

27 July 2021

Matthews & Scavalli Architects
Po Box 131
APPLECROSS WA 6953

Alexander Thamm
08 9311 8111
Planning Officer
File Ref: PR23703
DA Ref No.: 5.2020.704.1

Dear Sir/Madam

**NO. 32 (LOT: 137) OSWALD STREET, VICTORIA PARK - DEVELOPMENT APPLICATION
5.2020.704.1 FOR ADDITIONS (EARLY CHILDHOOD BLOCK) TO EXISTING EDUCATIONAL
ESTABLISHMENT**

Thank you for your application dated 21/12/2020, for the above proposed development. Please be advised that the application has been APPROVED by the Council subject to the conditions and advice notes in the attached Notice of Determination on Application for Development Approval.

The conditions of this approval are required to be met in the course of carrying out the development for which the approval has been granted. If you wish to clarify any of the conditions, please do so prior to submission of an application for a building permit.

All information necessary for the purpose of addressing the conditions and advice notes of this approval should be provided with, or prior to, the application for a building permit.

Please be aware that this development approval does not remove the need to obtain permits, licenses or forms of approval under other legislation or requirements of Council.

Should you have any queries please contact Alexander Thamm of Council's Urban Planning Business Unit on 08 9311 8111 or by email to AThamm@vicpark.wa.gov.au.

Yours faithfully



**ROBERT CRUICKSHANK
MANAGER DEVELOPMENT SERVICES**



**WE'RE OPEN
VIC PARK**

TEL (08) 9311 8111 **FAX** (08) 9311 8181 **ABN** 77 284 859 739

EMAIL admin@victoriapark.wa.gov.au **VISIT** victoriapark.wa.gov.au

Administration Centre, 99 Shepperton Road, Victoria Park WA 6100

Locked Bag No. 437, Victoria Park WA 6979

Planning and Development Act 2005

TOWN OF VICTORIA PARK

NOTICE OF DETERMINATION ON APPLICATION FOR DEVELOPMENT APPROVAL

Location: No. 32 Oswald Street VICTORIA PARK, 28 Oswald Street VICTORIA PARK

Lot: 137, 138

Plan / Diagram: 4377

Application date: 21/12/2020

Received on: 21/12/2020

Description of proposed development: Additions (Early Childhood Block) to Educational Establishment

At the Council's Meeting held on 20 July 2021, in accordance with the provisions of the Town of Victoria Park Town Planning Scheme No. 1 and the Metropolitan Region Scheme, the application for development approval was:

☒ **Approved** subject to the following conditions

☐ **Refused** for the following reason(s)

Conditions / ~~Reasons for refusal~~ :

1. The total number of enrolled students shall not exceed 150. Further approval will be required from the Town for any future increase in enrolled students.
2. Prior to the submission of an application for a building permit, the applicant is to prepare and submit an updated Traffic Impact Statement to the satisfaction of the Town, reflecting the amended proposal and inclusive of:
 - A reduction in the maximum number of students to 150;
 - The provision of 10 additional on-site car bays;
 - Removing reference to a possible future proposal for up to 230 students;
 - The implementation of the measures required by condition 5 below.
 - Deleting reference to retention of the existing kiss and drop bays within the existing on-site car parking.
3. The following traffic management measures as outlined in the Cardno Traffic Impact Statement and additional Technical Memorandum dated 15 March 2021 and 4 May 2021 respectively, are to be implemented to the satisfaction of the Town at all times, inclusive of but not limited to the following traffic management measures:
 - The proposed kiss and drop arrangement along Oswald Street during school hours;
 - Staggered start and finish times for year groups;
 - Further encouragement of the private bus use;
 - Further encouragement of the use of public and active transport modes.

TOWN OF VICTORIA PARK REQUIREMENTS OF OTHER COUNCIL BUSINESS UNITS

4. A Memorandum of Understanding between the School and the Town is to be prepared and executed by both parties to the satisfaction of the Town, which includes commitments from the school to implement the required traffic management measures, to inform and educate staff and parents of the required traffic management measures and to work with the Town to resolve any issues that may arise (see Advice note 5) and any recommended additional or modified measures for the future.
5. The wall of classroom 4 fronting Oswald Street shall be provided with windows to the satisfaction of the Town (see related advice note).
6. No kiss and drop/collection or bus drop off/collection is to occur within the existing car park and is to be restricted to Oswald Street only.
7. A minimum of 30 car parking bays, including an ACROD bay, shall be provided on site in accordance with the approved plans. These bays shall be marked and allocated in accordance with the approved plans.
8. Prior to the first occupation of the development hereby approved, all approved car parking spaces together with their access aisles shall be clearly paved, sealed, marked and drained in accordance with Australian Standards AS2890.1 and arranged so that all vehicles may at all times leave or enter the street in a forward gear. All parking bays and access aisles shall thereafter be maintained to the satisfaction of the Town.
9. The required acoustic screening treatment as stated at Part 5, Note 1 the Acoustic Assessment provided to the Town on 24 June 2021 is to be implemented prior to occupation of the building, to the satisfaction of the Town.
10. A maximum of 50 children are permitted to attend classes within the new 'Early Teaching Block' at any one time, consistent with the amended Acoustic Assessment, date stamped 24 June 2021. Changes to the maximum number of students permitted within the new 'Early Teaching Block' will require further approval from the Town in addition to the provision of an amended Acoustic Assessment.
11. Existing trees identified on the approved site plan must be retained and protected in accordance with AS 4970-2009 and to the satisfaction of the Town.
12. The proposed trees (shown on the site plan dated 16/06/21) shall be a species of tree that has the potential at maturity to be a minimum height of 5m and a minimum canopy width of 4m and is a minimum size of at least 35 litres when planted. The proposed tree shall be maintained via an automated irrigation system or other similar method by the landowner or developer for the first two summers after the occupation of the dwelling. If the proposed tree is of poor health and is removed, it is to be replaced with a suitable replacement tree by the owner or developer to the satisfaction of the Town.
13. A Tree Growth Zone, as shown on the approved plans shall be maintained to the satisfaction of the Town. No structure, unless water permeable, is to encroach within the

TOWN OF VICTORIA PARK REQUIREMENTS OF OTHER COUNCIL BUSINESS UNITS

Tree Growth Zone.

14. Complete details of the proposed external colours, finishes and materials to be used in the construction of the buildings are to be provided to the satisfaction of the Town prior to submission of an application for building permit. The development shall be constructed in accordance with the approved details and shall be thereafter maintained to the satisfaction of the Town.
15. Prior to the submission of an application for building license for this development, Lots 139, 140 158 & 159 are to (a) be amalgamated into a single lot on a Certificate of Title; or (b) the Owner entering into a legal agreement with the Town prepared by the Town's Solicitors at the owner's cost requiring amalgamation to be completed within twelve months of the issue of a building license (refer to related advice note)
16. The development, once commenced, is to be carried out in accordance with the approved plans at all times, unless otherwise authorised by the Town.
17. This approval does not include approval for any signage. Signage is to be the subject of separate approval from the Town.
18. All stormwater must be contained and disposed of on-site at all times, to the satisfaction of the Town (refer to related Advice Note).
19. Prior to lodging an application for a building permit, the applicant must submit and have approved by the Town, and thereafter implement to the satisfaction of the Town, a construction management plan addressing the following matters:
 - i. How materials and equipment will be delivered and removed from the site;
 - ii. How materials and equipment will be stored on the site;
 - iii. Parking arrangements for contractors;
 - iv. Construction waste disposal strategy and location of waste disposal bins;
 - v. Details of cranes, large trucks or similar equipment which may block public thoroughfares during construction;
 - vi. How risks of wind and/or water borne erosion and sedimentation will be minimised during and after the works;
 - vii. Construction traffic and pedestrian management; and
 - viii. Other matters likely to impact on the surrounding properties.
20. All plant, equipment and external fixtures, including but not restricted to airconditioning units, satellite dishes and non-standard television aerials, but excluding solar collectors, are to be located such that they are not visible from the primary street or secondary street.
21. All building works to be carried out under this development approval are required to be contained within the boundaries of the subject lot.
22. This approval is valid for a period of twenty four months only. If the subject development is

TOWN OF VICTORIA PARK REQUIREMENTS OF OTHER COUNCIL BUSINESS UNITS

not substantially commenced within the twenty four month period, the approval shall lapse and be of no further effect.

Date of determination: 20 July 2021

- Note 1: If the development the subject of this approval is not substantially commenced within a period of 2 years, or another period specified in the approval after the date of the determination, the approval will lapse and be of no further effect.
- Note 2: Where an approval has so lapsed, no development must be carried out without the further approval of the local government having first been sought and obtained.
- Note 3: If an applicant or owner is aggrieved by this determination there is a right of review by the State Administrative Tribunal in accordance with the Planning and Development Act 2005 Part 14. An application must be made within 28 days of this determination.



Date: 20 July 2021

Signed: _____

For and on behalf of the Town of Victoria Park

Advice to Applicant:

1. Should the applicant be aggrieved by this decision a right of appeal may exist under the provisions of the Town Planning Scheme or Metropolitan Region Scheme and the applicant may apply for review of the determination of Council by the State Administrative Tribunal within 28 days of this decision.
2. Stormwater drainage design is to cater for a 1:100 year storm event. All stormwater drainage for commercial developments shall be designed and signed by a practicing Hydraulic Consultant. An overland flow path is to be included in the design to ensure diversion of stormwater from the developments during storm events.
3. Crossover location and construction shall comply with the Town's Specifications for Crossover Construction. A separate application must be made to the Town's Street Life Sub Program (tel 9311 8115) for approval prior to construction of a new crossover.
4. Any modifications to the approved drawings, other than those authorised by this approval, may require the submission of an application for an Amendment to Planning Approval and reassessment of the proposal.
5. In relation to Condition 4, the Memorandum of Understanding should include the following commitments:

TOWN OF VICTORIA PARK REQUIREMENTS OF OTHER COUNCIL BUSINESS UNITS

- To implement the traffic management measures referred to in Condition 3;
 - To submit relevant documentation referred to in conditions 2 and 3;
 - The measures that the school employ to inform and educate staff and parents of the traffic management measures that have been implemented and need to adhere to these;
 - To provide evidence of total enrolment and actual attendance numbers for students when requested by the Town;
 - To work with the Town to resolve any traffic related concerns that may arise from the operation of the school; and
 - To continually monitor the management of traffic in and around the school and where necessary implement any modified or additional measures.
6. In relation to Condition 5, in order to meet this condition and satisfy the needs for the teaching space, the removal of windows from the wall facing the south-west boundary is supported.
7. The direction of traffic should only be undertaken by suitably qualified individuals and should only be considered after a formal risk evaluation has been undertaken. Direction of traffic resulting in a collision/incident could lead to the individuals involved being held liable. The Town does not recommend, endorse or encourage school staff directing traffic. The Town does, however, recommend parents of students being informed/educated/reminded of traffic rules.
8. Your attention is drawn to the need to comply with the requirements of Part D3 of the Building Code of Australia - Access for People with Disabilities, including parking, sanitary facilities and tactile indicators in accordance with AS 1428.1, AS 1428.4, AS 1428.5 and AS/NZS 2890.6.
9. In addition to the disabled access and facility requirements of the Building Code of Australia, it is the responsibility of the building owner/developer to ensure the development complies with the Disability Discrimination Act 1992. Further information may be obtained from the Disability Services Commission.
10. Unauthorised verge tree pruning or removal is subject to a penalty under the Activities on Thoroughfares and Public Places Local Law 2000, Division 1 – General, 2.1 General Prohibitions.
11. Sound levels created are not to exceed the provisions of the Environmental Protection (Noise) Regulations 1997.

Should you have any queries regarding the above, please contact Planning Officer, Alexander Thamm on 08 9311 8111 or by email to athamm@vicpark.wa.gov.au.

GENERAL NOTES.

ALL DIMENSIONS ARE IN METRIC MILLIMETRES

THE CONTRACTOR SHALL CARRY OUT THE WORK IN ACCORDANCE WITH THE N.C.C. & LOCAL AUTHORITY REQUIREMENTS.

ALL MATERIAL SHALL BE OF NEW, GOOD QUALITY & CONFORM TO WHAT IS SHOWN ON THE DRAWINGS.

ABBREVIATIONS.

COL STEEL COLUMN - REFER TO S.E. DWGS.
CONC CONCRETE FLOOR SLAB - REFER TO S.E. DWGS.
F.L. FLOOR LEVEL
R.L. REDUCED LEVEL
RWP RAIN WATER PIPE
S.E. STRUCTURAL ENGINEER
UAT UNIVERSAL ACCESS TOILET.

LEGEND.

- S.F.L. 27.100 PROPOSED FLOOR LEVEL.
R.L. 27.60 PROPOSED FINISHED LEVEL.
34.470 EXISTING SITE LEVEL.
EXISTING TREE REMOVED.
EXISTING TREE RETAINED.
NEW TREE min 35L



DA No. 5.2020.704.1
DEVELOPMENT APPROVAL GRANTED
Subject to Conditions: 1-22
20/7/2021

DEVELOPMENT APPROVAL.

Architectural documents are to be read in conjunction with relevant structural, fire service, mechanical, hydraulic, electrical, civil and landscaping documents. Drawings are to be read in conjunction with the appropriate sections of technical applications.

Do not scale drawings. Use figured dimensions only. Inform Architect of any conflict between the site conditions and documents. Contractor to verify all dimensions on site before commencing work.

Copyright of designs shown herein is retained by this office. Written authority is required for any reproduction.

Rev	Date	Comment
3	16.06.21	DEVELOPMENT APPLICATION.
2	26.03.21	DEVELOPMENT APPLICATION.
1	09.02.21	DEVELOPMENT APPLICATION.
0	11.12.20	DEVELOPMENT APPLICATION.



M&S
MATTHEWS
& SCAVALLI
ARCHITECTS

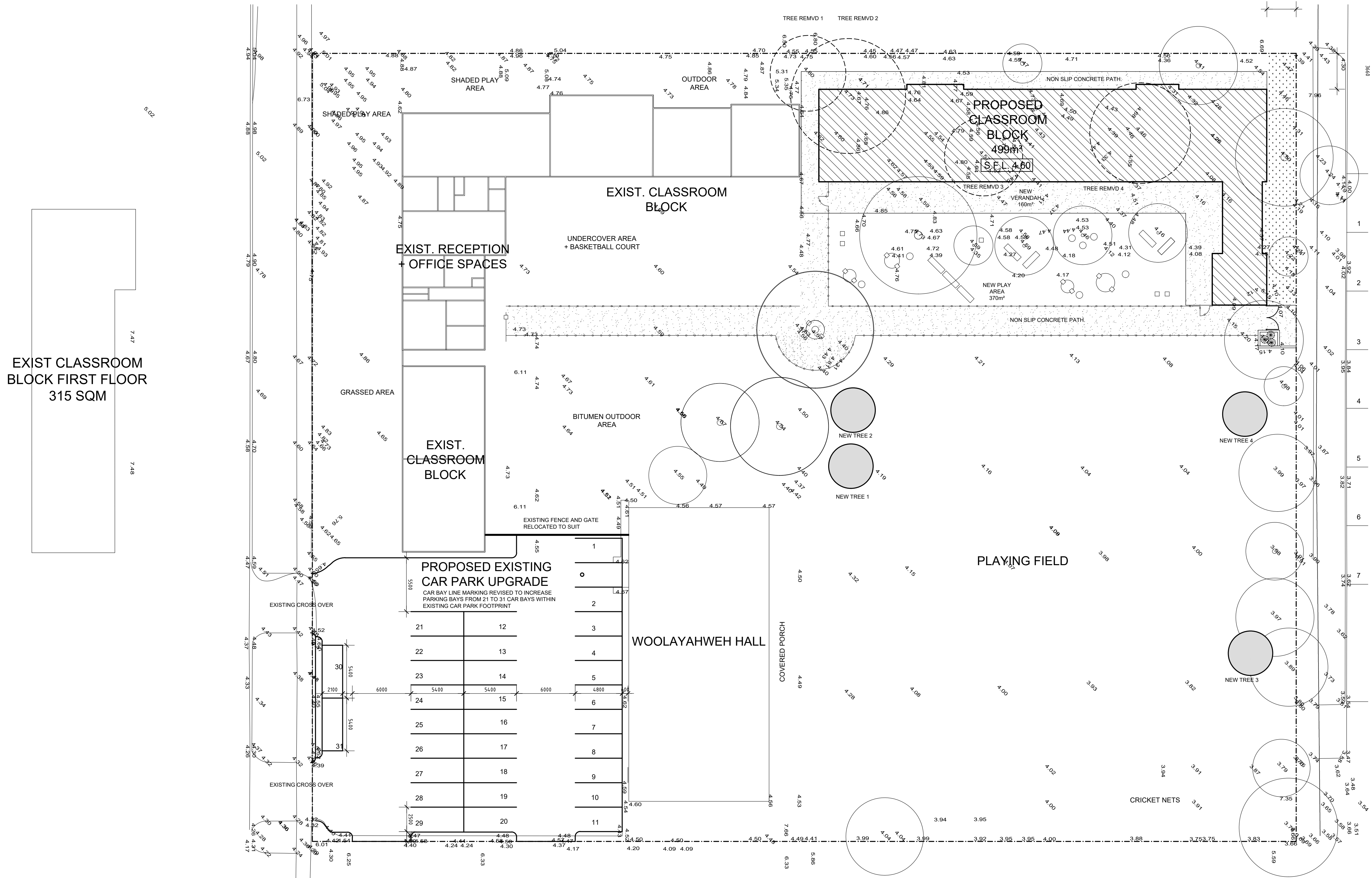
at: P O Box 131, Applecross WA 6953
t: (08) 9316 0531
f: (08) 9316 0531
w: mandsarchitects.com.au
AS/NZS Reg 2222

Project	Victoria Park Christian Primary School.
Client	Adventist Education.
Drawing Title	PROPOSED SITE PLAN.

Designed	M&S	Reduction
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Drawn	M&S	
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Project No.	20002	Scale	@A1	Drawing No.	Rev No.
		1:200.		SK01	3



EXIST CLASSROOM
BLOCK FIRST FLOOR
315 SQM

01 SITE PLAN.
1:200

TOWN OF VICTORIA PARK
Received: 21/12/20

GENERAL NOTES.

ALL DIMENSIONS ARE IN METRIC MILLIMETRES

~~THE CONTRACTOR SHALL CARRY OUT THE WORK~~

TOWN OF VICTORIA PARK

Received: 16/06/21

ABBREVIATIONS.

COL STEEL COLUMN - REFER TO S.E. DWGS.

CONC CONCRETE FLOOR SLAB - REFER TO S.E. DWG
F1 FLOOR LEVEL

R.L. REDUCED LEVEL.

S.E. STRUCTURAL ENGINEER.

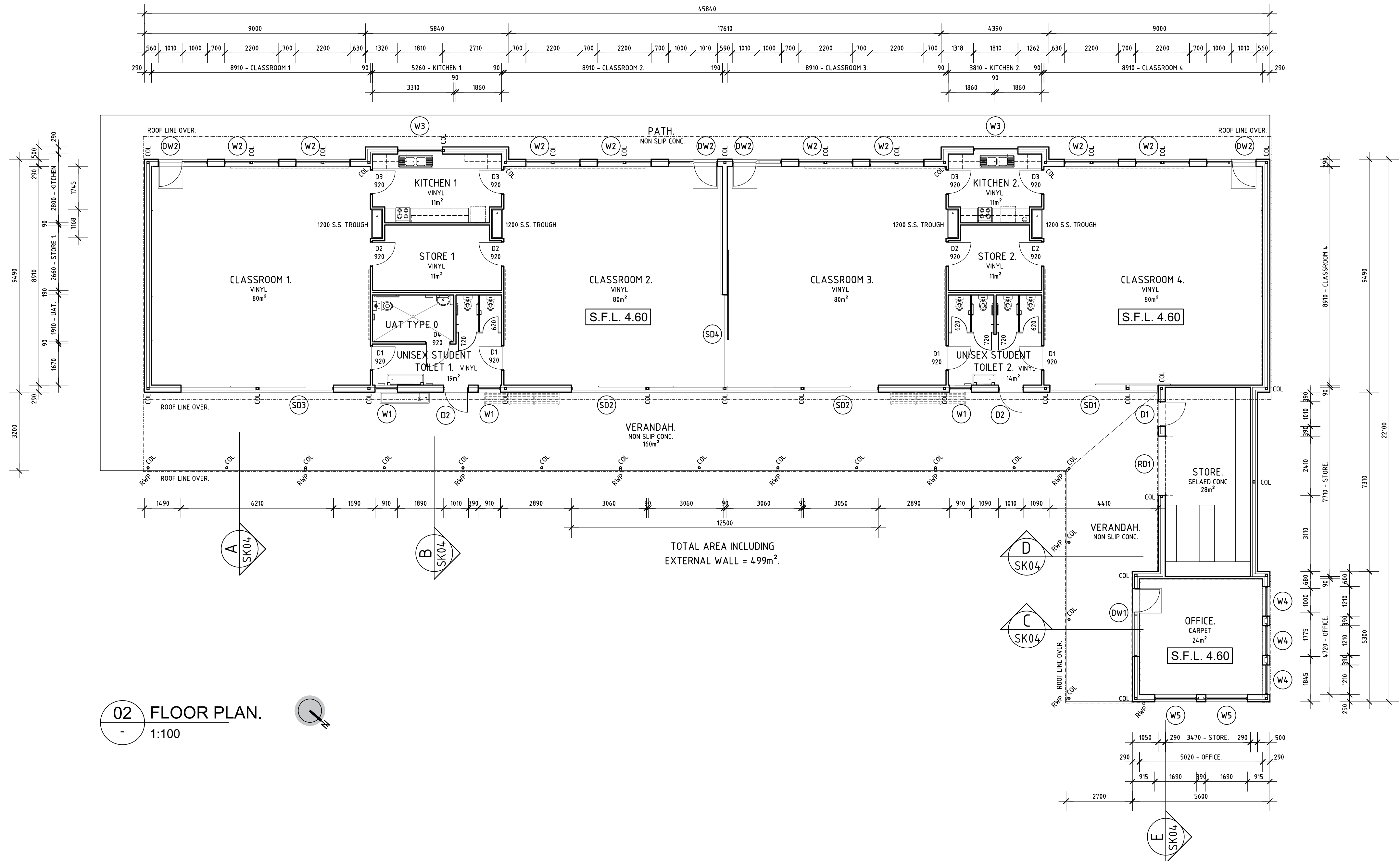
UAT UNIVERSAL ACCESS TOILET.

LEGEND.

S.F.L. 27.100 PROPOSED FLOOR LEVEL

R.L.27.60 PROPOSED FINISHED LE

34.470 EXISTING SITE LEVEL.



02 FLOOR PLAN.
- 1:100

TOTAL AREA INCLUDING
EXTERNAL WALL = 499m².



TOWN OF
VICTORIA PARK

DA No. 5.2020.704.1

DEVELOPMENT APPROVAL GRANTED

Subject to Conditions: 1-22

20/7/2021

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0	11.12.20	DEVELOPMENT APPLICATION.



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MATTHEWS
& SCAVALLI
ARCHITECTS

a: P.O Box 131, Applecross WA 6953
 t: (08) 9316 0531
 f: (08) 9316 0531
 w: mandsarchitects.com.au
 ABWA Reg: 2222

Project	Victoria Park Christian Primary School			
Client	Adventist Education.			
Drawing Title	PROPOSED SITE PLAN. PROPOSED FLOOR PLAN.			
Designed	M&S	Reduction		
Drawn	M&S			
Project No.	20002	Scale	@A1	Drawing No.
		SHOWN.	SK02	0

TOWN OF VICTORIA PARK
Received: 21/12/20

GENERAL NOTES.

ALL DIMENSIONS ARE IN METRIC MILLIMETRES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE WORK IN ACCORDANCE WITH THE TOWN OF VICTORIA PARK AUTHORITY REQUIREMENTS. Received: 16/06/21

ALL MATERIAL SHALL BE OF NEW, GOOD QUALITY & CONFORM TO WHAT IS SHOWN ON THE DRAWINGS.

ROOF LEGEND.

COLORBOND METAL DECKING AT X° PITCH ON STEEL PURLINS AS SPECIFIED. REFER TO S.E. DWGS.

SELECTED TRANSLUCENT ROOF SHEETING AS SPECIFIED.

X° FALL DIRECTION OF ROOF FALL.

SKYLIGHT AS SPECIFIED.

MECHANICAL EQUIPMENT. REFER TO MECH DWGS.

EJ EXPANSION JOINT.

O/P OVERFLOW POP FROM GUTTER.

RWP RAINWATER OUTLET IN GUTTER.

EXHAUST FAN REFER TO MECH DRAWINGS

ROOF COWL FOR EXHAUST. REFER TO MECH DRAWINGS

ROOF NOTES.

BUILDER TO PROVIDE SAFE ACCESS CONNECTIONS TO ALL PARTS OF THE ROOF IN ACCORDANCE WITH AS 1657.

CEILING LEGEND.

X TYPE OF CEILING

XX HEIGHT OF CEILING ABOVE MAIN FLOOR LEVEL, (NOT PAVING LEVEL).

FPB FLUSH PLASTERBOARD CEILING WITH 'RONDO' P50 SHADOW ANGLE CORNICE TO PERIMETER UNLESS OTHERWISE NOTED.

APT ACOUSTIC RLY TIMBER PANEL CEILING ON SUSPENDED CONCEALED CEILING SYSTEM.

NC NO CEILING - UNDERSIDE OF ROOF INSULATION.

X° PITCH DIRECTION OF FALL OF CEILING.

AP ACCESS PANEL

WALLS BUILT UP TO UNDERSIDE OF ROOF SHEETING OR STEEL STRUCTURE.

DEVELOPMENT APPROVAL.

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t: (08) 9316 0531
f: (08) 9316 0531
w: mandsarchitects.com.au
ABWA Reg 2222

Project Victoria Park Christian Primary School.

Client Adventist Education.

Drawing Title PROPOSED CEILING PLAN.
PROPOSED ROOF PLAN.

Designed M&S Reduction

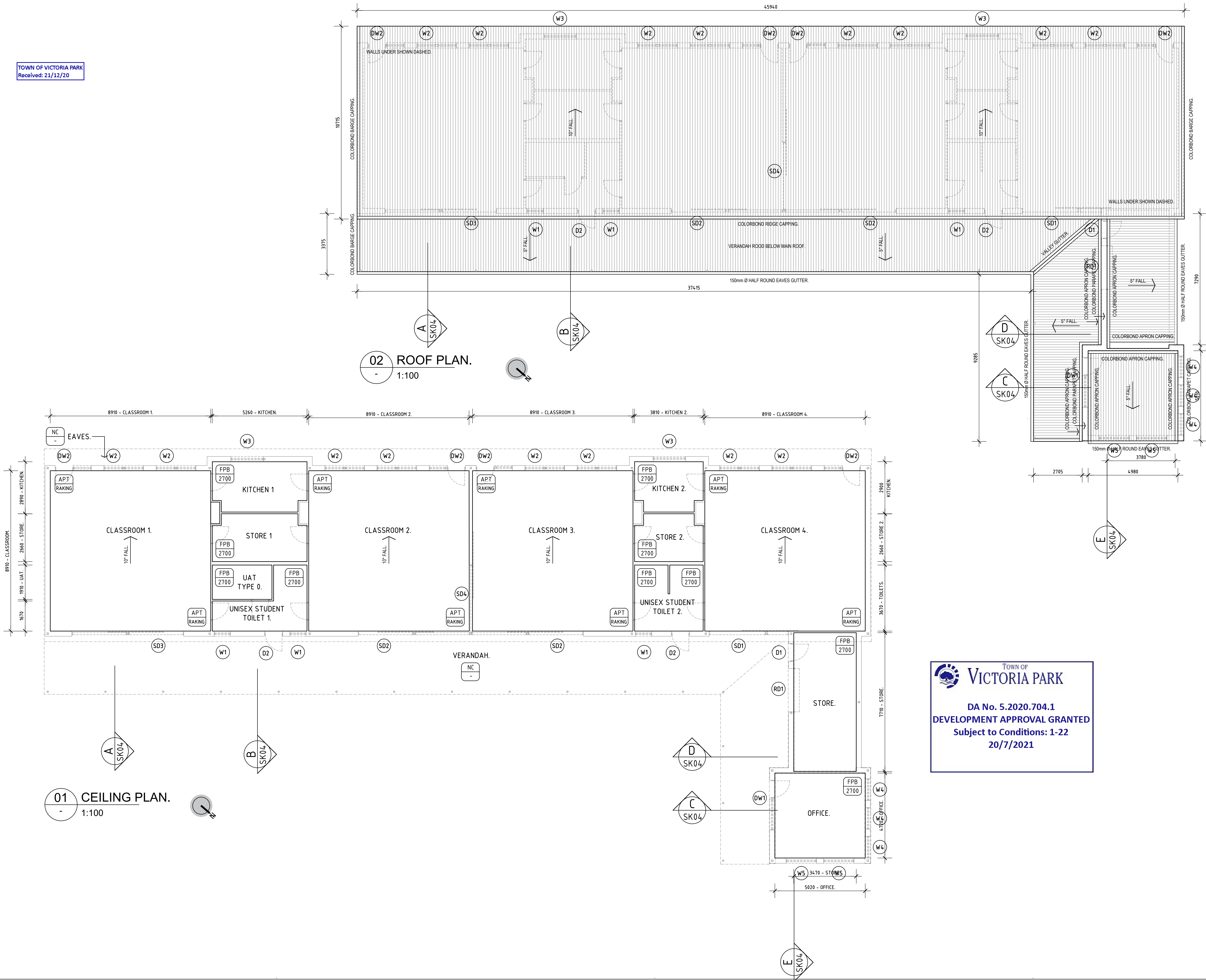
Drawn M&S

Project No. 20002

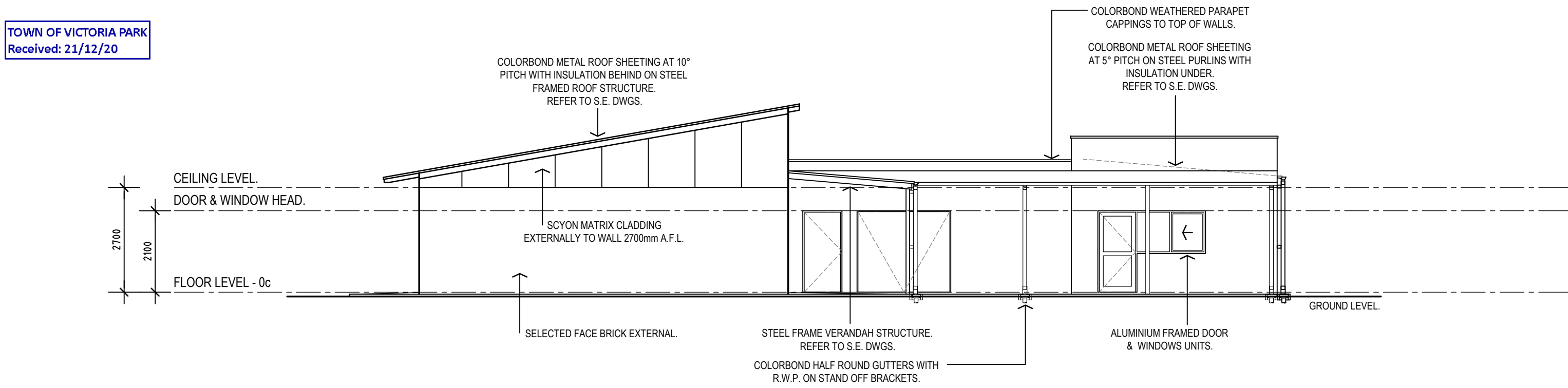
Scale @A1

Drawing No. SK03

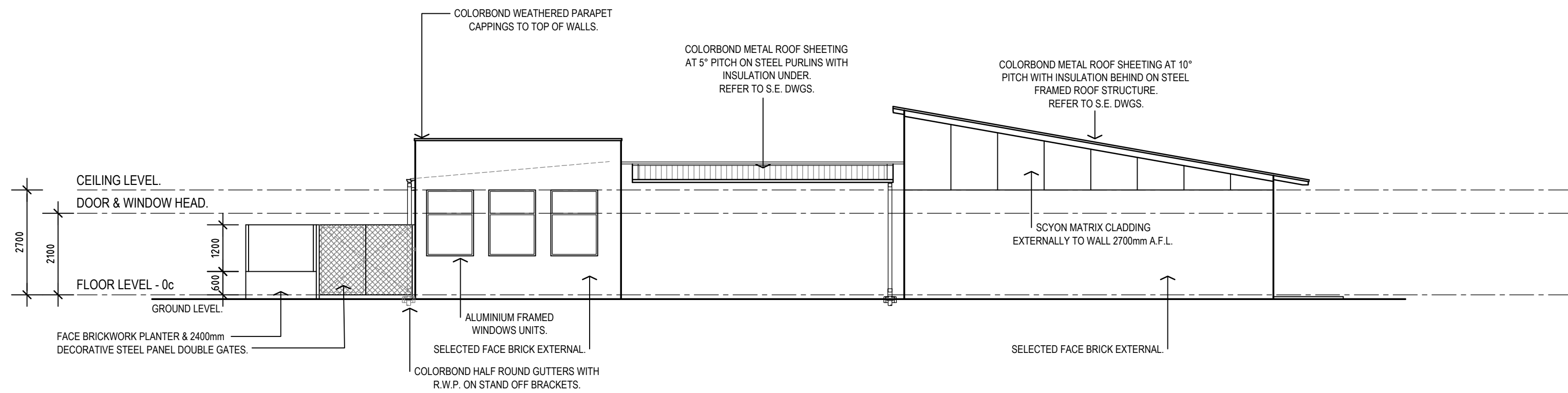
Rev No. 0



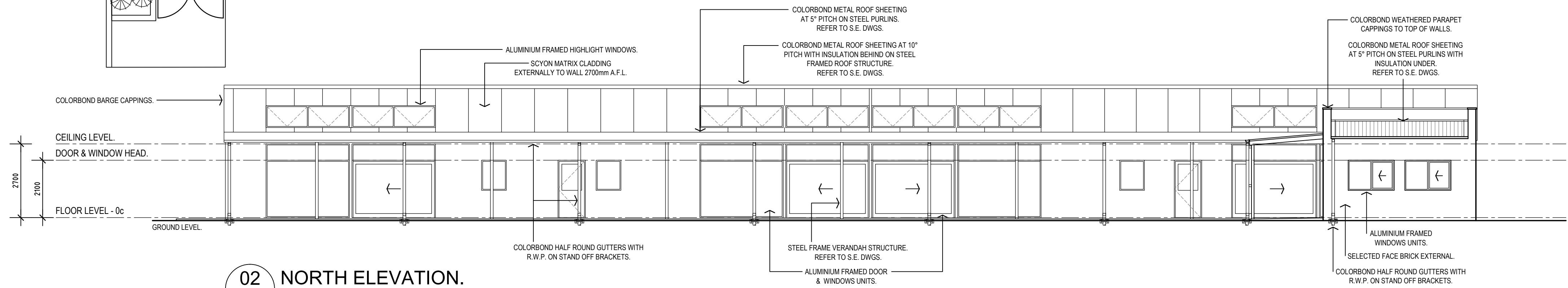
TOWN OF
VICTORIA PARK
DA No. 5.2020.704.1
DEVELOPMENT APPROVAL GRANTED
Subject to Conditions: 1-22
20/7/2021



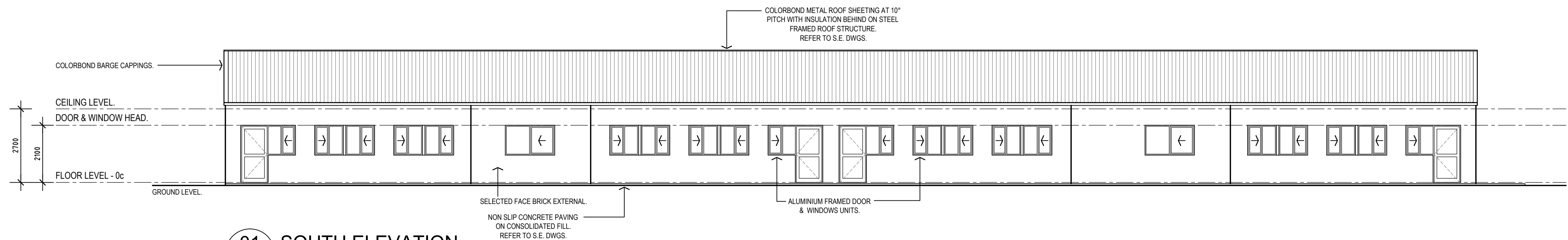
04 EAST ELEVATION.
- 1:100



03 WEST ELEVATION.
- 1:100



02 NORTH ELEVATION.
- 1:100



01 SOUTH ELEVATION.
- 1:100

GENERAL NOTES.

ALL DIMENSIONS ARE IN METRIC MILLIMETRES

THE CONTRACTOR SHALL CARRY OUT THE WORK IN ACCORDANCE WITH THE TOWN OF VICTORIA PARK AUTHORITY RECEIVED 16/06/21

ALL MATERIAL SHALL BE OF NEW, GOOD QUALITY & CONFORM TO WHAT IS SHOW ON THE DRAWINGS.

ABBREVIATIONS.

COL STEEL COLUMN - REFER TO S.E. DWGS.
CONC CONCRETE FLOOR SLAB - REFER TO S.E. DWGS.
F.L FLOOR LEVEL
RWP RAIN WATER PIPE
S.E STRUCTURAL ENGINEER



DEVELOPMENT APPROVAL.

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Do not scale drawings. Use figured dimensions only. Inform Architect of any conflict between the site conditions and documents. Contractor to verify all dimensions on site before commencing work.

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Rev	Date	Comment
0	11.12.20	DEVELOPMENT APPLICATION.



Project	Victoria Park Christian Primary School.
Client	Adventist Education.
Drawing Title	PROPOSED ELEVATIONS.
Designed	M&S
Drawn	M&S
Project No.	20002
Scale	1:100
@A1 Drawing No.	SK04
Rev No.	0

GENERAL NOTES.

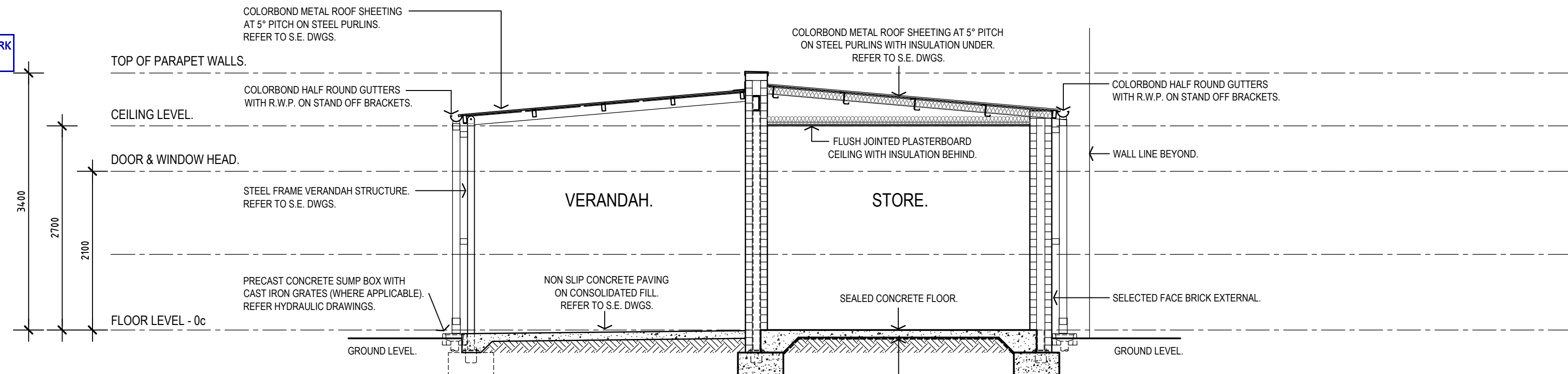
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THE CONTRACTOR SHALL CARRY OUT THE WORK
IN ACCORDANCE WITH THE TOWN OF VICTORIA PARK
AUTHORITY RECEIVED: 16/06/21

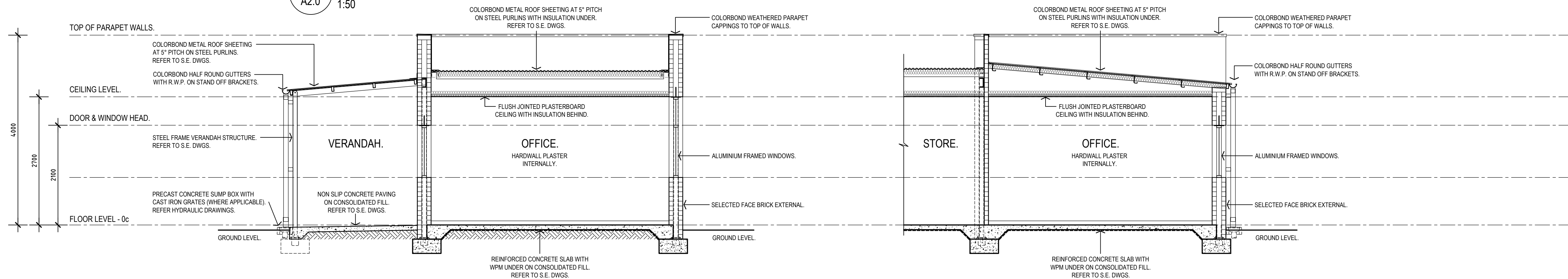
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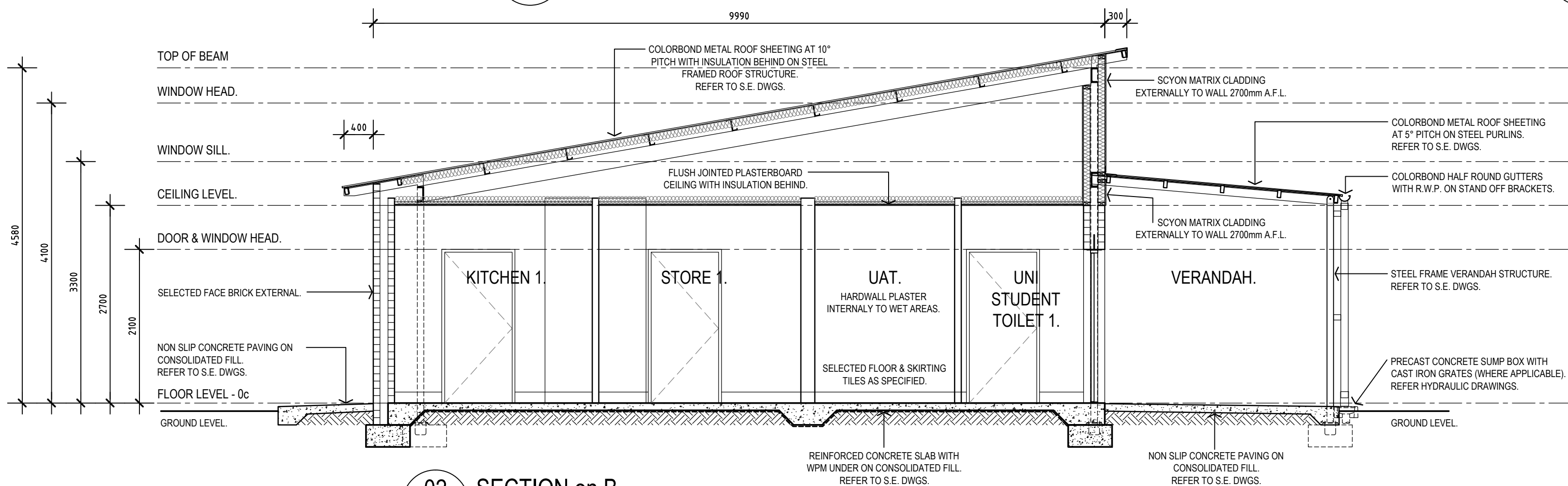


04 SECTION on D.
A2.0 1:50

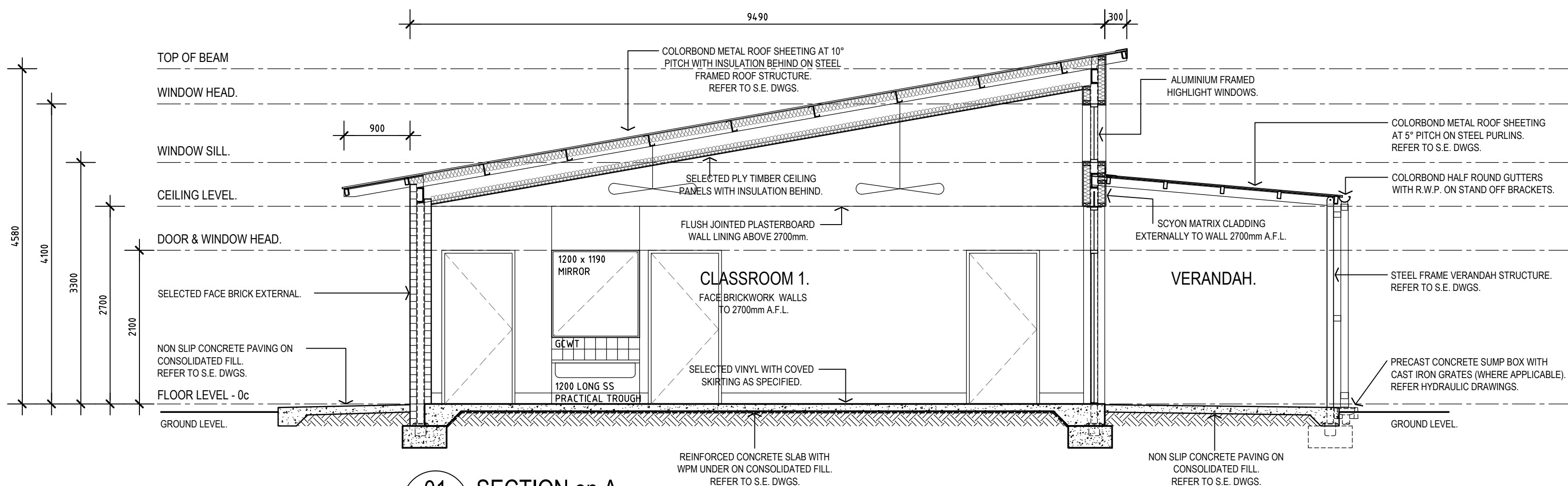


03 SECTION on C.
A2.0 1:50

05 SECTION on E.
A2.0 1:50



02 SECTION on B.
A2.0 1:50



01 SECTION on A.
A2.0 1:50

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w: mandsarchitects.com.au
ABWA Reg. 2222

Project	Victoria Park Christian Primary School.
Client	Adventist Education.
Drawing Title	PROPOSED SECTIONS.
Designed	M&S
Drawn	M&S
Project No.	20002
Scale	1:50
@A1 Drawing No.	SK05
Rev No.	0

PROPOSED KINDY / PRE-PRIMARY**VICTORIA PARK CHRISTIAN PRIMARY SCHOOL****ENVIRONMENTAL ACOUSTIC ASSESSMENT****MARCH 2021****OUR REFERENCE: 27402-2-21088**

DOCUMENT CONTROL PAGE

TOWN OF VICTORIA PARK

Received: 24/06/21

ENVIRONMENTAL ACOUSTIC ASSESSMENT
KINDY / PRE-PRIMARY
VICTORIA PARK CHRISTIAN PRIMARY SCHOOL

Job No: 21088

Document Reference : 27402-2-21088

FOR

MATTHEWS & SCAVALLI ARCHITECTS

DOCUMENT INFORMATION				
Author:	Tim Reynolds	Checked By:	Paul Daly	
Date of Issue :	12 March 2021			
REVISION HISTORY				
Revision	Description	Date	Author	Checked
1	Correction to number of children	24/06/2021	TR	N/A
DOCUMENT DISTRIBUTION				
Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Matthews & Scavalli Architects Attn : Sally Matthews Email : sally@mandsarchitects.com.au		✓
1	2	Matthews & Scavalli Architects Attn : Sally Matthews Email : sally@mandsarchitects.com.au		✓

This report has been prepared in accordance with the scope of services and on the basis of information and documents provided to Herring Storer Acoustics by the client. To the extent that this report relies on data and measurements taken at or under the times and conditions specified within the report and any findings, conclusions or recommendations only apply to those circumstances and no greater reliance should be assumed. The client acknowledges and agrees that the reports or presentations are provided by Herring Storer Acoustics to assist the client to conduct its own independent assessment.

CONTENTS

1.	INTRODUCTION	1
2.	SUMMARY	1
3.	CRITERIA	1
4.	PROPOSAL	4
5.	MODELLING	4
6.	ASSESSMENT	5
7.	CONCLUSION	6

APPENDICIES

A	PLANS
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1. INTRODUCTION

Herring Storer Acoustics were commissioned to undertake an acoustic assessment of noise emissions associated with the proposed development of a kindy and pre-primary classrooms, as part of the Victoria Park Christian Primary School.

The report considers noise received at the neighbouring premises from the proposed development for compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. This report considers noise emissions from :

- Children playing within the outside play areas of the child care centre; and
- Mechanical services.

For reference, plans of the proposed development is attached in Appendix A.

2. SUMMARY

The proposed classrooms would only operate during school hours, thus they would only be open during the day period on weekdays (excluding Public Holidays).

With the design / location of the early learning centre, we believe that the noise received at the closest neighbours to the south west would, due to the barrier affect provided by the early learning centre building, from children playing outdoors would be significantly reduced from the current situation. Additionally, noise received at the neighbouring premises from children playing in the outdoor areas would comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed operating times.

With the air conditioning condensing units located, as shown on the plan attached in Appendix A and the screening to the plant as shown on Figure 5.1, noise emissions from the mechanical services has been assessed to also comply with the relevant assigned noise levels for the proposed operating times.

With the screening of the air conditioning condensing units, as shown in Figure 5.1, noise emissions from the proposed child care centre, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

3. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 & 8 stipulate maximum allowable external noise levels. For noise sensitive premises this is determined by the calculation of an influencing factor, which is then added to the base levels shown below in Table 3.1. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. For commercial premises, the assigned noise levels are fixed throughout the day, as listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises: highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

“impulsiveness”

means a variation in the emission of a noise where the difference between L_{Apeak} and L_{Amax(Slow)} is more than 15 dB when determined for a single representative event;

“modulation”

means a variation in the emission of noise that –

- (a) is more than 3 dB L_{Afast} or is more than 3 dB L_{Afast} in any one-third octave band;
- (b) is present for more at least 10% of the representative assessment period; and
- (c) is regular, cyclic and audible;

“tonality”

means the presence in the noise emission of tonal characteristics where the difference between –

- (a) the A-weighted sound pressure level in any one-third octave band; and
- (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as L_{Aeq,T} levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as L_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

For this development, the closest neighbouring residences are located to the west, as shown on Figure 3.1. For these residences, with Canning Highway being within 450 metres, the influencing factor (IF) has been calculated at +2 dB.



FIGURE 3.1 – NEIGHBOURING RESIDENCES

Based on the above influencing factor, the assigned outdoor noise levels for the neighbouring residential locations are listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _A 10	L _A 1	L _A max
Noise sensitive premises	0700 - 1900 hours Monday to Saturday	47	57	67
	0900 - 1900 hours Sunday and Public Holidays	42	52	67
	1900 - 2200 hours all days	42	52	57
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	37	47	57

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

4. PROPOSAL

The proposed classrooms would only operate during school hours, thus they would only be open during the day period on weekdays (excluding Public Holidays). From the information provided, we understand that the number of children associated with the kindy / pre-primary program would be limited to 50.

With regards to the air conditioning, we understand that the air conditioning system will be located, as shown on the mechanical services plan, attached in Appendix A.

5. MODELLING

To assess the noise received at the neighbouring premises from the proposed development, noise modelling was undertaken using the noise modelling program SoundPlan.

Calculations were carried out using the DWER weather conditions as stated in the Department of Environment Regulation "Draft Guidance on Environmental Noise for Prescribed Premises".

Calculations were based on the sound power levels used in the calculations are listed in Table 5.1.

TABLE 5.1 – SOUND POWER LEVELS

Item	Sound Power Level, dB(A)
Children Playing	83 (per 10 children)
Air conditioning condensing Units	4 @ 68 1 @ 65 1 @ 63

Notes :

- 1 The screening to the air conditioning condensing unit being as shown on the plans, as shown on Figure 5.1.
- 2 Noise modelling was undertaken to a number of different receiver locations for each of the neighbouring residences. However, to simplify the assessment, only the noise level in the worst case location, as shown on Figure 3.1, have been listed.

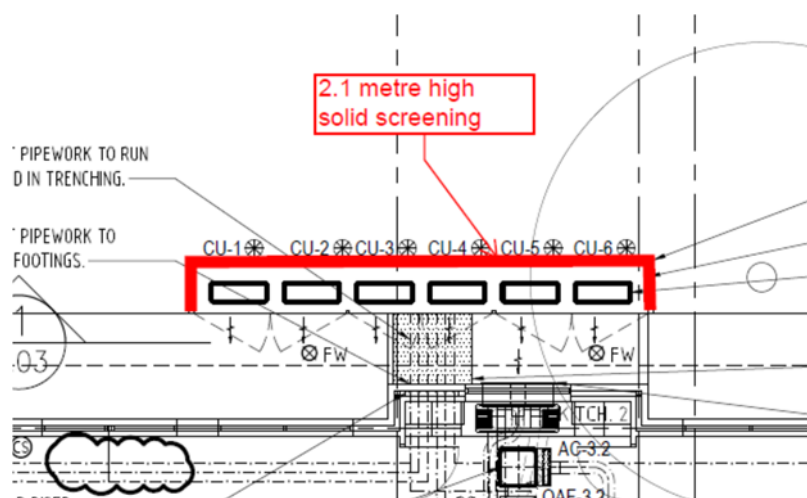


FIGURE 5.1 – SCREENING TO CONDENSING UNITS

6. ASSESSMENT

Given the number of children, acoustic modelling of outdoor play noise was based on the plans provide, with, to be conservative as the sound power level is based on 5 groups of 10 children within the play area.

The resultant noise levels at the neighbouring residence from children playing outdoors are tabulated in Table 6.1.

The resultant noise levels from the air conditioning at the neighbouring residences are also listed in Table 6.1.

From previous measurements, noise emissions from children playing is a broadband noise and does not contain any annoying characteristics. Noise emissions from the mechanical services would be tonal and a +5 dB(A) penalty would be applied, as shown in Table 6.1.

**TABLE 6.1 - ACOUSTIC MODELLING RESULTS FOR L_{A10} CRITERIA
OUTDOOR PLAY AREAS AND MECHANICAL PLANT**

Neighbouring Premises	Calculated Noise Level (dB(A))	
	Children Playing	Air Conditioning
North West	45	13 (18)
South West	29	40 (45)

() Includes +5 dB(A) penalty for tonality

Tables 6.2 and 6.3 summarise the applicable Assigned Noise Levels, and assessable noise level emissions for each identified noise.

**TABLE 6.2 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS
OUTDOOR PLAY (DAY PERIOD)**

Neighbouring Premises	Assessable Noise Level, dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
North West	45	47	Complies
South West	29	47	Complies

**TABLE 6.3 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS
ALL AIR CONDITIONING (NIGHT PERIOD)**

Neighbouring Premises	Assessable Noise Level, dB(A)	Applicable Assigned Noise Level (dB(A))	Exceedance to Assigned Noise Level
North West	18	47	Complies
South West	45	47	Complies

7. CONCLUSION

The proposed classrooms would only operate during school hours, thus they would only be open during the day period on weekdays (excluding Public Holidays).

Additionally, noise received at the neighbouring premises from children playing in the outdoor areas would comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* for the proposed operating times.

With the air conditioning condensing units located, as shown on the plan attached in Appendix A and the screening to the plant as shown on Figure 5.1, noise emissions from the mechanical services has been assessed to also comply with the relevant assigned noise levels for the proposed operating times.

With the screening of the air conditioning condensing units, as shown in Figure 5.1, noise emissions from the proposed child care centre, would be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

TOWN OF VICTORIA PARK Received: 24/06/21



**MATTHEWS
& SCAVALLI**

ARCHITECTS

TOWN OF VICTORIA PARK

Received: 16/06/21

16.06.21

**Mr Alex Thamm
Planning Officer**

www.victoriapark.wa.gov.au



**TOWN OF
VICTORIA PARK**

**DA No. 5.2020.704.1
DEVELOPMENT APPROVAL
GRANTED
Subject to Conditions: 1-22
20/7/2021**

Dear Alex,

The Victoria Park Christian Primary School proposes the addition of a new teaching block to accommodate the existing years Kindergarten, Pre- Primary and Year 1 in a specialist building that is designed to cater for these younger years with a fenced nature playground for the exclusive use of these years. In association with this new building is the refurbishment of the existing carpark to increase parking facilities from the current amount to 31 car bays.

Victoria Park Christian School focuses on the provision of programs of learning to meet student's individual needs that enables the building of a culture of improvement and to be a School of Excellence. The school welcomes families of all cultural and religious backgrounds.

The school has been in Victoria Park for over 90 years and on the current site since the 1960s. Therefore, this is a well established use of the site for Educational purposes of young children for over 60 years within the Town of Victoria Park.

The school has currently approximately 135 students enrolled and with the addition of this new building, the school looks to expand to 150 students, with the addition of the new teaching block, in the medium term (2-5 years).

It is noted that the capacity of the school is under Council control. The applicant seeks to cease the Council control of enrolment numbers as the capacity of the school is adequately managed by the Town Planning Scheme and the Town of Victoria Park Planning department. The removal of this council capacity approval requirement would negate the current parallel approval regimes and reduce duplicated red tape processes.

The school caters to students from the local area as well as the wider metropolitan area. The school has a dedicated student bus service for out of area students and a functioning kiss and drop area accommodated within the school grounds carpark area.

The school has two road frontages being Colombo Street and Oswald street. The addition of the proposed teaching block is adjacent to the Oswald street frontage and proposes a pedestrian entry off this street as an alternative to the Colombo street main frontage. A traffic report is provided as part of this application for further information. This report expands on the subjects of traffic and parking and responds to the Town of Victoria Park policies for these. The traffic report summarises to deem the addition of the new teaching block as keeping traffic at acceptable levels.

The proposed teaching block is to be located in the current playground area to the west of the school site. The building proposed is single storey with a skillion roof of brick and metal roof sheet construction. The new playground will be to the east of the new block adjacent to the current open grassed play area.

a suite 7/779-781 Canning Hwy, Applecross • PO Box 131, Applecross 6953 **p** (08) 9316 0531 **e** info@mandsarchitects.com.au **w** mandsarchitects.com.au

Architecture Award
Small Projects
2006 AIA

Finalist Heritage Awards
2011 Heritage Council

Winner Best Hospitality,
Best Retail, Best in State
2011 DIA

Julius Elischer Award
Interior Architecture
2011 AIA

Matthews Veccia-Scavalli Pty. Ltd. trading
as Matthews and Scavalli Architects
ABN: 81 115 118 922

Existing mature trees have sought to be retained for shade with a minimum amount being removed within the building footprint. All removed trees will be replaced by 1 medium new trees on the site per tree removed. The school promotes play and nature experiences and is proposing a nature playground adjacent to the new teaching block. Note that as per the survey attached 23 trees are to be retained on the site.

‘Our Nature Space provides our students with open-ended opportunities for unstructured play and discovery, nature-based sensory experiences and exploration. With open-ended opportunities, students have that sense of being and doing what they can imagine and are encouraged to think outside the box.’

The replacement trees are proposed to be located within the school site added to the current treed buffer between the play areas and Oswald St, these proposed additions can be viewed on the site plan – SK01 rev 2, forming part of this submission see attached.

We trust that the drawings, reporting and additional information as part of this package satisfies the requirements of the planning approval process.

Regards,



Sally Matthews

Director : Architect

Encl:
Site plan – SK01 rev 3

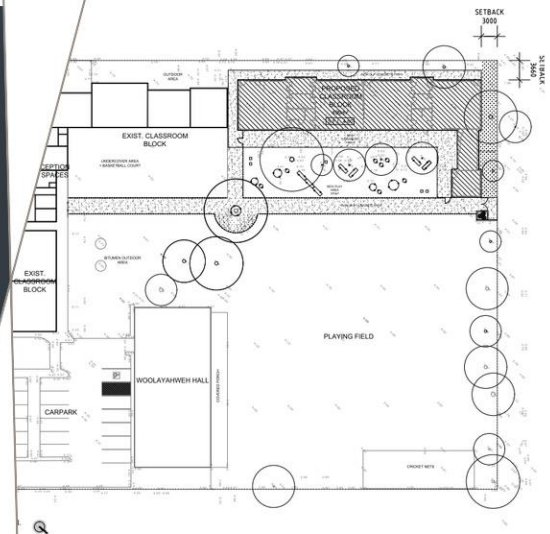
Transport Impact Assessment

Victoria Park Christian School

CW1167400

Prepared for
Adventist Education

15 March 2021



TOWN OF
VICTORIA PARK

**DA No. 5.2020.704.1
DEVELOPMENT APPROVAL
GRANTED
Subject to Conditions: 1-22
20/7/2021**

Contact Information

Cardno (WA) Pty Ltd

ABN 77 009 119 000

11 Harvest Terrace
West Perth WA 6005
Australia

www.cardno.com

Phone +61 8 9273 3888

Fax +61 8 9486 8664

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Edmond Hoang
Traffic Engineer

Effective Date 15/03/2021

Approved By:

Ray Cook
Business Leader – Traffic and Transport Planning

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Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

Table of Contents

1	Introduction	1
1.1	Background	1
2	Existing Situation	2
2.1	Existing Site Context	2
2.2	Existing Site Development	3
2.3	Surrounding Land Use	3
2.4	Existing Site Access	5
2.5	Existing Site Traffic Generation and Land Uses	5
3	Road Network	6
3.1	Existing Road Network	6
3.2	Traffic Volumes	8
3.3	Existing Intersections	8
3.4	Future Road Network	9
3.5	Crash Assessment	9
4	Pedestrian/Cycle Network	10
4.1	Existing Pedestrian/Cycling Network	10
4.2	Future Pedestrian/Cycling Network	10
5	Public Transport Facilities	12
5.1	Existing Public Transport Facilities	12
5.2	Future Public Transport Facilities	13
6	Development Proposal	14
6.1	Proposed Development	14
6.2	Access Arrangements	14
6.3	Car Parking Provision	14
6.4	Service/Delivery Vehicles	16
7	Integration with Surrounding Area	17
7.1	Surrounding Major Attractors/Generators	17
7.2	Proposed Changes to the Surrounding Land Uses	17
8	Analysis of Transport Network	18
8.1	Assessment Years and Time Period	18
8.2	Traffic Generation	18
8.3	Development Traffic Distribution and Assignment	18
8.4	Transport Analysis Assumptions	18
8.5	Intersection Performance	19
9	Summary and Conclusions	25

Appendices

Appendix A WAPC Checklist

Appendix B Site Plans

Appendix C SIDRA Results

Tables

Table 3-1	Summary of Existing Road Network	7
Table 3-2	Existing Site Traffic	8
Table 3-3	Hordern Street (West)/Colombo Street (Nth) Intersection	9
Table 5-1	Bus Services and Frequency	13
Table 6-1	Parking Requirements and Provision	15
Table 8-1	Trip Generation Rate – Peak Hour Generator	18
Table 8-2	Total Trip Generation	18
Table 8-3	Level of Service (LOS) Performance Criteria	20
Table 8-4	SIDRA Layout for Oswald Street/Hordern Street Intersection – Scenario 1	21
Table 8-5	SIDRA Layout for Oswald Street/Hordern Street Intersection – Scenario 2	21
Table 8-6	SIDRA Layout for Oswald Street/Hordern Street Intersection – Scenario 3	22
Table 8-7	SIDRA Layout for Hordern Street/Colombo Street Intersection – Scenario 1	23
Table 8-8	SIDRA Layout for Hordern Street/Colombo Street Intersection – Scenario 2	24
Table 8-9	SIDRA Layout for Hordern Street/Colombo Street Intersection – Scenario 3	24

Figures

Figure 2-1	Site Location	2
Figure 2-2	Aerial View of the Site	3
Figure 2-3	Zoning Map	4
Figure 2-4	Existing Site Access Arrangement	5
Figure 3-1	Existing Road Hierarchy	6
Figure 3-2	Posted Speed Limit and School Zones	7
Figure 3-3	Oswald Street/Hordern Street Intersection	8
Figure 3-4	Hordern Street/Colombo Street Intersection	9
Figure 4-1	Existing Pedestrian / Cycle Networks	10
Figure 4-2	Proposed Networks for Cycle Routes	11
Figure 4-3	Proposed Bridge Construction	11
Figure 5-1	Existing Transperth Networks	12
Figure 5-2	Existing Transperth Networks	12
Figure 6-1	Site Plan	14

Figure 6-2	Verge Parking Along the School Frontage (Colombo Street)	15
Figure 6-3	On-street Parking Along School Frontage (Oswald Street)	16
Figure 7-1	Major Attractors/Generators	17
Figure 8-1	Hordern Street/Colombo Street intersection north eastern approach closure	19
Figure 8-2	SIDRA Layout for Oswald Street/Hordern Street Intersection	20
Figure 8-3	SIDRA Layout for Hordern Street/Colombo Street Intersection	23

1 Introduction

1.1 Background

Cardno have been commissioned by Matthews & Scavalli Architects on behalf of the Adventist Education to prepare a Transport Impact Assessment (TIA) for the proposed expansion of Victoria Park Christian School, located in the Town of Victoria Park.

This report aims to focus on traffic access, circulation, and safety of the proposed school. Discussion regarding pedestrian, cycle and public transport considerations has also been included.

This report is under the Western Australian Planning Commission (WAPC) *Transport Assessment Guidelines for Developments: Volume 4 Individual Developments (2016)*.

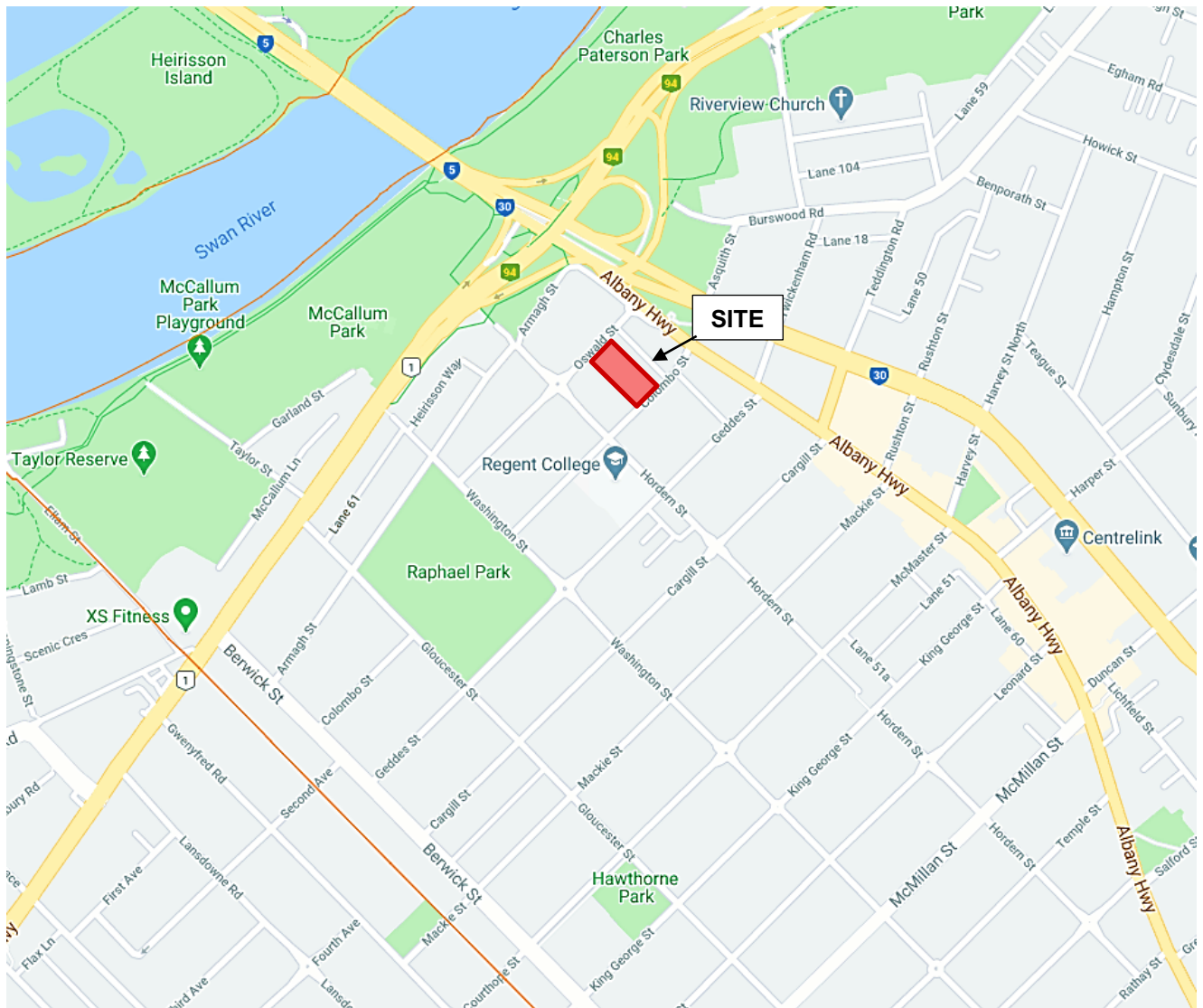
2 Existing Situation

2.1 Existing Site Context

The Site is located between Colombo Street and Oswald Street. The Site is bounded by Hordern Street to the north, Oswald Street to the west, residential dwelling to the south and Columbo Street to the east.

The location of the Site is illustrated in **Figure 2-1**.

Figure 2-1 Site Location



Source: Nearnap (2021)

2.2 Existing Site Development

The existing site is home to Victoria Park Christian School. An aerial view of the Site location is presented in **Figure 2-2**.

Figure 2-2 Aerial View of the Site

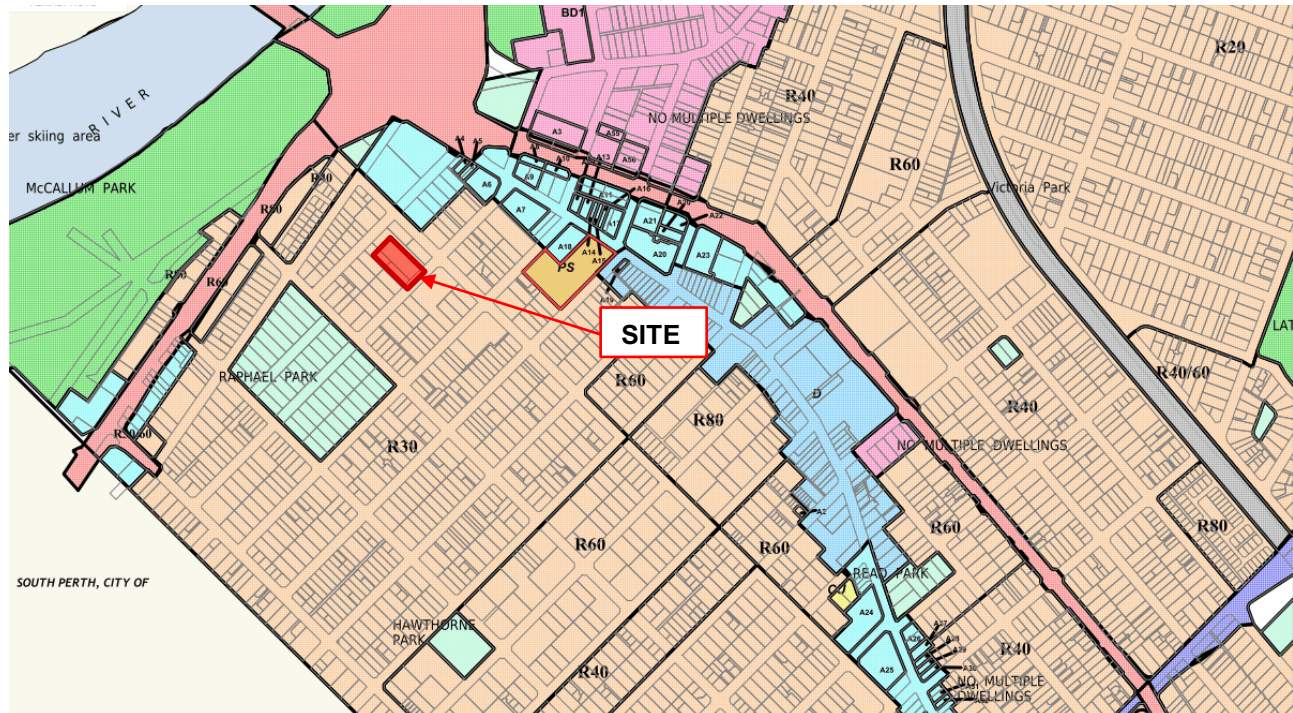


Source: Nearmap (2021)

2.3 Surrounding Land Use

According to the *Town of Victoria Park Local Planning Scheme No. 1*, the Site is zoned as “Residential R30” and the nearby surrounding area is zoned as “Residential”. A detailed zoning map around the Site is presented in **Figure 2-3**.

Figure 2-3 Zoning Map



- Commercial
- District Centre
- Industrial Area
- Local Centre
- Office/Residential
- Other Regional Roads (MRS)
- Parks and Recreation
- Parks and Recreation (MRS)
- Parks and Recreation Restricted (MRS)
- Primary Regional Roads (MRS)
- Public Purpose
- Public Purpose - High School (MRS)
- Public Purpose - Special Uses
- Public Purpose - Technical School (MRS)
- Public Purpose - University
- Public Purpose - SEC
- Railways (MRS)
- Residential R20
- Residential R30
- Residential R30 / 60

Source: Town of Victoria Park Local Planning Scheme No. 1

2.4 Existing Site Access

The existing vehicle accesses to the Site are shown in **Figure 2-4** and the access arrangement is summarised as follows:

- > Access 1 – Car park Entry (Staff parking and pick-up/drop-off)
- > Access 2 – Car park Exit (Staff parking and pick-up/drop-off)
- > Access 3 – Service Entry and Exit (Maintenance)

Figure 2-4 Existing Site Access Arrangement



2.5 Existing Site Traffic Generation and Land Uses

The current student count in 2021 is 135 full time students and the current staff count is 10 full-time equivalent (FTE) staff.

3 Road Network

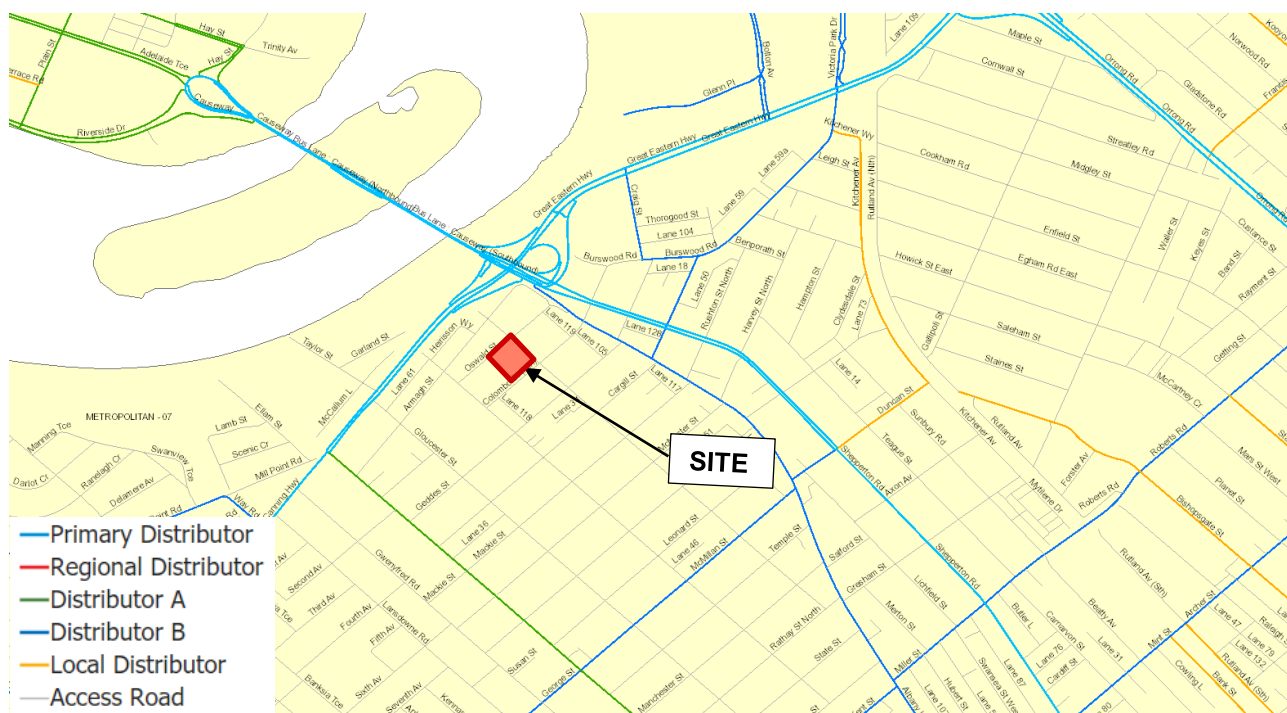
3.1 Existing Road Network

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- > **Primary Distributors (light blue):** Form the regional and inter-regional grid of the Main Roads WA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes and all are National or State roads. They are managed by Main Roads WA.
- > **Regional Distributors (red):** Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.
- > **District Distributor A (green):** These carry traffic between industrial, commercial and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government.
- > **District Distributor B (dark blue):** Perform a similar function to District Distributor A but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- > **Local Distributors (orange):** Carry traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks. They are managed by Local Government.
- > **Access Roads (grey):** Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local government.

The layout and classification of the roads surrounding the Site are presented in **Figure 3-1** and summarised in **Table 3-1**.

Figure 3-1 Existing Road Hierarchy



Source: Main Roads Mapping Information Centre (2021)

Table 3-1 Summary of Existing Road Network

Road Name	Road Hierarchy	Jurisdiction	No. of Lanes	No. of Footpaths	Width (m)	Posted Speed (km/h)
Berwick Street	Distributor A	Local Government	3	2	Approximately 19.6m	60
Canning Highway	Primary Distributor	Local Government	5	2	Approximately 20.4m	60
Albany Highway	Distributor B	Local Government	2	2	Approximately 16.7m	50
Hordern Street	Access Road	Local Government	2	2	Approximately 10.2	50/40
Oswald Street	Access Road	Local Government	2	1	Approximately 10m	50/40
Colombo Street	Access Road	Local Government	2	2	Approximately 7.3m	50/40

Figure 3-2 shows the posted speed limit for the surrounding road network including the 40km/h school zones. The periods when the school zone posted speed is in effect is between 7:30am – 9:00am and 2:30pm – 4:00pm.

Figure 3-2 Posted Speed Limit and School Zones



Source: Main Roads Mapping Information Centre (2021)

3.2 Traffic Volumes

Traffic volumes for the surrounding roads near the School were obtained from Main Roads Traffic Map and the Town of Victoria Park and is summarised in **Table 3-2**.

Table 3-2 Existing Site Traffic

Road Name	Date	Average Two-way Daily Traffic Volume (Weekday)	Average Two-way AM Peak Traffic Volume	Average Two-way PM Peak Traffic Volume
Berwick Street (East of Canning Highway)	2018	16,584	1,317	1,384
Albany Highway (East of Geddes Street)	2020	7,522	829	505
Cargill Street (West of Albany Highway)	2020	1,191	271	128
Canning Hwy (At Albany Hwy Bridge)	2020	37,593	2,676	3,355

Source: Main Roads WA

3.3 Existing Intersections

3.3.1 Oswald Street/Hordern Street Intersection

Oswald Street/Hordern Street Intersection is located to the north of the site. It is a 4-way roundabout and the intersection layout is shown in **Figure 3-3**.

Figure 3-3 Oswald Street/Hordern Street Intersection



Source: Nearmap (2021)

3.3.2 Hordern Street/Colombo Street Intersection

Hordern Street/Colombo Street Intersection is located east of the site. It is 4-way stop controlled intersection with priority to Odern Street. The intersection layout is shown in **Figure 3-4**.

Figure 3-4 Hordern Street/Colombo Street Intersection



Source: Nearmap (2021)

3.4 Future Road Network

Based on the information provided by the Town of Victoria Park and a desktop research there does not appear to be any significant changes proposed to the surrounding road network.

3.5 Crash Assessment

A search of the Main Road WA crash data for the five-year period between January 2015 and December 2019 has been undertaken. Of all the intersections and midblock sections along the frontage of the Site, the intersection of Hordern Street/Colombo Street was the only intersection with recorded crash data. The crash data is summarised in **Table 3-3**.

Table 3-3 Hordern Street (West)/Colombo Street (Nth) Intersection

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Not Stated	Total Crashes
Right Turn Thru	-	-	-	2	-	-	2
Right Angle	-	-	-	1	-	-	1
Total	0	0	0	3	0	0	3

A summary of the crash data are as follows;

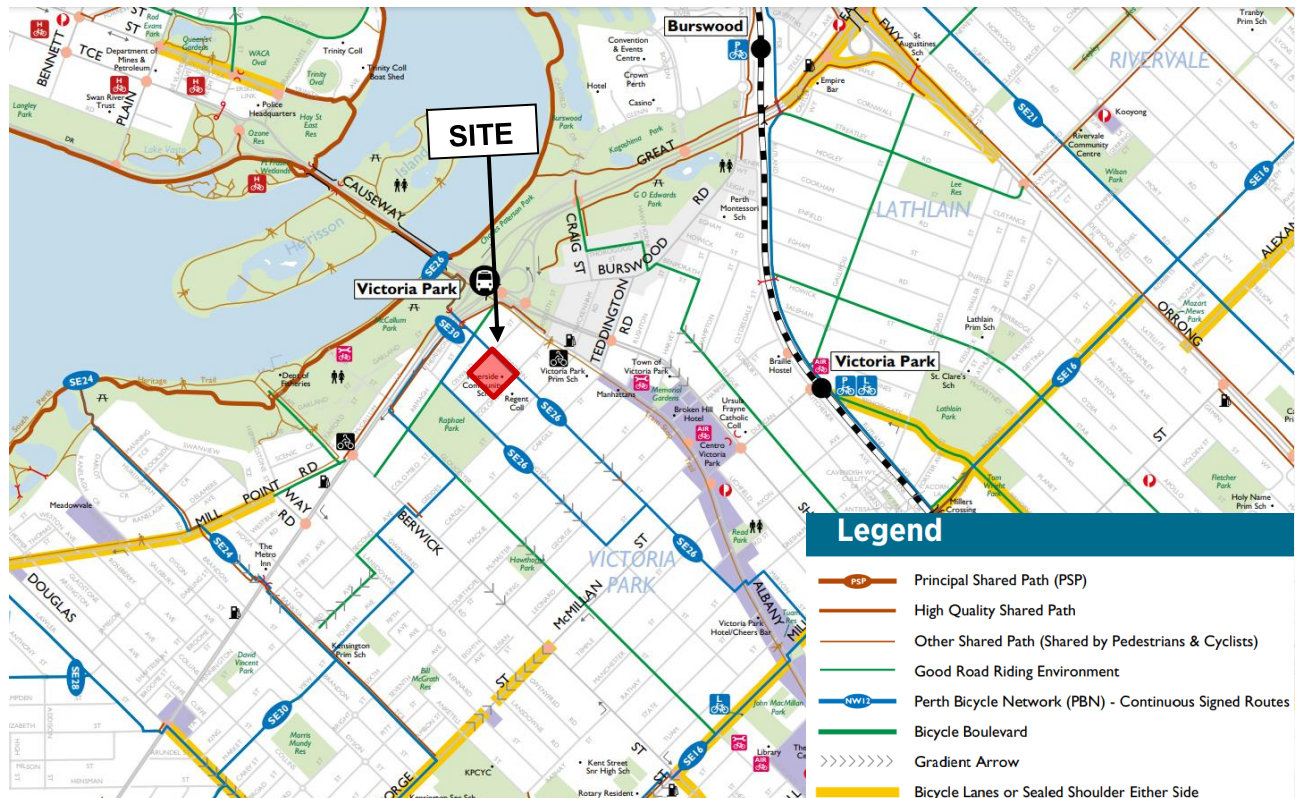
- > There was only crash data for the intersection at Hordern Street and Colombo Street. Having minimal crash data shows is a good sign for the future development within the area and at the projected site.
- > 3 crashes were recorded which had major property damage
- > Overall the number of crashes occurring near the Site is low.

4 Pedestrian/Cycle Network

4.1 Existing Pedestrian/Cycling Network

According to the *Department of Transport Perth, Fremantle and Stirling Comprehensive Bike Map* the Perth Bicycle Network (PBN) provides a route along the school frontage roads (Hordern Street and Washington Street). In addition, there are good road riding environments and convenient access to high quality shared paths. Overall, the walking and cycling network is considered to be good with convenient access to high quality facilities. **Figure 4-1** shows the bicycle network within the surrounding area of the site.

Figure 4-1 Existing Pedestrian / Cycle Networks



Source: Department of Transport

4.2 Future Pedestrian/Cycling Network

4.2.1 Joint Bike Plan

Town of Victoria Park and the City of South Perth have taken initiatives to create the state's first joint bike plan, this aims to set out the long-term vision for a strategic cycling network covering both local government areas. This is in line with the State Government's *Perth and Peel @3.5million Transport Plan*. The bike plan outlines a five-year action plan for specific improvements to the cycle network and environment with 13 key infrastructure projects are proposed for delivery. The implementations aim for new cycling and pedestrian friendly networks which would be beneficial for the walkability and accessibility of the site.

Figure 4-2 Proposed Networks for Cycle Routes



Source: Town of Victoria Park

4.2.2 Causeway Pedestrian and Cyclist Bridge

Main Roads is also in the process in creating a causeway pedestrian and cyclist bridge, which would travel from Victoria Park to Perth CBD. The new bridge is anticipated to be six metres wide, with dedicated pedestrian and cyclist lanes, **Figure 4-3** shows an image of the projected bridge construction. It will be connected from Victoria Park foreshore with Heirisson Island and Perth's CBD. It is anticipated that the contract will be awarded late this year with commencement of construction to happen at the beginning of 2022.

Figure 4-3 Proposed Bridge Construction



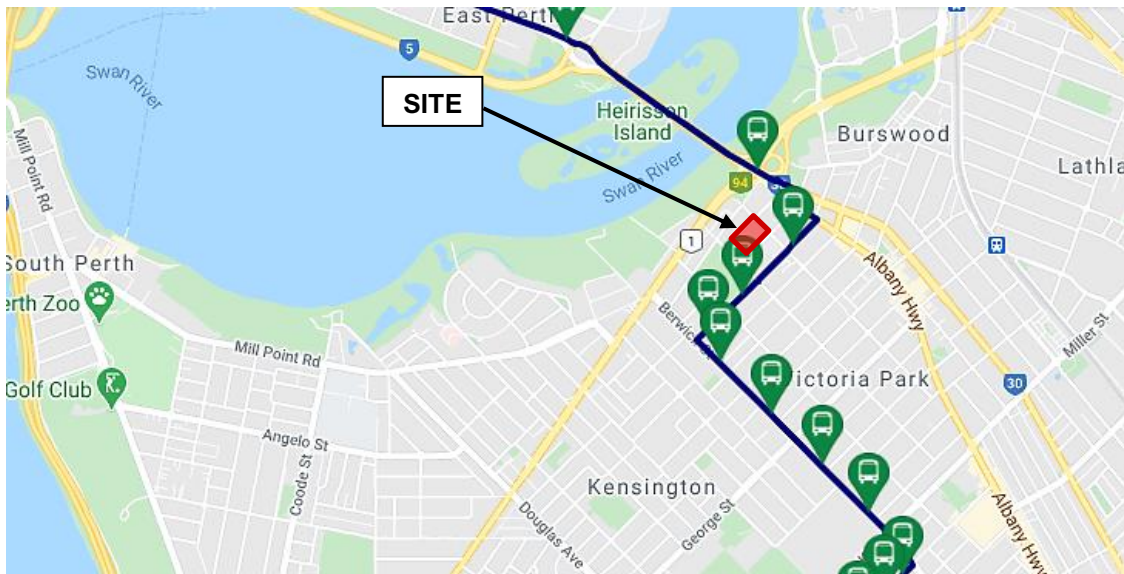
Source: Main Roads WA

5 Public Transport Facilities

5.1 Existing Public Transport Facilities

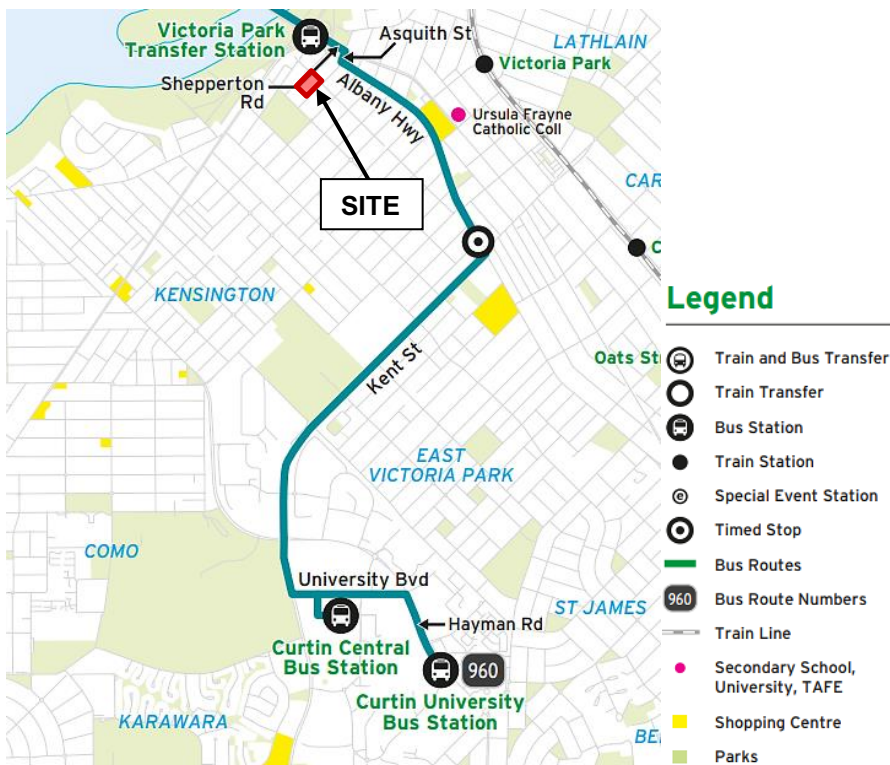
The closest Transperth bus services to the School are numbers 72,75 which travel from Elizabeth Quay Train Station to Canning Vale Bus Depot as shown in **Figure 5-1**. This bus route services specifically Canning College but bypasses Victoria Park Christian School. The closest bus stop is located along Geddes St Before Hordern St on the North entrance of campus (Stop ID: 11735).

Figure 5-1 Existing Transperth Networks



Source: Department of Transport

Figure 5-2 Existing Transperth Networks



Source: Department of Transport

Routes 177, 178, 179, 220 and 960 also operate nearby and travel to and from various bus ports across the Perth Metropolitan area including Elizabeth Quay Bus Station and Fremantle Station as shown in **Figure 5-2**. The closest bus stop is located along Albany Highway Before Geddes Street on the North entrance of campus (Stop ID: 11733).

Table 5-1 provides a summary of the bus services which operate near the Site and their respective frequencies.

Table 5-1 Bus Services and Frequency

Bus Service	Weekday Peak	Weekday Off-peak	Saturday	Sunday & Public Holiday
177 (Cannington Stn – via Albany Hwy & Chapman Rd)	10-15mins	60mins	60mins	60mins
178 (Bull Creek Stn – via Albany Highway, Shelley & Rossmoyne)	15-20mins	60mins	60mins	60mins
179 (Bull Creek Stn – via Albany Hwy & Riverton Forum Shop Ctr)	25-60mins	60mins	N/A	N/A
72 (Cannington Stn – via Victoria Park & Curtin University)	10-20mins	20-30mins	60minutes	60-90mins
75 (Canning Vale – via Victoria Park & Curtin University)	30mins	30-60mins	N/A	N/A
960 (Mirrabooka Bus Stn – Curtin University Bus Stn via Alexander Drive)	10-15mins	10-15mins	15-20mins	15-20mins
220 (Armadale Stn – Kelmscott Stn via Albany Hwy)	60mins	60mins	60mins	60-90mins

The Victoria Park Transfer Station also services a substantial amount of bus services that travel to various parts of Perth. The bus services that transfer through the station that weren't mentioned above include; 37, 286, 287, 293, 36, 40, 39. It is approximately 550 metres from the proposed site, equivalent to a 7 minute walk.

5.2 Future Public Transport Facilities

The PTA have advised that there are no fundamental changes to the public transport services within the surrounding area of the subject Site. Some services will undergo route number changes associated with the Airport Line commissioning. There will still be high frequency services along Great Eastern Highway (Amended 39, New 270, Amended SuperBus 935, New SuperBus 940) and Shepperton Rd (Amended 38 / 282 / 283, Existing SuperBus 930).

6 Development Proposal

6.1 Proposed Development

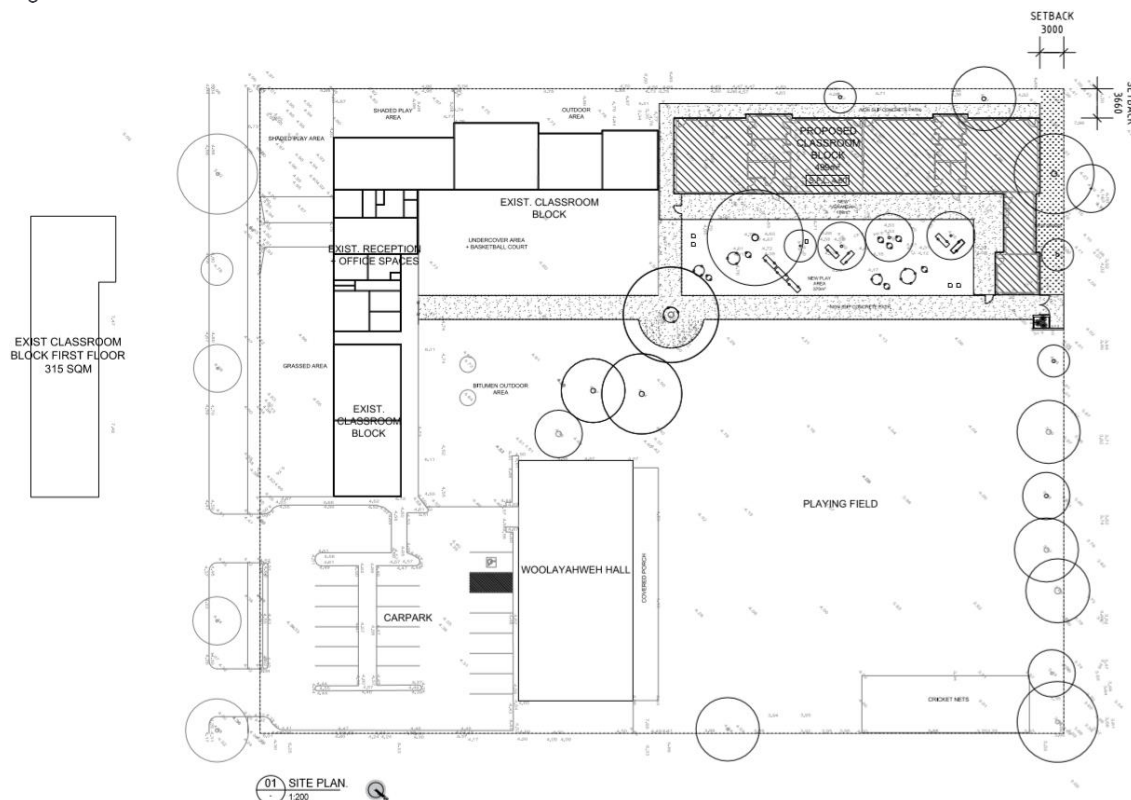
The proposed development comprises of upgrades to existing buildings and the provision of new school buildings which include the following:

- > Proposed classroom block
- > New outdoor sitting areas
- > Playing field including cricket nets
- > Shaded playing areas

Student numbers are expected to increase up to 180+ students with approximately 14 FTE staff. In the long term (5-6 years), anticipated student numbers are forecast to reach 230 students.

Figure 6-1 shows the site development layout plan. Higher resolution plans are provided in **Appendix A**.

Figure 6-1 Site Plan



Source: Matthews & Scavalli Architects

6.2 Access Arrangements

The Site is anticipated to utilise the existing access arrangements as described in **Section 2.4**.

6.3 Car Parking Provision

Car parking requirements are set out in the Town of Victoria Park's *Parking Policy (LPP23)*. The parking requirements are calculated in accordance with the following rates:

- > Minimum of 14 bays per 100 students, plus staff car parking at a rate of 0.07 per student.

The projected enrolment is projected to increase by 45 students for the short term and up to 95 students in the long term.

Based on these requirements, the table below provides a summary of the additional parking requirements.

Table 6-1 Parking Requirements and Provision

Number of Students	Number of bays for parents/visitors	Number of bays for staff	Total bays required
180	26	13	39
230	33	17	50

19 bays (including 1 ACROD bay) are currently provide on-site for staff which satisfies the requirements for both student thresholds. Currently verge parking is available for parents/visitors of the school along the southern frontage of the school (along Colombo Street) as well as on-street bays along the northern frontage of the school (along Oswald Street).

Figure 6-2 Verge Parking Along the School Frontage (Colombo Street)



Figure 6-3 On-street Parking Along School Frontage (Oswald Street)



In addition to the parking bay along the school frontage, on-street parking is also available on all nearby local road within the surrounding area with varying time limits and fees.

Furthermore, the parking demand from the school is likely to be lower due to the following:

- > The school operates a private bus service to transport students to and from school. Approximately 30 students currently use this service (which is approximately 22% of the current student population).
- > Bike parking for staff and students is provided by the school (approximately 10 bike bays).

Given the availability of parking within the surrounding area of the School as well as initiatives aimed at reducing parking demand (e.g. the private bus service), the current parking arrangement would be sufficient enough to accommodate the increase in student numbers.

6.4 Service/Delivery Vehicles

Service and delivery vehicles for the proposed development is not likely to change.

7 Integration with Surrounding Area

7.1 Surrounding Major Attractors/Generators

The major attractors and generators surrounding the development are shown in **Figure 7-1**. Key attractors and generators include;

- > Victoria Park Primary School and Regent College
- > Various parks and reserves including McCallum Park, Raphael Park and Taylor Reserve
- > The commercial and retail strip along Distributor B road (Albany Highway)

Figure 7-1 Major Attractors/Generators



7.2 Proposed Changes to the Surrounding Land Uses

Based on current available information, there does not appear to be any significant changes to the land uses within the surrounding area of the Site.

8 Analysis of Transport Network

8.1 Assessment Years and Time Period

Peak times selected are 8:00am-9:00am and 4:00pm-5:00pm respectively for the morning and afternoon peak periods, which are the peak times identified from the supplied traffic counts.

School peak traffic generation is generally in the period of 8:30am-9:00am and 3:00pm-3:30pm, which corresponds to the class start and finish times.

For the purpose of this assessment, the school peak and background traffic peak is assumed to coincide which would represent the worst-case scenario.

The following model scenarios have been analysed as part of the assessment:

- > Scenario 1 – Background 2021;
- > Scenario 2 – Background 2023 (assumed opening year) + Development Traffic (45 additional students); and
- > Scenario 3 – Background 2033 (10-year horizon) + Development Traffic (95 additional students).

For the purpose of this assessment, a 1% growth rate has been adopted for the background traffic growth which is consistent with the average traffic growth across all roads within metropolitan Perth.

8.2 Traffic Generation

Trip generation has been calculated for the proposed development utilising trip generation rates from the *Institute of Transportation Engineers (ITE) "Trip Generation" 10th Ed.* The following tables explain the directional distribution and total trip generation of the development.

Table 8-1 provides the trip generation rate during the AM and PM peak hours and **Table 8-2** states the total trip generation for the proposed development.

Table 8-1 Trip Generation Rate – Peak Hour Generator

Land Use	ITE Code/Source	AM Peak	PM Peak
School	WAPC	IN: 0.5 trip per student OUT: 0.5 trip per student	IN: 0.5 trip per student OUT: 0.5 trip per student

Table 8-2 Total Trip Generation

Land Use	AM Peak		PM Peak	
	In	Out	In	Out
School (additional 45 students, total 180 students)	23	23	23	23
School (additional 95 students, total 230 students)	48	48	48	48

The proposed development represents a trip generation of approximately 46 vehicles during the AM and PM peak hours for 45 additional students and 96 vehicles during the AM and PM peak hours for 95 additional students. Note that the actual traffic generated is likely to be lower given that a proportion of students use the private bus service operated by the school or walk/cycle if they live nearby.

8.3 Development Traffic Distribution and Assignment

It is anticipated the majority of school traffic will be traveling to and from the east along Albany Highway.

8.4 Transport Analysis Assumptions

A list of the assumptions is summarised below:

- > Surveys were unable to be conducted for the Hordern Street/Colombo Street intersection for the PM peak period due to construction works which resulted in the closure of the north-eastern approach during the survey period (Refer to **Figure 8-1**).

Figure 8-1 Hordern Street/Colombo Street intersection north eastern approach closure



- > For the purpose of this assessment, it is assumed that the initial 45 student increase will occur when the proposed building upgrades are complete (Scenario 2). The 95 student increase is assumed to occur 10 years after the proposed building upgrades (Scenario 3). This aligns with the WAPC guidelines (which requires a post development assessment 10 years after full opening) as well as provides a robust assessment of the surrounding road network.
- > Heavy vehicle percentages were obtained from the Main Roads WA Traffic Map.

8.5 Intersection Performance

SIDRA analysis for the 30-minute school peak was undertaken at the following intersection to estimate the impact of the school generated traffic on the surrounding transport network:

- > Oswald Street/Hordern Street Intersection; and
- > Hordern Street/Colombo Street Intersection.

The visitor parking accesses have not been assessed as traffic entering and exiting this area is not expected to increase. The proposed expansion of the visitor pick-up/drop-off area effectively increases its traffic and queuing capacity.

SIDRA results for each approach are presented below in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue. These characteristics are defined as follows:

- > Degree of Saturation (DOS): is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The DOS for an un-signalized intersection is considered critical where $DOS > 0.80$;
- > 95th percentile Queue: is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- > Average Delay: is the average of all travel time delays for vehicles through the intersection; and
- > Level of Service (LOS): is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in **Table 8-3**.

Table 8-3 Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
B	Reasonable free-flow operations	10-20 sec	10-15 sec
C	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	25-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

Full SIDRA outputs are also provided in **Appendix C**.

8.5.2 Oswald Street/Hordern Street Intersection

The results of the analysis of the Oswald Street/Hordern Street intersection for all scenarios is presented and summarised in this section. **Figure 8-2** is a SIDRA layout representation of the intersection. **Table 8-4**, **Table 8-5** and **Table 8-6** shows the results of the analysis.

Figure 8-2 SIDRA Layout for Oswald Street/Hordern Street Intersection

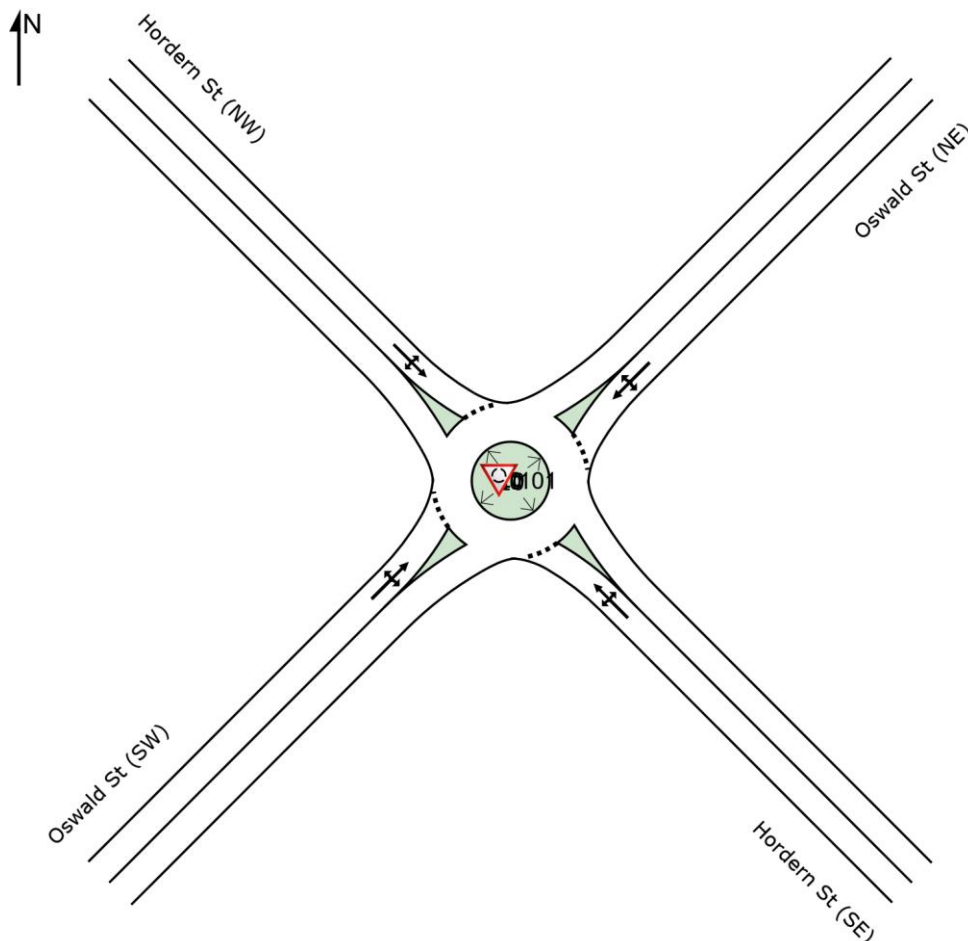


Table 8-4 SIDRA Layout for Oswald Street/Hordern Street Intersection – Scenario 1

Intersection Approach	Background 2021 + Dev (AM)					Background 2021 + Dev (PM)			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Hordern St (SE)	L	0.023	4.7	A	0.8	0.056	5	A	2.1
	T	0.023	4.8	A	0.8	0.056	5.1	A	2.1
	R	0.023	8.1	A	0.8	0.056	8.4	A	2.1
Oswald St (NE)	L	0.037	4.8	A	1.4	0.114	4.8	A	4.4
	T	0.037	4.9	A	1.4	0.114	4.9	A	4.4
	R	0.037	8.1	A	1.4	0.114	8.2	A	4.4
Hordern St (NW)	L	0.031	5.2	A	1.2	0.022	5	A	0.8
	T	0.031	5.3	A	1.2	0.022	5.1	A	0.8
	R	0.031	8.5	A	1.2	0.022	8.4	A	0.8
Oswald St (SW)	L	0.057	4.8	A	2	0.025	4.9	A	0.9
	T	0.057	4.9	A	2	0.025	5	A	0.9
	R	0.057	8.1	A	2	0.025	8.3	A	0.9

Table 8-5 SIDRA Layout for Oswald Street/Hordern Street Intersection – Scenario 2

Intersection Approach	Background 2023 + Dev (AM)					Background 2023 + Dev (PM)			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Hordern St (SE)	L	0.023	4.7	A	0.8	0.061	5.1	A	2.3
	T	0.023	4.8	A	0.8	0.061	5.2	A	2.3
	R	0.023	8.1	A	0.8	0.061	8.4	A	2.3
Oswald St (NE)	L	0.038	4.8	A	1.4	0.125	4.9	A	4.8
	T	0.038	4.9	A	1.4	0.125	4.9	A	4.8
	R	0.038	8.1	A	1.4	0.125	8.2	A	4.8
Hordern St (NW)	L	0.031	5.2	A	1.2	0.022	5.1	A	0.8
	T	0.031	5.3	A	1.2	0.022	5.2	A	0.8
	R	0.031	8.5	A	1.2	0.022	8.5	A	0.8
Oswald St (SW)	L	0.057	4.8	A	2.1	0.035	4.9	A	1.3
	T	0.057	4.9	A	2.1	0.035	5	A	1.3
	R	0.057	8.1	A	2.1	0.035	8.3	A	1.3

Table 8-6 SIDRA Layout for Oswald Street/Hordern Street Intersection – Scenario 3

Intersection Approach	Background 2033 + Dev (AM)					Background 2033 + Dev (PM)			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
Hordern St (SE)	L	0.026	4.7	A	0.9	0.072	5.2	A	2.8
	T	0.026	4.8	A	0.9	0.072	5.3	A	2.8
	R	0.026	8.1	A	0.9	0.072	8.5	A	2.8
Oswald St (NE)	L	0.042	4.8	A	1.5	0.145	5	A	5.8
	T	0.042	4.9	A	1.5	0.145	5	A	5.8
	R	0.042	8.2	A	1.5	0.145	8.3	A	5.8
Hordern St (NW)	L	0.036	5.2	A	1.3	0.026	5.2	A	1
	T	0.036	5.3	A	1.3	0.026	5.3	A	1
	R	0.036	8.6	A	1.3	0.026	8.6	A	1
Oswald St (SW)	L	0.063	4.8	A	2.3	0.05	5	A	1.8
	T	0.063	4.9	A	2.3	0.05	5	A	1.8
	R	0.063	8.2	A	2.3	0.05	8.3	A	1.8

Based on the above, the SIDRA results show that this intersection will operate at an acceptable level of service for all scenarios.

8.5.3 Hordern Street/Colombo Street Intersection

The results of the analysis of the Hordern Street/Colombo Street intersection for all scenarios is presented and summarised in this section. **Figure 8-3** is a SIDRA layout representation of the intersection. **Table 8-7**, **Table 8-8** and **Table 8-9** shows the results of the analysis.

Figure 8-3 SIDRA Layout for Hordern Street/Colombo Street Intersection

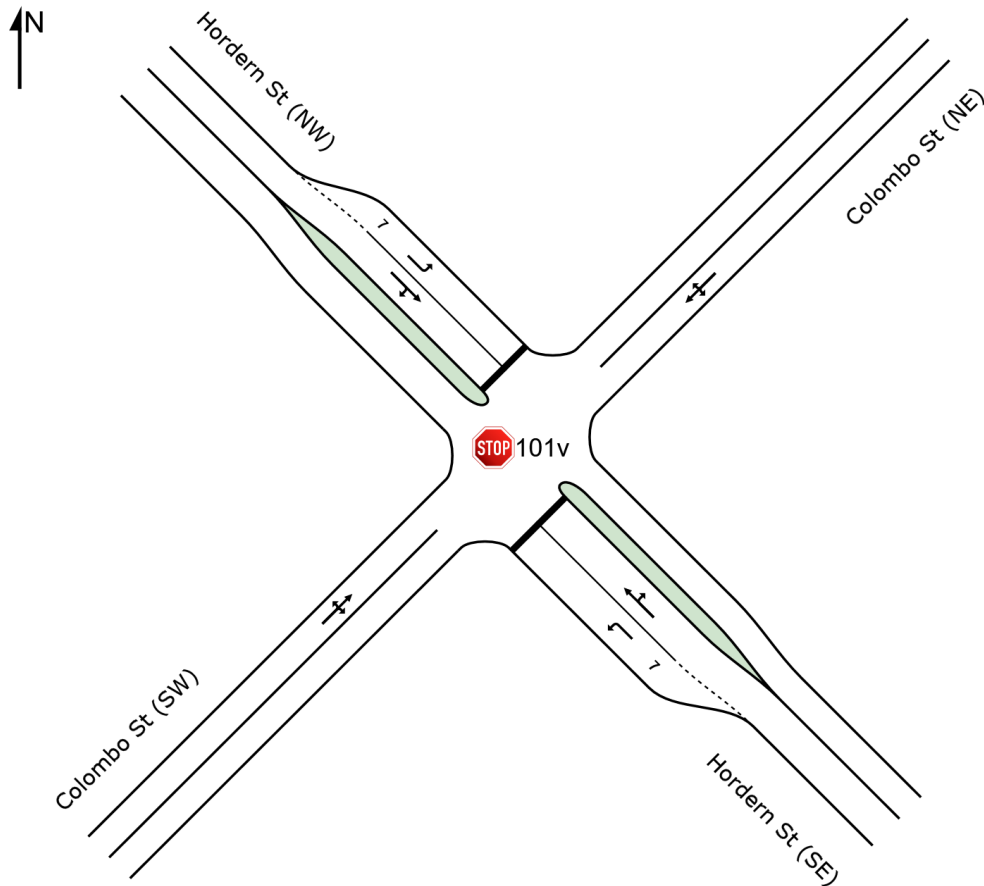


Table 8-7 SIDRA Layout for Hordern Street/Colombo Street Intersection – Scenario 1

Intersection Approach	Background 2021 (AM)				
		DOS	Delay (s)	LOS	95% Queue (m)
Hordern St (SE)	L	0.041	8.6	A	1.2
	T	0.133	9	A	3.5
	R	0.133	9.5	A	3.5
Colombo St (NE)	L	0.051	5.8	A	0.6
	T	0.051	0	A	0.6
	R	0.051	5.9	A	0.6
Hordern St (NW)	L	0.029	8.5	A	0.8
	T	0.024	8.8	A	0.6
	R	0.024	9.4	A	0.6
Colombo St (SW)	L	0.051	5.8	A	0.5
	T	0.051	0	A	0.5
	R	0.051	5.9	A	0.5

Table 8-8 SIDRA Layout for Hordern Street/Colombo Street Intersection – Scenario 2

Intersection Approach	Background 2023 + Dev (AM)				
		DOS	Delay (s)	LOS	95% Queue (m)
Hordern St (SE)	L	0.042	8.6	A	1.2
	T	0.136	9	A	3.6
	R	0.136	9.5	A	3.6
Colombo St (NE)	L	0.052	5.8	A	0.6
	T	0.052	0	A	0.6
	R	0.052	5.9	A	0.6
Hordern St (NW)	L	0.03	8.5	A	0.9
	T	0.024	8.8	A	0.6
	R	0.024	9.5	A	0.6
Colombo St (SW)	L	0.052	5.8	A	0.5
	T	0.052	0	A	0.5
	R	0.052	5.9	A	0.5

Table 8-9 SIDRA Layout for Hordern Street/Colombo Street Intersection – Scenario 3

Intersection Approach	Background 2033 + Dev (AM)				
		DOS	Delay (s)	LOS	95% Queue (m)
Hordern St (SE)	L	0.047	8.6	A	1.4
	T	0.154	9.2	A	4.1
	R	0.154	9.8	A	4.1
Colombo St (NE)	L	0.058	5.8	A	0.7
	T	0.058	0.1	A	0.7
	R	0.058	5.9	A	0.7
Hordern St (NW)	L	0.033	8.6	A	1
	T	0.026	8.9	A	0.7
	R	0.026	9.6	A	0.7
Colombo St (SW)	L	0.057	5.8	A	0.5
	T	0.057	0	A	0.5
	R	0.057	5.9	A	0.5

The SIDRA results show that this intersection will operate at an acceptable level of service for all scenarios.

9 Summary and Conclusions

This TIA assesses the proposed expansion of Victoria Park High School (“the Site”) located on Colombo Street in Town of Victoria Park.

The following conclusions can be drawn from the TIA:

- > The proposed development comprises of upgrades to existing building and the provision of new school buildings in addition to expanding the existing drop-off/pick-up area and providing more parking.
- > Public transport is considered to be excellent as the School is well serviced by local and school bus services.
- > Walking and cycling within the surrounding area is considered to be excellent with easily accessible high quality shared paths.
- > The SIDRA assessment shows that the nearby intersections will operate at an acceptable level of service for all scenarios analysed.
- > Given the availability of parking within the surrounding area of the School as well as initiatives aimed at reducing parking demand (e.g. the private bus service), the current parking arrangement would be sufficient enough to accommodate the increase in student numbers.
- > Overall, the number of crashes occurring near the Site is low.

APPENDIX

A

WAPC CHECKLIST

Item	Provided	Comments/Proposals
Summary		
Introduction/Background		
name of applicant and consultant	Section 1	
development location and context	Section 2	
brief description of development proposal	Section 2	
key issues	Section 2	
Background information	Section 1	
Existing situation		
existing site uses (if any)	Section 2	
existing parking and demand (if appropriate)	Section 2	
existing access arrangements	Section 2	
existing site traffic	Section 3	
surrounding land uses	Section 2	
surrounding road network	Section 3	
traffic management on frontage roads	NA	
traffic flows on surrounding roads (usually am and pm peak hours)	Section 2	
traffic flows at major intersections (usually am and pm peak hours)	Section 2	
operation of surrounding intersections	Section 8	
existing pedestrian/cycle networks	Section 4	
existing public transport services surrounding the development	Section 5	
Crash data	Section 3	
Development proposal		
regional context	Section 6	
proposed land uses	Section 6	
table of land uses and quantities	Section 6	
access arrangements	Section 6	
parking provision	Section 6	
end of trip facilities	N/A	
any specific issues	N/A	
road network	N/A	
intersection layouts and controls	Section 5	
pedestrian/cycle networks and crossing facilities	NA	

Item	Provided	Comments/Proposals
public transport services	Section 5	
Integration with surrounding area	Section 7	
surrounding major attractors/generators	Section 7	
committed developments and transport proposals	N/A	
proposed changes to land uses within 1200 metres	Section 7	
travel desire lines from development to these attractors/generators	N/A	
adequacy of existing transport networks	Section 6	
deficiencies in existing transport networks	N/A	
remedial measures to address deficiencies	N/A	
Analysis of transport networks		
assessment years	Section 8	
time periods	Section 8	
development generated traffic	Section 8	
distribution of generated traffic	Section 8	
parking supply & demand	Section 8	
base and "with development" traffic flows	Section 8	
analysis of development accesses	Section 8	
impact on surrounding roads	Section 8	
impact on intersections	Section 8	
impact on neighbouring areas	Section 8	
traffic noise and vibration	N/A	
road safety	N/A	
public transport access	Section 5	
pedestrian access / amenity	Section 4	
cycle access / amenity	Section 4	
analysis of pedestrian / cycle networks	Section 4	
safe walk/cycle to school (for residential and school site developments only)	N/A	
Traffic management plan (where appropriate)	N/A	

APPENDIX

B

SITE PLANS

ALL DIMENSIONS ARE IN METRIC MILLIMETRES

THE CONTRACTOR SHALL CARRY OUT THE WORK
IN ACCORDANCE WITH THE N.C.C. & LOCAL
AUTHORITY REQUIREMENTS.

ALL MATERIAL SHALL BE OF NEW, GOOD QUALITY & CONFORM TO WHAT IS SHOW ON THE DRAWINGS.

COL STEEL COLUMN - REFER TO S.E. DWGS.

CONC CONCRETE FLOOR SLAB - REFER TO S.E. DWGS.
F.L. FLOOR LEVEL.
R.L. REDUCED LEVEL.
RWP RAIN WATER PIPE.
S.E. STRUCTURAL ENGINEER.
UAT UNIVERSAL ACCESS TOILET.

S.F.L. 27.100 PROPOSED FLOOR LEVEL.

R.L.27.60 PROPOSED FINISHED LEVEL.

34.470 EXISTING SITE LEVEL



TOTAL AREA INCLUDING
EXTERNAL WALL = 499m².

Architectural documents are to be read in conjunction with relevant structural, fire service, mechanical, hydraulic, electrical, civil and landscaping documents. Drawings are to be read in conjunction with the appropriate sections of technical applications.

*Do not scale drawings. Use figured dimensions only.
Inform Architect of any conflict between the site conditions
and documents. Contractor to verify all dimensions on site
before commencing work.*

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Written authority is required for any reproduction.

Rev	Date	Comment
0	11.12.20	DEVELOPMENT APPLICATION.



a: P.O Box 131, Applecross WA 6953
t: (08) 9316 0531
f: (08) 9316 0531
w: mandsarchitects.com.au
ABWA Reg: 2222

Project	Victoria Park Christian Primary School.		
Client	Adventist Education.		
Drawing Title	PROPOSED SITE PLAN. PROPOSED FLOOR PLAN.		
Designed	M&S	Reduction	
Drawn	M&S		
Project No.	Scale	@A1	Drawing No.
20002	SHOWN.	SK02	0

GENERAL NOTES.

ALL DIMENSIONS ARE IN METRIC MILLIMETRES
THE CONTRACTOR SHALL CARRY OUT THE WORK
IN ACCORDANCE WITH THE N.C.C. & LOCAL
AUTHORITY REQUIREMENTS.

ALL MATERIAL SHALL BE OF NEW, GOOD QUALITY &
CONFORM TO WHAT IS SHOWN ON THE DRAWINGS.

ROOF LEGEND.

COLORBOND METAL DECKING
AT X° PITCH ON STEEL
PURLINS AS SPECIFIED.
REFER TO S.E. DWGS.

SELECTED TRANSLUCENT ROOF
SHEETING AS SPECIFIED.

X° FALL
DIRECTION OF ROOF FALL.

SKYLIGHT AS SPECIFIED.

MECHANICAL EQUIPMENT.
REFER TO MECH DWGS.

EJ EXPANSION JOINT.

O/P OVERFLOW POP FROM GUTTER.

RWP RAINWATER OUTLET IN GUTTER.

EXHAUST FAN
REFER TO MECH DRAWINGS

ROOF COWL FOR EXHAUST.
REFER TO MECH DRAWINGS

ROOF NOTES.

BUILDER TO PROVIDE SAFE ACCESS
CONNECTIONS TO ALL PARTS OF THE
ROOF IN ACCORDANCE WITH AS 1657.

CEILING LEGEND.

X TYPE OF CEILING
XX HEIGHT OF CEILING ABOVE MAIN
FLOOR LEVEL, (NOT PAVING LEVEL).

FPB FLUSH PLASTERBOARD CEILING WITH
RONDOL P50 SHADOW ANGLE CORNICE TO
PERIMETER UNLESS OTHERWISE NOTED.

APT ACOUSTIC PLY TIMBER PANEL CEILING ON
SUSPENDED CONCEALED CEILING SYSTEM.

NC NO CEILING - UNDERSIDE
OF ROOF INSULATION.

X° PITCH
DIRECTION OF FALL OF CEILING.

AP ACCESS PANEL

WALLS BUILT UP TO UNDERSIDE OF ROOF
SHEETING OR STEEL STRUCTURE.

DEVELOPMENT APPROVAL.

Architectural documents are to be read in conjunction with
relevant structural, fire service, mechanical, hydraulic,
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Rev	Date	Comment
0	11.12.20	DEVELOPMENT APPLICATION.

M&S
MATTHEWS
& SCAVALLI
ARCHITECTS

a: P.O. Box 131, Applecross WA 6953
t: (08) 9316 0531
f: (08) 9316 0531
w: mandsarchitects.com.au
ABWA Reg. 2222

Project **Victoria Park Christian Primary School.**

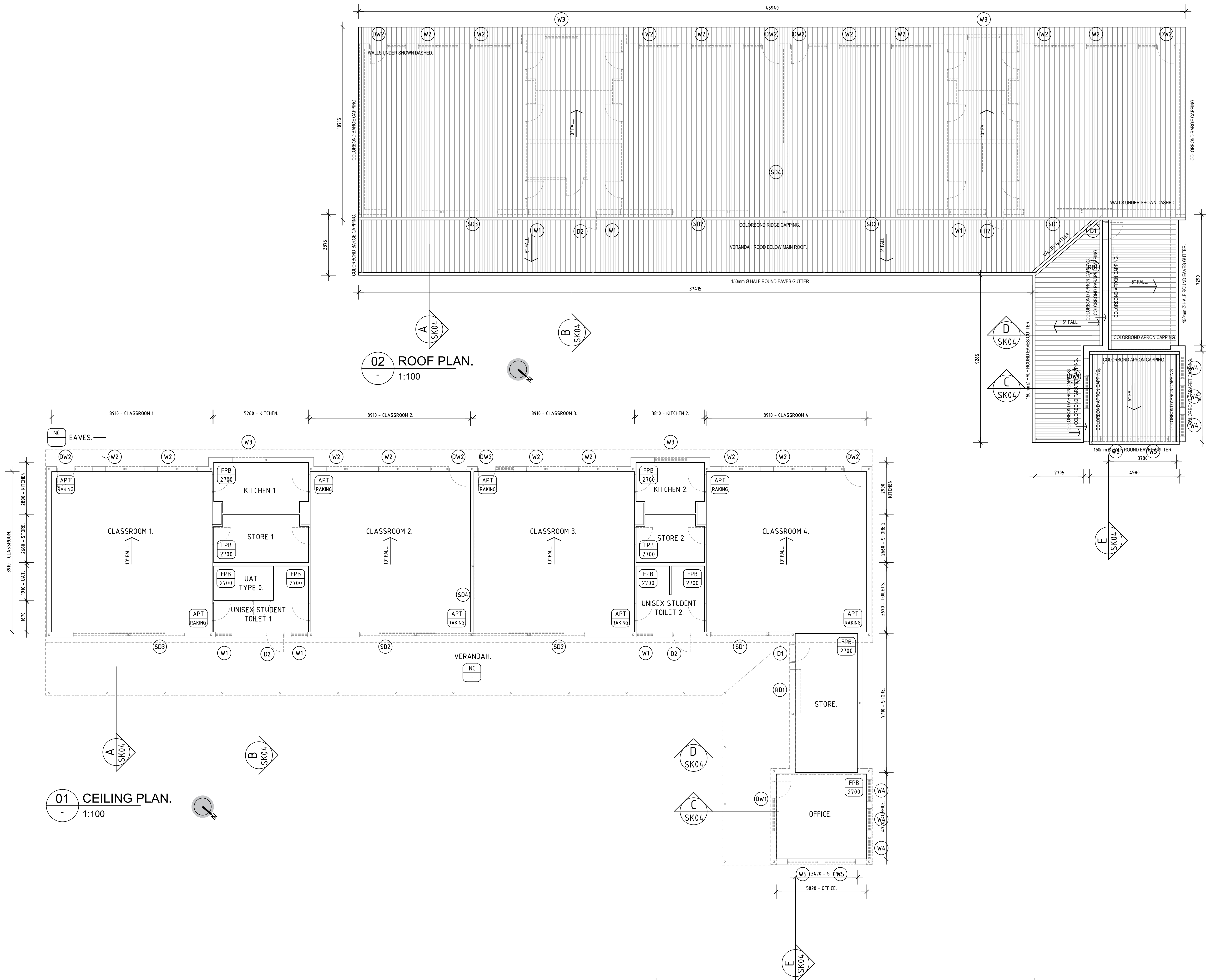
Client **Adventist Education.**

Drawing Title **PROPOSED CEILING PLAN.
PROPOSED ROOF PLAN.**

Designed **M&S** Reduction **SCALE 1:100**

Drawn **M&S** SCALE 1:200

Project No. **20002** Scale **SHOWN.** Drawing No. **SK03** Rev No. **0**



GENERAL NOTES.

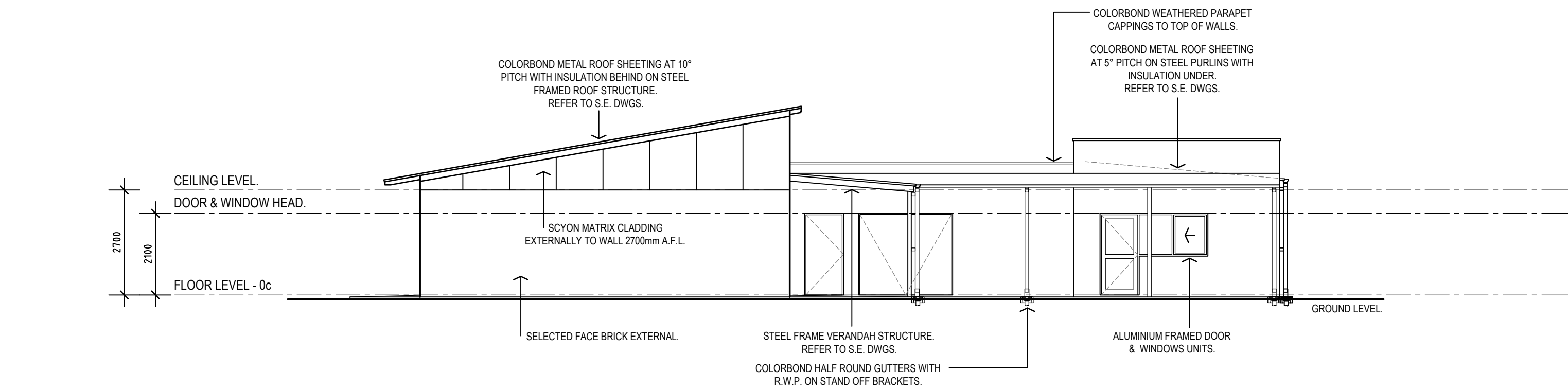
ALL DIMENSIONS ARE IN METRIC MILLIMETRES

THE CONTRACTOR SHALL CARRY OUT THE WORK IN ACCORDANCE WITH THE N.C.C. & LOCAL AUTHORITY REQUIREMENTS.

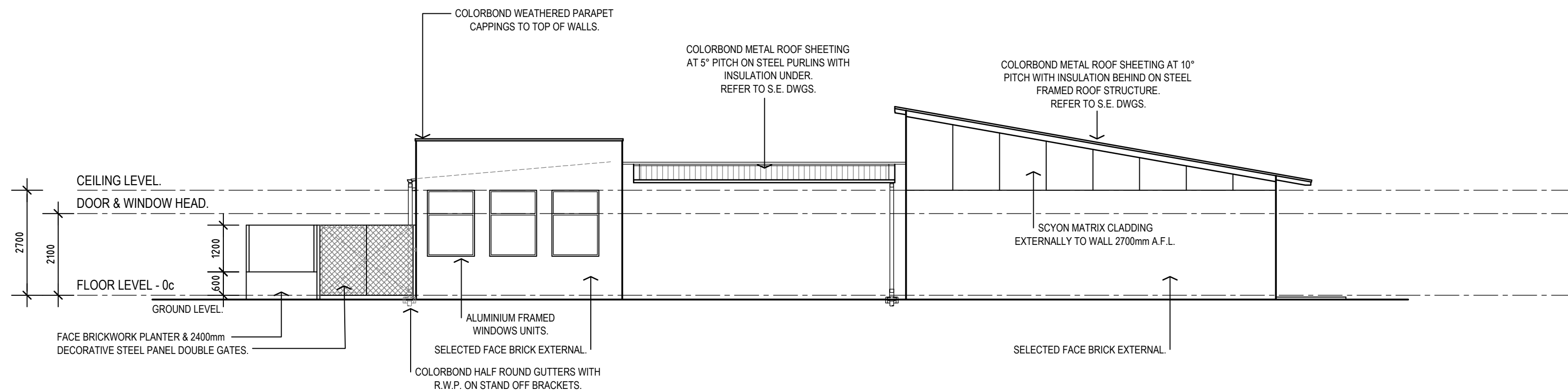
ALL MATERIAL SHALL BE OF NEW, GOOD QUALITY & CONFORM TO WHAT IS SHOW ON THE DRAWINGS.

ABBREVIATIONS.

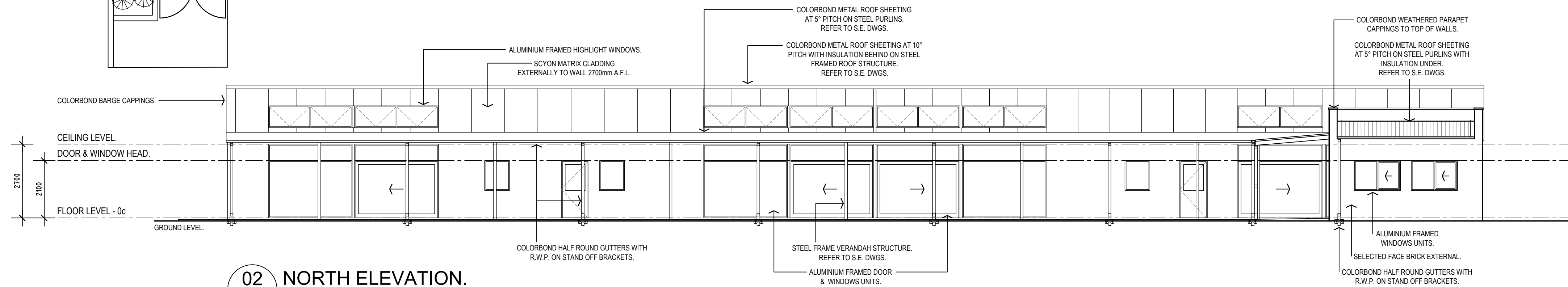
COL. STEEL COLUMN - REFER TO S.E. DWGS.
CONC. CONCRETE FLOOR SLAB - REFER TO S.E. DWGS.
F.L. FLOOR LEVEL
R.W.P. RAIN WATER PIPE
S.E. STRUCTURAL ENGINEER.



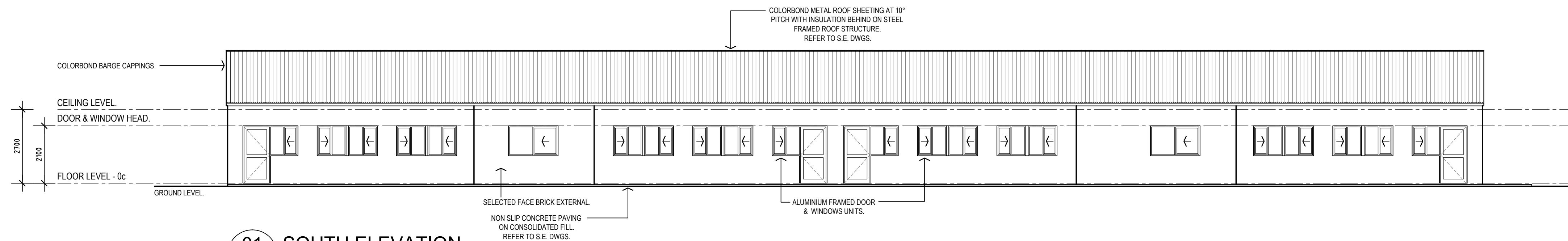
04 EAST ELEVATION.
- 1:100



03 WEST ELEVATION.
- 1:100



02 NORTH ELEVATION.
- 1:100



01 SOUTH ELEVATION.
- 1:100

DEVELOPMENT APPROVAL.

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Rev	Date	Comment
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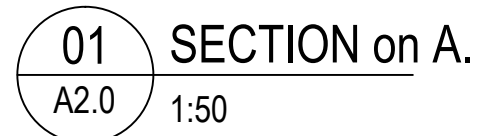
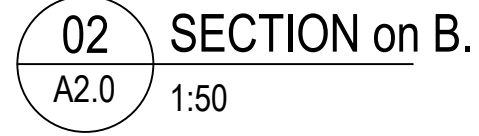
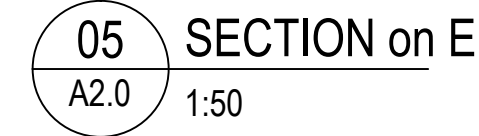
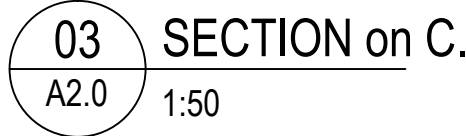
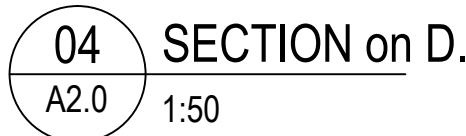
at: P.O. Box 131, Applecross WA 6953
t: (08) 9316 0531
f: (08) 9316 0531
w: mandsarchitects.com.au
ABWA Reg. 2222

Project	Victoria Park Christian Primary School.		
Client	Adventist Education.		
Drawing Title	PROPOSED ELEVATIONS.		
Designed	M&S	Reduction	
Drawn	M&S		
Project No.	20002	Scale	@A1
	1:100	Drawing No.	SK04
		Rev No.	0

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COL STEEL COLUMN - REFER TO S.E. DWGS.



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Figure 1

Subject	Victoria Park Christian Primary School.
---------	---

ent	Adventist Education.
-----	----------------------

Following	PROPOSED SECTIONS.
-----------	--------------------

signed	M&S	Reduction
--------	-----	-----------

own	M&S	
-----	-----	--

Project	Scale	@A1	Drawing No.	Rev No.
00000			01605	0

20002	1:50	SK05	0
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APPENDIX

C

SIDRA RESULTS

MOVEMENT SUMMARY

 Site: 101 [S3-Oswald St/Hordern St PM (Site Folder: Scenario 3)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] [Total veh/h %]		DEMAND FLOWS [Total HV] [Total veh/h %]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] [Veh. m]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Hordern St (SE)														
21	L2	37	6.0	39	6.0	0.072	5.2	LOS A	0.4	2.8	0.27	0.58	0.27	48.0
22	T1	2	6.0	2	6.0	0.072	5.3	LOS A	0.4	2.8	0.27	0.58	0.27	49.2
23	R2	38	6.0	40	6.0	0.072	8.5	LOS A	0.4	2.8	0.27	0.58	0.27	48.6
Approach		77	6.0	81	6.0	0.072	6.8	LOS A	0.4	2.8	0.27	0.58	0.27	48.3
NorthEast: Oswald St (NE)														
24	L2	92	6.0	97	6.0	0.145	5.0	LOS A	0.8	5.8	0.19	0.51	0.19	49.6
25	T1	74	6.0	78	6.0	0.145	5.0	LOS A	0.8	5.8	0.19	0.51	0.19	54.1
26	R2	11	6.0	12	6.0	0.145	8.3	LOS A	0.8	5.8	0.19	0.51	0.19	53.7
Approach		177	6.0	186	6.0	0.145	5.2	LOS A	0.8	5.8	0.19	0.51	0.19	52.2
NorthWest: Hordern St (NW)														
27	L2	9	6.0	9	6.0	0.026	5.2	LOS A	0.1	1.0	0.27	0.50	0.27	52.8
28	T1	16	6.0	17	6.0	0.026	5.3	LOS A	0.1	1.0	0.27	0.50	0.27	49.1
29	R2	3	6.0	3	6.0	0.026	8.6	LOS A	0.1	1.0	0.27	0.50	0.27	53.3
Approach		28	6.0	29	6.0	0.026	5.6	LOS A	0.1	1.0	0.27	0.50	0.27	51.2
SouthWest: Oswald St (SW)														
30	L2	4	6.0	4	6.0	0.050	5.0	LOS A	0.3	1.8	0.19	0.56	0.19	52.2
31	T1	24	6.0	25	6.0	0.050	5.0	LOS A	0.3	1.8	0.19	0.56	0.19	53.1
32	R2	28	6.0	29	6.0	0.050	8.3	LOS A	0.3	1.8	0.19	0.56	0.19	47.2
Approach		56	6.0	59	6.0	0.050	6.7	LOS A	0.3	1.8	0.19	0.56	0.19	50.6
All Vehicles		338	6.0	356	6.0	0.145	5.8	LOS A	0.8	5.8	0.22	0.53	0.22	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: 101 [S1-Oswald St/Hordern St AM (Site Folder: Scenario 1)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Hordern St (SE)														
21	L2	9	6.0	9	6.0	0.023	4.7	LOS A	0.1	0.8	0.11	0.58	0.11	48.5
22	T1	4	6.0	4	6.0	0.023	4.8	LOS A	0.1	0.8	0.11	0.58	0.11	49.7
23	R2	14	6.0	15	6.0	0.023	8.1	LOS A	0.1	0.8	0.11	0.58	0.11	49.1
Approach		27	6.0	28	6.0	0.023	6.5	LOS A	0.1	0.8	0.11	0.58	0.11	49.0
NorthEast: Oswald St (NE)														
24	L2	25	6.0	26	6.0	0.037	4.8	LOS A	0.2	1.4	0.13	0.53	0.13	49.5
25	T1	11	6.0	12	6.0	0.037	4.9	LOS A	0.2	1.4	0.13	0.53	0.13	54.1
26	R2	8	6.0	8	6.0	0.037	8.1	LOS A	0.2	1.4	0.13	0.53	0.13	53.6
Approach		44	6.0	46	6.0	0.037	5.4	LOS A	0.2	1.4	0.13	0.53	0.13	51.9
NorthWest: Hordern St (NW)														
27	L2	17	6.0	18	6.0	0.031	5.2	LOS A	0.2	1.2	0.26	0.50	0.26	53.1
28	T1	16	6.0	17	6.0	0.031	5.3	LOS A	0.2	1.2	0.26	0.50	0.26	49.5
29	R2	1	6.0	1	6.0	0.031	8.5	LOS A	0.2	1.2	0.26	0.50	0.26	53.6
Approach		34	6.0	36	6.0	0.031	5.3	LOS A	0.2	1.2	0.26	0.50	0.26	51.8
SouthWest: Oswald St (SW)														
30	L2	1	6.0	1	6.0	0.057	4.8	LOS A	0.3	2.0	0.13	0.49	0.13	53.2
31	T1	58	6.0	61	6.0	0.057	4.9	LOS A	0.3	2.0	0.13	0.49	0.13	54.1
32	R2	10	6.0	11	6.0	0.057	8.1	LOS A	0.3	2.0	0.13	0.49	0.13	48.5
Approach		69	6.0	73	6.0	0.057	5.4	LOS A	0.3	2.0	0.13	0.49	0.13	53.5
All Vehicles		174	6.0	183	6.0	0.057	5.5	LOS A	0.3	2.0	0.15	0.52	0.15	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [S1-Oswald St/Hordern St PM (Site Folder: Scenario 1)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Hordern St (SE)														
21	L2	26	6.0	27	6.0	0.056	5.0	LOS A	0.3	2.1	0.23	0.58	0.23	48.0
22	T1	2	6.0	2	6.0	0.056	5.1	LOS A	0.3	2.1	0.23	0.58	0.23	49.2
23	R2	34	6.0	36	6.0	0.056	8.4	LOS A	0.3	2.1	0.23	0.58	0.23	48.6
Approach		62	6.0	65	6.0	0.056	6.9	LOS A	0.3	2.1	0.23	0.58	0.23	48.4
NorthEast: Oswald St (NE)														
24	L2	82	6.0	86	6.0	0.114	4.8	LOS A	0.6	4.4	0.14	0.51	0.14	49.8
25	T1	52	6.0	55	6.0	0.114	4.9	LOS A	0.6	4.4	0.14	0.51	0.14	54.3
26	R2	10	6.0	11	6.0	0.114	8.2	LOS A	0.6	4.4	0.14	0.51	0.14	53.9
Approach		144	6.0	152	6.0	0.114	5.1	LOS A	0.6	4.4	0.14	0.51	0.14	52.2
NorthWest: Hordern St (NW)														
27	L2	8	6.0	8	6.0	0.022	5.0	LOS A	0.1	0.8	0.22	0.49	0.22	53.1
28	T1	14	6.0	15	6.0	0.022	5.1	LOS A	0.1	0.8	0.22	0.49	0.22	49.5
29	R2	2	6.0	2	6.0	0.022	8.4	LOS A	0.1	0.8	0.22	0.49	0.22	53.5
Approach		24	6.0	25	6.0	0.022	5.4	LOS A	0.1	0.8	0.22	0.49	0.22	51.4
SouthWest: Oswald St (SW)														
30	L2	2	6.0	2	6.0	0.025	4.9	LOS A	0.1	0.9	0.18	0.56	0.18	52.2
31	T1	12	6.0	13	6.0	0.025	5.0	LOS A	0.1	0.9	0.18	0.56	0.18	53.1
32	R2	14	6.0	15	6.0	0.025	8.3	LOS A	0.1	0.9	0.18	0.56	0.18	47.2
Approach		28	6.0	29	6.0	0.025	6.6	LOS A	0.1	0.9	0.18	0.56	0.18	50.7
All Vehicles		258	6.0	272	6.0	0.114	5.7	LOS A	0.6	4.4	0.17	0.53	0.17	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: 101v [S1-Colombo St/Hordern St AM (Site Folder: Scenario 1)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist m				km/h
SouthEast: Hordern St (SE)														
21	L2	51	6.0	54	6.0	0.041	8.6	LOS A	0.2	1.2	0.18	0.90	0.18	51.5
22	T1	9	6.0	9	6.0	0.133	9.0	LOS A	0.5	3.5	0.36	0.92	0.36	46.3
23	R2	88	6.0	93	6.0	0.133	9.5	LOS A	0.5	3.5	0.36	0.92	0.36	50.7
Approach		148	6.0	156	6.0	0.133	9.1	LOS A	0.5	3.5	0.30	0.91	0.30	50.8
NorthEast: Colombo St (NE)														
24	L2	8	6.0	8	6.0	0.051	5.8	LOS A	0.1	0.6	0.06	0.11	0.06	56.8
25	T1	72	6.0	76	6.0	0.051	0.0	LOS A	0.1	0.6	0.06	0.11	0.06	58.7
26	R2	10	6.0	11	6.0	0.051	5.9	LOS A	0.1	0.6	0.06	0.11	0.06	41.5
Approach		90	6.0	95	6.0	0.051	1.2	NA	0.1	0.6	0.06	0.11	0.06	56.9
NorthWest: Hordern St (NW)														
27	L2	36	6.0	38	6.0	0.029	8.5	LOS A	0.1	0.8	0.18	0.90	0.18	47.2
28	T1	20	6.0	21	6.0	0.024	8.8	LOS A	0.1	0.6	0.29	0.93	0.29	46.8
29	R2	1	6.0	1	6.0	0.024	9.4	LOS A	0.1	0.6	0.29	0.93	0.29	46.8
Approach		57	6.0	60	6.0	0.029	8.6	LOS A	0.1	0.8	0.22	0.91	0.22	47.0
SouthWest: Colombo St (SW)														
30	L2	6	6.0	6	6.0	0.051	5.8	LOS A	0.1	0.5	0.05	0.09	0.05	31.3
31	T1	76	6.0	80	6.0	0.051	0.0	LOS A	0.1	0.5	0.05	0.09	0.05	59.0
32	R2	8	6.0	8	6.0	0.051	5.9	LOS A	0.1	0.5	0.05	0.09	0.05	57.1
Approach		90	6.0	95	6.0	0.051	0.9	NA	0.1	0.5	0.05	0.09	0.05	56.7
All Vehicles		385	6.0	405	6.0	0.133	5.3	NA	0.5	3.5	0.17	0.53	0.17	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [S2-Oswald St/Hordern St AM (Site Folder: Scenario 2)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist m				km/h
SouthEast: Hordern St (SE)														
21	L2	9	6.0	9	6.0	0.023	4.7	LOS A	0.1	0.8	0.11	0.58	0.11	48.5
22	T1	4	6.0	4	6.0	0.023	4.8	LOS A	0.1	0.8	0.11	0.58	0.11	49.7
23	R2	14	6.0	15	6.0	0.023	8.1	LOS A	0.1	0.8	0.11	0.58	0.11	49.1
Approach		27	6.0	28	6.0	0.023	6.5	LOS A	0.1	0.8	0.11	0.58	0.11	49.0
NorthEast: Oswald St (NE)														
24	L2	26	6.0	27	6.0	0.038	4.8	LOS A	0.2	1.4	0.13	0.53	0.13	49.6
25	T1	11	6.0	12	6.0	0.038	4.9	LOS A	0.2	1.4	0.13	0.53	0.13	54.1
26	R2	8	6.0	8	6.0	0.038	8.1	LOS A	0.2	1.4	0.13	0.53	0.13	53.6
Approach		45	6.0	47	6.0	0.038	5.4	LOS A	0.2	1.4	0.13	0.53	0.13	51.8
NorthWest: Hordern St (NW)														
27	L2	17	6.0	18	6.0	0.031	5.2	LOS A	0.2	1.2	0.26	0.50	0.26	53.1
28	T1	16	6.0	17	6.0	0.031	5.3	LOS A	0.2	1.2	0.26	0.50	0.26	49.5
29	R2	1	6.0	1	6.0	0.031	8.5	LOS A	0.2	1.2	0.26	0.50	0.26	53.6
Approach		34	6.0	36	6.0	0.031	5.3	LOS A	0.2	1.2	0.26	0.50	0.26	51.8
SouthWest: Oswald St (SW)														
30	L2	1	6.0	1	6.0	0.057	4.8	LOS A	0.3	2.1	0.13	0.49	0.13	53.2
31	T1	59	6.0	62	6.0	0.057	4.9	LOS A	0.3	2.1	0.13	0.49	0.13	54.1
32	R2	10	6.0	11	6.0	0.057	8.1	LOS A	0.3	2.1	0.13	0.49	0.13	48.5
Approach		70	6.0	74	6.0	0.057	5.3	LOS A	0.3	2.1	0.13	0.49	0.13	53.5
All Vehicles		176	6.0	185	6.0	0.057	5.5	LOS A	0.3	2.1	0.15	0.52	0.15	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 Site: 101 [S2-Oswald St/Hordern St PM (Site Folder: Scenario 2)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
SouthEast: Hordern St (SE)														
21	L2	30	6.0	32	6.0	0.061	5.1	LOS A	0.3	2.3	0.24	0.58	0.24	48.0
22	T1	2	6.0	2	6.0	0.061	5.2	LOS A	0.3	2.3	0.24	0.58	0.24	49.2
23	R2	35	6.0	37	6.0	0.061	8.4	LOS A	0.3	2.3	0.24	0.58	0.24	48.6
Approach		67	6.0	71	6.0	0.061	6.8	LOS A	0.3	2.3	0.24	0.58	0.24	48.3
NorthEast: Oswald St (NE)														
24	L2	84	6.0	88	6.0	0.125	4.9	LOS A	0.7	4.8	0.16	0.51	0.16	49.8
25	T1	61	6.0	64	6.0	0.125	4.9	LOS A	0.7	4.8	0.16	0.51	0.16	54.2
26	R2	10	6.0	11	6.0	0.125	8.2	LOS A	0.7	4.8	0.16	0.51	0.16	53.8
Approach		155	6.0	163	6.0	0.125	5.1	LOS A	0.7	4.8	0.16	0.51	0.16	52.3
NorthWest: Hordern St (NW)														
27	L2	8	6.0	8	6.0	0.022	5.1	LOS A	0.1	0.8	0.24	0.49	0.24	53.0
28	T1	14	6.0	15	6.0	0.022	5.2	LOS A	0.1	0.8	0.24	0.49	0.24	49.4
29	R2	2	6.0	2	6.0	0.022	8.5	LOS A	0.1	0.8	0.24	0.49	0.24	53.5
Approach		24	6.0	25	6.0	0.022	5.4	LOS A	0.1	0.8	0.24	0.49	0.24	51.3
SouthWest: Oswald St (SW)														
30	L2	3	6.0	3	6.0	0.035	4.9	LOS A	0.2	1.3	0.18	0.56	0.18	52.2
31	T1	17	6.0	18	6.0	0.035	5.0	LOS A	0.2	1.3	0.18	0.56	0.18	53.1
32	R2	20	6.0	21	6.0	0.035	8.3	LOS A	0.2	1.3	0.18	0.56	0.18	47.2
Approach		40	6.0	42	6.0	0.035	6.6	LOS A	0.2	1.3	0.18	0.56	0.18	50.6
All Vehicles		286	6.0	301	6.0	0.125	5.8	LOS A	0.7	4.8	0.19	0.53	0.19	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: 101v [S2-Colombo St/Hordern St AM (Site Folder: Scenario 2)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
SouthEast: Hordern St (SE)														
21	L2	52	6.0	55	6.0	0.042	8.6	LOS A	0.2	1.2	0.18	0.90	0.18	51.5
22	T1	9	6.0	9	6.0	0.136	9.0	LOS A	0.5	3.6	0.36	0.92	0.36	46.3
23	R2	90	6.0	95	6.0	0.136	9.5	LOS A	0.5	3.6	0.36	0.92	0.36	50.7
Approach		151	6.0	159	6.0	0.136	9.2	LOS A	0.5	3.6	0.30	0.91	0.30	50.8
NorthEast: Colombo St (NE)														
24	L2	8	6.0	8	6.0	0.052	5.8	LOS A	0.1	0.6	0.06	0.11	0.06	56.8
25	T1	73	6.0	77	6.0	0.052	0.0	LOS A	0.1	0.6	0.06	0.11	0.06	58.7
26	R2	10	6.0	11	6.0	0.052	5.9	LOS A	0.1	0.6	0.06	0.11	0.06	41.5
Approach		91	6.0	96	6.0	0.052	1.2	NA	0.1	0.6	0.06	0.11	0.06	56.9
NorthWest: Hordern St (NW)														
27	L2	37	6.0	39	6.0	0.030	8.5	LOS A	0.1	0.9	0.18	0.89	0.18	47.2
28	T1	20	6.0	21	6.0	0.024	8.8	LOS A	0.1	0.6	0.30	0.93	0.30	46.8
29	R2	1	6.0	1	6.0	0.024	9.5	LOS A	0.1	0.6	0.30	0.93	0.30	46.8
Approach		58	6.0	61	6.0	0.030	8.6	LOS A	0.1	0.9	0.23	0.91	0.23	47.0
SouthWest: Colombo St (SW)														
30	L2	6	6.0	6	6.0	0.052	5.8	LOS A	0.1	0.5	0.05	0.09	0.05	31.3
31	T1	78	6.0	82	6.0	0.052	0.0	LOS A	0.1	0.5	0.05	0.09	0.05	59.0
32	R2	8	6.0	8	6.0	0.052	5.9	LOS A	0.1	0.5	0.05	0.09	0.05	57.1
Approach		92	6.0	97	6.0	0.052	0.9	NA	0.1	0.5	0.05	0.09	0.05	56.8
All Vehicles		392	6.0	413	6.0	0.136	5.3	NA	0.5	3.6	0.17	0.53	0.17	53.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: 101 [S3-Oswald St/Hordern St AM (Site Folder: Scenario 3)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
SouthEast: Hordern St (SE)														
21	L2	10	6.0	11	6.0	0.026	4.7	LOS A	0.1	0.9	0.12	0.58	0.12	48.4
22	T1	4	6.0	4	6.0	0.026	4.8	LOS A	0.1	0.9	0.12	0.58	0.12	49.7
23	R2	16	6.0	17	6.0	0.026	8.1	LOS A	0.1	0.9	0.12	0.58	0.12	49.1
Approach		30	6.0	32	6.0	0.026	6.5	LOS A	0.1	0.9	0.12	0.58	0.12	48.9
NorthEast: Oswald St (NE)														
24	L2	28	6.0	29	6.0	0.042	4.8	LOS A	0.2	1.5	0.14	0.53	0.14	49.5
25	T1	12	6.0	13	6.0	0.042	4.9	LOS A	0.2	1.5	0.14	0.53	0.14	54.0
26	R2	9	6.0	9	6.0	0.042	8.2	LOS A	0.2	1.5	0.14	0.53	0.14	53.6
Approach		49	6.0	52	6.0	0.042	5.5	LOS A	0.2	1.5	0.14	0.53	0.14	51.8
NorthWest: Hordern St (NW)														
27	L2	19	6.0	20	6.0	0.036	5.2	LOS A	0.2	1.3	0.27	0.50	0.27	53.0
28	T1	18	6.0	19	6.0	0.036	5.3	LOS A	0.2	1.3	0.27	0.50	0.27	49.4
29	R2	1	6.0	1	6.0	0.036	8.6	LOS A	0.2	1.3	0.27	0.50	0.27	53.5
Approach		38	6.0	40	6.0	0.036	5.4	LOS A	0.2	1.3	0.27	0.50	0.27	51.7
SouthWest: Oswald St (SW)														
30	L2	1	6.0	1	6.0	0.063	4.8	LOS A	0.3	2.3	0.13	0.49	0.13	53.1
31	T1	65	6.0	68	6.0	0.063	4.9	LOS A	0.3	2.3	0.13	0.49	0.13	54.1
32	R2	11	6.0	12	6.0	0.063	8.2	LOS A	0.3	2.3	0.13	0.49	0.13	48.5
Approach		77	6.0	81	6.0	0.063	5.4	LOS A	0.3	2.3	0.13	0.49	0.13	53.5
All Vehicles		194	6.0	204	6.0	0.063	5.6	LOS A	0.3	2.3	0.16	0.52	0.16	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

 **Site: 101v [S3-Colombo St/Hordern St AM (Site Folder: Scenario 3)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h %		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Hordern St (SE)														
21	L2	57	6.0	60	6.0	0.047	8.6	LOS A	0.2	1.4	0.19	0.89	0.19	51.5
22	T1	10	6.0	11	6.0	0.154	9.2	LOS A	0.6	4.1	0.39	0.93	0.39	46.1
23	R2	99	6.0	104	6.0	0.154	9.8	LOS A	0.6	4.1	0.39	0.93	0.39	50.5
Approach		166	6.0	175	6.0	0.154	9.3	LOS A	0.6	4.1	0.32	0.92	0.32	50.7
NorthEast: Colombo St (NE)														
24	L2	9	6.0	9	6.0	0.058	5.8	LOS A	0.1	0.7	0.06	0.11	0.06	56.8
25	T1	81	6.0	85	6.0	0.058	0.1	LOS A	0.1	0.7	0.06	0.11	0.06	58.7
26	R2	11	6.0	12	6.0	0.058	5.9	LOS A	0.1	0.7	0.06	0.11	0.06	41.5
Approach		101	6.0	106	6.0	0.058	1.2	NA	0.1	0.7	0.06	0.11	0.06	56.9
NorthWest: Hordern St (NW)														
27	L2	40	6.0	42	6.0	0.033	8.6	LOS A	0.1	1.0	0.19	0.89	0.19	47.2
28	T1	22	6.0	23	6.0	0.026	8.9	LOS A	0.1	0.7	0.31	0.93	0.31	46.7
29	R2	1	6.0	1	6.0	0.026	9.6	LOS A	0.1	0.7	0.31	0.93	0.31	46.7
Approach		63	6.0	66	6.0	0.033	8.7	LOS A	0.1	1.0	0.24	0.91	0.24	47.0
SouthWest: Colombo St (SW)														
30	L2	7	6.0	7	6.0	0.057	5.8	LOS A	0.1	0.5	0.05	0.09	0.05	31.3
31	T1	85	6.0	89	6.0	0.057	0.0	LOS A	0.1	0.5	0.05	0.09	0.05	58.9
32	R2	9	6.0	9	6.0	0.057	5.9	LOS A	0.1	0.5	0.05	0.09	0.05	57.1
Approach		101	6.0	106	6.0	0.057	1.0	NA	0.1	0.5	0.05	0.09	0.05	56.6
All Vehicles		431	6.0	454	6.0	0.154	5.4	NA	0.6	4.1	0.18	0.53	0.18	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Title	Transport Impact Assessment Addendum	Client	Adventist Education
Project Number	CW1167400	Date	04/05/2021
Author	Edmond Hoang	Reviewer	Ray Cook
Status	For Issue (Rev A)	Discipline	Traffic and Transport

1 Introduction

This Transport Impact Assessment (TIA) Addendum aims to address the comments provided by the Town of Victoria Park in regards to traffic and parking. The Town's comments are as listed below:

- > *The Town would consider a "Kiss n drive" zone on Oswald Street utilising the schools frontage. This request would have to be supported by a traffic management plan. It should be noted that "Kiss n Drive" zones only work effectively when parents/ care givers do not leave their car.*
- > *It is correct that the traffic report has advised of many transport modes. However, the breakdown of travel modes does not indicate the existing school parking can support the proposed expansion.*
- > *It is estimated that 51 students will use the school bus service. It's all so noted that walking and cycling trips will be very low. This is likely because of the school not being catchment based. Thus this leaves 179 car trips that will either use the "Kiss n drive", existing street parking or on-site school parking. The proposed on-site supply of 1 car park is considered inadequate. This is not practical for kindergarten and pre-primary students who are likely to require parents/care givers to park and leave their cars to assist them during drop-off and pick-up. The risk of queuing out of the car park and along Oswald Street is also concerning.*

The following three Sections address the above 3 comments in sequence in a manner agreed with the City via email communication on 22 April 2021.

2 Oswald Street Kiss and Drop Traffic Management

Figure 2-1 shows the existing on-street bays proposed to be utilised as a kiss and drop.

Figure 2-1 Delineated Bays Along the School Frontage on Oswald Street



The proposed and drop zone would be utilised by Kindy to Year 2 families from Monday to Friday. A staff member would be allocated each morning and afternoon to supervise this area. The operating times for this kiss and drop arrangement would be between 8:30-8:45am and 3:00-3:30pm. The parents would approach from the eastern end of Oswald and exit to the west utilising the already existing parallel parking delineated on the street. To ensure that parents are not parking for long periods, school staff will ask them to leave after a short period and circulate around the block.

Prior to the operation of the proposed kiss and drop, parents will be educated via newsletters and school information on the appropriate etiquette for the kiss and ride area to prevent any potential queuing of other traffic issues.

3 Breakdown of Transport Modes

The school operates a private bus service to transport students to and from school. Approximately 30 students currently use this service (which is approximately 22% of the current student population of 135). It is assumed that the same proportion of students will also use the private bus service in the future (for the medium term student population of 180, approximately 40 students are estimated to use the private bus service and for a future student population of 230, approximately 51 students are estimated to use the private bus service.)

This leaves approximately 179 students who are likely to travel via private vehicle. It is likely that there will be some students that will walk however this is likely to be low. To determine the actual number of vehicle trips, there is a need to account for the fact that families can potentially have more than one child attending the same school who are likely to be dropped-off/picked-up at the same time.

Additional information provided by the school mentions that there are currently 90 families which are a part of the school. Therefore, for a school population of 135 students this equates to approximately 1.5 students per family. As each family is likely to only perform a single trip during pick-up and drop-off periods, the anticipated number of vehicle trips is approximately 120 ($179/1.5$).

Table 3-1 provides a summary of the anticipated number of vehicle trips for the medium term (180 students) and long term (230 students).

Table 3-1 Transport modes breakdown – Medium term and Long term

Anticipated Student Numbers	Students using bus service	Students traveling by car	Total car trips
180	40	140	94
230	51	179	120

4 Parking Impact within the Surrounding Area

Based on the above assessment, the likely demand during the morning and afternoon school pick-up and drop-off is 94 vehicles in the medium term and 120 vehicles in the long term.

Table provides a summary of the parking available within the school and the surrounding area and its estimated capacity. The following assumptions for this high level parking impact assessment are as follows:

- > There are a total of 21 bays within the school car park. It is assumed that 15 of these bays will be assigned to staff and the remaining 6 for visitors.
- > It is assumed that the duration of pick-up/drop-off during the morning and afternoon is approximately 30mins.
- > For quick drop-offs/pick-ups it is assumed that these people stay 5 mins on average.
- > For drop-offs/pick-ups which involve a long period of stay (e.g. parents guiding kindy and pre-primary students to the school), it is assumed that these users stay for approximately 15 mins.
- > Nearby on-street parking within 200m has also been considered as parents are likely to also park in these locations and walk to the school with their child due to limited parking available adjacent to the school. As this is considered to be public parking, it is assumed that only 50% of these bays will be available to account for other users.

Table 4-1 Parking Capacity

Parking Location	Parking duration	Number of bays available	Total number of cars that can be accommodated over a 30 min period
Current kiss and drop	5 mins	2	12*
Proposed Oswald Street kiss and drop	5 mins	7	42
Verge parking along Colombo Street on school frontage	15 mins	Approximately 15 bays	30
School car park (visitor)	15 mins	6 bays	12
Oswald Street (between Washington Street and Albany Highway)	15 mins (2P time limit)	Approximately 27	27
Hordern Street (between Armagh Street and Colombo Street)	15 mins (2P time limit)	Approximately 38	38
Colombo Street (between Washington Street and Albany Highway)	15 mins (2P time limit)	Approximately 30	30
Total			191

* Based on the information provided by the school, it is estimated that approximately 20 vehicles use the existing kiss and drop facility within the car park each day. Given to low volume of user of this kiss and ride, queuing and compliance does not appear to be an issue.

The above demonstrates that the school surrounds has/will have capacity to service around 191 vehicles during the pick-up/drop-off periods which is adequate for the demand of 120 vehicles estimated in the long term scenario. As is typically expected at most schools, the pick-up/drop-off periods will be quite busy but only for a short period (typically no longer than 30 mins).

Figure 4-2 Current Parking Arrangement for the Site



4.2 Parking Management Measures

The following is a list of additional parking management measures that the school will consider to reduce the impact of parking within the surrounding area of the school.

4.2.1 Staggered start and finish times for different year levels

By designating different start and finishing times for certain year levels, the level of traffic during pick-up and drop-off times can be managed to a certain extent by reducing the peak demand. However, this may increase the duration of the demand period.

4.2.2 Verge Parking along Colombo Street on School Frontage

Though the verge is not considered to be a formalised parking area, it is still currently being used by the school as an area where parents can park.

4.2.3 Encouraging use of School Bus Service

Almost a quarter of the school population currently utilise the school bus service which helps to reduce the traffic and parking impact to the school and surrounding area. Promoting and encouraging more families to use this service is likely to reduce vehicle trips to and from the school.

4.2.4 Future Additional Parking

The Victoria Parking Christian School Master Development Plan (2018) includes plans to provide an additional 6 parking bays for staff and visitors at the south west corner of the School. Note that the provision of these bays is likely to be under a separated application for the future student population of 230 students.

