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Environmental Noise Assessment

Redevelopment of St Luke's Grammar School 210 Headland Road, Dee Why, NSW

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6479-1.1R Rev A

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Prepared For:

The Anglican School Corporation
C/- Midson Group Pty Ltd
PO Box 283
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Attention: Mr Ian Thompson







Revision History

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Final	25/07/2018	Adam Shearer	Stephen Gauld	
Rev A	07/10/2022	Adam Shearer	Stephen Gauld	Revised car park detail

Document 6479-1.1R Rev A, 19 pages plus attachments

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1.0 CONSULTING BRIEF

Day Design Pty Ltd was engaged by Midson Group on behalf of The Anglican School Corporation to carry out an acoustic assessment of the proposed redevelopment of the Junior School and Pre-School at St Luke's Grammar School, 210 Headland Road, Dee Why, NSW. This commission involves the following:

Scope of Work:

- Inspect the site and environs
- Measure the background noise levels at critical locations and times
- Establish acceptable noise level criteria
- Quantify noise emissions from the School taking into consideration the proposed redevelopment
- Calculate the level of noise emission, taking into account building envelope transmission, screen walls and distance attenuation
- Prepare a site plan identifying the development and nearby noise sensitive locations
- Provide recommendations for acoustical treatment (if necessary)
- Prepare an Environmental Noise Assessment Report.

2.0 PROJECT DESCRIPTION & SUMMARY OF FINDINGS

The Anglican Schools Corporation propose to redevelop the existing Junior School and Pre-School at St Luke's Grammar School, 210 Headland Road, Dee Why, NSW.

The existing site is situated on land zoned *R2: Low Density Residential* under Warringah Local Environmental Plan (LEP) 2011.

The existing School comprises of a Senior School, Junior School and Pre-School with associated administration buildings, library, multipurpose hall and permanent learning spaces.

This proposal is to be undertaken as a Complying Development under the *State Environmental Planning Policy (SEPP) – (Transport and Infrastructure) 2021*.

The proposal seeks approval for the redevelopment of the Junior School and Pre-School, on the south-eastern side of the site. The redevelopment will comprise of the removal of the existing Junior School and Pre-School structures to accommodate a new five storey building consisting of the following:

- basement car park expansion of the car park to accommodate an additional 11 vehicles;
- levels 1-3 4 x general learning areas (GLAs) on each level (12 GLAs total), breakout areas and staff areas;
- level 4 pre-school, playground, 1 x GLA and staff area; and
- levels 1-4 amenities.

The existing outdoor playground on level 1 is to be maintained.

The current total number of students enrolled at the School is 992 students, as follows:

- 630 at the Senior School years 7 to 12;
- 340 at the Junior School kindergarten to year 6; and
- 22 at the Pre-School 3 to 5 year olds.

There will be no increase to the total number of students enrolled at the School as part of this proposal, therefore, we have not assessed noise emissions from the outdoor play areas as noise levels from students playing will also not increase.

Mechanical plant, including but not limited to air conditioning condenser units and exhaust fans, will be required to serve the proposed GLAs, car park and amenities.

St Luke's Grammar School is bounded by dense bushland to the north (Stony Range Regional Botanic Garden), Tango Avenue and Quirk Street to the east, Headland Road to the south and industrial premises to the west. Residential dwellings are located on the opposite sides of Tango Avenue and Quirk Street to the east and on the opposite side of Headland Road to the south, as shown on Figure 1.



The nearest noise sensitive receptors to the Junior School and Pre-School, in various directions, are shown on Figure 1 and as follows in Table 1.

Table 1 Noise Sensitive Receptors

Receptor and Type	Address	Direction from site
R1 - Residential	1 Tango Avenue	North
R2 – Residential	2 Quirk Street	North - East
R3 – Residential	1 Quirk Street	East
R4 – Residential	202 Headland Road	South - East
R5 – Residential	197 Headland Road	South

Each receptor location has been selected to represent the adjacent residential premises, eg R5 is representative of all residential receptors to the south of the School.

The existing and ongoing operating hours for the School are:

Standard Hours:

• Monday – Friday: 8.00 am – 3.00 pm.

An acoustic assessment of the noise from the Junior School GLAs, Pre-School, mechanical plant and car park has been carried out to ensure the noise impact of the Junior School and Pre-school, subsequent to the proposed redevelopment, will not adversely affect the acoustic amenity of the nearby residences.

Calculations show that the level of noise emission, subsequent to the proposed redevelopment, from the Junior School and Pre-School will meet the acoustic requirements in the NSW Department of Planning and Environment's (DoPE) SEPP – (Transport and Infrastructure) 2021 and the NSW Environment Protection Authority's (EPA) Noise Policy for Industry.



Figure 1. Site Plan - 210 Headland Road, Dee Why, NSW

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3.0 ACOUSTIC CRITERIA

3.1 Measured Ambient Noise Levels

In order to assess the severity of a possible environmental noise problem in a residential area it is necessary to measure the ambient background noise level at the times and locations of worst possible annoyance. The lower the background noise level, the more perceptible the intrusive noise becomes and the more potentially annoying.

The ambient L₉₀ background noise level is a statistical measure of the sound pressure level that is exceeded for 90% of the measuring period (typically 15 minutes).

The Rating Background Level (RBL) is defined by the Environment Protection Authority (NSW) as the median value of the (lower) tenth percentile of L_{90} ambient background noise levels for day, evening or night periods, measured over a number of days during the proposed days and times of operation.

The places of worst possible annoyance are the nearby residential dwellings. These locations are shown in the Site Plan on Figure 1 as 'R1' to 'R5'. The times of worst possible annoyance will be during the day when the School is operating.

Ambient noise levels were measured in the backyard of 20 Quirk Street, shown as Logger Location 'A' on Figure 1, from Tuesday 10 April to Tuesday 17 April, 2018.

The day time ambient noise levels are presented in the attached Appendix B and also below in Table 2.

Table 2 Ambient Noise Levels

Noise Measurement Location	Time Period	L ₉₀ Rating Background Level	Existing L _{eq} Noise Level
Logger Location 'A' - Backyard - 20 Quirk Street	Day (7 am to 6 pm)	42 dBA	56 dBA

Meteorological conditions during the testing typically consisted of clear skies and temperatures of 15 to 31°C. Atmospheric conditions were ideal for noise monitoring. Noise measurements were therefore considered reliable and typical for the receptor areas.



3.2 SEPP (Transport and Infrastructure) 2021

The NSW DoPE published the SEPP – (Transport and Infrastructure) 2021 on 1 March 2022. The SEPP (Transport and Infrastructure) 2021 consolidates the previous SEPP (Educational Establishments and Child Care Facilities) 2017, along with other related SEPPs.

Chapter 3 of the SEPP, 'Educational establishments and child care facilities', aims to establish consistent State-wide assessment requirements and design considerations for educational establishments and early education and care facilities to improve the quality of infrastructure delivered and to minimise impacts on surrounding areas.

'Schedule 6 Schools – complying development' of the SEPP requires the following regarding noise:

'6 Noise

A new building or (if the development is an alteration or addition to an existing building for the purpose of changing its use) an existing building that is to be used for the purpose of a school or school-based child care must be designed so as not to emit noise exceeding an L_{Aeq} of 5 dB(A) above background noise when measured at any lot boundary.'

Also, 'Schedule 8 Schools – design quality principles' of the SEPP requires the following:

Principle 5. Amenity

Schools should provide pleasant and engaging spaces that are accessible for a wide range of educational, informal and community activities, while also considering the amenity of adjacent development and the local neighbourhood.'

3.3 NSW Environment Protection Authority - Noise Policy for Industry

The NSW Environment Protection Authority (EPA) published the *Noise Policy for Industry* (NPI) in October 2017. The *NPI* is specifically aimed at assessing noise from industrial noise sources listed in Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO, 1997).

While the *NPI* is not strictly applicable to this site, as the site is not scheduled, as the standards are consistent with the SEPP, the limits set out in the *NPI* will be used as a guide in determining whether the level of noise is considered intrusive or not.

3.3.1 Intrusiveness Criteria

The EPA states in Section 2.3 of its NSW NPI (October 2017) that the intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (represented by the L_{Aeq} descriptor), measured over a 15-minute period, does not exceed the rating background noise level by more than 5 dB when beyond a minimum threshold (EPA NPI, 2017, Section 2.3).

The Rating Background Level at Logger Location 'A', 20 Quirk Street, Dee Why was 42 dBA during the day (see Table 2).

Therefore, the acceptable L_{eq, 15 minute} noise intrusiveness criteria in this area is:

• $(42 + 5 =) 47 \text{ dBA L}_{eq, 15 \text{ minute}}$ during the day.

3.3.2 Amenity Criteria

Depending on the type of area in which the noise is being made, there is a certain reasonable expectancy for noise amenity. The NSW NPI provides a schedule of recommended L_{eq} industrial noise levels that under normal circumstances should not be exceeded. If successive developments occur near a residential area, each one allowing a criterion of background noise level plus 5 dB, the ambient noise level will gradually creep higher.

The recommended L_{eq} noise levels below in Table 3 are taken from Section 2.4, Table 2.2 of the NPI.

Table 3 Amenity Criteria

Receiver	Noise Amenity Area	Time of Day	L _{eq} , dBA, Recommended Amenity Noise Level
		Day	55
Residential	Suburban	Evening	45
		Night	40

The L_{Aeq} is determined over a 15-minute period for the project intrusiveness noise level and over an assessment period (day, evening and night) for the project amenity noise level. This leads to the situation where, because of the different averaging periods, the same numerical value does not necessarily represent the same amount of noise heard by a person for different time periods. To standardise the time periods for the intrusiveness and amenity noise levels, the *NPI* assumes that the $L_{Aeq,15min}$ will be taken to be equal to the $L_{Aeq,period}$ + 3 decibels (dB) (Section 2.2, NPI).

Compliance with the amenity criteria will limit ambient noise creep. Wherever the existing L_{eq} noise level from industrial noise sources approaches or exceeds the amenity criteria at a critical receptor location, the intrusive L_{eq} noise from the noise source in question must be reduced to a level that may be as much as 10 dB below the existing L_{eq} industrial noise level.



Section 2.4 of the *NPI* states that where the project amenity noise level is 10 dB or more lower than the existing industrial noise level, the project amenity noise levels can be set at 10 dB below the existing industrial noise levels, provided the existing industrial noise levels are unlikely to reduce over time.

The existing L_{eq} noise level at Logger Location 'A', 20 Quirk Street, Dee Why was 56 dBA during the day. Therefore, the acceptable amenity criteria for the residential receptors in this area are:

• $(55 - 5 + 3 =) 53 \text{ dBA L}_{eq, 15 \text{ minute}}$ during the day.

3.4 Project Specific Noise Criteria

When all the above factors are considered, we find that the most stringent noise criteria are:

Residential Receivers - 'R1' to 'R5' - based on Logger Location 'A'

• 47 dBA L_{eq, 15 minute} during the day for all noise sources.

These criteria apply at the most-affected point on or within the residential property boundary. For upper floors, the noise is assessed outside the nearest window.

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4.0 SCHOOL NOISE EMISSION

The main sources of noise from the Junior School and Pre-School, will be as follows:

- Students inside the GLAs & Pre-School Classroom;
- Mechanical plant; and
- The use of the car park.

The noise assessment was based on the drawings by Tonkin Zulaikha Greer Architects for Project No. 18001, dated 7 June 2018, attached as Appendix C and Gardner Wetherill and Associates for Project No. 22072 dated 23 September 2022, attached as Appendix D.

4.1 General Learning Areas & Pre-School

We have assumed that the maximum class size within the proposed new GLAs will be 28 students and within the new pre-school room will be 22 children.

During normal classroom activities, the main source of noise will be from the teachers and students talking. We have assumed that there may be a maximum of 1/3 (10) of the students talking normally. We have also assumed that the teacher in each classroom may be talking loudly.

Calculations assume students are distributed evenly throughout the inside of the GLAs and windows and doors are partially open (10 % of floor area).

Day Design Pty Ltd has previously measured and quantified the Octave Band Centre Frequency sound power level of teachers and students talking at different noise levels. The $L_{eq.\,15\,minute}$ sound power levels of teachers and students are shown below in Table 4.

Table 4 Leq. 15 minute Sound Power Levels - Teacher & Students - GLAs & Pre-School

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
Teacher talking loudly	80	59	61	70	77	76	72	65	56
School student talking normally	63	54	54	60	63	56	52	48	43
1 teacher and 28 students	80	65	66	73	78	76	72	66	58
10 x children passive play – Pre-school	78	55	61	66	72	74	71	67	63
1 teacher and 22 children	84	92	66	73	79	80	77	72	67



4.2 Mechanical Plant

The mechanical drawings prepared by JHA mechanical engineers, dated 4 May 2018, attached as Appendix E, show that the air conditioning condenser units for the new building will be located in a roof top plant area on the north-western side of the new building.

The proposed type of air conditioning condenser units have been provided by JHA and are shown in Table 5 below.

We have assumed that the car park exhaust fan will be located in the ground level car park and exhaust at roof level in the roof top plant area, adjacent to the emergency stairs. We have also assumed that the amenities on levels 1 to 4 will be served by toilet exhaust fans

The type of exhaust fans have not yet been selected. The car park exhaust fans will typically only operate during day time hours, Monday to Friday, with the exhaust fan likely to operate on a carbon monoxide (CO) censor. The toilet exhaust fans are likely to operate 24 hours, 7 days a week.

The $L_{eq, 15 \text{ minute}}$ sound power levels for the selected air conditioning condenser units and typical exhaust fans used at school sites are presented below in Table 5.

 Table 5
 Leq, 15 minute
 Sound Power Levels - Mechanical Plant

Description		Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)							
	dBA	63	125	250	500	1k	2k	4k	8k
Daikin - REYQ12TY1(E)	80	84	85	79	80	74	72	64	58
Daikin - REYQ16TY1(E)	82	89	86	85	80	75	71	64	61
Daikin - REYQ18TY1(E)	83	86	84	85	81	78	71	69	63
Daikin - REYQ22TY1(E)	82	86	87	82	82	76	73	66	59
Toilet Exhaust Fan (8 -off)	59	48	48	56	57	54	53	45	38
Car Park Exhaust Fan	90	96	90	89	87	84	82	79	76

Once mechanical plant selection has been finalised, a final assessment should be made, prior to the issue of a Construction Certificate.



4.3 Car Park Noise Emission

Based on the RTA's 'Guide to Traffic Generating Developments' prediction of 1.4 peak (morning 7 am – 9 am) vehicle trips per child for Pre-school, we have assumed, as a worst case scenario, a flow of cars equivalent to 16 cars in 1 hour arriving or leaving the Pre-school in the morning peak. This is equivalent to 4 vehicle trips in a 15 minute period.

The Sound Exposure Level¹ (SEL) sound power level and spectra of vehicle noise is shown below in Table 6 and is based on previous measurements by Day Design.

Table 6 SEL Sound Power Levels - Car Park

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
SEL level of car drive by at approximately 10 km/h	82	90	87	80	78	77	72	70	64



 $^{^1}$ SEL is the total sound energy of a single noise event condensed into a one second duration, or in other words, it is a $L_{\rm eq,~1~second}$.

4.4 Predicted Noise Level at Receptor Locations

Knowing the sound power level of a noise source (See Tables 4 - 6), the sound pressure level (as measured with a sound level meter) can be calculated at a remote location using suitable formulae to account for distance losses, sound barriers, building envelope transmission, etc. The predicted noise level at the residential and educational receptors from the various noise producing facets of the development are shown below.

Where applicable, calculations include acoustic shielding provided by the proposed School buildings to the residential receptors. Also, calculations for the roof top plant area include a reduction for a 2.7 metre high solid barrier around the perimeter and the calculations for the roof top playground includes a reduction for an assumed 1.5 metre high solid barrier around the eastern, southern and western perimeter, as shown in Appendix C.

The cumulative noise impact from the Junior School GLAs, Pre-School, mechanical plant and car park within the Junior School are summarized and shown in Table 7.

Table 7 Predicted Cumulative Leq, 15 minute Noise Levels – GLAs, Pre-School, Mechanical Plant & Car Park

Receptor Location	Predicted L _{eq} Noise Level (dBA)	Acceptable L _{eq} Noise Level (dBA)	Compliance
R1 – 1 Tango Avenue			
- GLAs & Pre-School	45		
- Mechanical Plant	37		
- Car Park	<20		
Cumulative Noise Level	45	47	Yes
R2 - 2 Quirk Street			
- GLAs & Pre-School	47		
- Mechanical Plant	36		
- Car Park	<20		
Cumulative Noise Level	47	47	Yes
R3 - 1 Quirk Street			
- GLAs & Pre-School	38		
- Mechanical Plant	34		
- Car Park	<20		
Cumulative Noise Level	39	47	Yes



Table 7 Predicted Cumulative Leq, 15 minute Noise Levels – GLAs, Pre-School, Mechanical Plant & Car Park - Continued

Receptor Location	Predicted L _{eq} Noise Level (dBA)	Acceptable L _{eq} Noise Level (dBA)	Compliance
R4 - 202 Headland Road			
- GLAs & Pre-School	40		
- Mechanical Plant	36		
- Car Park	<20		
Cumulative Noise Level	42	47	Yes*
R5 - 197 Headland Road			
- GLAs & Pre-School	24		
- Mechanical Plant	34		
- Car Park	24		
Cumulative Noise Level	35	47	Yes

The predicted cumulative level of noise from the Junior School GLAs, Pre-School, car park and mechanical plant, subsequent to the redevelopment, at all of the receptor locations 'R1', 'R2', 'R3', 'R4' and 'R5', complies with the criteria in Section 3.4 of this report, and is therefore acceptable.

5.0 NOISE CONTROL RECOMMENDATIONS

5.1 Construction Certificate

The specifications for the mechanical plant including, but not limited to, the car park exhaust fan and toilet exhaust fans have not yet been finalised for this development. For typical mechanical plant equipment with sound power levels not exceeding those listed in Table 5, it is reasonable and feasible to locate the plant area or equipment itself so that noise will not impact the neighbouring properties.

Once mechanical plant and its location has been finalised, a detailed acoustic assessment should be made, prior to the issue of a Construction Certificate. We recommend that the mechanical services engineers select mechanical plant equipment with the lowest sound power levels to reduce the amount of acoustic treatment necessary to achieve the noise criteria at nearby residential receivers.

We offer to provide detailed noise controls when specifications of the mechanical plant equipment have been finalised.

5.2 Roof Top Plant Area

We recommend the proposed 2.7 metre high walls on the boundaries of the roof top plant area be constructed from 6 mm fibre cement or masonry. Gaps should be fully sealed to create a solid barrier.

7-Oct-2022

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NOISE IMPACT STATEMENT 6.0

Day Design Pty Ltd was engaged by Midson Group on behalf of The Anglican School Corporation to carry out an acoustic assessment of the proposed redevelopment of the Junior Schools and Pre-School at St Luke's Grammar School, 210 Headland Road, Dee Why, NSW.

Calculations show that, the level of noise emitted from the St Luke's Junior Grammar School and Pre-School at 210 Headland Road, Dee Why, NSW, subsequent to the redevelopment, will meet the noise level requirements of the NSW DoPE's SEPP - (Transport and Infrastructure) 2021, such that the new building will not emit noise exceeding an LAeq of 5 dBA above background noise when measured at any lot boundary, and the NSW Environment Protection Authority's *Noise Policy for Industry* as detailed in Section 3 of this report, and be considered acceptable.

In addition, the amenity of adjacent development and the local neighbourhood will be respected and upheld.

Adam Shearer, BCT (Audio), MDesSc (Audio and Acoustics), MAAS Senior Acoustical Consultant for and on behalf of Day Design Pty Ltd

AAAC MEMBERSHIP

Day Design Pty Ltd is a member company of the Association of Australasian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

APPENDICES

- Appendix A Noise Survey Instrumentation
- Appendix B Ambient Noise Surveys 20 Quirk Street, Dee Why, NSW
- Appendix C Proposed Site Layout Cover page, Site Plan & Level 1 to Level 5 plans
- Appendix D Proposed Basement Car Park Layout
- Appendix E Proposed Air Conditioning Condenser Units Location

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The Anglican School Corporation

Environmental Noise Assessment

APPENDIX A - NOISE SURVEY INSTRUMENTATION

Noise level measurements and analysis were made with instrumentation as follows in Table A:

Table A Noise Instrumentation

Description	Model No.	Serial No.
Infobyte Noise Logger	iM4	118
Condenser Microphone 0.5" diameter	MK 250	118

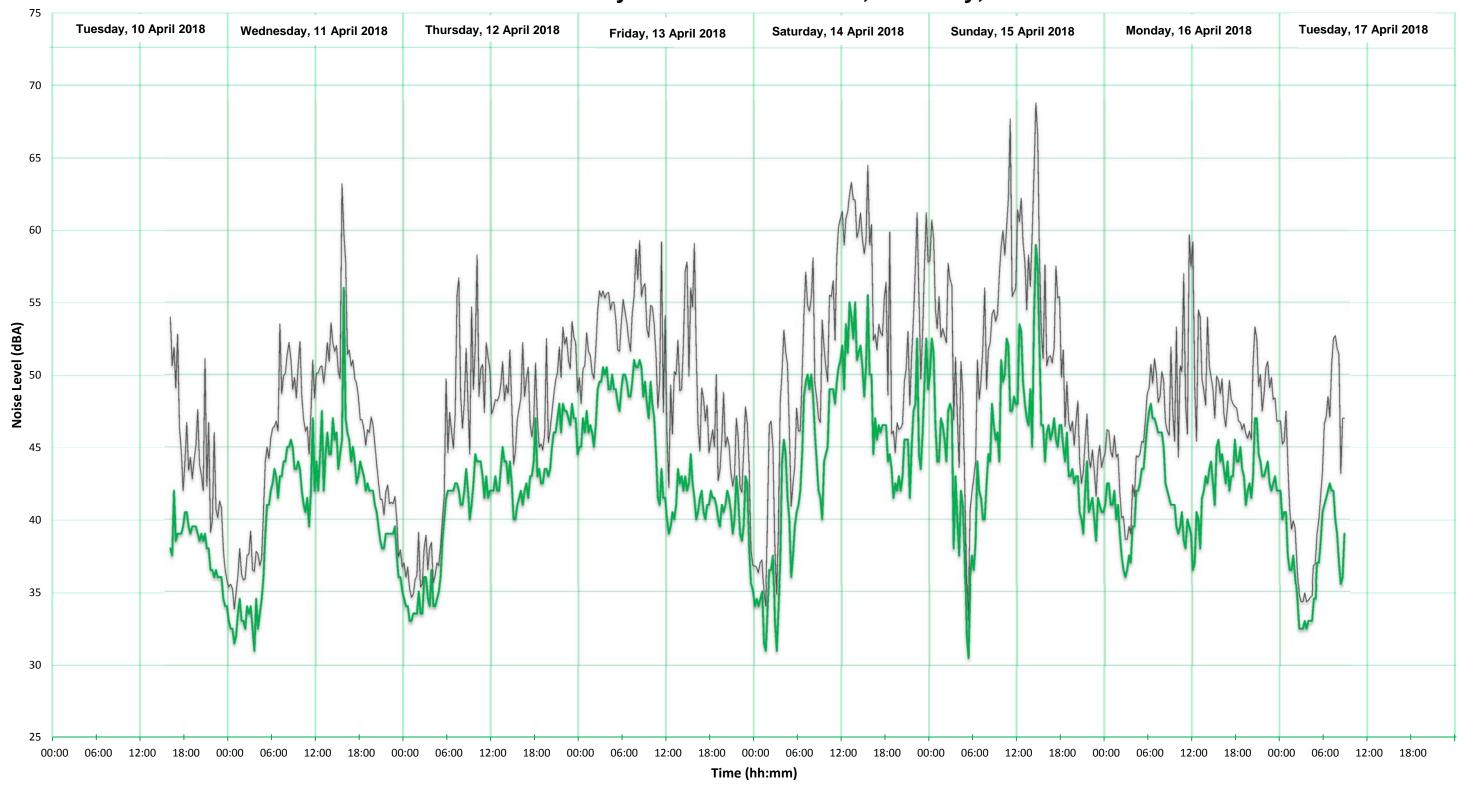
An environmental noise logger is used to continuously monitor ambient noise levels and provide information on the statistical distribution of noise during an extended period of time. The Infobyte Noise Monitor iM4 #118 is a Type 2 (118) precision environmental noise monitor meeting all the applicable requirements of AS1259 for an integrating-averaging sound level meter.

All instrument systems had been laboratory calibrated using instrumentation traceable to Australian National Standards and certified within the last two years thus conforming to Australian Standards. The measurement system was also field calibrated prior to and after noise surveys. Calibration drift was found to be within 0.5 dB for long-term measurements. No adjustments for instrument drift during the measurement period were warranted.



AMBIENT NOISE SURVEY

Located at Rear yard - 20 Quick Street, Dee Why, NSW





ST LUKE'S JUNIOR SCHOOL BUILDING



			Scale @ A1
000 GENEI	RAL INFORMATION	1	
	A-001	COVER PAGE, DRAWING LIST, LEGEND AND WALL TYPES	
	A-002	SITE PLAN	1:200
	A-003	SHADOW DIAGRAMS	1:1000
010 DEMO	LITION PLANS		
	A-011	DEMOLITION PLAN - GROUND FLOOR	1:100
	A-012	DEMOLITION PLAN - LEVEL 1	1:100
	A-013	DEMOLITION PLAN - ROOF	1:100
100 GENEI	RAL ARRANGEME	NT PLANS	
	A-101	GROUND FLOOR PLAN	1:100
	A-102	LEVEL 1 PLAN	1:100
	A-103	LEVEL 2 PLAN	1:100
	A-104	LEVEL 3 PLAN	1:100
	A-105	LEVEL 4 PLAN	1:100
	A-106	LEVEL 5 PLAN	1:100
120 REFLE	CTED CEILING PL	ANS	
	A-121	RCP - GROUND FLOOR	1:100
	A-122	RCP - LEVEL 1	1:100
	A-123	RCP - LEVEL 2	1:100
	A-124	RCP - LEVEL 3	1:100
	A-125	RCP - LEVEL 4	1:100
130 PROJE	CT COORDINATIO	N DIAGRAMS	
	A-131	PROJECT COORDINATION DIAGRAMS - GROUND FLOOR	1:100
	A-132	PROJECT COORDINATION DIAGRAMS - LEVEL 1	1:100
	A-133	PROJECT COORDINATION DIAGRAMS - LEVEL 2	1:100
	A-134	PROJECT COORDINATION DIAGRAMS - LEVEL 3	1:100
	A-135	PROJECT COORDINATION DIAGRAMS - LEVEL 4 AND 5	1:100
200 ELEVA	TIONS		
	A-201	ELEVATIONS - 1	1:100
	A-202	ELEVATIONS - 2	1:100
300 SECTI	ONS		
	A-301	SECTIONS - 1	1:100
	A-302	SECTIONS - 2	1:100

DRAWING LEGEND			
Code Description			
APC	Acoustic panel, ceiling		
BG	Balustrade, metal framed glass		
BM	Balustrade, metal		
CFS	Concrete finish, steel trowel		
COP	Concrete, Paint Finish		
CPT	Carpet		
CTF	Ceramic tiles, floor		
FC	Fibre cement panel		
GCB	Glass, colour backed		
GL1	Glass, clear		
MC1	Metal cladding, aluminium		
MFS	Metal Facade Strips		
MR	Metal roof		
PBP	Plasterboard, paint finish		
XCP	Existing Concrete Painted		

30% CO-ORDINATION ISSUE

DATE	REV	DESCRIPTION:	NOTES:
			Do not scale off drawings. Use figured
			dimensions only. Report any discrepencie
			to the architect. These designs, plans,
			specifications and the copyright therein ar
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of Tonkin Zulaikha	DFP
	Phone: 9980 Email: ream!

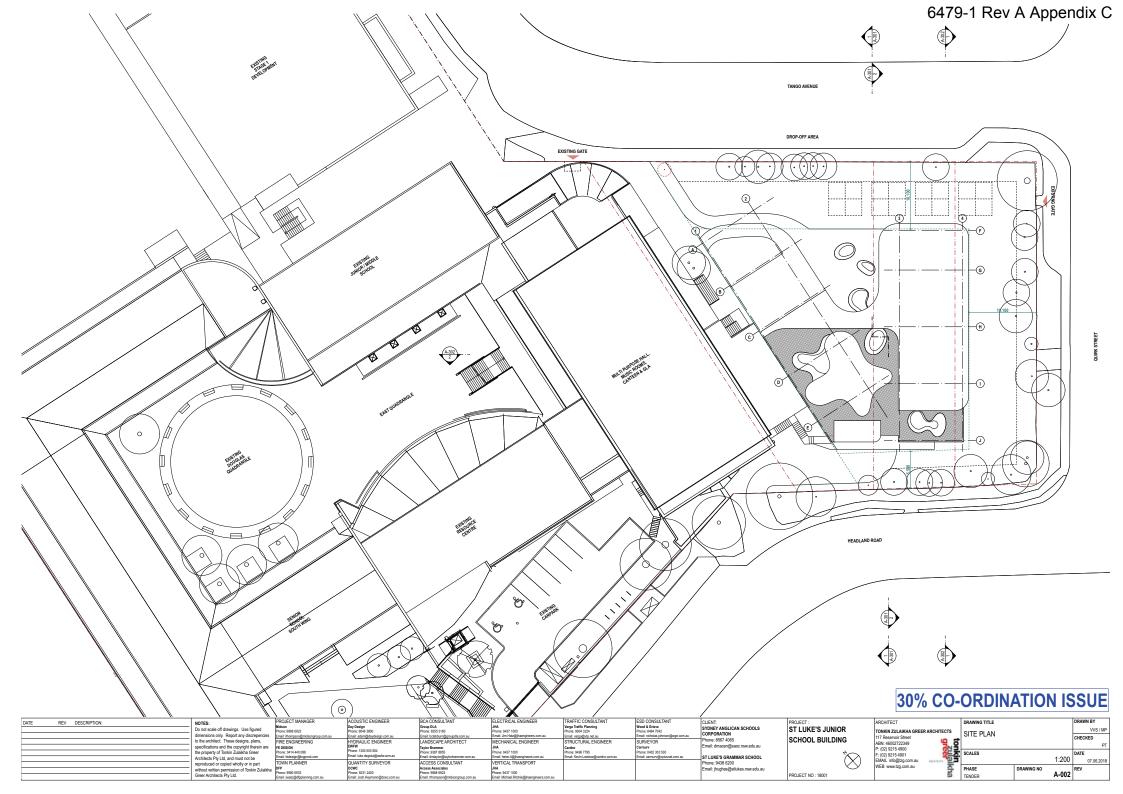
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	TOWN PLANNER	QUANTITY SURVEYOR
	DFP	DCWC
8	Phone: 9980 6933	Phone: 9231 2400

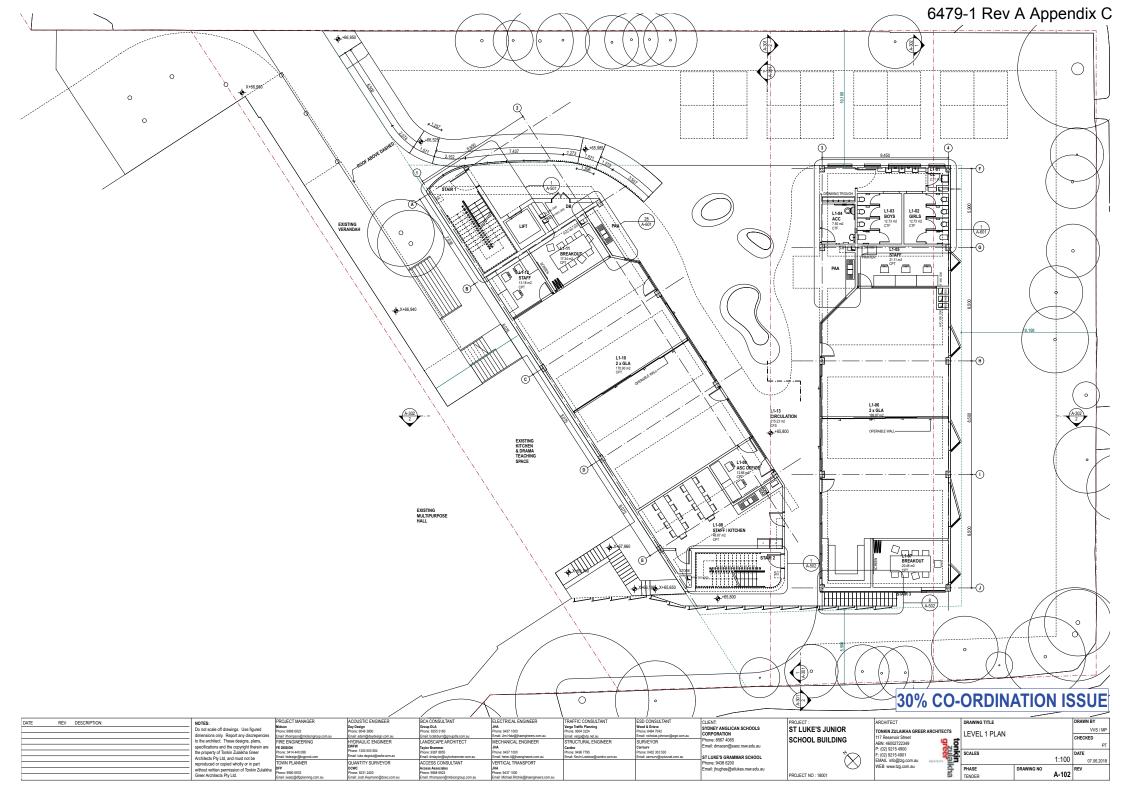
MANAGER	ACOUSTIC ENGINEER	BCA CONSULTANT
923		Group DLA Phone: 8355 3160
on@midsongroup.com.au	Email: adam@daydesign.com.au	Email: bclabburn@groupdla.com.au
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I40 088 n@bigpond.com		Phone: 9387 8855 Email: dmtaylor@taylorbrammer.com.au
NNER	QUANTITY SURVEYOR	ACCESS CONSULTANT

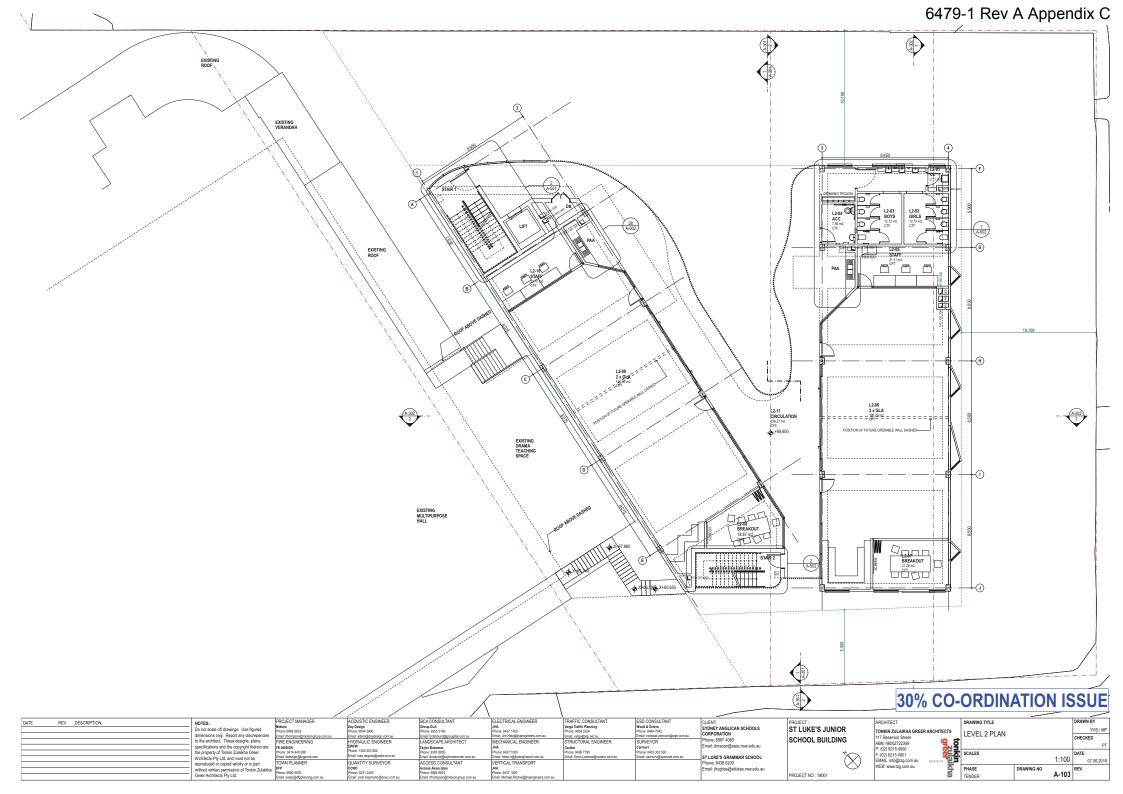
		Wood & Grieve
		Phone: 8484 7042
Email: Jim Hatz@jhaengineers.com.au	Email: varga@vtp.net.au	Email: nicholas.johnson@wgo
MECHANICAL ENGINEER	STRUCTURAL ENGINEER	SURVEYOR
JHA	Cardno	Carrsury
		Phone: 0402 303 530
Email: helen.li@jhaengineers.com.au	Email: Kevin Leedow@cardno.com.au	Email: carrsurv@optusnet.con
VERTICAL TRANSPORT		
JHA		

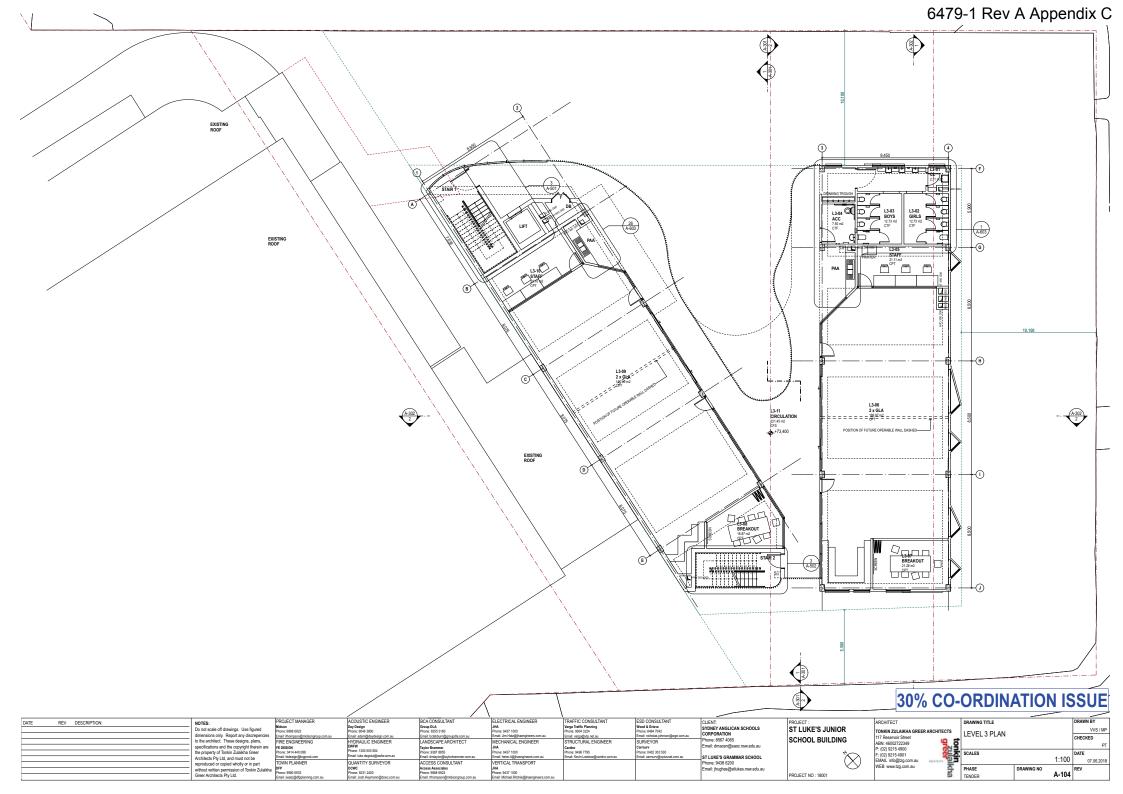
CLIENT: SYDNEY ANGLICAN SCHOOLS CORPORATION Phone: 8567 4065 ST LUKE'S GRAMMAR SCHOOL Phone: 9438 6200 Email: jhughes@stlukes.nsw.edu.au PROJECT: ST LUKE'S JUNIOR SCHOOL BUILDING ARCHITECT
TONKIN ZULAIKHA GREER ARCHITECTS
117 Reservo's Sheet
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P: (02) 9215 4800
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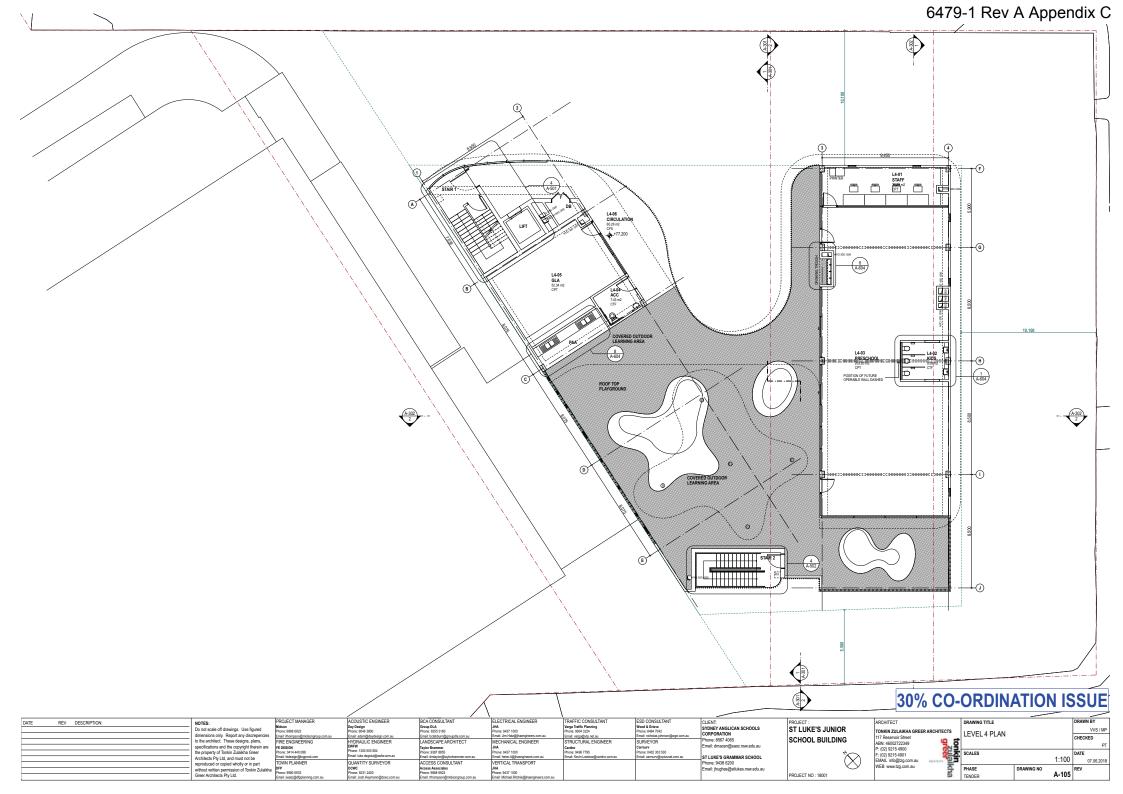
COVER PAGE, DRAWING LIST, LEGEND AND WALL TYPES A-001

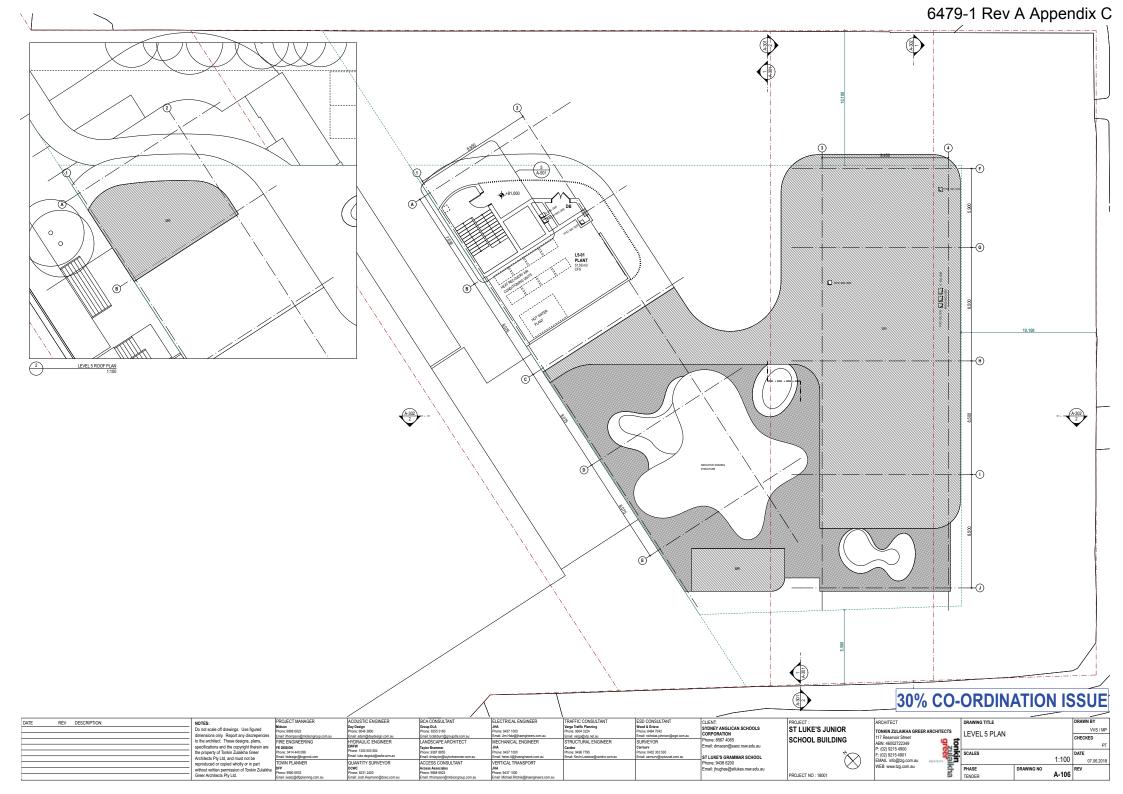






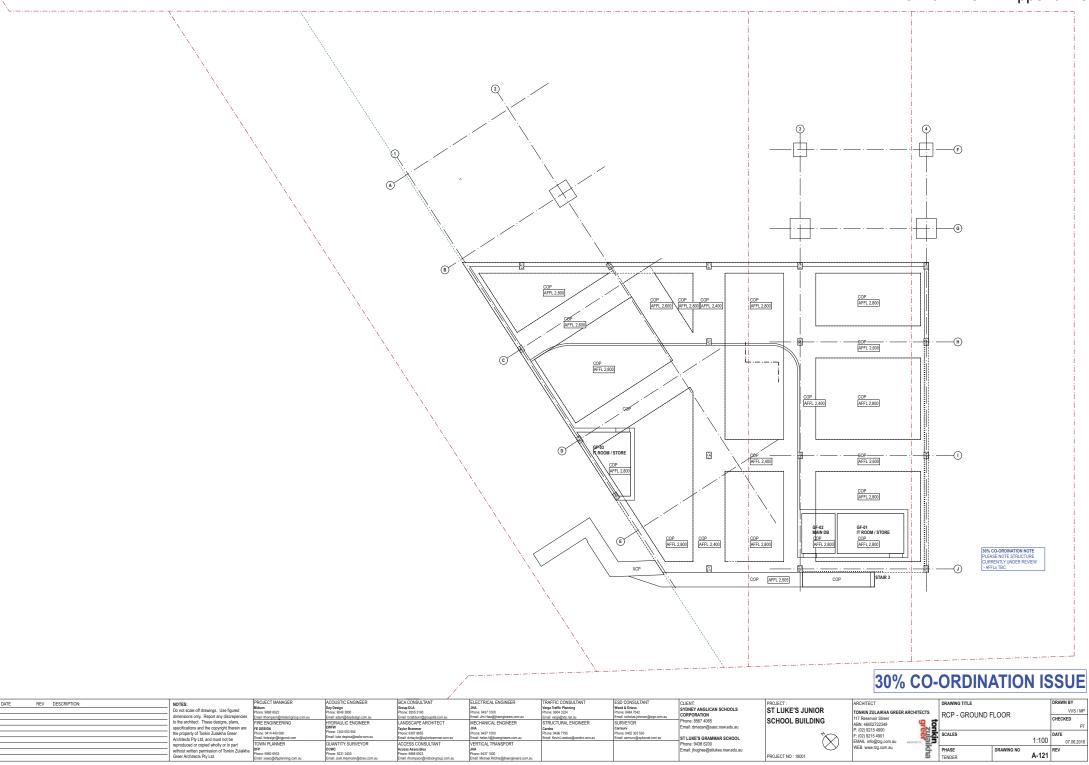


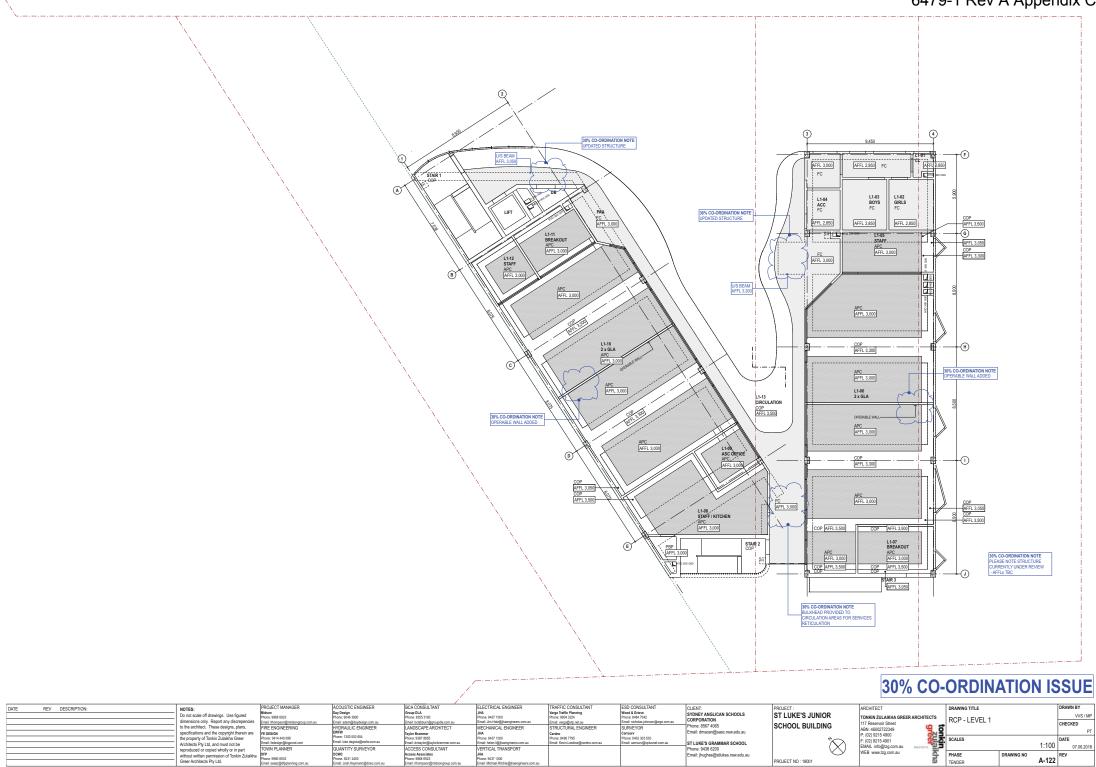


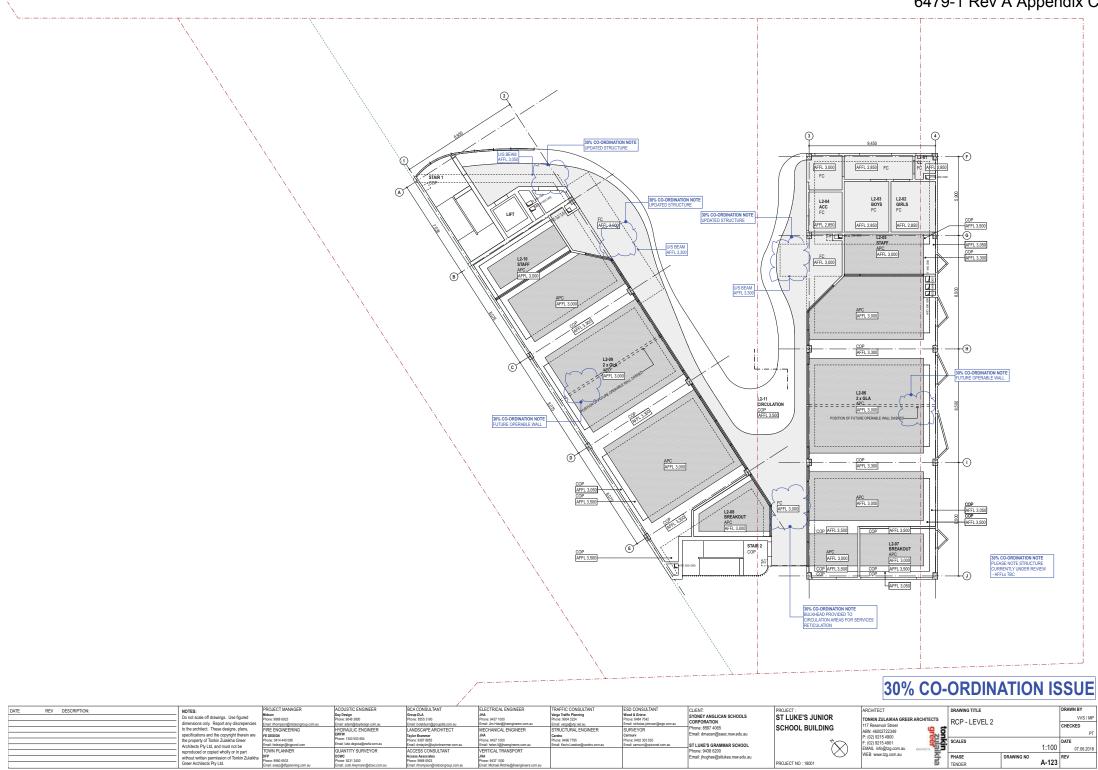


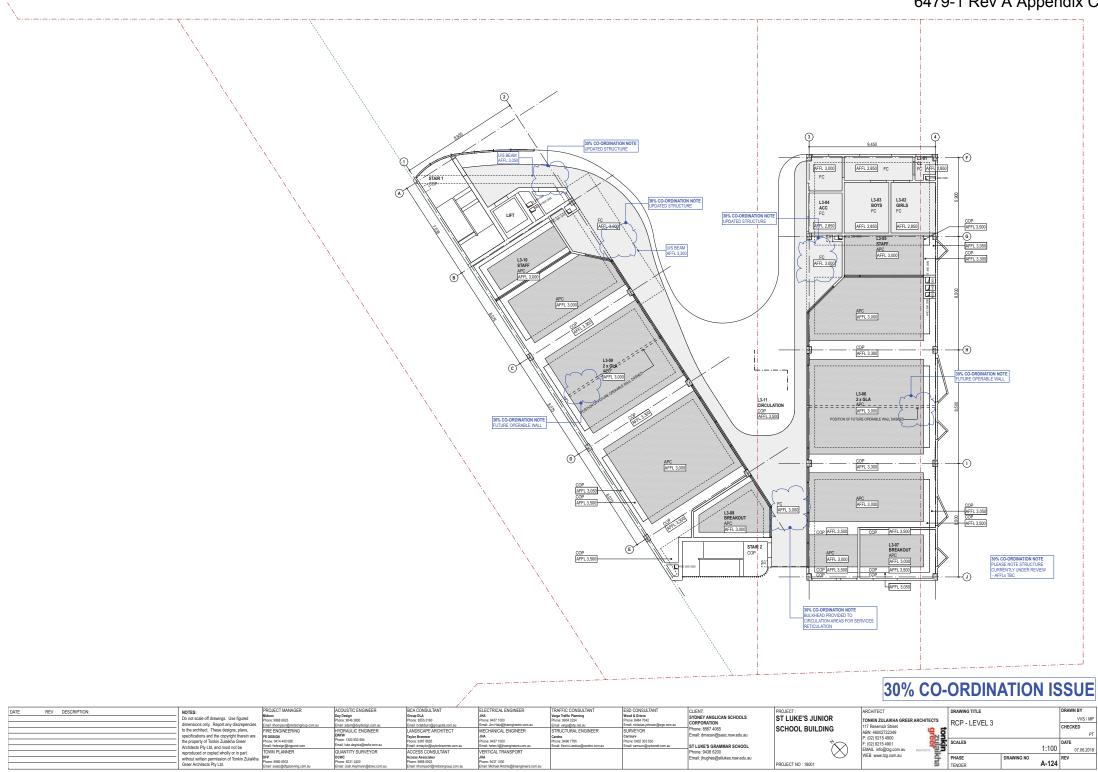
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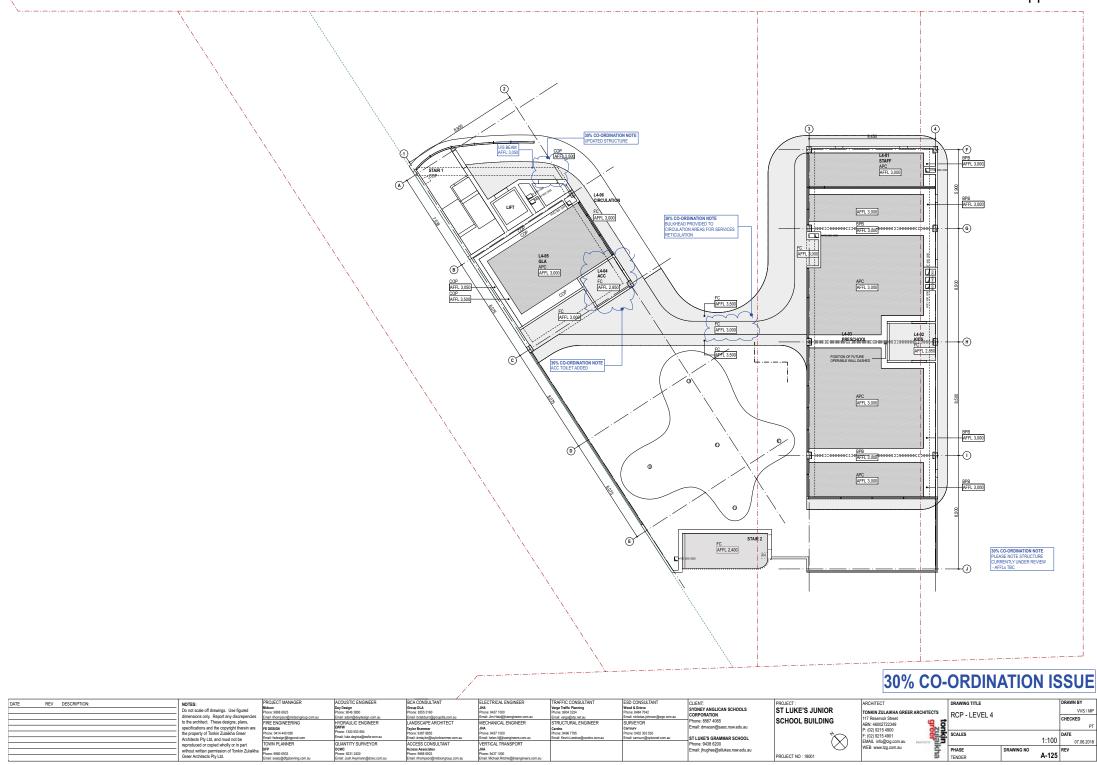
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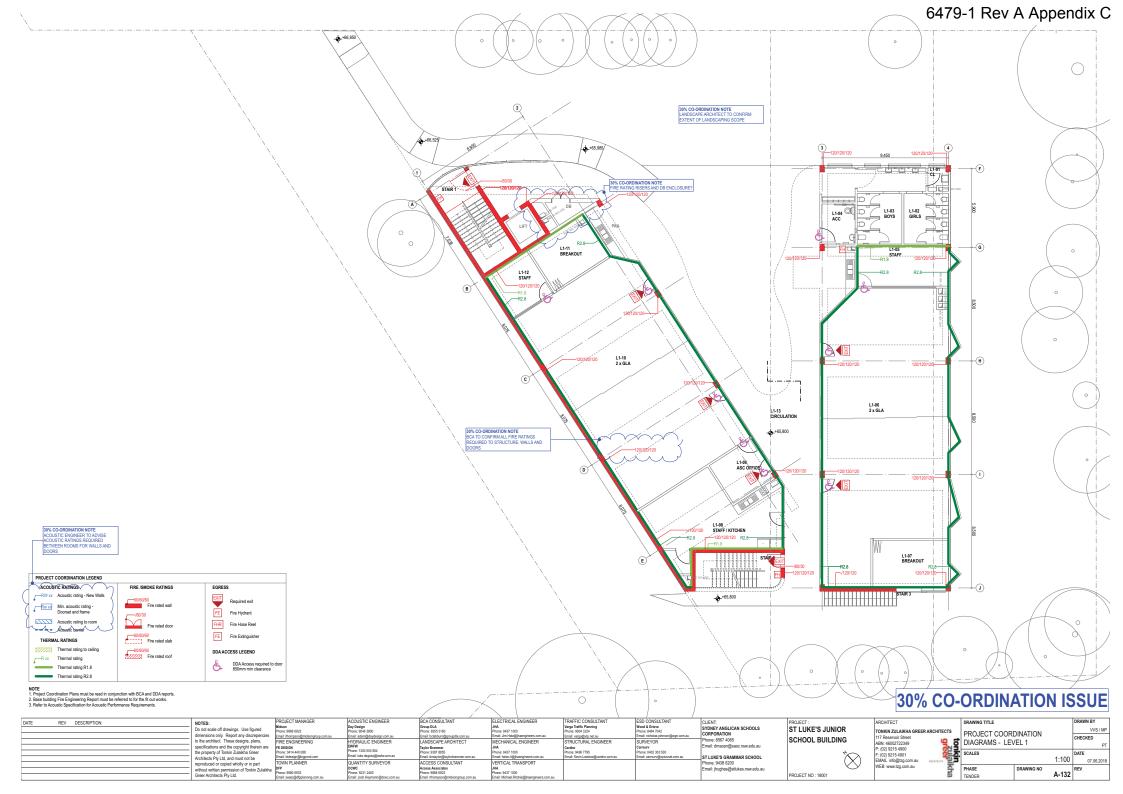


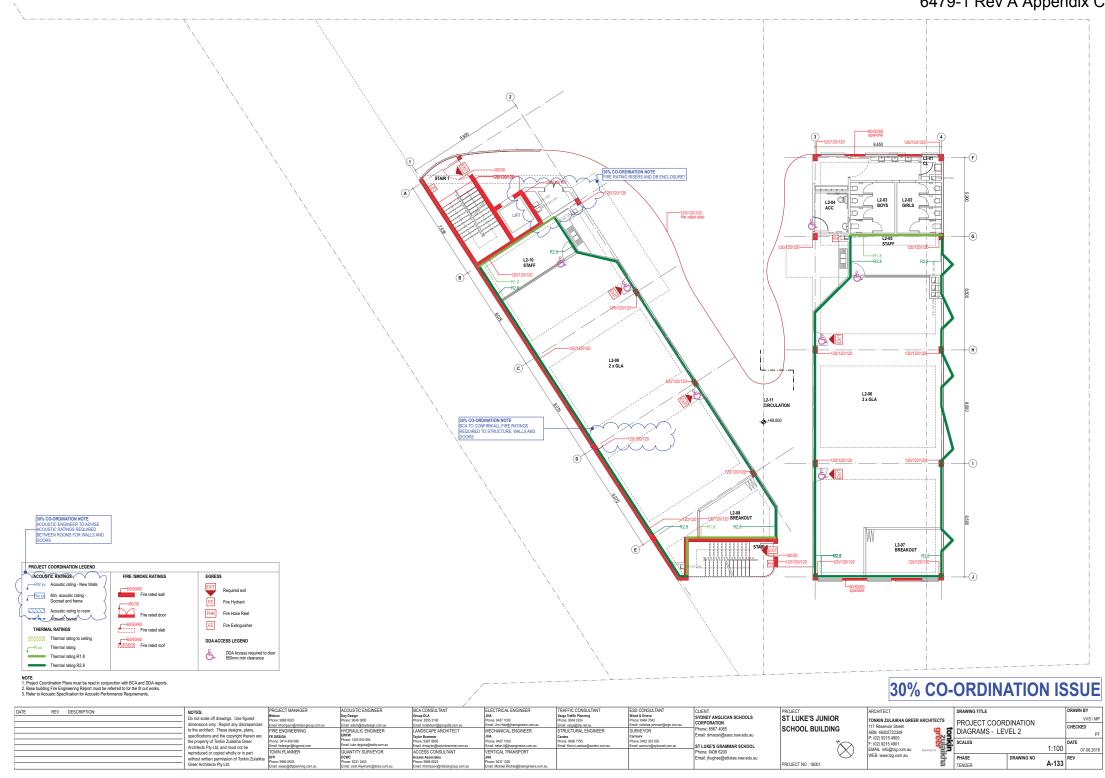


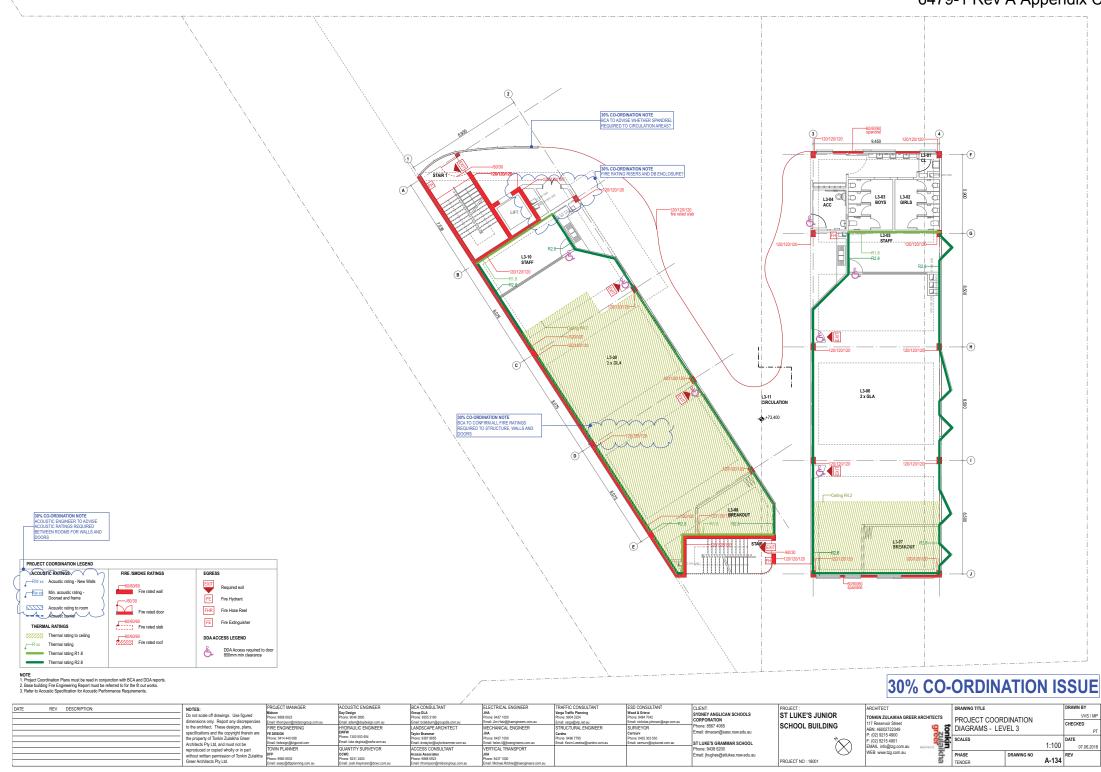


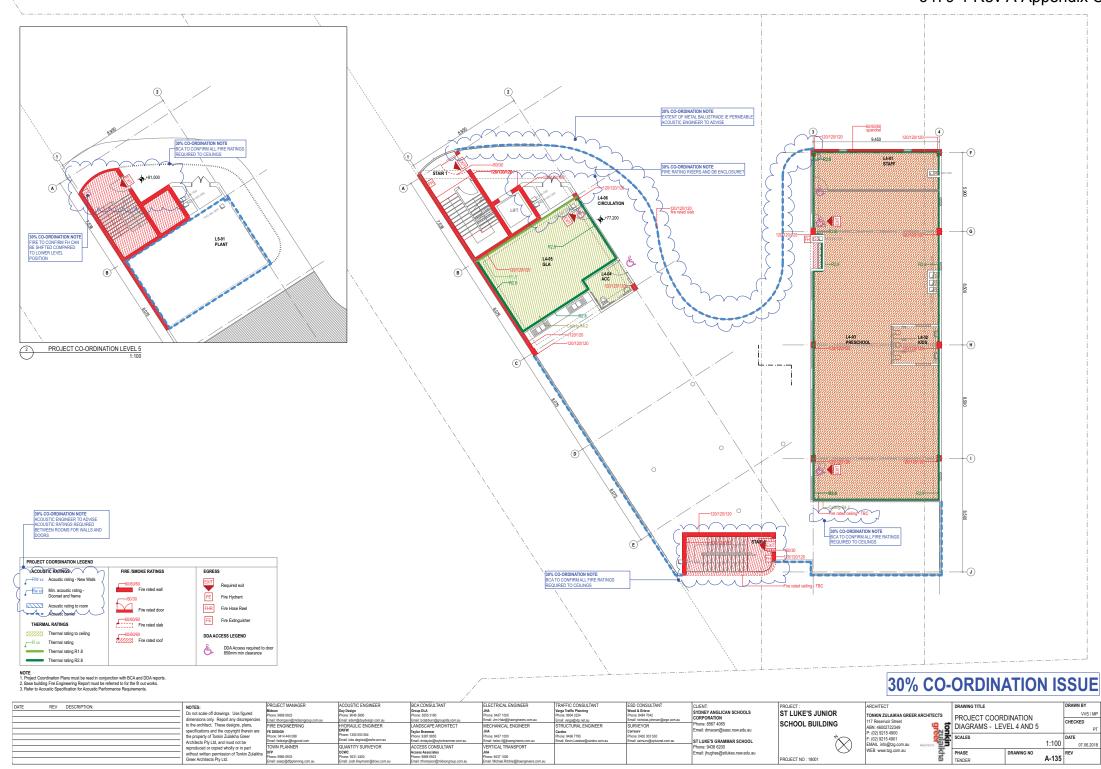


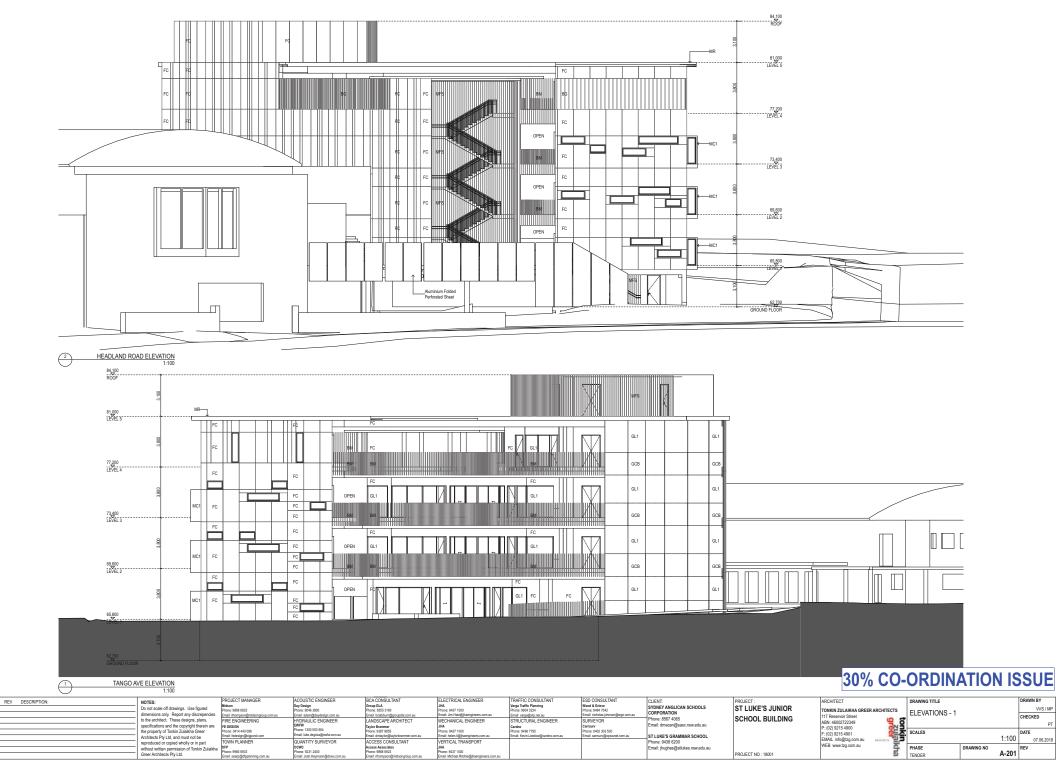


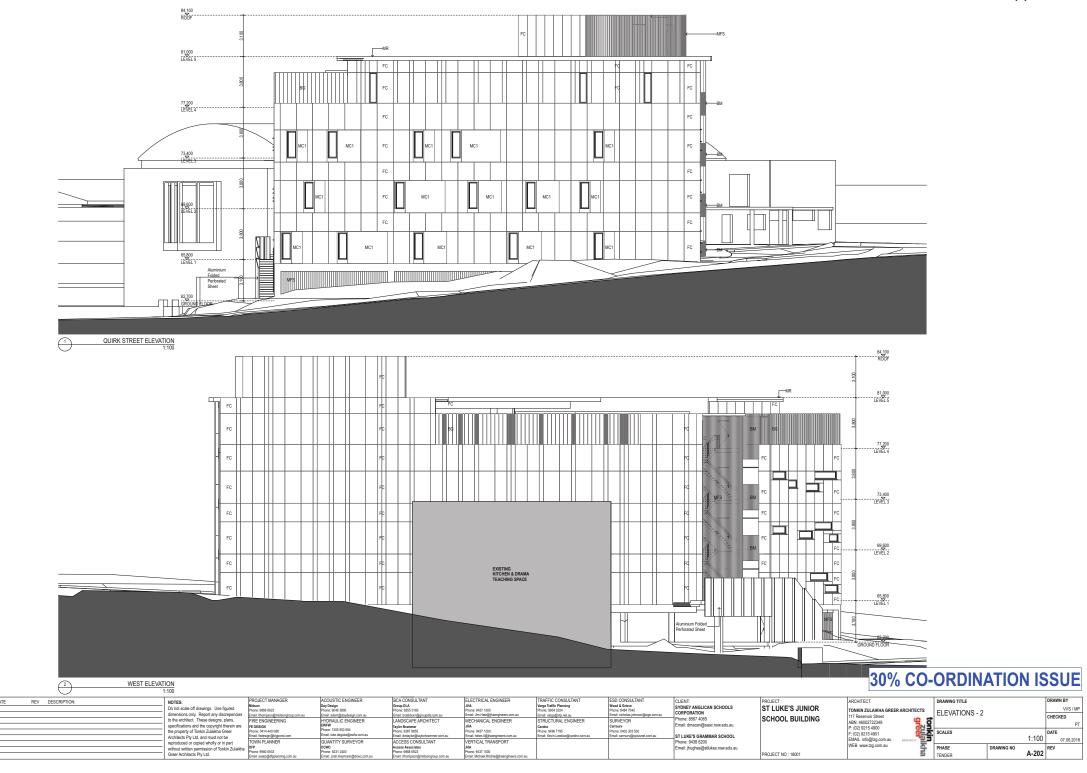


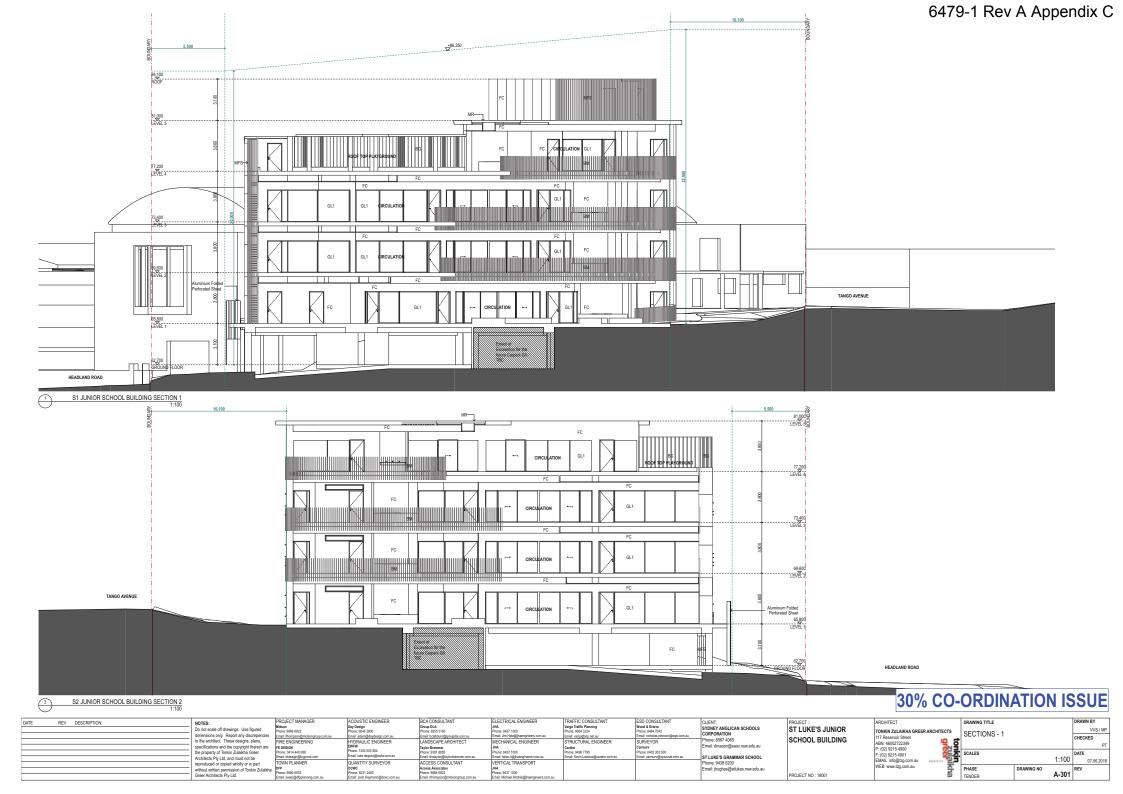


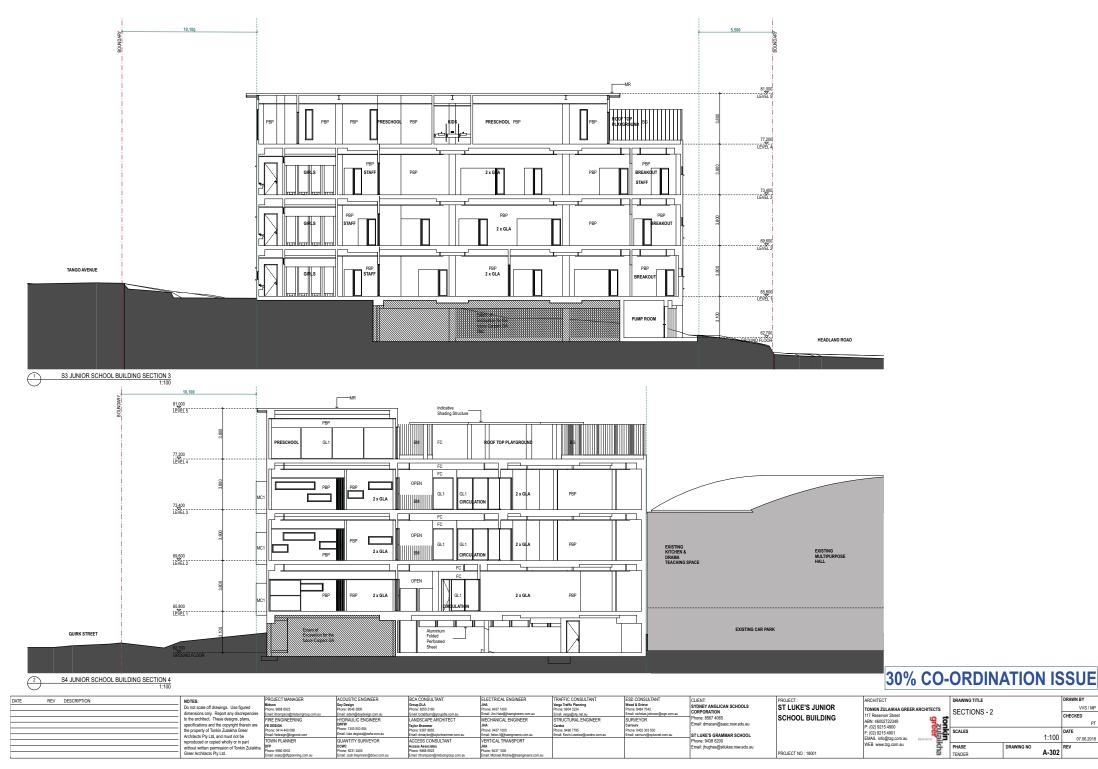


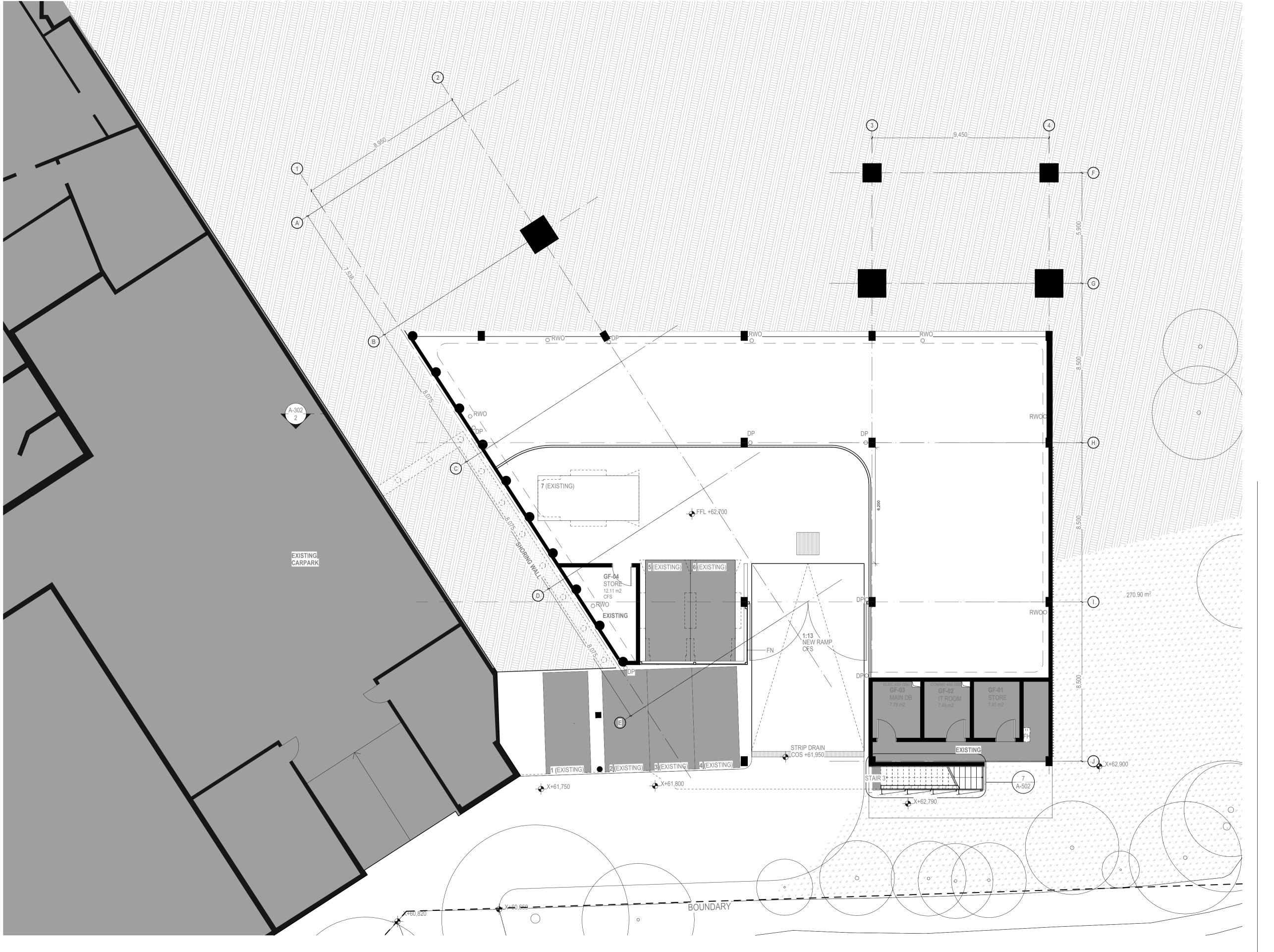




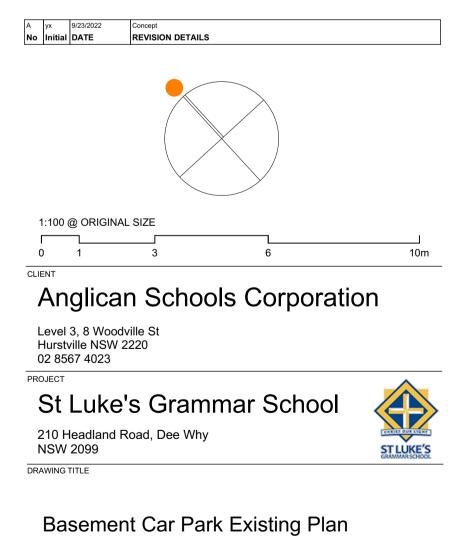




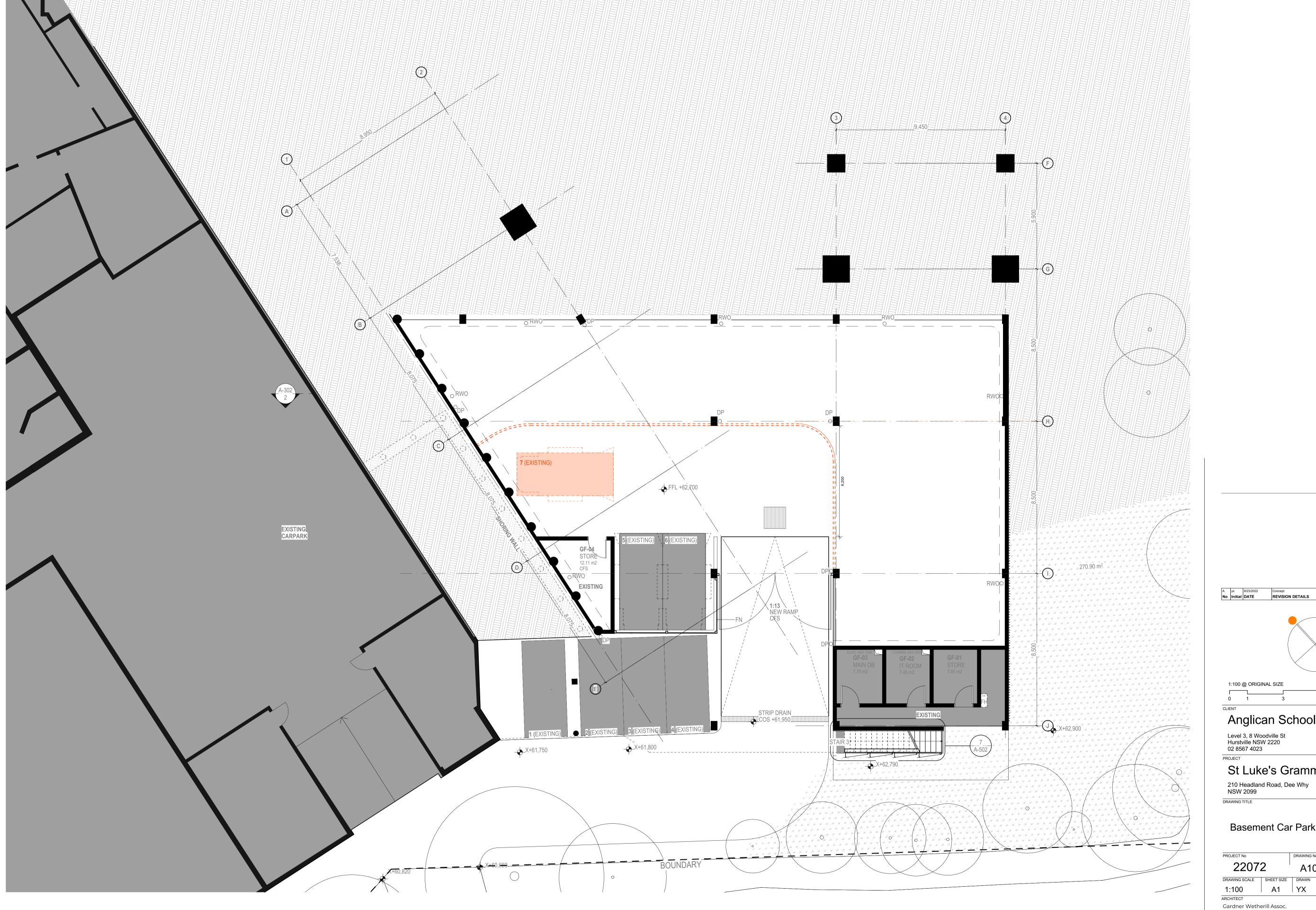


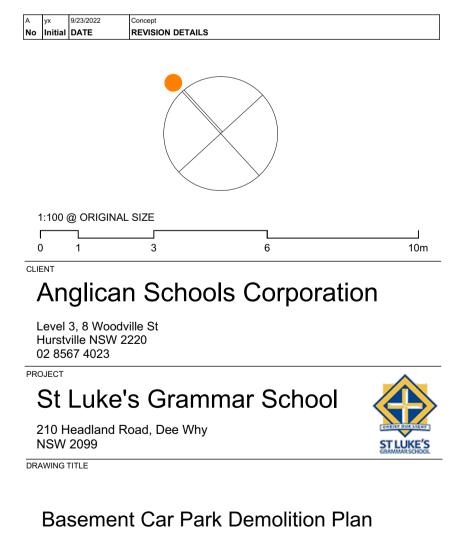


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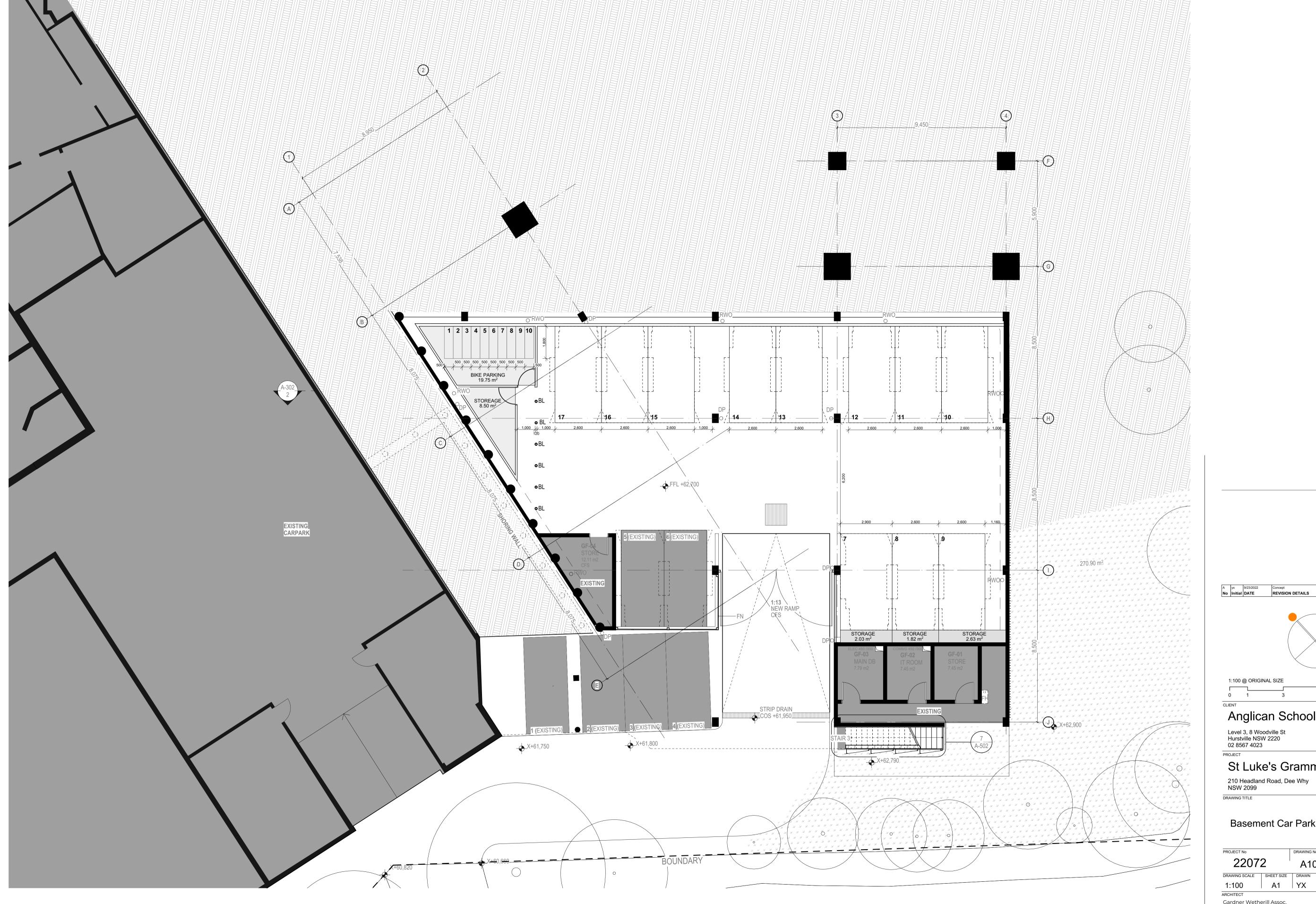


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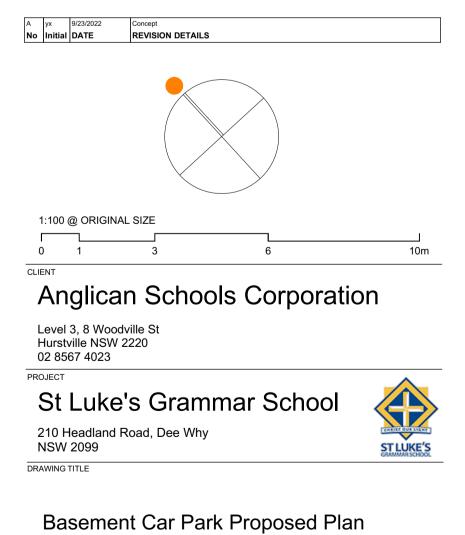




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