).



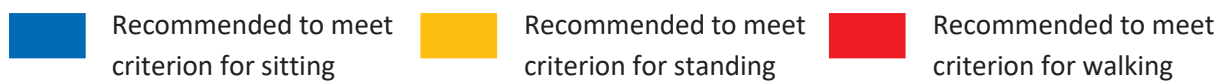
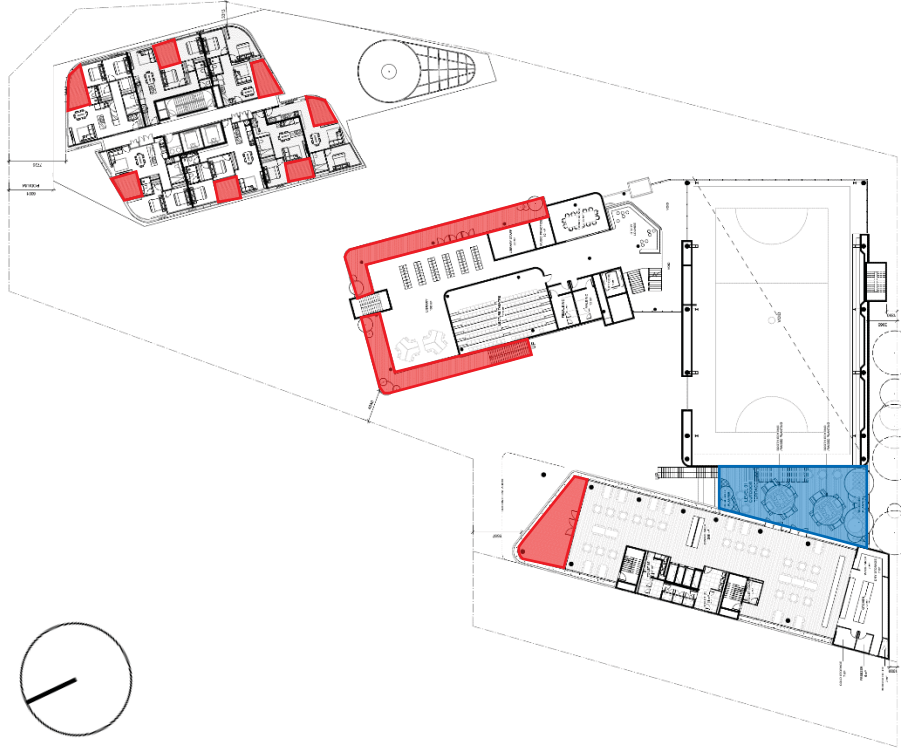


Figure 6: Schematic plan view of proposed development with recommended wind criteria overlaid on the upper ground floor of the proposed development



- Recommended to meet criterion for sitting
- Recommended to meet criterion for walking

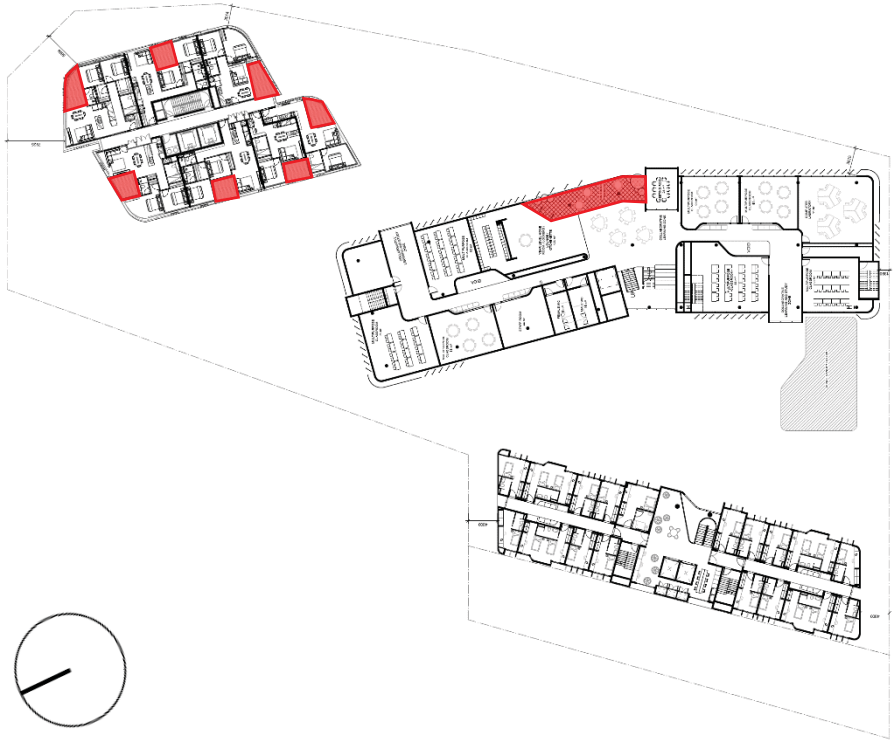
Figure 7: Schematic plan view of proposed development with recommended wind criteria overlaid on level 1 of the proposed developments



- Recommended to meet criterion for sitting
- Recommended to meet criterion for walking

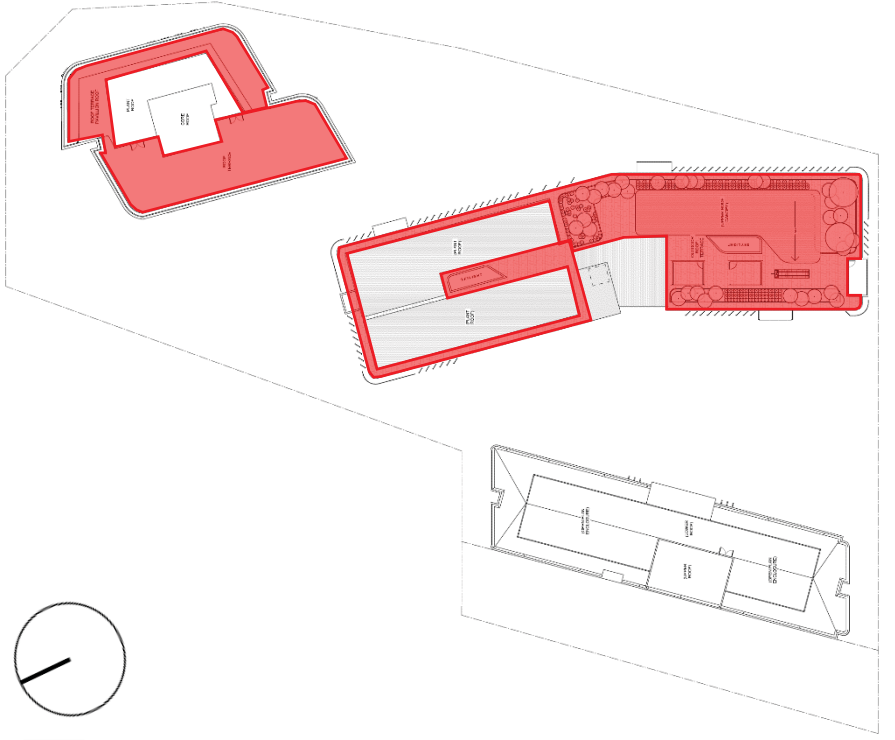
Figure 8: Schematic plan view of proposed development with recommended wind criteria overlaid on level 2 of the proposed developments





Recommended to meet criterion for walking

Figure 9: Schematic plan view of proposed development with recommended wind criteria overlaid on level 3 of the proposed developments



Recommended to meet criterion for walking

Figure 10: Schematic plan view of proposed development with recommended wind criteria overlaid on the roof levels of the proposed developments

## 4. WIND ENVIRONMENT ANALYSIS

### *Impacts on Adjoining Properties & Footpaths*

Considering the orientation, building setbacks from the property boundary and the locations of buildings to adjoining properties and footpaths, it is predicted that the surrounding areas will not be adversely impacted by the proposed development.

### *Main Building Entrances*

The main entrance to the Residential Tower is located on the western face of the building with exposure to the stronger northerly and westerly winds in the Melbourne region. As illustrated in the drawings, a canopy has been implemented over the entire western face which will protect the entrance area from any downwash effects. Furthermore, the existing building on 380 Burwood Highway will offer some shielding from winds in the north-westerly sector. Thus, it is predicted this area will satisfy the recommended standing criterion and no further recommendations have been made.

The main ground floor entrances of the Imperial Grammar School are located on the west for the dining area and on the east for the foyer. Considering implementation of an air-lock door system at the eastern entrance and the exposure only to the weaker winds in the Melbourne region, wind speeds are predicted to satisfy the standing criterion in this area. The entrance to the dining area is setback under the level 1 terrace and will therefore not be affected by downwash. Significant shielding is also provided upstream by the vegetation in the raised planter. Thus, it is predicted the entrance areas will satisfy the recommended standing criterion and no further recommendations have been made.

The main entrance to the Boarding Accommodation development is located at the northern face of the building. The entrance is set back beneath the level 1 building line above, contained within a relatively closed courtyard environment and also protected from westerly winds by the adjacent Meeting Room. Thus, it is predicted this area will satisfy the recommended standing criterion and no further recommendations have been made.

### *Ground Floor Outdoor Dining Area*

The ground floor outdoor dining area is located outside the interior dining room of the Imperial Grammar School development. It is predicted that the wind environment will be fairly calm in this area as is common in courtyard spaces. To further increase the comfort of this area, recommendations on using dense vegetation in the adjacent planter boxes/garden beds have been made to reduce the likelihood of light westerly breezes from Blind Creek being felt in this area.

### *Level 1 Terraces*

North facing terraces are located on the first level of the Boarding Accommodation and Imperial Grammar School developments. Considering the elevated height and larger areas of these spaces in relation to their exposure to the stronger winds of the Melbourne region, it is predicted that higher wind speeds may infrequently approach the walking criterion. Thus, recommendations on minimum balustrade heights have been made accordingly.



### ***Outdoor Dining/Biology Classroom Terraces***

The level 1 and 2 Outdoor Dining/Biology Classroom Terraces are located between the Boarding Accommodation and Imperial Grammar School developments. As illustrated in Figure 11, the form and orientation of the buildings create a narrowing passage for westerly, south-westerly and southerly (common in winter) winds to pass through. When a large volume of air is funnelled through a constricted pathway, the wind must speed up as it passes through the constriction to maintain flow continuity. Thus, elevated wind speeds in these areas may occur due to the funnelling phenomenon and recommendations have been made accordingly.



Figure 11: Recommended location of dense vegetation around the ground floor outdoor dining area

### ***Rooftop Terraces***

Due to the height and exposure of the Residential Tower and Imperial Grammar School rooftop terrace areas, and also considering the intended use of these areas, it is predicted that wind speeds may exceed the recommended walking criterion during infrequent wind events. Thus, recommendations on minimum balustrade heights have been made accordingly.

### ***Balcony Areas***

Due to the height and exposure of the balcony areas it is predicted that wind speeds may exceed the recommended walking criterion during infrequent wind events, particularly on corner balconies. The phenomenon of elevated wind conditions producing discomfort to pedestrians on corner balconies and terrace areas is a common occurrence for similar developments. Accelerated corner flows, standing vortices and high exposure to corner balconies often attract a windy environment that may impede the overall use of the recreational area. As a result, owners of corner apartments may resort to using their balcony less frequently. Thus, it is predicted that owners of corner apartments will consider the balcony areas as acceptable for their intended use majority of the time, however, the overall use of these areas may be impeded during strong wind events. ***Please see discussion in Section 3.2 for rationale as why this is acceptable.***

## 5. RECOMMENDATIONS

### Ground Floor Outdoor Dining Area

It is recommended that dense vegetation of minimum 1.2m height be implemented around the ground floor outdoor dining area, as illustrated in green in Figure 12, to improve the wind comfort in this area.



Figure 12: Recommended location of dense vegetation around the ground floor outdoor dining area

### Level 1 Outdoor Dining Terrace

It is recommended that balustrades of minimum 1.5m height be implemented in the location highlighted in red in Figure 13 and minimum 1.2m height in the location highlighted in blue.

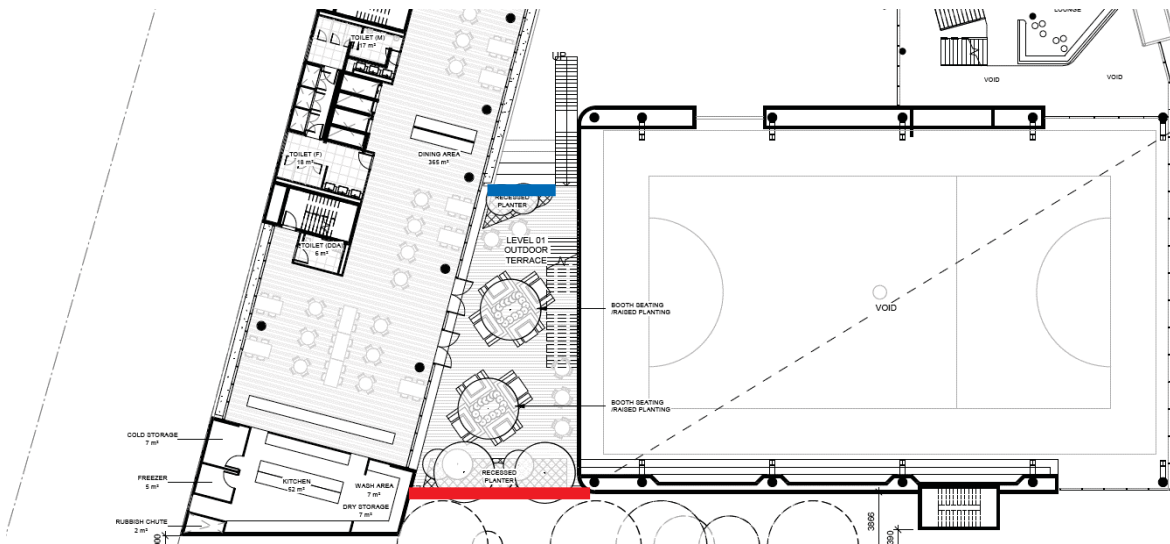


Figure 13: Recommended location of increased balustrade heights on the Level 1 outdoor dining terrace



**Level 2 Outdoor Dining Terrace and Outdoor Biology Classroom**

It is recommended that balustrades of minimum 1.5m height be implemented in the location highlighted in red in Figure 14 and minimum 1.2m height in the location highlighted in blue.

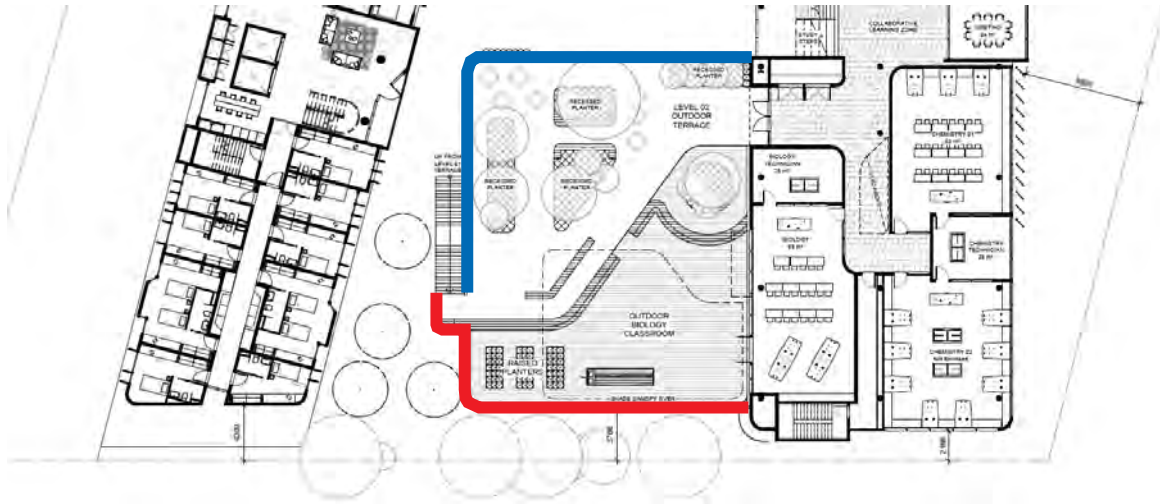


Figure 14: Recommended location of increased balustrade heights on the Level 2 outdoor dining terrace and outdoor biology classroom

**Residential Tower and Imperial Grammar School Rooftop Terraces**

Minimum balustrade heights on the rooftop terrace areas on the Residential Tower and Imperial Grammar School. Make it 1.5m.

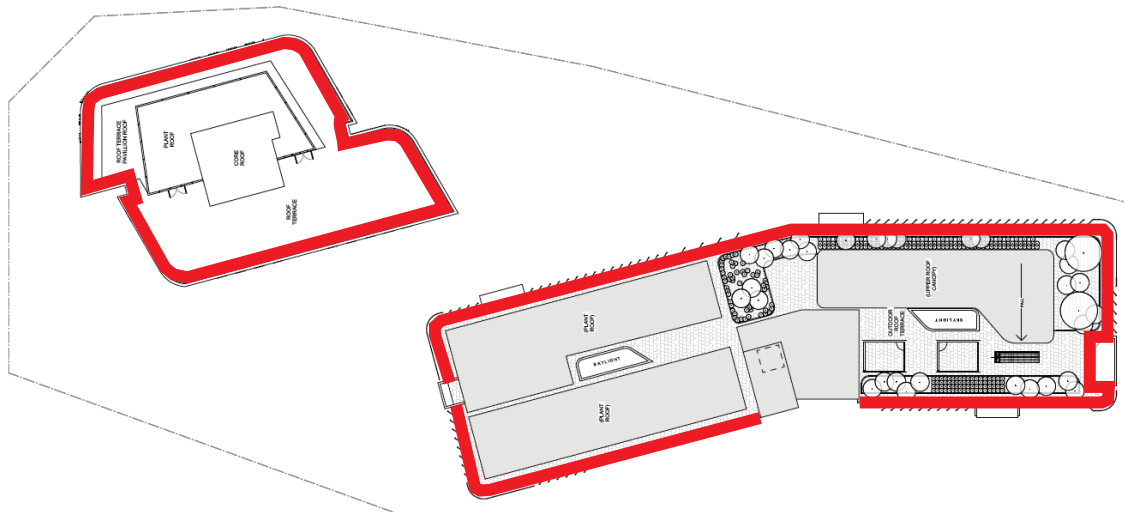


Figure 15: Recommended location of increased balustrade heights on the rooftop terraces of the Residential Tower and Imperial Grammar School

### ***Balconies and Other Terrace Areas***

It is recommended that balustrades of minimum 1.2m height be implemented on the level 1 north facing terraces of the proposed Boarding Accommodation and Imperial Grammar School developments, as highlighted in red in Figure 16 below.

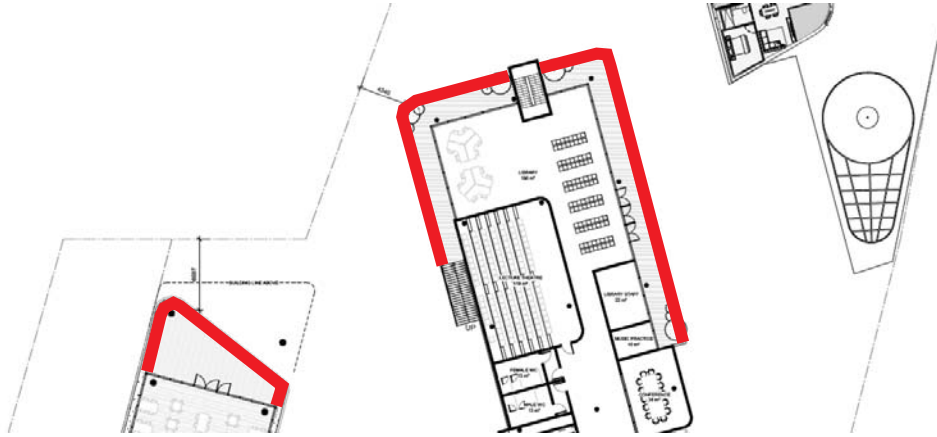


Figure 16: Recommended location of increased balustrade heights on the Level 2 outdoor dining terrace and outdoor biology classroom

It is also recommended that safety and precaution is taken by the building occupants to securely fix lightweight items in the balcony areas. During high wind events, the winter gardens are at potential risk of the removal of lightweight items from these areas of the proposed development.



## 6. CONCLUSION

GWTS has carefully evaluated the wind environment around the proposed building by considering the form and exposure of the proposed development, the nearby existing developments, the local wind climate and the proposed use of ground level areas and elevated recreational areas in and adjacent to the proposed development. Based on our experience and empirical relations for wind speeds at pedestrian/recreational areas, and the above consideration, the expected wind speeds around the proposed building have been predicted and assessed against widely accepted and used criteria for comfort and safety.

A summary of the study is as follows:

- Minor increases in wind speeds were predicted to occur within the pedestrian level wind environment as a result of the proposed development.
- Wind speeds are predicted to approach or marginally exceed the limit for the recommended criteria in some locations and recommendations have been made where necessary.

The following recommendations were made:

- Use of dense vegetation around the ground floor outdoor dining area
- Minimum balustrade heights on the level 1 outdoor dining terrace
- Minimum balustrade heights on the level 2 outdoor dining terrace and outdoor biology classroom
- Minimum balustrade heights on the rooftop terrace areas on the Residential Tower and Imperial Grammar School
- Minimum balustrade heights on the level 1 terraces of the Boarding Accommodation and Imperial Grammar School developments
- Fixing of lightweight items on balcony/terrace areas

**Please note that this is an opinion statement and is not based on wind tunnel testing.**

## 7. REFERENCES

- 1) Australian Standard 1170.2:1989, Wind actions
- 2) Melbourne, W. H., "Criteria for Environmental Wind Conditions", Jour. Industrial Aerodynamics, Vol. 3, 241-249,1978
- 3) Australian Wind Engineering Society, "Cladding Pressure and Environmental Wind Studies" Quality Assurance Manual, 2001
- 4) AS/NZS 1170.2 Supplement 1: 2011
- 5) Guidelines for Pedestrian Wind Effects Criteria, Australasian Wind Engineering Society, September 2014
- 6) Developmentactivity.melbourne.vic.gov.au. (2018). *Development Activity Model*. [online] Available at: <https://developmentactivity.melbourne.vic.gov.au/> [Accessed 16 Oct. 2018].

## APPENDIX A – DRAWING FILES

 190524 COX - Without Prejudice Plans      31/05/2019 3:58 PM      Adobe Acrobat Document      15,717 KB



5 Motions for Which Notice has Previously Been Given

6 Supplementary Items

7 Urgent Business

7.1 Urgent Business

7.2 Call Up Items

8 Confidential Items