

The Anglican Schools Corporation
C/- Midson Group Pty Ltd

Detailed Site Investigation:
St Luke's Grammar School Proposed
Senior School and Sports Centre –
800 Pittwater Road, Dee Why &
224 Headland Road, North Curl Curl, NSW



P1907215JR03V01
October 2019

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



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General Abbreviations

ACM	Asbestos-containing material
AEC	Areas of environmental concern
ASC NEPM	National Environmental Protection (Assessment of Site Contamination) Measure (2013)
ASS	Acid sulfate soil
ASSMAC	Acid Sulfate Soils Management Advisory Committee
AST	Above ground storage tank
BGL	Below ground level
BH	Borehole
BTEXN	Benzene, toluene, ethylbenzene, xylene, naphthalene
COPC	Contaminants of potential concern
DA	Development application
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DP	Deposited Plan
DSI	Detailed Site Investigation
EPA	Environmental Protection Authority
HM	Heavy metals
HPT	Hand push tube
IA	Investigation Area
LEP	Local Environmental Plan
MA	Martens & Associates
mAHD	Metres, Australian Height Datum
mbgl	Metres below ground level
NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochloride pesticides
OEH	Office of Environment and Heritage
OPP	Organophosphorus pesticides
PACM	Potential asbestos containing material
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyl
PSI	Preliminary Site Investigation
RAP	Remedial Action Plan
TP	Test pit
TRH	Total recoverable hydrocarbons
UCL	Upper confidence limit
UPSS	Underground petroleum storage system
UST	Underground storage tank
VHC	Volatile halogenated compounds
VOC	Volatile organic compounds

1 Introduction

1.1 Overview

This report prepared by Martens and Associates (MA) documents a Detailed Site Investigation (DSI) on behalf of Midson Group Pty Ltd (the Client), to support a development application (DA) to Northern Beaches Council (Council) for the expansion of St Luke's Grammar Senior School at 800 Pittwater Road, Dee Why and 224 Headland Road, North Curl Curl, NSW ('the site').

This DSI has been prepared to address areas of environmental concern (AEC) identified in the Preliminary Site Investigation (PSI) prepared by MA (2019), which should be read in conjunction with this report.

The investigation area (IA) for this DSI was based on the AEC in the PSI within the proposed development areas, as shown in Attachment A.

1.2 Proposed Development

St Luke's Grammar School proposes to provide a new senior campus which will incorporate 800 Pittwater Road, with sporting facilities at 224 Headland Road.

The proposed development comprises refurbishing and extensions to existing buildings as shown in Attachment C.

The proposed development works at 800 Headland Road will require excavations, consisting of:

- Northern excavation for the extension of the basement carpark.
- Southern excavation for additional car parking building extension and internal access.
- Eastern excavation for the swimming pool and associated boiler/pool plant room.
- Potential for excavations under/below existing building.
- Up to 20m of excavation for combined lift shaft/stairs to join both sites at 224 Headland Road.

1.3 Scope of Works

The scope of works includes:

- Review of previous site documentation PSI (MA, 2019).
- Intrusive subsurface investigation and sampling.
- Analysis of representative samples for COPC from AEC.
- Assessment of results and provide recommendations based on the proposed development.
- Provide a preliminary waste classification in general accordance with NSW EPA (2014).
- Preparation of a report in general accordance with the relevant sections of ASC NEPM (2013), NSW OEH (2011) and NSW EPA (2017).

1.4 Reference Guidelines

This assessment is prepared in general accordance with the following guidelines:

- NSW EPA (1995) Sampling Design Guidelines.
- NSW EPA (2014) Waste Classification Guidelines: Part 1 Classifying Waste.
- NSW EPA (2017) 3rd Ed. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.
- ASC NEPC (2013) National Environmental Protection Measure. Referred to as NEPM 1999, amended 2013.
- NSW OEH (2011) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.

2 Site Background Information

2.1 Location and Setting

Site information is summarised in Table 1, with the site area and general surrounds plans provided in Attachment A.

Table 1: Site information

Item	Description / Detail
Site address	800 Pittwater Road, Dee Why, NSW 224 Headland Road, North Curl Curl, NSW
Legal identifier	Lot 6 DP 523299 SP 45082
Surveyed area	1.5 ha (SIX Maps, 2019)
Local Government Area	Northern Beaches Council.
Current zoning and land use	800 Pittwater Road is zoned B5 (Business Development) and; 224 Headland Road is zoned IN1 (General Industrial). The lots were commercial properties at the time of preparing this report.
Site description	800 Pittwater Road contained a commercial facility with concrete car parking surrounding the site. The majority of the building footprint is above a basement carpark excavated into sandstone bedrock. 224 Headland Road contained commercial and existing St Luke's Grammar facilities with hardstand car parking to the west and adjoining commercial development and St Luke's Grammar School to the east.
Surrounding land uses	The site is bounded by Pittwater Road to the northwest, Harbord Road to the southwest, Headland Road to the southeast, St Luke's Grammar School to the east and Stony Range Regional Botanic Garden to the north. Commercial and residential properties in all directions.
Topography	The site slope at 800 Pittwater Road is > 15 % and at 224 Headland Road is > 5 %. Site elevation ranges between approximately 58 mAHD in the east and 34 mAHD in the west (Stephen R. Carr, 2019).
Expected geology	The Sydney 1:100,000 Geological Sheet 9130 describes site geology as Hawkesbury Sandstone, containing medium to coarse-grained quartz sandstone with very minor shale and laminite lenses The NSW Environment and Heritage eSPADE website identifies the site as having soils of Gynea Landscape having soils of shallow to moderately deep yellow earths and earthy sands on crests and insides of benches; shallow siliceous sands on leaning edges of benches;

Item	Description / Detail
	localised gleyed podzolic soils and yellow podzolic soils on shale lenses; shallow to moderately deep siliceous sands and leached sands along drainage lines.
Surface hydrology	Drainage of the site is via overland flow to the council stormwater network on Harbord Road and Headland Road.

2.2 Local Meteorology

A summary of local meteorology from Sydney – Terry Hills (station 066059, 2004 to 2019) is provided in Table 2.

Table 2: Meteorological data

Month	Mean Rainfall (mm)	Mean Maximum Temperature (°C)
January	91.9	27.0
February	125.6	26.0
March	142.3	24.8
April	111.4	22.3
May	48.1	19.6
June	142.9	16.4
July	53.1	16.3
August	51.2	17.8
September	57.1	20.7
October	80.6	22.6
November	101.0	24.0
December	84.4	25.6

2.3 Hydrogeology

A review of WaterNSW Realtime Water Databases indicated that there were twelve groundwater bores within 1000 m of the site as shown in Table 3. No springs were listed within 500 m of the site in the NSW Government Hydrography Spatial Data (SEED, 2019).

No groundwater was encountered during subsurface investigations undertaken by MA.

Table 3: Available hydrogeological information.

Bore Identification	Record Date	Intended Use	Standing Water Level (mbgl)	Distance and direction from site
GW105850	2001	Monitoring	1.4	335 m northeast
GW105849	2001	Monitoring	1.4	352 m northeast
GW108144	2005	Recreation	-	697 m west
GW107655	2005	Recreation	3.0	771 m southeast
GW107814	2005	Household	-	911 m southeast
GW107782	2006	Household	1.2	913 m southeast
GW107867	2006	Household	2.1	919 m southeast
GW108029	2006	Household	2.0	928 m southeast
GW111038	2010	Recreation	2.0	934 m southeast
GW107362	2005	Household	2.0	940 m southeast
GW072222	1994	Recreation	1.0	940 m southeast
GW110933	2010	Household	1.9	991 m southeast

Should further information on permanent site groundwater conditions be required, an additional assessment would need to be carried out (i.e. installation of groundwater monitoring bores / ongoing groundwater monitoring).

As the site was mostly elevated and groundwater was not encountered during MA's subsurface investigations, it is unlikely that groundwater will be encountered with the proposed development.

2.4 Previous Site Investigations

A PSI (MA, 2019) was completed for the site, which provided potential sources of contamination. A summary of key findings is provided Table 4.

Table 4: PSI (MA, 2019) summary

Investigation Details	Investigation Task and Finding
Scope of works	<ul style="list-style-type: none"> ○ Desktop review of previous reports, aerial photographs, online databases and land title information. ○ Review of local geology, hydrogeology and topography maps. ○ Site walkover to review existing site conditions.
Key findings of historic site review and walkover	<p>Aerials indicate that the site was bushland from 1930 to 1943. Existing building at 800 Pittwater Road was constructed between 1943 and 1951 and at 224 Headland Road between 1965 and 1970. Parking area north of existing building at 800 Pittwater Road was constructed between 1951 and 1961. Extensions for the existing building at 800 Pittwater Road were constructed to the northeast between 1961 and 1965, with the eastern extension constructed between 1994 and 2004.</p> <p>The site walkover identified that:</p> <ul style="list-style-type: none"> ○ Site consisted of two properties (800 Pittwater Road and 224 Headland Road) which were mainly used for commercial purposes. ○ The site is bounded by Pittwater Road to the northwest, Headland Road to the southeast, Harbord Road to the southwest, St Luke's Grammar School to the east and Stony Range Regional Botanic Garden to the north. ○ 800 Pittwater Road: commercial facility with concrete car parking areas surrounding the site. Basement car park excavated into sandstone bedrock underlies the majority of the building footprint. ○ 224 Headland Road: commercial and existing St Luke's Grammar facilities (clothing shop, small gym, sporting facilities etc) with bitumen hardstand carpark to the west, adjoining commercial buildings and St Luke's Grammar School to the east. ○ Majority of carparking area at 224 Headland Road is suspended up to 3 - 4m above ground level. The area under the suspended carpark, and open area north of the carpark, consisted of fill material and/or disturbed excavated soil and rock overburden likely from construction works for the building platform for the site and also 222 Headland Road. ○ Building at 224 Headland Road likely situated on fill material used to create level building platform and/or levelling of the site. ○ Drainage of the site is via overland flow to the council stormwater network on Harbord Road and Headland Road. ○ No sign of contamination or activity likely to create contamination was sighted during the walkover.
Areas of environmental concern	<p>Areas of environmental concern identified as:</p> <ul style="list-style-type: none"> ○ Existing buildings and a 1m curtilage. ○ On-site fill.

Investigation Details	Investigation Task and Finding
Recommendations	DSI incorporating soil sampling and analysis for COPC within the AEC on the site. In relation to the proposed development we consider it necessary to undertake a DSI investigation for any proposed works outside of the existing building footprints (i.e. area for elevator shaft as well as the extension of the basement carpark and building at 800 Pittwater Road) and under the building at 224 Headland Road.

3 Conceptual Site Model

3.1 Areas of Environmental Concern

Table 5 summarises site AEC and COPC identified from review of previous site documentation. A map showing locations of identified AEC is provided in Attachment A.

Table 5: AEC and COPC

AEC	Potential for Contamination	COPC
AEC A Buildings including 1m curtilage	Pesticides and heavy metals may have been used underneath buildings for pest control. Buildings construction may include PACM, zinc treated (galvanised) metals, and/or lead based paints. Possible contaminated works during previous commercial use may have introduced contaminants to the site.	HM, TRH, BTEXN, PAH, OCP/OPP and asbestos
AEC B Onsite fill	Fill material brought to the site (for earth works) from unknown origins may have introduced contaminants to the subject area.	HM, TRH, BTEXN, PAH, OCP/OPP and asbestos

Only the building and area of proposed lift shaft/stairs at the 224 Headland Road are considered as areas of environmental concern. Although the external façade and footprint will remain unchanged, internal works consisting of new walls, foundations, trenching for services and excavation will be required.

The building at 800 Pittwater Road is mainly situated above a basement car park excavated into sandstone bedrock. The majority of the ground floor is suspended above the basement and therefore this building is not considered an AEC. Where excavations are proposed, these areas were assessed for COPCs.

As all other existing structures at 800 Pittwater Road and 224 Headland Road not mentioned above will be retained, they will not be considered as an AEC requiring DSI testing.

3.2 Receptors and Pathway

A conceptual site model based on the COPC identified and the associated exposure pathways to potential receptors is shown in Table 6.

Table 6: Preliminary conceptual site model

COPC	Pathway	Receptor ¹
HM PAH OCP / OPP	<p>Transport of contaminants via air.</p> <p>Transport of contaminants by mechanical disturbance (e.g. earthworks).</p> <p>Biomagnification and / or bioaccumulation along food chains.</p> <p>Dermal contact with contaminants</p> <p>Digestion of contaminants</p>	<p><u>Possible Human Receptors</u></p> <p>Current or future site users.</p> <p>On-site and off-site construction or maintenance workers.</p> <p>Current or future users of surrounding residences, reserves, and commercial or industrial premises.</p> <p><u>Possible Environmental Receptors</u></p> <p>Flora and fauna that may inhabit or migrate through the site.</p>
TRH / BTEXN	<p>As above plus:</p> <p>Volatilisation to air</p>	<p>Contaminant pathway / sink areas.</p>
Asbestos	<p>Transport of contaminants via air and inhalation of particles</p> <p>Transport of contaminants by mechanical disturbance (e.g. earthworks).</p> <p>Transport of particles on clothing</p>	<p><u>Possible Human Receptors</u></p> <p>Current or future site users.</p> <p>On- and off-site construction or maintenance workers.</p> <p>Current or future users of surrounding residences, reserves, and commercial or industrial premises.</p>

4 Sampling, Analytical and Quality Plan

A Sampling Analytical and Quality Plan (SAQP) was developed to ensure that data collected for the DSI is representative and provides a robust basis for site assessment decisions. Preparation of the SAQP was completed in general accordance with ASC NEPM (2013) methodology and includes:

- Data quality objectives (DQO).
- Data quality indicators (DQI).
- Sampling methodologies and procedures.

Field screening methods:

- Sample handling, preservation and storage procedures.
- Analytical QA/QC.

The following sections summarise the DQO, DQI and QA/QC.

4.1 Data Quality Objectives

DQO were prepared as statements specifying qualitative and quantitative data required to support project decisions. DQO were prepared in general accordance with NSW EPA (2017), EPA (2014) and ASC NEPM (2013) guidelines, and are presented in Table 7.

Table 7: DQO for the investigation

<p>Step 1 Stating the Problem</p>	<p>Review of previous site documentation identified potential contaminants that might be accessible to human receptors during construction and operation of the proposed development. This DSI is required to assess risk posed by COPC in the identified AEC to receptors.</p>
<p>Step 2 Identifying the Decision(s)</p>	<p>To assess the suitability of the site for future land use, decisions are to be made based on the following questions:</p> <ul style="list-style-type: none"> ○ What is the contaminant exposure pathway? ○ Has previous or current site use impacted the site that may pose a risk to humans for the proposed future land use? ○ Does the site require remediation or management prior to constructing the proposed development?
<p>Step 3 Identification of Inputs to the Decision</p>	<p>The inputs to the assessment include:</p> <ul style="list-style-type: none"> ○ Soil sampling at nominated locations across the IA. ○ Laboratory analytical results for relevant COPC. ○ Assessment of analytical results against site suitable guidelines.
<p>Step 4 Study Boundary Definitions</p>	<p>Study boundaries are as follows:</p> <ul style="list-style-type: none"> ○ Lateral – Lateral boundary of the assessment is defined by the investigation area boundary. ○ Vertical – Vertical boundary is governed by the maximum depth reached during subsurface investigations. ○ Temporal – Two rounds of soil sampling have been undertaken at this stage.
<p>Step 5 Development of Decision Rules</p>	<p>The decision rule for this IA is as follows: If the concentration of contaminants exceed the adopted assessment criteria, a risk assessment is required. Should the risk be unacceptable, further investigations to remediate and / or manage the onsite impacts, in relation to the proposed development, will be undertaken.</p>
<p>Step 6 Specification of Limits on Decision Errors</p>	<p>Guidance found in ASC NEPM (2013) Schedule B2 regarding 95% upper confidence limit (UCL) states that the 95% UCL of the arithmetic mean provides a 95% confidence level that the true population mean will be less than or equal to this value. Therefore a decision can be made based on a probability that 95% of the data collected will satisfy the site acceptance criteria. A limit on decision error will be 5% that a conclusive statement may be incorrect.</p>
<p>Step 7 Optimisation of Sampling Design</p>	<p>Proposed sampling locations shall provide even coverage across the site in the identified AEC. Sampling shall attempt to ensure that critical locations are assessed, sampled, and analysed for appropriate contaminants of concern. Soil sampling locations were set subject to access and using a combined judgemental and grid pattern across the investigation area.</p>

4.2 Data Quality Indicators

In accordance with NSW EPA (2017), the investigation data set has been compared with DQI outlined in Table 8 to ensure that collected data meets the project needs and that DQO have been met.

Table 8: Data quality indicators

Assessment Measure (DQI)	Comment
Precision – A measure of the variability (or reproducibility) of data.	<p>Precision is assessed by reviewing blind field duplicated sample set through the calculation of relative percent difference (RPD).</p> <p>Data precision is deemed acceptable where results are 0-10 x EQL or where RPDs <50% (10-30 x EQL) or <30% (>30 x EQL).</p> <p>Exceedance of this range may still be considered acceptable where heterogeneous materials are sampled.</p>
Accuracy – A measure of the closeness of reported data to the "true value".	<p>Data accuracy is assessed by:</p> <ul style="list-style-type: none"> ○ Field spikes and blanks. ○ Laboratory control samples.
Representativeness – The confidence that data are representative of each media present on the site.	<p>To ensure data representativeness the following field and laboratory procedures are followed:</p> <ul style="list-style-type: none"> ○ Ensure that the design and implementation of the sampling program has been completed in accordance with MA standard operating procedures (SOP). ○ Blank samples shall be used during field sampling to ensure no cross contamination or laboratory artefacts. ○ Ensure that all laboratory hold times are met and that sample handling and transport is completed in accordance with the MA SOP.
Completeness – A measure of the amount of usable data from a data collection activity.	<p>To ensure data set completeness, the following is required:</p> <ul style="list-style-type: none"> ○ Confirmation that all sampling methodology was completed in general accordance with the MA SOP. ○ COC and receipt forms. ○ Results from all laboratory QA/QC samples (lab blanks, trip/spike, lab duplicates). ○ NATA accreditation stamp on all laboratory reports.
Comparability - The confidence that data may be considered to be equivalent for each sampling and analytical event.	<p>Data comparability is maintained by ensuring that:</p> <ul style="list-style-type: none"> ○ All site sampling events are undertaken following methodologies outlined in MA SOP and published guidelines. ○ NATA accredited laboratory methodologies shall be followed on all laboratory testing.

4.3 Methodology and Quality Assurance / Quality Control

Site investigation and soil sampling methodology as shown in Table 9, was completed to meet the project DQO.

Table 9: Investigation and sampling methodology.

Activity	Detail / Comments
Fieldworks	<p>Initial sub surface soil investigations were undertaken on 14 June 2019, and involved:</p> <ul style="list-style-type: none"> ○ Concrete coring on concrete slab for access to sub surface soils. ○ Excavation of 4 boreholes using a 4WD truck-mounted hydraulic drill rig (BH101-BH104) to TC- bit refusal of 3.30 mbgl. <p>Collection and analysis of representative samples.</p> <p>Additional surface and sub surface soil investigations were undertaken on 17 and 18 July, 2019, and involved:</p> <ul style="list-style-type: none"> ○ Concrete coring on concrete slab for access to sub surface soils. ○ Excavation of 17 boreholes using a Hydraulic Hand Push Tube (BH201 – BH217) to equipment refusal depth of 1.3 mbgl. ○ Excavation of 6 test pits (TP101 – TP106) using a spade to a depth of 0.3 mbgl, on inferred sandstone boulders/floaters. ○ Collection and analysis of representative samples. ○ Collection of QA / QC samples for laboratory analysis. <p>It should be noted that soil sampling was subjected to access constraints within buildings (224 Headland Road) and on steep/unstable slopes (area of proposed lift shaft/stairs).</p> <p>Soil sampling locations are provided in Attachment A and borehole/test pit logs are provided in Attachment B.</p>
Soil sampling	<p>Soil sampling was completed by the MA environmental consultant using a clean pair of nitrile gloves for each sample.</p> <p>Each sample was placed into laboratory-supplied, 250mL glass jar with no headspace to limit volatile loss and labelled with a unique identification number.</p>
QA / QC sampling	<p>QA samples were collected for the initial investigation as follows:</p> <ul style="list-style-type: none"> ○ Four soil duplicate sample was collected for intra-laboratory analysis during investigations. ○ One soil trip blank and one trip spike sample were used during soil sampling.
Sample handling and transport	<p>Sample collection, storage and transport were conducted according to MA SOP. Collected soil and groundwater samples were placed immediately into an ice chilled cooler-box.</p> <p>Samples were dispatched to NATA-accredited laboratories under chain of custody documentation within holding times.</p>

4.4 Laboratory Analytical Suite

Laboratory analysis was carried out by Envirolab Pty Ltd a NATA accredited laboratory. Summary of laboratory analyses (Enirolab reports 219745 and 222010) is summarised in Table 10.

Table 10: Summary of soil laboratory analyses.

COPC	Primary Samples Analysed (14 June 2019)	Primary Samples Analysed (17 and 18 July 2019)	QA/QC samples analysed
BTEXN	5	23	1 trip spike
TRH	5	23	1 trip blank
PAH	5	23	
Heavy metals ¹	5	23	4 duplicates
OCP / OPP	5	23	
CEC and pH	-	3	
Asbestos in soil	5	11	

Notes:

¹: Heavy metals – arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc.

Laboratory chain of custody documentation is provided in Attachment F. Borehole and test pit locations are shown on the sampling plan in Attachment A, and sample depths noted on borehole/test pit logs, provided in Attachment B.

5 Site Assessment Criteria

The site assessment criteria (SAC) adopted for this DSI, listed in Table 11 were derived from the ASC NEPM (2013).

Both investigation and screening levels affecting human health were considered for this site investigation. As the existing and proposed development will not provide access to soil (through slab designs), EIL and ESL were not applicable.

Table 11: Summary of SAC.

Media	Adopted Guidelines	Applicability
Soil	ASC NEPM (2013)	<p><u>Health investigation levels (HIL)</u> HIL C – Open space, includes parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpath.</p> <p><u>Health screening levels (HSL)</u> HSL C – Open space.</p> <p><u>Management Limits</u> Residential / Parkland, coarse soil</p> <hr/> <p><u>Asbestos</u> Due to the limited access and drilling method, asbestos was assessed on a detect / non-detect basis.</p>

6 Results

6.1 Field Observations

Field investigations and detailed site walkovers were undertaken on 14, 17 and 18 July, 2019. All locations were examined for signs of contamination (odours, staining etc.). The following observations were made:

- Majority of site was covered by concrete apart from area where proposed lift shaft/stairs will be constructed (Test pit investigation location as shown in Attachment A).
- Anthropogenic inclusions, such as plastics and styrofoam, were identified on the surface and within the test pit soil profile for the excavated test pit locations, at the northern portion of 224 Headland Road, North Curl Curl.
- Visual inspection revealed exposed sandstone boulders in a sandy matrix beneath the concrete slab carpark at 224 Headland Road.
- Sub-surface observed: concrete slab of up to 0.35 m thick across the entire site apart from area of proposed lift shaft/stairs; underlain by fill consisting of Silty Clay, Sand, Clayey Sand and Crushed Sandstone to depths of 1.3 mBGL. Borehole/test pit logs are shown in Attachment B.
- Minor hydrocarbon staining of concrete outdoor car parks at 800 Pittwater Road and 224 Headland Road, as well as the underground car park at the northern portion of 800 Pittwater Road were observed.
- No odours were noted during investigations.
- There were little to no changes to the site from the PSI (MA, 2019) walkover.

6.2 Analytical Results

6.2.1 Soil Results

The following sections summarise the results of soil laboratory analysis. Detailed tabulated results showing individual sample concentrations compared to adopted SAC are available in Attachment D. Laboratory analytical documentation is available in Attachment F.

Table 12: Summary of soil laboratory results for the site.

Analyte	Results Compared to SAC
Heavy metals	<u>HIL</u> All results below the SAC.
TRH/BTEXN	<u>HSL</u> All results below SAC. <u>Management Limits</u> All results below SAC.
OCP/OPP	<u>HIL</u> All results below SAC.
PAH	<u>HIL</u> All results below SAC.
Asbestos in soil	No asbestos detected.

6.2.2 Data QA/QC

Field QA/QC data was collected as per the SAQP. A review of QA/QC procedure has been completed and is presented in the data validation report (Attachment E).

The RPD between the sample and duplicate exceeded for cadmium and lead in TP105 and DUP03, which could be attributed to the heterogeneity of the fill material sampled. Laboratory analysis for primary duplicates samples for both cadmium and lead were less than the SAC. The trip spike and blank both reported within acceptable concentrations. Therefore, the data is suitable for the purposes of the assessment. Refer to Attachment E for the data validation report.

6.3 Preliminary Waste Classification

Laboratory results exceeds the contamination threshold (CT) limits for General Solid Waste (CT1) for nickel in BH213/0.15-0.3 and lead in BH217/0.4-0.6. TCLP analysis found that samples tested were below the threshold for General Solid Waste (TCLP1).

All other samples analysed were less than the maximum concentration limit for General Solid Waste (SCC1).

No asbestos was detected in the tested samples.

In accordance with NSW EPA (2014), the preliminary classification for the tested fill material within the proposed main excavation areas are 'General Solid Waste (non-putrescible)'.

7 Discussion

Intrusive DSI investigations were undertaken by MA to assess the site to determine the suitability for the proposed land use. DSI investigations were conducted by MA in general accordance with the project SAQP.

Sub-surface excavation revealed site filling across the the site, up to investigation termination depth of 1.5 mbgl. Observations during the DSI included minor hydrocarbon staining noted throughout the outdoor and underground carparks at 800 Pittwater Road, and the outdoor carpark at 224 Headland Road. Anthropogenics inclusions such as plastic and styrofoam were observed in the area of the proposed lift shaft. Otherwise, no visual or odours indicating contamination were observed.

Laboratory analytical results (Envirolab reports 219745 and 222010) indicated all analytes to be below the adopted SAC and considered not to pose a significant risk to receptors.

The preliminary classification for materials to be removed off-site is 'General Solid Waste (non-putrescible)'. Laboratory analytical results (Envirolab report 219745 and 222010) indicated all analytes to be below CT1 apart for two samples, with exceedances for nickel in BH213/0.15-0.3 and lead in BH217/0.4-0.6. TCLP testing indicated both samples to be below TCLP1.

8 Conclusions and Recommendations

Based on the current analysis and site observations, the site is considered to have a low risk to human receptors from the proposed development. MA considers that the site does not require further investigation or remediation. However, where any additional excavation or changes to the on-grade car park are proposed, these areas will required further contamination investigations and assessment of associated COPCs.

If any unexpected finds (such as fibro material, odours or soil staining) are encountered during site works, the unexpected find will require assessment by MA to determine requirements for additional investigation and / or remedial action.

If any soil material is to be removed from site, a formal waste classification assessment shall be required in accordance with the NSW EPA Waste Classification Guidelines (2014).

9 Limitations

This DSI was undertaken in accordance with current industry standards.

It is important to note that no land contamination study can be considered to be a complete and exhaustive characterisation of a site nor can it be guaranteed that any assessment shall identify and characterise all areas of potential contamination or all past potentially contaminating land-uses. This is particularly the case where onsite filling has occurred. Therefore, this report should not be read as a guarantee that only contamination identified shall be found on the site. Should material be exposed in future which appears to be contaminated, additional testing may be required to determine the implications for the site. The management of such 'unexpected finds' is to be included in the proposed site RAP.

Martens & Associates Pty Ltd has undertaken this assessment for the purposes of assessing potential site contamination. No reliance on this report should be made for any other investigation or proposal. Martens & Associates Pty Ltd accepts no responsibility, and provides no guarantee regarding the characteristics of areas of the site not specifically studied in this investigation.

10 References

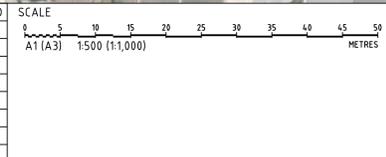
- Martens and Associates Pty Ltd (2019) *Preliminary Site Investigation: 800 Pittwater Road, Dee Why and 224 Headland Road, North Curl Curl, NSW* . Ref. P1907215JR01V01.
- NEPC (1999, amended 2013) *National Environmental Protection (Assessment of Site Contamination) Measure*. Referred to as ASC NEPM (2013).
- NSW EPA (2017) *3rd Ed. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*.
- NSW EPA (1995) *Contaminated Sites: Sampling Design Guidelines*.
- NSW EPA (2014) *Waste Classification Guidelines*.
- NSW OEH (2011) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*.
- Planning Secretary's Environmental Assessment Requirements, application No. SSD-10291.
- Standards Australia (1997) Australian Standard AS 4482.1 – *Guide to sampling and investigation of potentially contaminated soil: Part 2: Non-volatile and semi-volatile substances*.
- Standards Australia (1999) Australian Standard AS 4482.1 – *Guide to sampling and investigation of potentially contaminated soil: Part 2: Volatile substances*.
- SEPP 55 Remediation of Land.
- Stephen R. Carr (2019), *Surveyed Plan*, Ref No. 1819-10, Sheets 1-2.
- Western Australia Department of Health (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*.

11 Attachment A – AEC, Site and Sampling Plans



KEY	
SITE BOUNDARY	
LOT BOUNDARY	
INDICATIVE LOCATION OF THE MAIN PROPOSED EXTERNAL WORKS	

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INTERNAL	21/06/2019	LL	MM	BM	GT



GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GT

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CLIENT
THE ANGLICAN SCHOOL'S CORPORATION

PROJECT NAME/PLANSSET TITLE
PRELIMINARY SITE INVESTIGATION

800 PITTWATER ROAD, DEE WHY
 AND 224 HEADLAND ROAD, NORTH CURL CURL, NSW 2099

martens
 & Associates Pty Ltd

Consulting Engineers
 Environment
 Water
 Geotechnical
 Civil

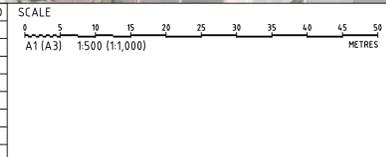
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DRAWING TITLE				
FIGURE 1: SITE BOUNDARY NEARMAP (2019)				
PROJECT NO.	PLANSSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907215	PS01	R02	PS01-JZ01	A



KEY	
SITE BOUNDARY	
AEC A - BUILDINGS + 1m CURTLAGE	
AEC B - ONSITE FILL	

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INTERNAL	21/06/2019	LL	MM	BM	GT



GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GT

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PROJECT NAME/PLANSSET TITLE
PRELIMINARY SITE INVESTIGATION

800 PITTWATER ROAD, DEE WHY
 AND 224 HEADLAND ROAD, NORTH CURL CURL, NSW 2099

martens
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Consulting Engineers
 Environment
 Water
 Geotechnical
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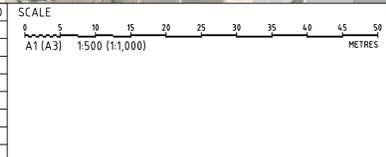
DRAWING TITLE				
FIGURE 2: AEC MAP NEARMAP (2019)				
PROJECT NO.	PLANSSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907215	PS01	R02	PS01-JZ02	A



KEY	
SITE BOUNDARY	
LOT BOUNDARY	
INDICATIVE LOCATION OF THE MAIN PROPOSED EXTERNAL WORKS	
BOREHOLE (DRILL RIG) (14 JUNE 2019)	
TEST PITS (18 JULY 2019)	
BOREHOLE (HAND PUSH TUBE) (17 & 18 JULY 2019)	

PROJECT MILESTONE

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	INITIAL RELEASE	22/07/2019	JS	WX	BM	GT



GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GT

CLIENT
THE ANGLICAN SCHOOL'S CORPORATION

PROJECT NAME/PLANSSET TITLE
DETAILED SITE INVESTIGATION

800 PITTWATER ROAD, DEE WHY
 AND 224 HEADLAND ROAD, NORTH CURL CURL, NSW 2099

Consulting Engineers
 Environment
 Water
 Geotechnical
 Civil

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DRAWING TITLE				
SAMPLING PLAN NEARMAP (2019)				
PROJECT NO.	PLANSSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P1907215	PS02	R02	PS02-JZ01	A

12 Attachment B – Borehole and Test Pit Logs

CLIENT	The Anglican School's Corporation	COMMENCED	14/06/2019	COMPLETED	14/06/2019	REF BH101	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	HN	CHECKED	RE	Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	4WD truck-mounted hydraulic drill rig	EASTING	151.28138	RL SURFACE	39 m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.45 m depth	NORTHING	-33.758921	ASPECT	West	SLOPE	<5%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
		Not Encountered	39.00						CONCRETE.				PAVEMENT
DT			0.20		P7215/101/0.2-0.3/S/1								
	L		38.80		D 0.20 m			SC	FILL: Clayey SAND: medium grained; grey and brown; trace sandstone gravels.				FILL
ADT			0.40										
	H		0.45						SANDSTONE: medium grained; red-brown and brown; inferred low to medium strength.				WEATHERED ROCK
			0.5						Hole Terminated at 0.45 m				0.45: TC-bit refusal on inferred medium to high strength sandstone.

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH1-EH103-NORTH CURL CURL V01-COPY.GPJ <<DrawingFile>> 12/08/2019 11:29 8:30:004 Daigul Lab and in Situ Tool - DGD | Lib: Martens 2.00 2016-11-13 Ppj: Martens 2.00 2016-11-13



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**Engineering Log -
 BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	14/06/2019	COMPLETED	14/06/2019	REF BH102	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	HN	CHECKED	RE	Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	4WD truck-mounted hydraulic drill rig	EASTING	151.281216	RL SURFACE	37.2 m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 3.30 m depth	NORTHING	-33.758529	ASPECT	Southwest	SLOPE	<5%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT				37.20					CONCRETE.				PAVEMENT
			0.22	36.98	P7215/102/0.3-0.4/S/1 D 0.30 m			SC	FILL: Clayey SAND: medium to coarse grained; brown and grey; with fine to medium sandstone and roadbase gravels.				FILL
			0.50	36.70					Pale brown and orange.		MD		
			0.75	36.45	P7215/102/0.8-1.0/S/1 D 0.80 m				Grey.				
			1.00	36.20				SC	Clayey SAND: medium to coarse grained; grey and green.				RESIDUAL SOIL
			1.50	35.60	P7215/102/1.5-1.6/S/1 D 1.50 m				Brown and red-brown; trace sandstone gravels.		M		
			2.20	35.00					Pale grey with brown.		MD		2.20: Possibly extremely weathered rock.
			2.50		P7215/102/2.4-2.5/S/1 D 2.40 m								
			2.90	34.30					SANDSTONE: medium grained; grey; inferred low to medium strength; distinctly weathered.				WEATHERED ROCK 2.90: V-bit refusal.
			3.30						Hole Terminated at 3.30 m				3.30: TC-bit refusal on inferred medium to high strength sandstone.
			3.50										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B-H1-EH1-03 -NORTH CURL CURL V01 - COPY.GPJ <<DrawingFile>> 12/08/2019 11:29 8:30:004 Daigal Lab and in Situ Tool - DGD [Lib: Martens 2.00 2016-1-13 Pj: Martens 2.00 2016-1-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	14/06/2019	COMPLETED	14/06/2019	REF BH103	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	HN	CHECKED	RE	Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	4WD truck-mounted hydraulic drill rig	EASTING	151.281318	RL SURFACE	37.9 m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 2.00 m depth	NORTHING	-33.75836	ASPECT	West	SLOPE	<5%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			37.90						CONCRETE.				PAVEMENT
			0.20										
			37.70					SC	FILL: Clayey SAND: medium grained; brown and grey with red-brown; with sandstone and roadbase gravels; inferred medium dense.				FILL
AD/V	L-M	Not Encountered	0.5		P7215/103/0.4-0.5/S/1 D 0.40 m								
			1.0						With tree roots.			D / M MD	
			1.00										
			36.90										
			1.5		P7215/103/1.2-1.4/S/1 D 1.20 m								
			1.50										
			36.40						SANDSTONE: fine to medium grained; pale brown; inferred low to medium strength; distinctly weathered.				WEATHERED ROCK 1.50: V-bit refusal.
AD/T	H		2.0										
			2.00						Hole Terminated at 2.00 m				2.00: TC-bit refusal on inferred medium to high strength sandstone.
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH1-EH103 -NORTH CURL CURL V01 - COPY.GPJ <<DrawingFile>> 12/08/2019 11:29 8:30:004 Daigal Lab and in Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Pj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	14/06/2019	COMPLETED	14/06/2019	REF BH104	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	HN	CHECKED	RE	Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	4WD truck-mounted hydraulic drill rig	EASTING	151.282008	RL SURFACE	57.3 m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 2.10 m depth	NORTHING	-33.758778	ASPECT	West	SLOPE	<5%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			57.30						CONCRETE.				PAVEMENT
			0.30	57.00	P7215/104/0.3-0.4/S/1 D 0.30 m			SP	FILL: SAND: fine to medium grained; pale brown/yellow; with fine to medium sandstone gravels.				FILL
ADV	L		0.5										
		Not Encountered	0.90	56.40					SANDSTONE: fine to medium grained; grey and pale brown; inferred low to medium strength.				WEATHERED ROCK 0.90: V-bit refusal.
AD/T	H		1.0										
			1.5										
			2.0										
			2.10						Hole Terminated at 2.10 m				2.10: TC-bit refusal on inferred medium to high strength sandstone.
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log: MARTENS BOREHOLE: P1907215 B-H4-TP101-TP106.GPJ <-DrawingFile>> 12/08/2019 11:21 8.30.004 D:\git\Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Pjt: Martens 2.00 2016-11-13]



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF TP101	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED	RE	Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281979	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	0.10 m depth	NORTHING	-33.758603	ASPECT	East	SLOPE	<2%

Excavation			Sampling			Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
S		Not Encountered	0.10		7215/TP101/0.0-0.17S/1 D 0.00 m			SP	FILL: SAND; fine to medium grained; dark brown; trace gravels.	D			FILL
			0.5						Hole Terminated at 0.10 m				0.10: Refusal at 0.1m inferred rock.
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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**Engineering Log -
 TEST PIT**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF TP102	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED	RE	Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281962	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	0.15 m depth	NORTHING	-33.758702	ASPECT	East	SLOPE	<2%

Excavation			Sampling			Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
S		Not Encountered	0.15		7215/TP102/0.0-0.15/S/D 0.00 m			SP	FILL: SAND; fine to medium grained; dark brown; trace gravels.	D			FILL
			0.5						Hole Terminated at 0.15 m				0.15: Refusal at 0.15m inferred rock.
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B.H4-TP101-TP106.GPJ <-DrawingFile>> 12/08/2019 11:22 8.30.004 DiggetLab and In Situ Tool - DGD | Lib: Martens 2.00 2016-11-13 Pjt: Martens 2.00 2016-11-13



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**Engineering Log -
TEST PIT**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF TP103	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED	RE	Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282031	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	0.10 m depth	NORTHING	-33.758635	ASPECT	East	SLOPE	<2%

Excavation			Sampling			Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
S		Not Encountered	0.10		7215/TP103/0.0-0.175/1 D 0.00 m			SP	FILL: SAND; fine to medium grained; dark brown; trace gravels.	D			FILL
			0.5						Hole Terminated at 0.10 m				0.10: Refusal at 0.1m inferred rock.
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B.H4-TP101-TP106.GPJ <-DrawingFile>> 12/08/2019 11:22 8.30.004 DiggetLab and In Situ Tool - DGD | Lib: Martens 2.00 2016-11-13 Pjt: Martens 2.00 2016-11-13



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**Engineering Log -
TEST PIT**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF TP104	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED	RE	Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282023	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	0.15 m depth	NORTHING	-33.758707	ASPECT	East	SLOPE	<2%

Excavation			Sampling			Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
S		Not Encountered	0.15		7215/TP104/0.0-0.15/S/D 0.00 m			SP	FILL: SAND; fine to medium grained; dark brown; trace gravels.	D			FILL
			0.5						Hole Terminated at 0.15 m				0.15: Refusal at 0.1m inferred rock.
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B.H4-TP101-TP106.GPJ <-DrawingFile>> 12/08/2019 11:22 8.30.004 DiggetLab and In Situ Tool - DGD | Lib: Martens 2.00 2016-11-13 Pjt: Martens 2.00 2016-11-13



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**Engineering Log -
 TEST PIT**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF TP105	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED	RE	Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.28206	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	0.15 m depth	NORTHING	-33.758697	ASPECT	East	SLOPE	<2%

Excavation			Sampling			Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
S		Not Encountered		0.15	7215/TP105/0.0-0.15/S/D 0.00 m			SP	FILL: SAND; fine to medium grained; dark brown; trace gravels.		D		FILL
			0.5						Hole Terminated at 0.15 m				0.15: Refusal at 0.1m inferred rock.
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B.H4-TP101-TP106.GPJ <-DrawingFile>> 12/08/2019 11:22 8.30.004 DiggetLab and In Situ Tool - DGD | Lib: Martens 2.00 2016-11-13 Pjt: Martens 2.00 2016-11-13



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**Engineering Log -
 TEST PIT**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF TP106	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED	RE	Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282056	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	0.10 m depth	NORTHING	-33.758717	ASPECT	East	SLOPE	<2%

Excavation			Sampling			Field Material Description							
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
S		Not Encountered		0.10	7215/TP106/0.0-0.175/1 D 0.00 m			SP	FILL: SAND; fine to medium grained; dark brown; trace gravels.	M (=LL)			FILL
			0.5						Hole Terminated at 0.10 m				0.10: Refusal at 0.1m inferred rock.
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B-H4-TP101-TP106.GPJ <-DrawingFile>> 12/08/2019 11:22 8.30.004 DiggetLab and In Situ Tool - DGD | Lib: Martens 2.00 2016-11-13 Pjt: Martens 2.00 2016-11-13



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**Engineering Log -
TEST PIT**

CLIENT	The Anglican School's Corporation	COMMENCED	17/07/2019	COMPLETED	17/07/2019	REF BH202	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281477	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	Ø100 mm x 0.90 m depth	NORTHING	-33.75884	ASPECT	East	SLOPE	<5%

Drilling			Sampling			Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
PT	L-M	Not Encountered	0.20						CONCRETE.				PAVEMENT	
			0.5					CL	FILL: Silty CLAY: low plasticity; dark grey-brown; trace gravels.				FILL	
			0.75	P7215/202/0.7/S/1 D 0.70 m				SC	FILL: Sandy CLAY: low plasticity; orange-brown.			M (<<PL)		
			0.90	P7215/202/0.9/S/1 D 0.90 m					Hole Terminated at 0.90 m				0.90: Pushtube refusal.	
			1.0											
			1.5											
			2.0											
			2.5											
			3.0											
			3.5											

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH202-BH202-1-13 DEE WHY.GPJ <<DrawingFile>> 12/08/2019 11:35 6:30:004 Daugel Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Pj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	17/07/2019	COMPLETED	17/07/2019	REF BH203	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281534	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	Ø100 mm x 1.30 m depth	NORTHING	-33.758948	ASPECT	East	SLOPE	<5%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT L-M	Not Encountered		0.20		P7215/203/0.2-0.5/S/1 D 0.20 m			SC	CONCRETE.				PAVEMENT
			0.50		P7215/203/1.0-1.3/S/1 D 1.00 m			SC	FILL: Clayey SAND: fine to medium grained; dark brown; with gravels, subangular to subrounded.				FILL
			0.65				CL	FILL: Clayey GRAVELS; dark orange-brown; with sand.			D		
			0.85				CL	FILL: Crushed SANDSTONE: pale orange-brown.					
			1.00			CL	FILL: Clayey GRAVELS: dark brown-black.						
			1.30			CL	FILL: Silty CLAY: low plasticity; dark grey-brown; trace gravels.				M (<<PL)		
			1.50						Hole Terminated at 1.30 m				1.30: Pushtube refusal.
			2.00										
			2.50										
			3.00										
			3.50										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH203-BH203-V01 - DEE WHY.GPJ <<DrawingFile>> 12/08/2019 11:35 6:30:004 Daugel Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Pj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	17/07/2019	COMPLETED	17/07/2019	REF BH204	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281396	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 1.30 m depth	NORTHING	-33.758847	ASPECT	East	SLOPE	<5%

Drilling			Sampling			Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
PT L-M	Not Encountered		0.30						CONCRETE.				PAVEMENT	
			0.40		P7215/204/0.4-0.7/S/1 D 0.40 m				NO SOIL (VOID).					
			0.5		P7215204/0.9-1.2/S/1 D 0.90 m			CL	FILL: Silty CLAY; low plasticity; dark brown and orange; with sand; trace gravels.		M (<PL)			FILL
			1.20					S	FILL: SAND: fine to medium grained; orange-yellow.		D			
			1.30							Hole Terminated at 1.30 m				1.30: Pushtube refusal.
			1.5											
			2.0											
			2.5											
			3.0											
			3.5											

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH204-DEE WHY.GPJ <<DrawingFile>> 12/08/2019 11:35 6:30:004 Daugel Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Pj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	17/07/2019	COMPLETED	17/07/2019	REF BH205	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281833	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.30 m depth	NORTHING	-33.758145	ASPECT	East	SLOPE	<2%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT				0.20					CONCRETE.				PAVEMENT
H		Not Encountered		0.30				S	FILL: Gravelly SAND: fine to medium grained; pale red-brown.				FILL
			0.5						Hole Terminated at 0.30 m				0.30: Pushtube refusal.

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH205-DEE WHY.GPJ <<DrawingFile>> 12/08/2019 11:35 6.30.004 Daugel Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Pj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	17/07/2019	COMPLETED	17/07/2019	REF BH206	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	800 Pittwater Rd, Dee Why, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281794	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	∅100 mm x 0.60 m depth	NORTHING	-33.758201	ASPECT	East	SLOPE	<2%

Drilling			Sampling			Field Material Description								
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
PT H	Not Encountered		0.20		P7215/206/0.2-0.4/S/1 D 0.20 m				CONCRETE.				PAVEMENT	
			0.40				S		S	FILL: SAND: fine to medium grained; orange-yellow; trace gravels.				FILL
			0.50				S		S	FILL: Gravelly SAND: fine to medium grained; pale red-brown.				
			0.60							Hole Terminated at 0.60 m				0.60: Pushtube refusal.
			1.0											
			1.5											
			2.0											
			2.5											
			3.0											
			3.5											

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH206-DEE WHY.GPJ <<DrawingFile>> 12/08/2019 11:35 6:30:004 Daugel Lab and In Situ Tool - DGD [Lib: Martens 2.00 2016-11-13 Pj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH209	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.281454	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	Ø100 mm x 0.85 m depth	NORTHING	-33.759566	ASPECT	East	SLOPE	<2%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	H	Not Encountered	0.20		P7215/209/0.2-0.4/S/1 D 0.20 m	[Cross-hatched pattern]	[Cross-hatched pattern]	S	CONCRETE.	D			PAVEMENT
			0.40						FILL: SAND: fine to medium grained; orange-brown.				FILL
			0.50						CLS FILL: Clayey SAND: fine to medium grained; black.				
			0.85		S FILL: SAND: fine to medium grained; grey; trace sandstone gravels.								
			1.0		Hole Terminated at 0.85 m				0.85: Pushtube refusal.				

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 BH209-BH217-NORTH CURL CURL.GPJ <-DrawingFile>> 12/08/2019 11:38 8.30.004 D:\git\Lab and in Silu Tool - DGD [Lib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH210	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282185	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.50 m depth	NORTHING	-33.759562	ASPECT	East	SLOPE	0

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	H	Not Encountered	0.15		P7215/210/0.2-0.5/S/1 D 0.20 m P7215/210/0.2-0.5/S/1DUPE D 0.20 m			S	CONCRETE. ----- FILL: SAND: fine to medium grained; dark brown; trace sandstone gravels.				PAVEMENT ----- FILL
			0.50						Hole Terminated at 0.50 m				0.50: Pushtube refusal.
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B-H209-BH217-NORTH-CURL.GPJ --DrawingFile-- 12/08/2019 11:38 8.30.004 D:\git\Lab and in Silu Tool - DGD \Lib: Martens 2.00 2016-11-13 Pjf: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH211	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282058	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	∅100 mm x 0.60 m depth	NORTHING	-33.758363	ASPECT	East	SLOPE	0

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT H	Not Encountered		0.20		P7215/211/0.2-0.4/S/1 D 0.20 m	[Pattern]	[Pattern]	S	CONCRETE.	D			PAVEMENT
			0.45		P7215/211/0.4-0.6/S/1 D 0.40 m				FILL: SAND: fine to medium grained; orange-yellow; trace sandstone gravels.				FILL
			0.50						FILL: Clayey SAND: fine to medium grained; black.				
			0.60						FILL: SAND: fine to medium grained; pale yellow-grey; trace sandstone gravels.				
								Hole Terminated at 0.60 m				0.60: Pushtube refusal.	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B-H209-BH217-NORTH-CURL.GPJ --DrawingFile-- 12/08/2019 11:38 8.30.004 D:\git\Lab and in Situ Tool - DGD\JLib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH212	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282245	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.50 m depth	NORTHING	-33.759375	ASPECT	East	SLOPE	0

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	H	Not Encountered	0.20	P7215/212/0.2-0.5/S/1 D 0.20 m				S	CONCRETE.				PAVEMENT
			0.30						FILL: SAND: fine to medium grained; orange-brown; trace sandstone gravels.				FILL
			0.40						FILL: Clayey SAND: fine to medium grained; brown; trace gravels.				
			0.50						FILL: SAND: fine to medium grained; pale grey; trace sandstone gravels.				
			0.5						Hole Terminated at 0.50 m				0.50: Pushtube refusal.

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B-H209-BH217-NORTH-CURL.GPJ --DrawingFile-- 12/08/2019 11:38 8.30.004 D:\git\Lab and in Silu Tool - DGD \Lib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH213	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282167	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	Ø100 mm x 0.30 m depth	NORTHING	-33.759298	ASPECT	East	SLOPE	0

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	H	Not Encountered	0.15 0.20		P7215/213/0.15-0.3/S/1 D 0.15 m			S S	CONCRETE. FILL: SAND: fine to medium grained; pale grey; trace gravels. FILL: Silty Clayey SAND: fine to medium grained; dark brown; trace gravels.				PAVEMENT FILL
			0.30						Hole Terminated at 0.30 m				0.30: Pushtube refusal.
			0.5										
			1.0										
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH214	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282282	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.40 m depth	NORTHING	-33.759172	ASPECT	East	SLOPE	0

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	H	Not Encountered	0.18		P7215/214/0.2-0.4/S/1 D 0.20 m			S	CONCRETE.				PAVEMENT
			0.30					S	FILL: SAND: fine to medium grained; orange-yellow; trace sandstone gravels.				FILL
			0.40					S	FILL: Silty Clayey SAND: fine to medium grained; dark brown; trace gravels.		D		
			0.5						Hole Terminated at 0.40 m				0.40: Pushtube refusal.

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log: MARTENS BOREHOLE: P1907215 B-H209-BH217-NORTH-CURL-CURL.GPJ --DrawingFile-- 12/08/2019 11:38 8:30:04 D:\glb\Lab and in Silu Tool - DGD \Lib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH215	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.28212	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.75 m depth	NORTHING	-33.759157	ASPECT	East	SLOPE	0

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT H	Not Encountered		0.20		P7215/215/0.2-0.5/S/1 D 0.20 m			CONCRETE.					PAVEMENT
			0.45		P7215/215/0.2-0.5/S/1 DUPE D 0.20 m			FILL: SAND: fine to medium grained; dark brown; trace gravels.				FILL	
			0.50		P7215/215/0.5-0.75/S/1 D 0.50 m			FILL: Clayey SAND: fine to medium grained; pale grey; with sandstone gravels.			D		
			0.65					FILL: SAND: fine to medium grained; pale brown; trace gravels.					
			0.75					Dark brown.					
			1.0					Hole Terminated at 0.75 m					0.75: Pushtube refusal.
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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**Engineering Log -
BOREHOLE**

CLIENT	The Anglican School's Corporation	COMMENCED	18/07/2019	COMPLETED	18/07/2019	REF BH216	
PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.282052	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	ø100 mm x 0.40 m depth	NORTHING	-33.758969	ASPECT	East	SLOPE	<2%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT		Not Encountered		0.25	P7215/216/0.25-0.4/S/1 D 0.25 m				CONCRETE.				PAVEMENT
H				0.40				S	FILL: SAND: fine to medium grained; dark orange-brown; trace sandstone gravels.		D		FILL
			0.5						Hole Terminated at 0.40 m				0.40: Pushtube refusal.

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS 2.00 LIB.GLB Log MARTENS BOREHOLE P1907215 B-H209-BH217-NORTH CURL CURL.GPJ --DrawingFile-- 12/08/2019 11:38 8.30.004 D:\git\Lab and in Silu Tool - DGD\ Lib: Martens 2.00 2016-11-13 Proj: Martens 2.00 2016-11-13



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**Engineering Log -
BOREHOLE**

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PROJECT	Preliminary Geotechnical Assessment	LOGGED	WX	CHECKED		Sheet 1 OF 1	
SITE	224 Headland Rd, North Curl Curl, NSW	GEOLOGY	Hawkesbury Sandstone	VEGETATION	None	PROJECT NO. P1907215	
EQUIPMENT	Hand Auger	EASTING	151.2821	RL SURFACE	m	DATUM	AHD
EXCAVATION DIMENSIONS	Ø100 mm x 0.95 m depth	NORTHING	-33.758802	ASPECT	East	SLOPE	<2%

Drilling			Sampling			Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	H	Not Encountered	0.30						CONCRETE.				PAVEMENT
			0.40		P7215/217/0.4-0.6/S/1 D 0.40 m			S	FILL: SANDSTONE: fine to medium grained; pale grey; very low to low strength; distinctly weathered.				FILL
			0.5		P7215/217/0.7-0.9/S/1 D 0.70 m			S	FILL: SAND: fine to medium grained; orange-yellow; trace sandstone gravels.			D	
			0.95										
			1.0						Hole Terminated at 0.95 m				0.95: Pushtube refusal.
			1.5										
			2.0										
			2.5										
			3.0										
			3.5										

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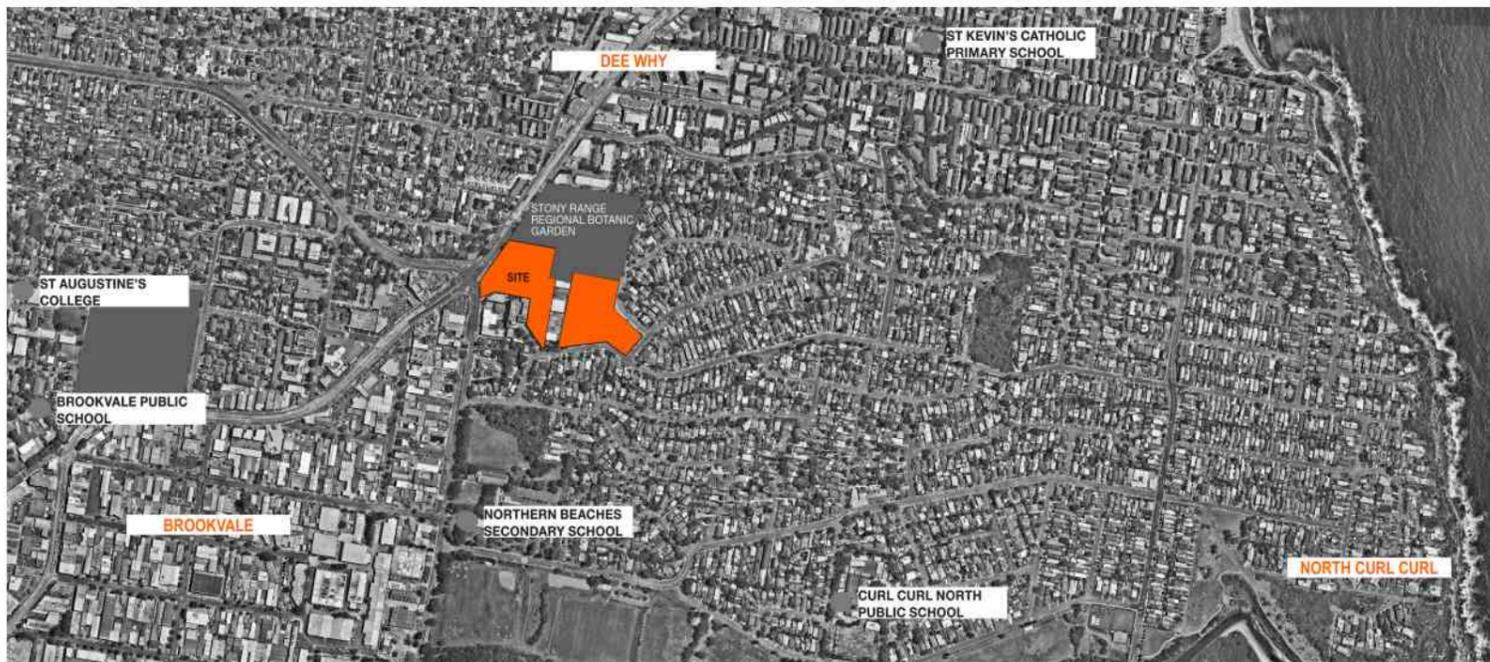
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**Engineering Log -
BOREHOLE**

13 Attachment C – Proposed Development Plans

ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS

224 HEADLAND RD AND 800 PITTWATER RD DEE WHY



DRAWING LIST		Scale @ A1
A 000 GENERAL INFORMATION		
A-000	COVER PAGE	1:1000
A-001	LEGEND	
A-002	SITE PLAN	1:500
A-003	STAGING OVERVIEW	1:500
A-004	SIGNAGE PLAN	1:500, 1:200
A 010 EXISTING PLANS + ELEVATIONS - 224 HEADLAND RD		
A-010	LEVEL 0 EXISTING PLAN_224	1:200
A-011	LEVEL 1 EXISTING PLAN_224	1:200
A-012	EXISTING ROOF PLAN_224	1:200
A-013	EXISTING ELEVATIONS_224	1:200
A 020 EXISTING PLANS + ELEVATIONS - 800 PITTWATER RD		
A-020	LEVEL 0 EXISTING PLAN_800	1:200
A-021	LEVEL 1 EXISTING PLAN_800	1:200
A-022	LEVEL 2 EXISTING PLAN_800	1:200
A-023	LEVEL 3 EXISTING PLAN_800	1:200
A-024	LEVEL 4 EXISTING PLAN_800	1:200
A-025	EXISTING ELEVATIONS_1_800	1:200
A-026	EXISTING ELEVATIONS_2_800	1:200
A 030 DEMOLITION PLANS + ELEVATIONS - 800 PITTWATER RD		
A-030	LEVEL 0 DEMOLITION PLAN_800	1:200
A-031	LEVEL 1 DEMOLITION PLAN_800	1:200
A-032	LEVEL 2 DEMOLITION PLAN_800	1:200
A-033	LEVEL 3 DEMOLITION PLAN_800	1:200
A-034	LEVEL 4 DEMOLITION PLAN_800	1:200
A-035	WEST + NORTH DEMOLITION ELEVATIONS_800	1:200
A-036	EAST + SOUTH DEMOLITION ELEVATIONS_800	1:200
A 040 DEMOLITION PLANS + ELEVATIONS - 224 HEADLAND RD		
A-040	LEVEL 0 DEMOLITION PLAN_224	1:200
A-041	LEVEL 1 DEMOLITION PLAN_224	1:200
A-042	ROOF DEMOLITION PLAN_224	1:200
A-043	DEMOLITION ELEVATIONS - 224 HEADLAND ROAD	1:200
A 100 GENERAL ARRANGEMENT PLANS - 224 HEADLAND RD		
A-100	LEVEL 0 PLAN_224	1:200
A-101	LEVEL 1 PLAN_224	1:200
A-102	ROOF PLAN_224	1:200
A 110 GENERAL ARRANGEMENT PLANS - 800 PITTWATER RD		
A-110	LEVEL 0 PLAN - STAGE 2_800	1:200
A-111	LEVEL 1 PLAN - STAGE 2_800	1:200
A-112	LEVEL 2 PLAN - STAGE 2_800	1:200
A-113	LEVEL 3 PLAN - STAGE 2_800	1:200
A-114	LEVEL 4 PLAN - STAGE 2_800	1:200
A-115	LEVEL 5 PLAN - STAGE 2_800	1:200
A-116	LEVEL 0 PLAN - STAGE 3_800	1:200
A-117	LEVEL 1 PLAN - STAGE 3_800	1:200
A-118	LEVEL 2 PLAN - STAGE 3_800	1:200
A-119	LEVEL 3 PLAN - STAGE 3_800	1:200
A-120	LEVEL 4 PLAN - STAGE 3_800	1:200
A-121	LEVEL 5 PLAN - STAGE 3_800	1:200
A 200 ELEVATIONS - 224 HEADLAND RD		
A-200	ELEVATIONS_224	1:200
A 210 ELEVATIONS - 800 PITTWATER RD		
A-210	ELEVATIONS WEST + NORTH_800	1:200
A-211	ELEVATIONS EAST + SOUTH_800	1:200
A 300 SECTIONS - 224 HEADLAND RD		
A-300	SECTIONS_1_224	1:200
A 310 SECTIONS - 800 PITTWATER RD		
A-310	SECTIONS_1_800	1:200
A-311	SECTIONS_2_800	1:200
A-312	SECTIONS_3_800	1:200
A-313	TYPICAL WALL SECTIONS_800	1:50
A 400 SCHEDULES AND AREAS		
A-400	GFA +FSR CALCULATION_224	1:500
A-401	GFA +FSR CALCULATION_800	1:500
A-402	OPEN SPACE CALCULATION	1:500
A-403	ACCOMMODATION SCHEDULE_224	
A-404	ACCOMMODATION SCHEDULE - STAGE 2_800	
A-405	ACCOMMODATION SCHEDULE - STAGE 3_800	
A-406	CAR PARKING SCHEDULE	
A 500 SHADOW DIAGRAMS		
A-500	SHADOW DIAGRAMS - 21 JUNE	1:500
A-501	SHADOW DIAGRAMS - 21 JUNE	1:500
A-502	SHADOW DIAGRAMS - NEIGHBOURS	
A 600 VISUALIZATION		
A-600	MATERIALS SCHEDULE	
A-601	EXTERIOR PERSPECTIVE	
A-602	INTERIOR PERSPECTIVE	

DATE	REV	DESCRIPTION
29.OCT.2019	A	ISSUE FOR SDA

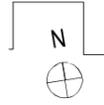
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PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl NSW 2099 PROJECT NO : 18032	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au	DRAWING TITLE GENERAL COVER PAGE SCALES AT A1 PHASE SSDA	DRAWING NO A-000	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A
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LEGEND

CODE	Description
BDY	Boundary
BIT	Bitumen
BKR	Bicycle racks
BM1	Balustrade, steel external
CFS	Concrete finish, steel trowel
CO	Concrete
CRA	Concrete Ramp
CRP	Render, cement, paint finish
CS	Stair, concrete
CW	Curtain Wall, glazed
FN2	Fence, vertical timber slats
FN3	Fence, steel verticals
FN4	Noise barrier wall
FN5	Metal mesh wall
FNG	Fence gate
GD1	Garage door, metal
GD2	Garage glass tilt door
GLO	Louvre, glass, operable
LCK	Lockers
MECH	Mechanical plant on steel platform
MF	Metal flashing
MLF	Louvre, metal, fixed
MR1	Metal roof, kliplock
MW2	Window, aluminium framed
PC	Pavers, concrete
PG	Pergola, timber
PLB	Planter box
PV	Photovoltaic cells
RD	Roller Door
SKY	Skylight
XBIT	Existing bitumen
XBM3	Existing balustrade, metal pipe
XCFS	Existing concrete finish, steel trowel
XCP2	Existing concrete, precast, paint finish
XCR	Existing concrete roof
XCRP	Existing render, cement, paint finish
XCTF	Existing ceramic tiles, floor
XDP	Existing down pipe
XFN1	Existing fence, reed screen
XMECH	Existing mechanical platform
XMLF	Existing louvre, metal, fixed
XMR1	Existing metal roof, kliplock
XMW2	Existing window, aluminium framed
XPLB	Existing planter box
XRD	Existing roller door
XSGR	Existing synthetic grass
XSTT	Existing stone tile
XWSE	Existing waterproofing system, external

DATE 29/OCT/2019	REV A	DESCRIPTION: ISSUE FOR SDA	NOTES: Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd, and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.		PROJECT : ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pitwater Road + 224 Hoedland Road Dee Why NSW 2099 North Curl Curl NSW 2099 PROJECT NO : 18032	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au		DRAWING TITLE GENERAL LEGEND SCALES AT A1 PHASE SSDA	DRAWING NO A-001	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A
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SITE PLAN LEGEND	
	PEDESTRIAN ENTRY
	VEHICULAR ENTRY / EXIT
	HERITAGE ITEM
	SUBSTATION
	BUS STOP

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

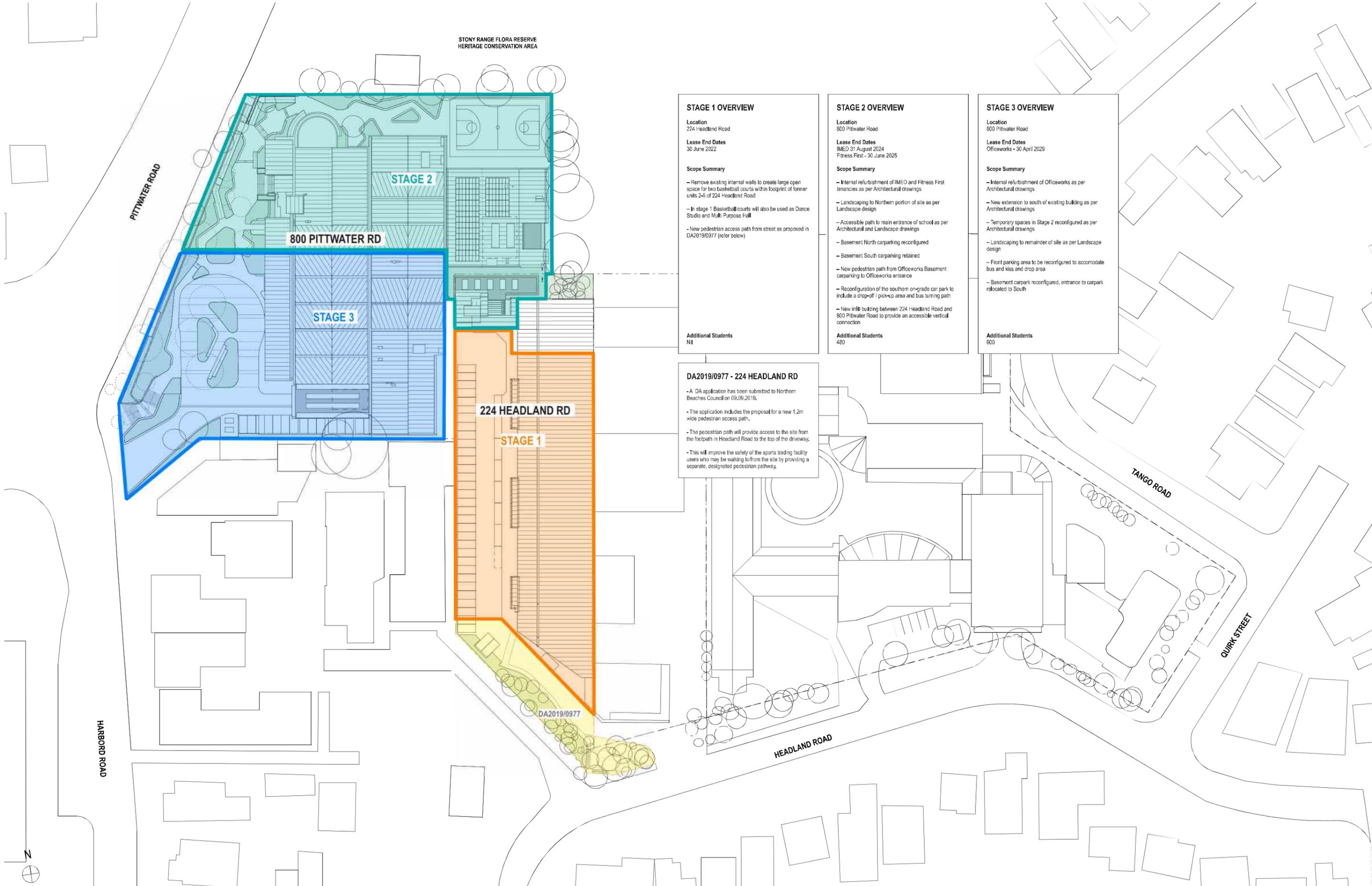
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PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

ARCHITECT
TONKIN ZULAIKHA GREER ARCHITECTS
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 F: (02) 9215 4901
 EMAIL: info@tzg.com.au
 WEB: www.tzg.com.au

DRAWING TITLE
 GENERAL
SITE PLAN
 SCALES AT A1
 PHASE
 SDA

DRAWING NO	REV	DRAWN BY	CHECKED	DATE
A-002	A	RM + CE + EG	PT	October 2019



STAGE 1 OVERVIEW

Location
224 Headland Road

Lease End Dates
30 June 2022

Scope Summary

- Remove existing internal walls to create large open space for two basketball courts within footprint of former units 2-6 of 224 Headland Road
- In stage 1 Basketball courts will also be used as Dance Studio and Multi Purpose Hall
- New pedestrian access path from street as proposed in DA2019/0977 (refer below)

Additional Students
Nil

STAGE 2 OVERVIEW

Location
800 Pittwater Road

Lease End Dates
IMED 31 August 2024
Fitness First - 30 June 2025

Scope Summary

- Internal refurbishment of IMED and Fitness First tenancies as per Architectural drawings
- Landscaping to Northern portion of site as per Landscape design
- Accessible path to main entrance of school as per Architectural and Landscape drawings
- Basement North carparking reconfigured
- Basement South carparking retained
- New pedestrian path from Officeworks Basement carparking to Officeworks entrance
- Reconfiguration of the southern on-grade car park to include a drop-off / pick-up area and bus turning path
- New infill building between 224 Headland Road and 800 Pittwater Road to provide an accessible vertical connection

Additional Students
480

STAGE 3 OVERVIEW

Location
800 Pittwater Road

Lease End Dates
Officeworks - 30 April 2029

Scope Summary

- Internal refurbishment of Officeworks as per Architectural drawings
- New extension to south of existing building as per Architectural drawings
- Temporary spaces in Stage 2 reconfigured as per Architectural drawings
- Landscaping to remainder of site as per Landscape design
- Front parking area to be reconfigured to accommodate bus and kiss and drop area
- Basement carpark reconfigured, entrance to carpark relocated to South

Additional Students
600

DA2019/0977 - 224 HEADLAND RD

- A DA application has been submitted to Northern Beaches Council on 09.09.2019.
- The application includes the proposal for a new 1.2m wide pedestrian access path.
- The pedestrian path will provide access to the site from the footpath in Headland Road to the top of the driveway.
- This will improve the safety of the sports trading facility users who may be walking to/from the site by providing a separate, designated pedestrian pathway.

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA

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PROJECT : ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099 PROJECT NO : 18032		ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au		DRAWING TITLE GENERAL STAGING OVERVIEW SCALES AT A1 1:500 PHASE SSDA		DRAWING NO A-003		DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A	
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4700

ST LUKE'S GRAMMAR SCHOOL

230

1 SIGNAGE TYPE 1

2670



3400

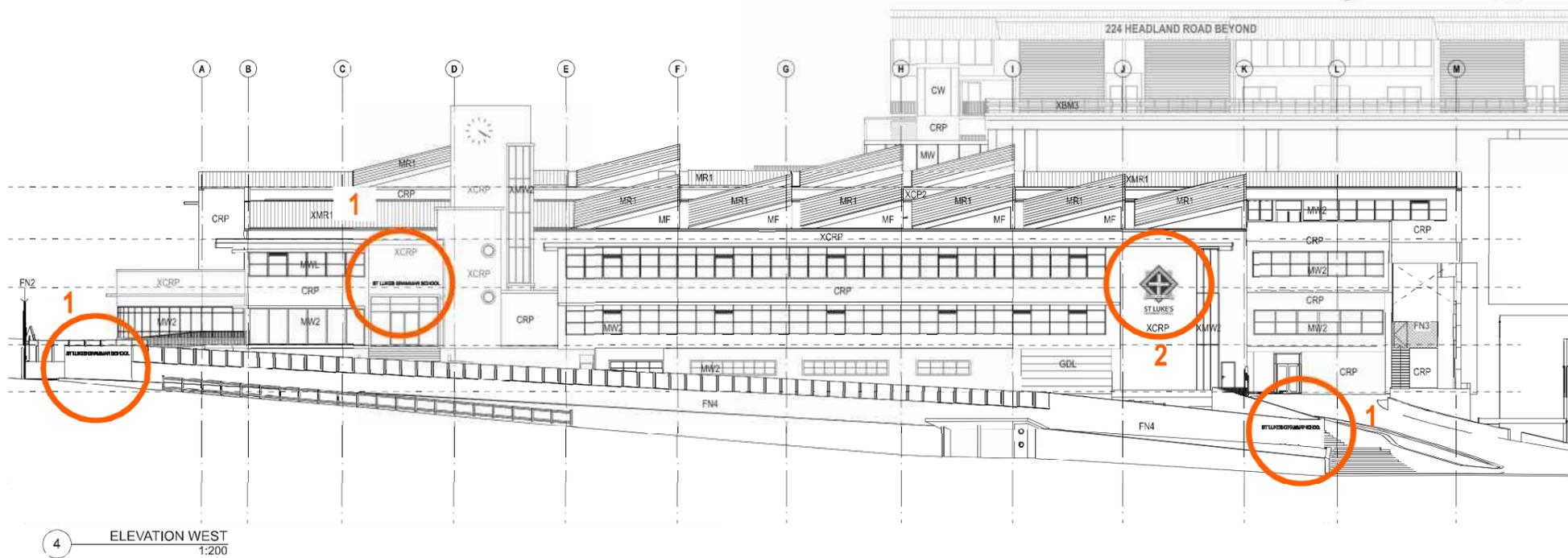
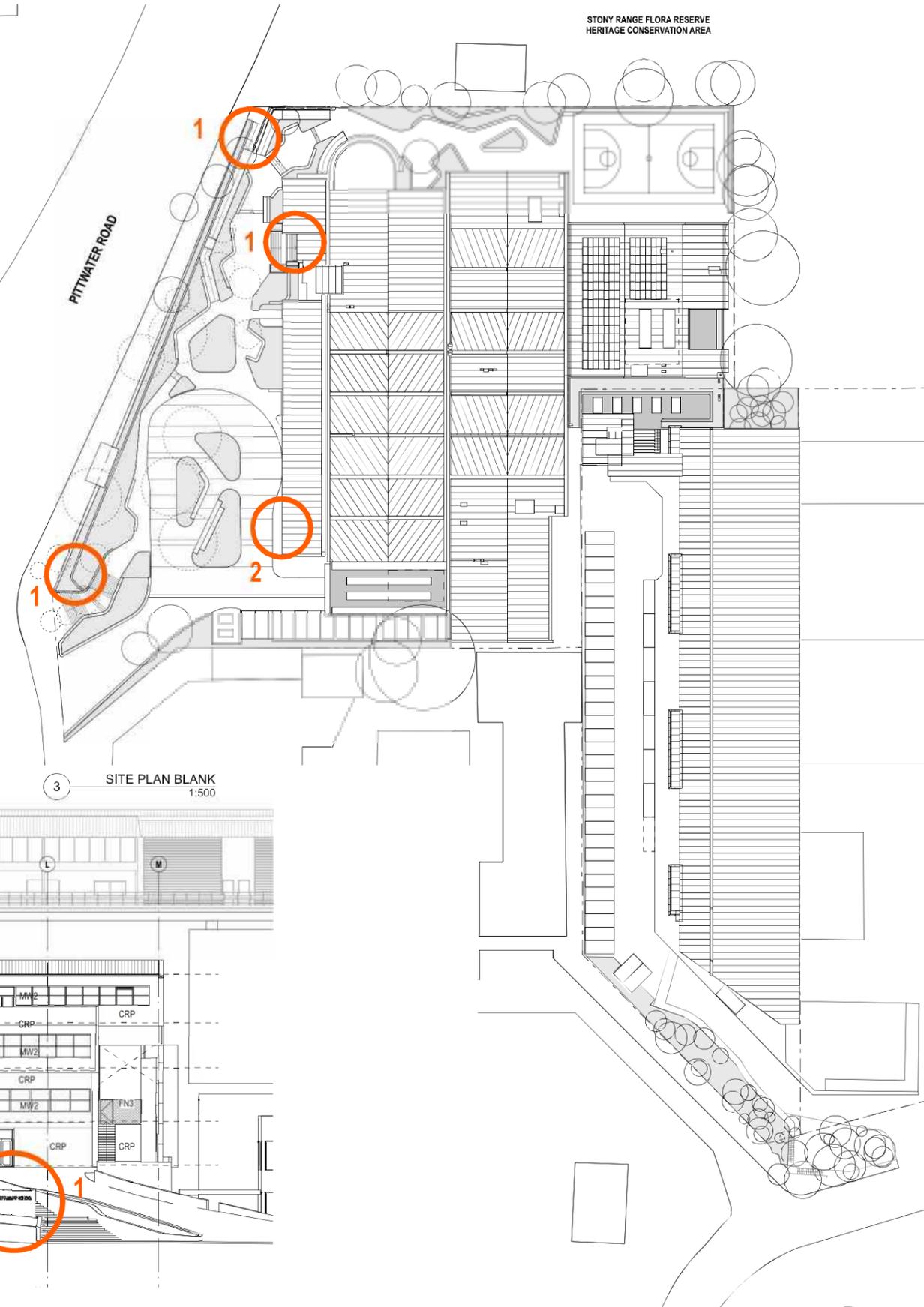
SIGNAGE TYPE 1

Individual metal letters, brass finish
Mounted to wall behind

SIGNAGE TYPE 2

Profiled metal sign, brass finish
Mounted to wall behind

2 SIGNAGE TYPE 2



DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA

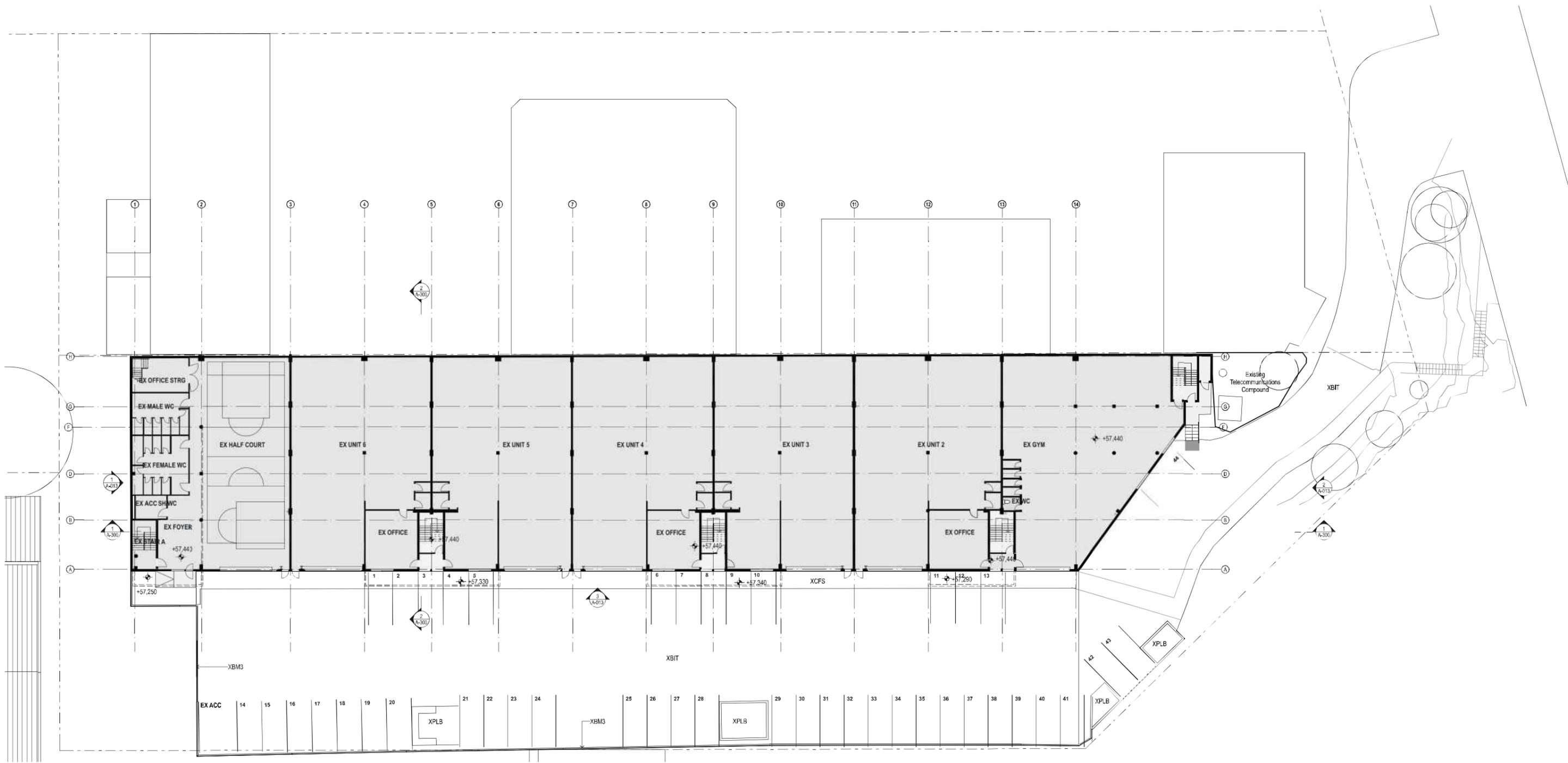
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PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
800 Pittwater Road + 224 Headland Road
Dee Why NSW 2099 North Curl Curl NSW 2099
PROJECT NO: 18032

ARCHITECT
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EMAIL: info@tzg.com.au
WEB: www.tzg.com.au

DRAWING TITLE
800 PITWATER ROAD
SIGNAGE PLAN
SCALES AT A1
1:500, 1:200
PHASE
SSDA
DRAWING NO
A-004

DRAWN BY
RM + CE + EG
CHECKED
PT
DATE
October 2019
REV
A



DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

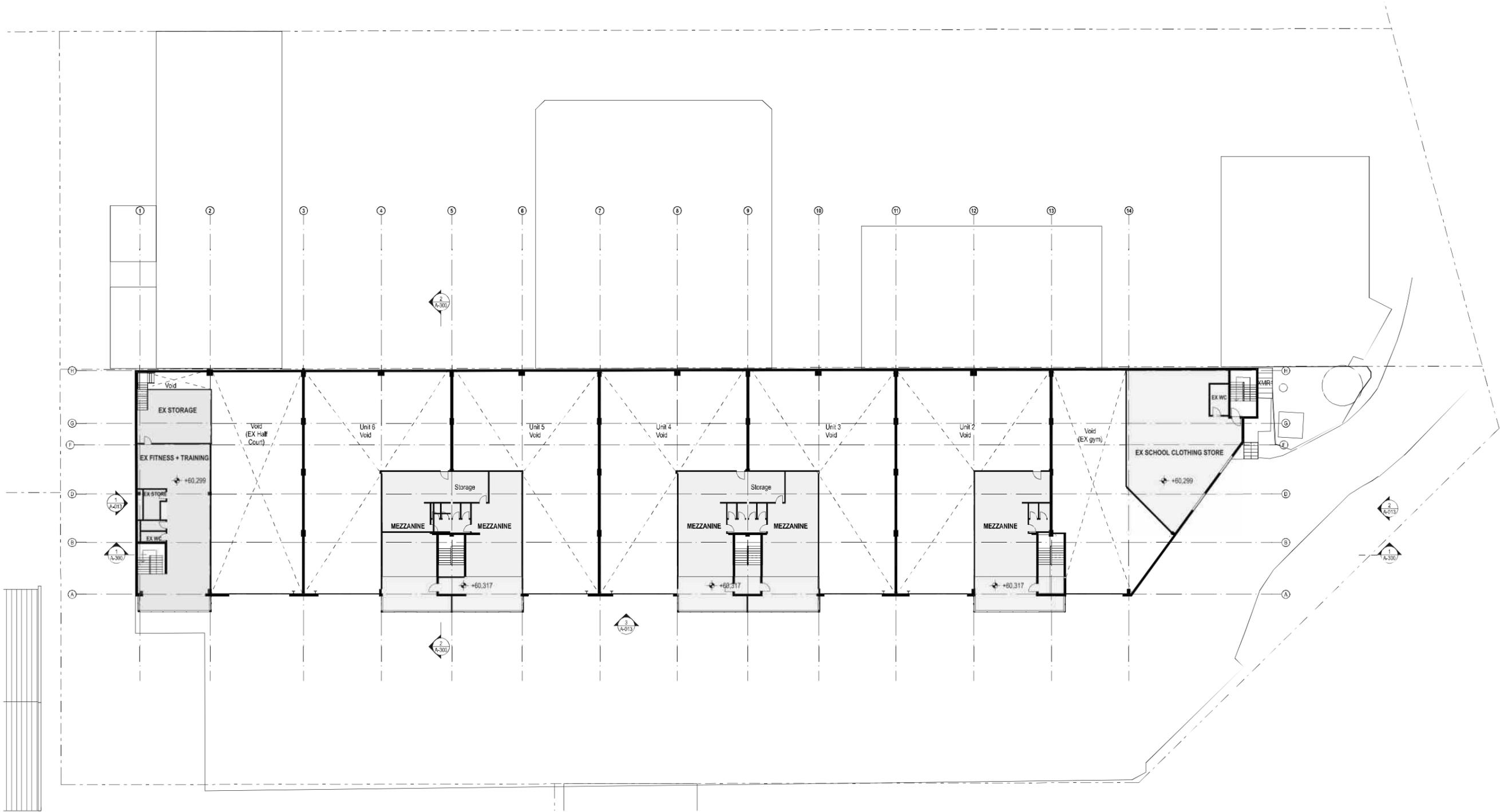
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APPLICANT:
 ST LUKE'S GRAMMAR SCHOOL
 Mrs. Jane Hughes (Business Manager)
 210 Headland Road
 Dee Why NSW 2099

PROJECT:
 ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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 EMAIL: info@tjg.com.au
 WEB: www.tjg.com.au

DRAWING TITLE		DRAWN BY	
224 HEADLAND ROAD LEVEL 0 EXISTING PLAN_224		RM + CE + EG	
SCALES AT A1		CHECKED	PT
PHASE SSDA		DATE October 2019	REV A
DRAWING NO	1:200	REV	A
A-010			



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29/OCT/2019	A	ISSUE FOR SDA

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 Mrs Jane Hughes (Business Manager)
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 Dee Why NSW 2099

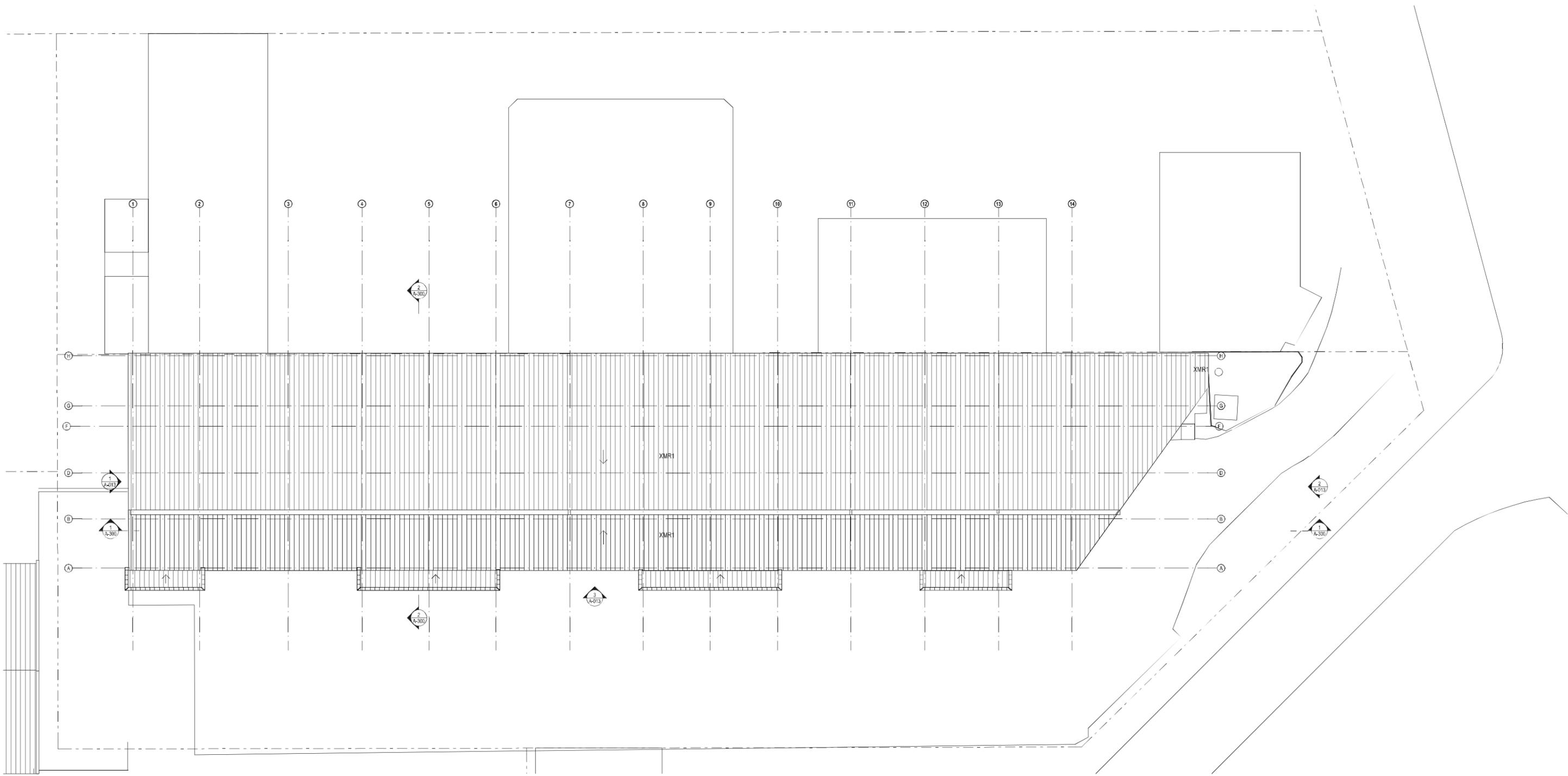
PROJECT:
 ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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 EMAIL: info@tզg.com.au
 WEB: www.tզg.com.au

DRAWING TITLE
 224 HEADLAND ROAD
 LEVEL 1 EXISTING PLAN_224
SCALES AT A1
 PHASE SDA

DRAWN BY
 RM + CE + EG
CHECKED
 PT
DATE
 October 2019
REV
 A

1:200
DRAWING NO
A-011



DATE	REV	DESCRIPTION:
29/OCT/2019	A	ISSUE FOR SDA

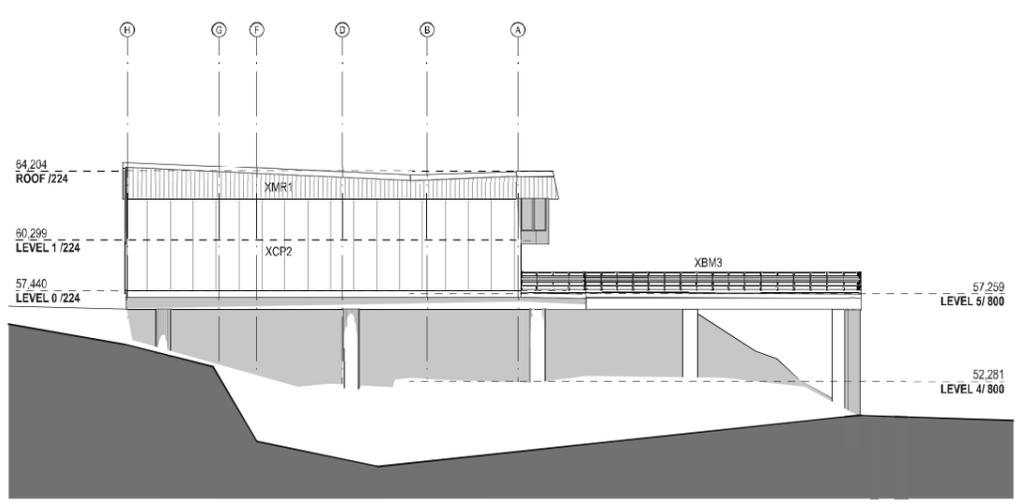
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 Mrs Jane Hughes (Business Manager)
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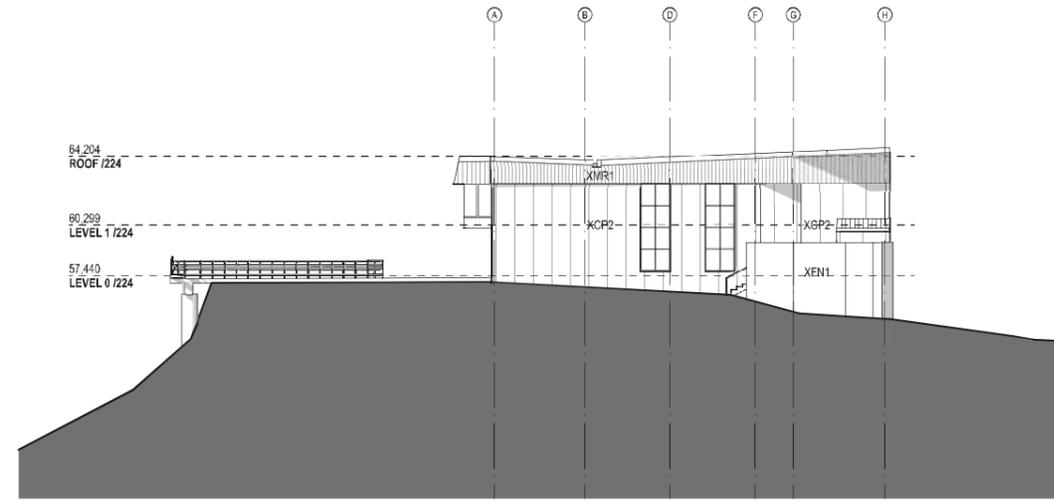
PROJECT:
 ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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 WEB: www.tzig.com.au

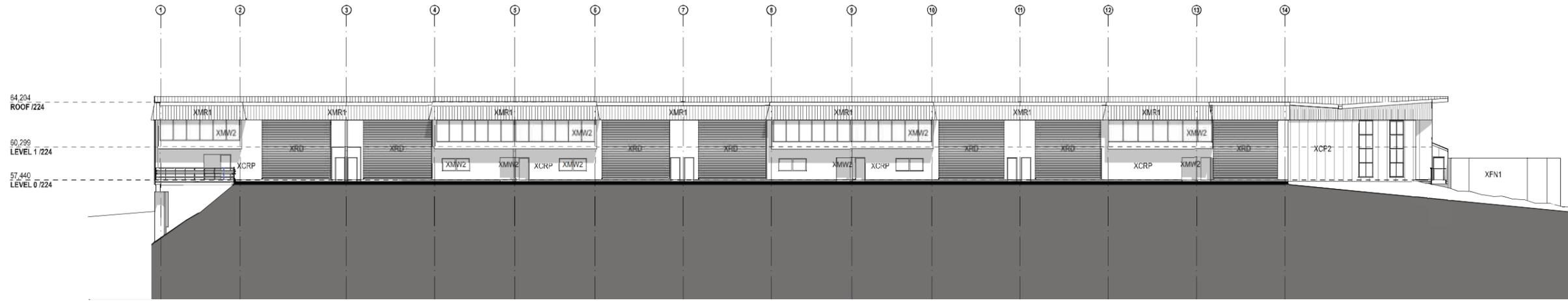
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224 HEADLAND ROAD EXISTING ROOF PLAN_224		RM + CE + EG	
SCALES AT A1		CHECKED	PT
PHASE SSDA		DATE	October 2019
DRAWING NO	1:200	REV	A
A-012			



1 EXISTING NORTH ELEVATION
1:200

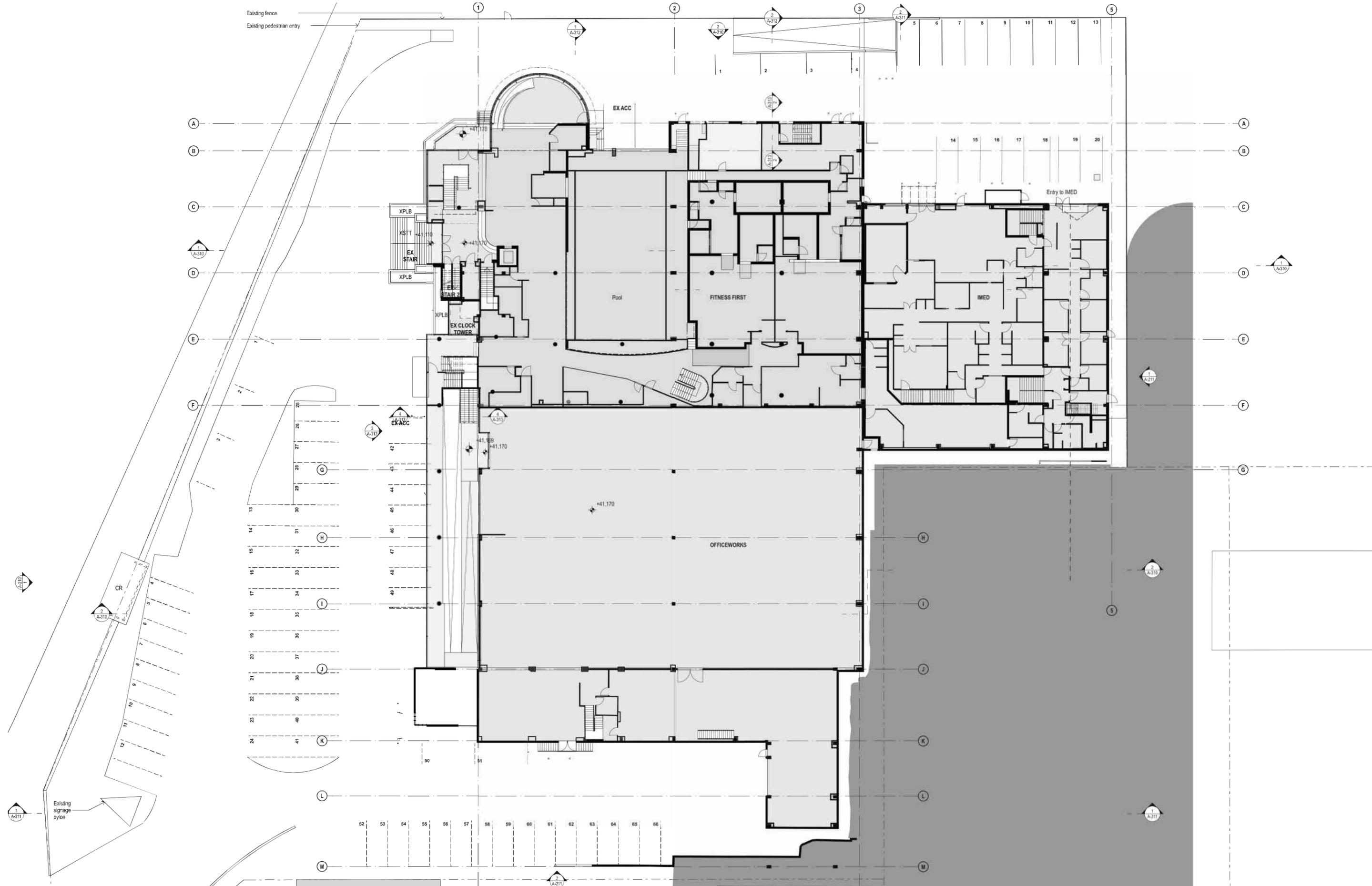


2 EXISTING SOUTH ELEVATION
1:200



3 EXISTING WEST ELEVATION
1:200

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							DRAWING NO A-013	



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PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road, 224 Headland Road, Dee Why NSW 2099, North Curl Curl NSW 2099
 PROJECT NO : 18032

ARCHITECT
TONKIN ZULAIKHA GREER ARCHITECTS
 117 Reservoir Street, ABN: 4600272349, P: (02) 9215 4900, F: (02) 9215 4901, EMAIL: info@tzg.com.au, WEB: www.tzg.com.au

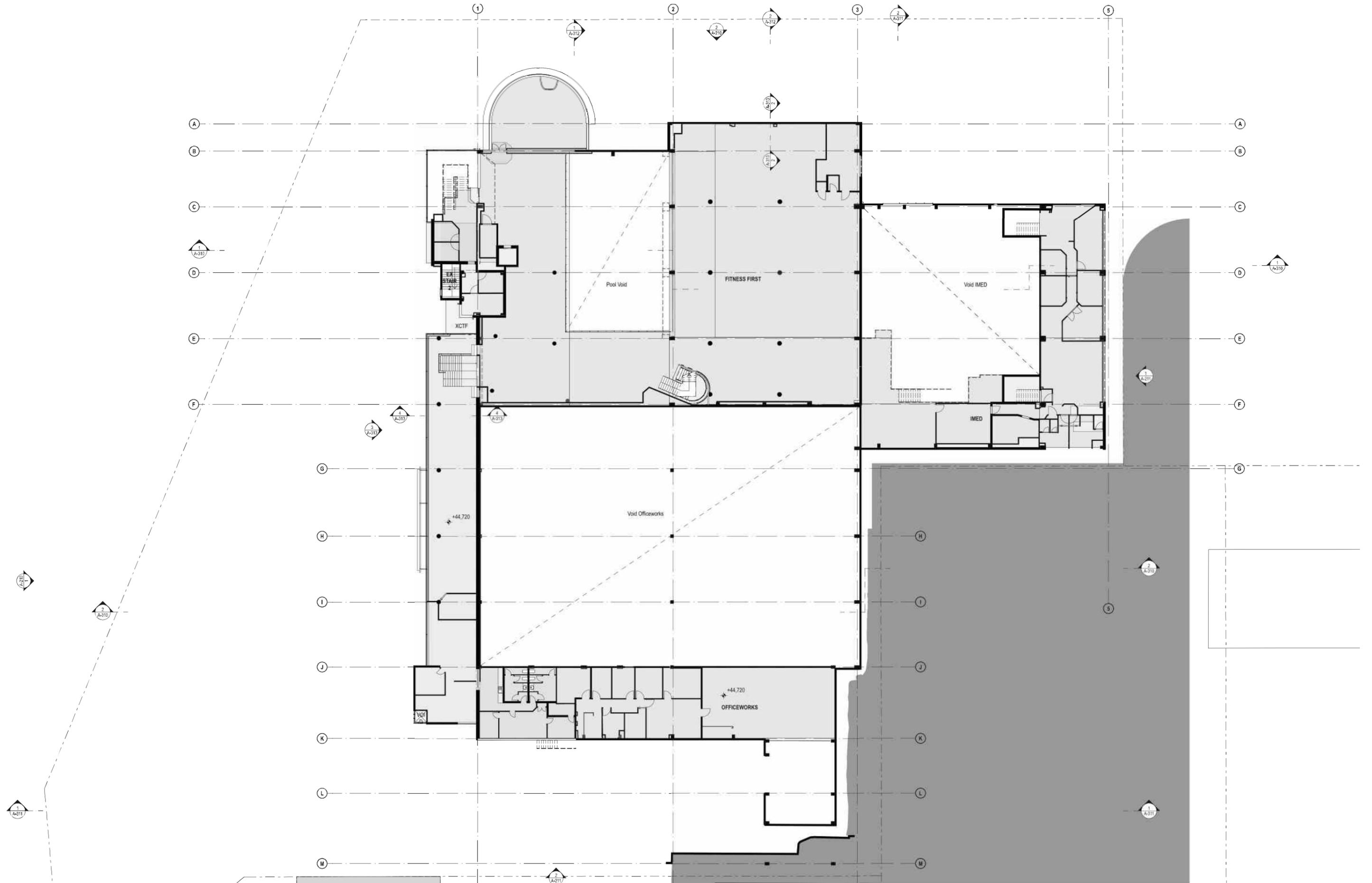
DRAWING TITLE
LEVEL 1 EXISTING PLAN_800

SCALE AT A1

PHASE
 SDA

DRAWING NO
A-021

DRAWN BY	CHECKED	DATE	REV
RM + CE + EG	PT	October 2019	A

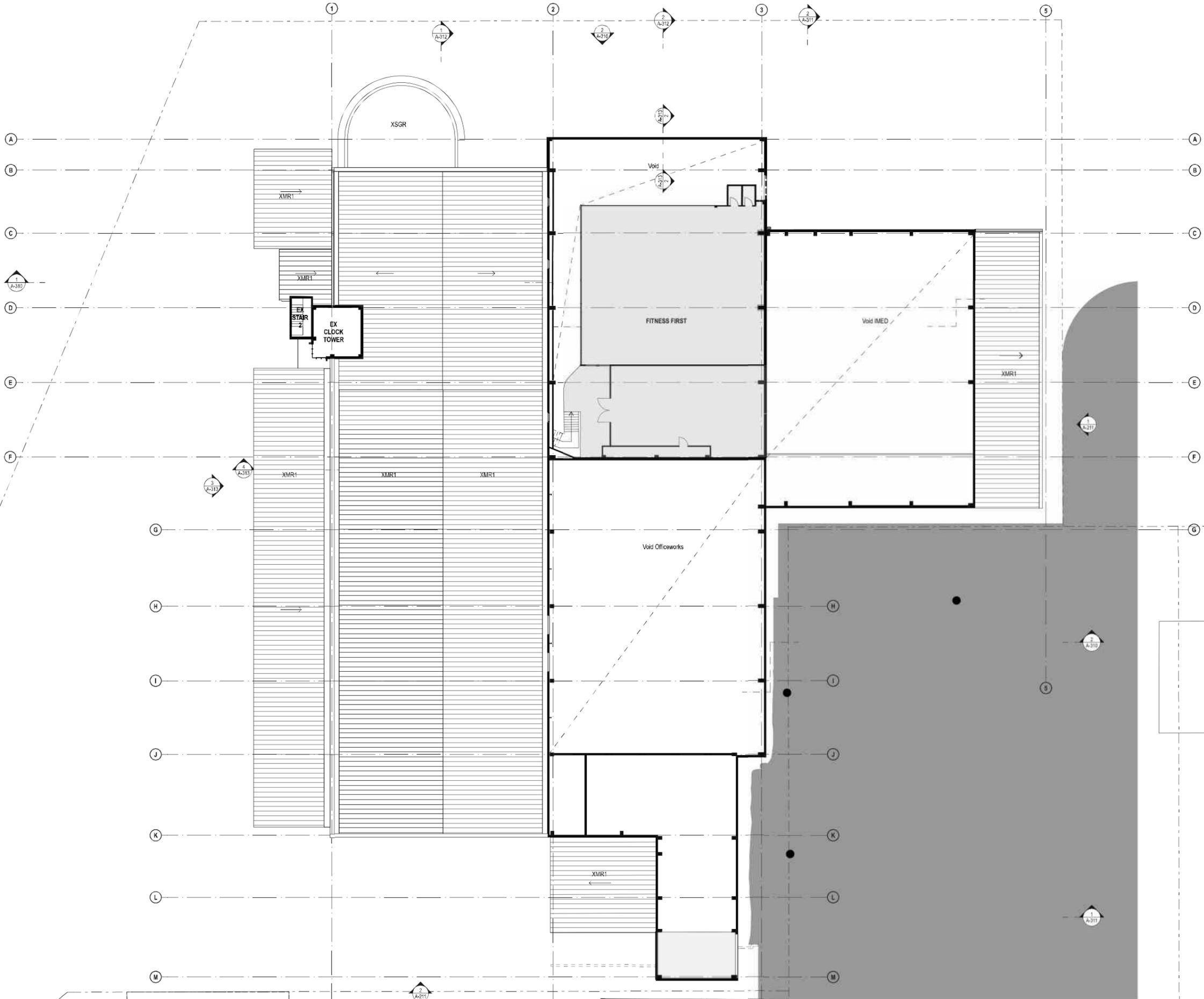


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800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099	PROJECT NO : 18032	SCALES AT A1	CHECKED PT
			DATE October 2019
			REV
			A

PHASE	DRAWING NO	SCALE	REV
SSDA	A-022	1:200	A



DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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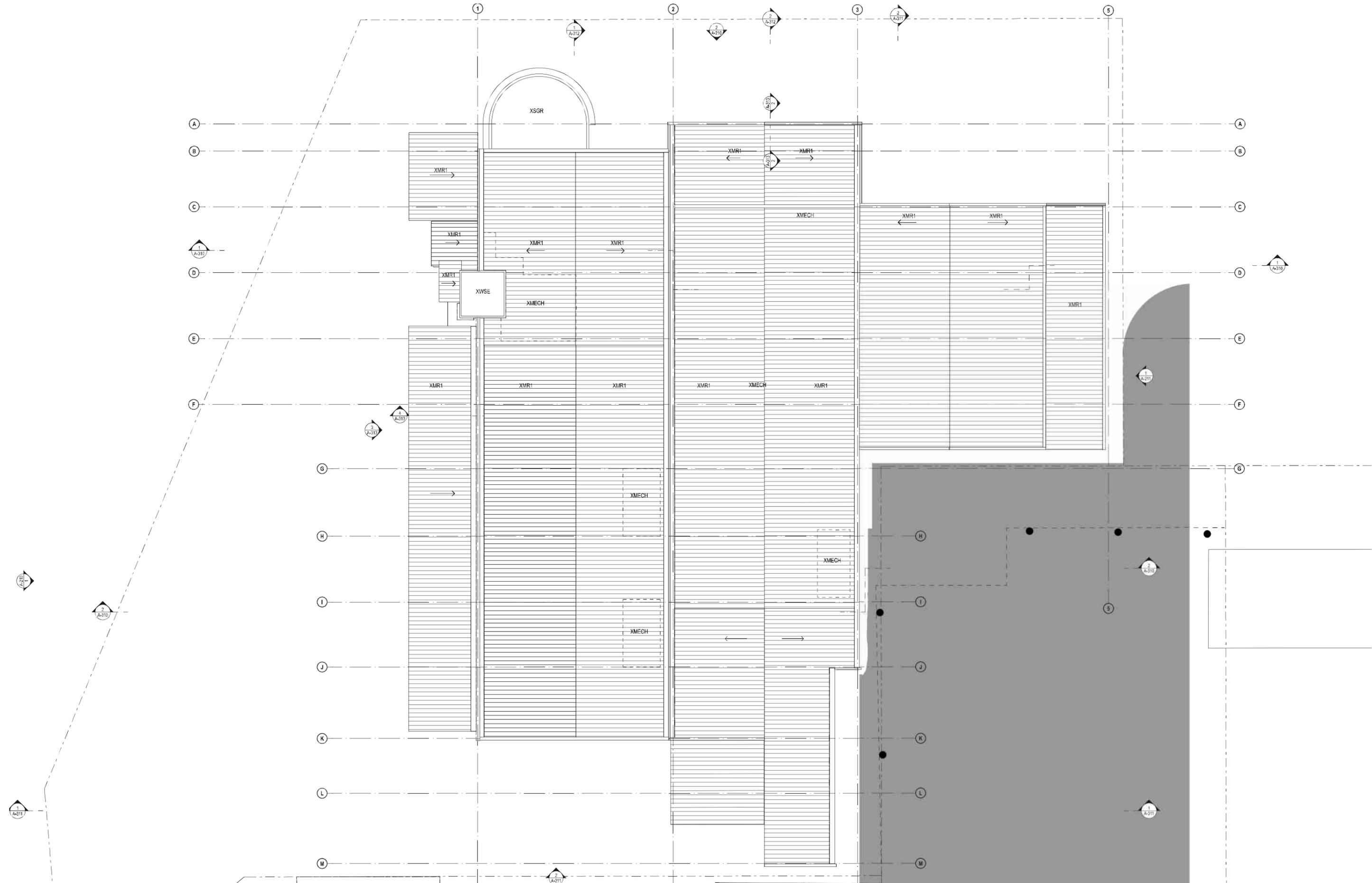
PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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 WEB: www.tzg.com.au

DRAWING TITLE
 800 PITTWATER ROAD
LEVEL 3 EXISTING PLAN_800

TONKIN ZULAIKHA GREER ARCHITECTS

SCALE AT A1	1:200	DATE	October 2019
PHASE	SSDA	DRAWING NO	A-023
DRAWN BY	RM + CE + EG	CHECKED	PT
REV	A	DATE	October 2019



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29/OCT/2019	A	ISSUE FOR SDA

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 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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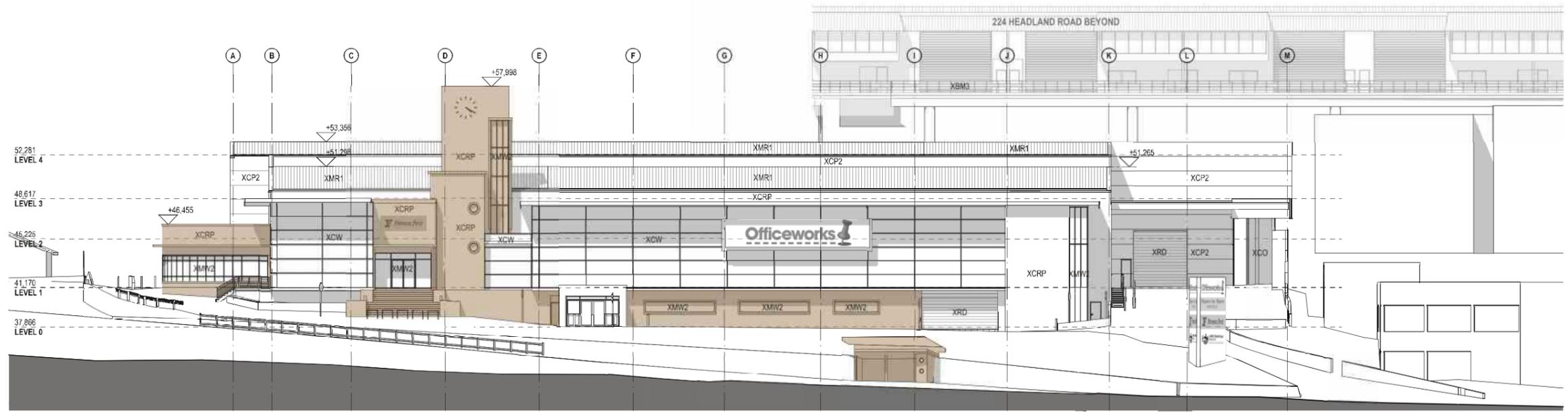
tonkin zulaikha greer architects
 GREEN REPERT

DRAWING TITLE
 800 PITTWATER ROAD
LEVEL 4 EXISTING PLAN_800
 SCALES AT A1
 PHASE
 SDA

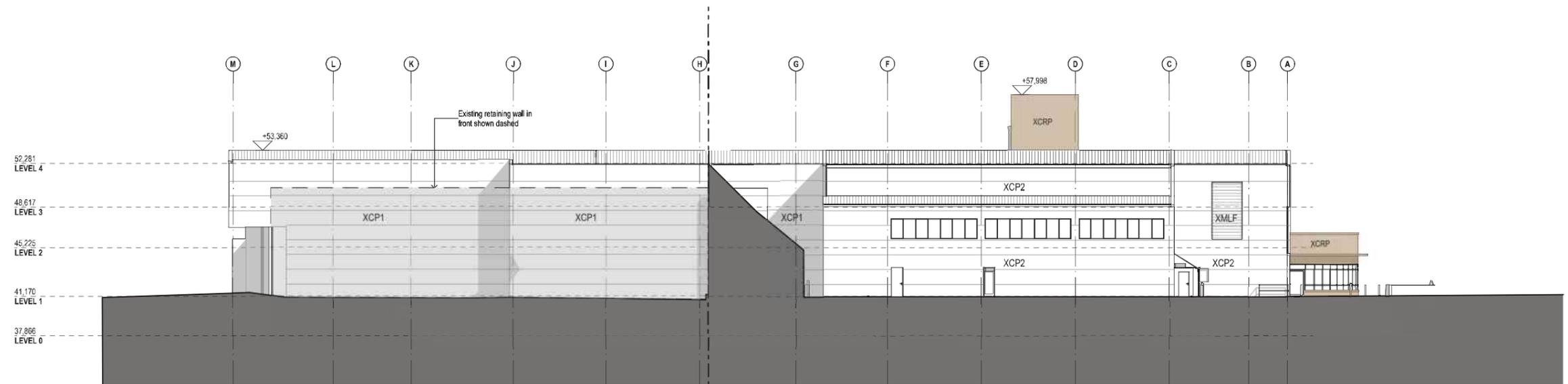
DRAWN BY
 RM + CE + EG
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 PT
 DATE
 October 2019
 REV
A

1:200

A-024



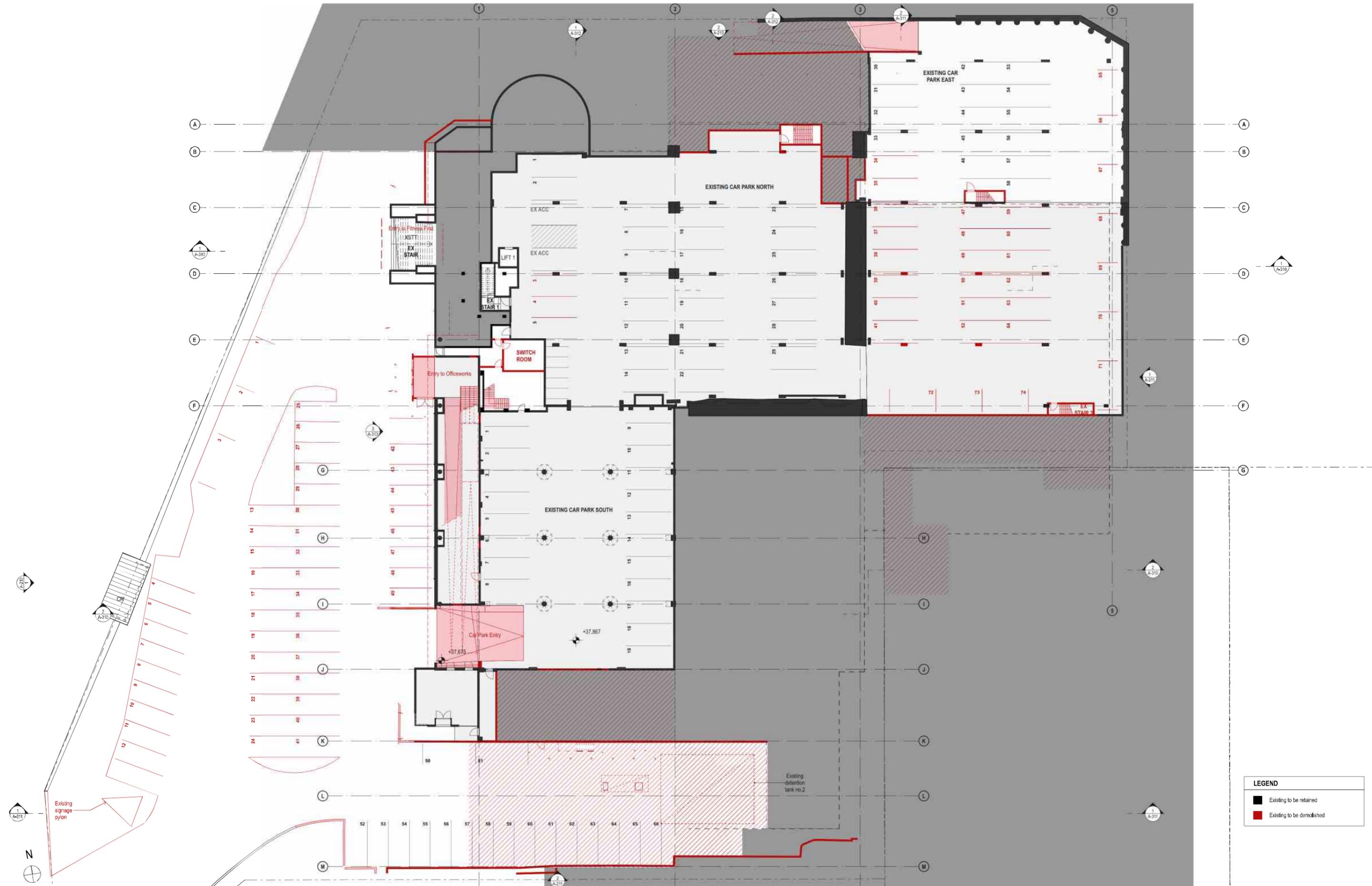
1 EXISTING ELEVATION WEST
1:200



2 EXISTING ELEVATION EAST
1:200

LEGEND	
	Existing, significant heritage item

DATE 29/OCT/2019	REV A	DESCRIPTION: ISSUE FOR SSDA	NOTES: Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd. and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road Dee Why NSW 2099	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au	DRAWING TITLE 800 PITTWATER ROAD EXISTING ELEVATIONS 1_800 SCALES AT A1 PHASE SSDA	DRAWING NO A-025	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A
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DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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PROJECT:	ARCHITECT:	DRAWING TITLE:	DRAWN BY:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au	800 PITTWATER ROAD LEVEL 0 DEMOLITION PLAN_800	RM + CE + EG
800 Pittwater Road Dee Why NSW 2099	224 Headland Road North Curl Curl NSW 2099	SCALES AT A1	CHECKED: PT
PROJECT NO: 18032		1:200	DATE: October 2019
		PHASE: SDA	REV: A
		DRAWING NO: A-030	

PROJECT:

ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS

800 Pittwater Road
Dee Why NSW 2099

PROJECT NO: 18032

ARCHITECT:

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F: (02) 9215 4901
EMAIL: info@tzg.com.au
WEB: www.tzg.com.au

DRAWING TITLE:

800 PITTWATER ROAD
LEVEL 0 DEMOLITION PLAN_800

SCALES AT A1

1:200

PHASE: SDA

DRAWING NO: A-030

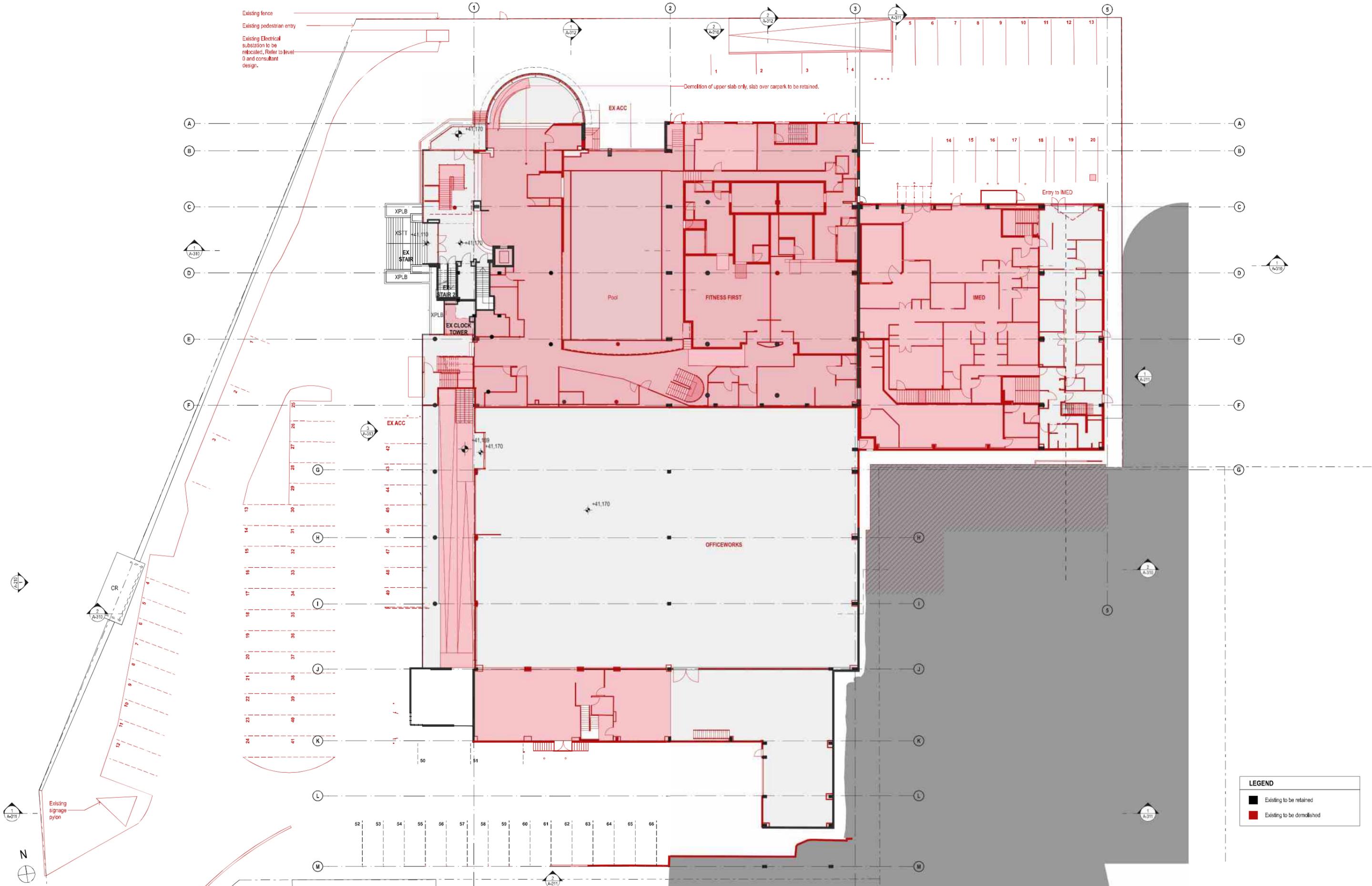
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RM + CE + EG

CHECKED: PT

DATE: October 2019

REV: A



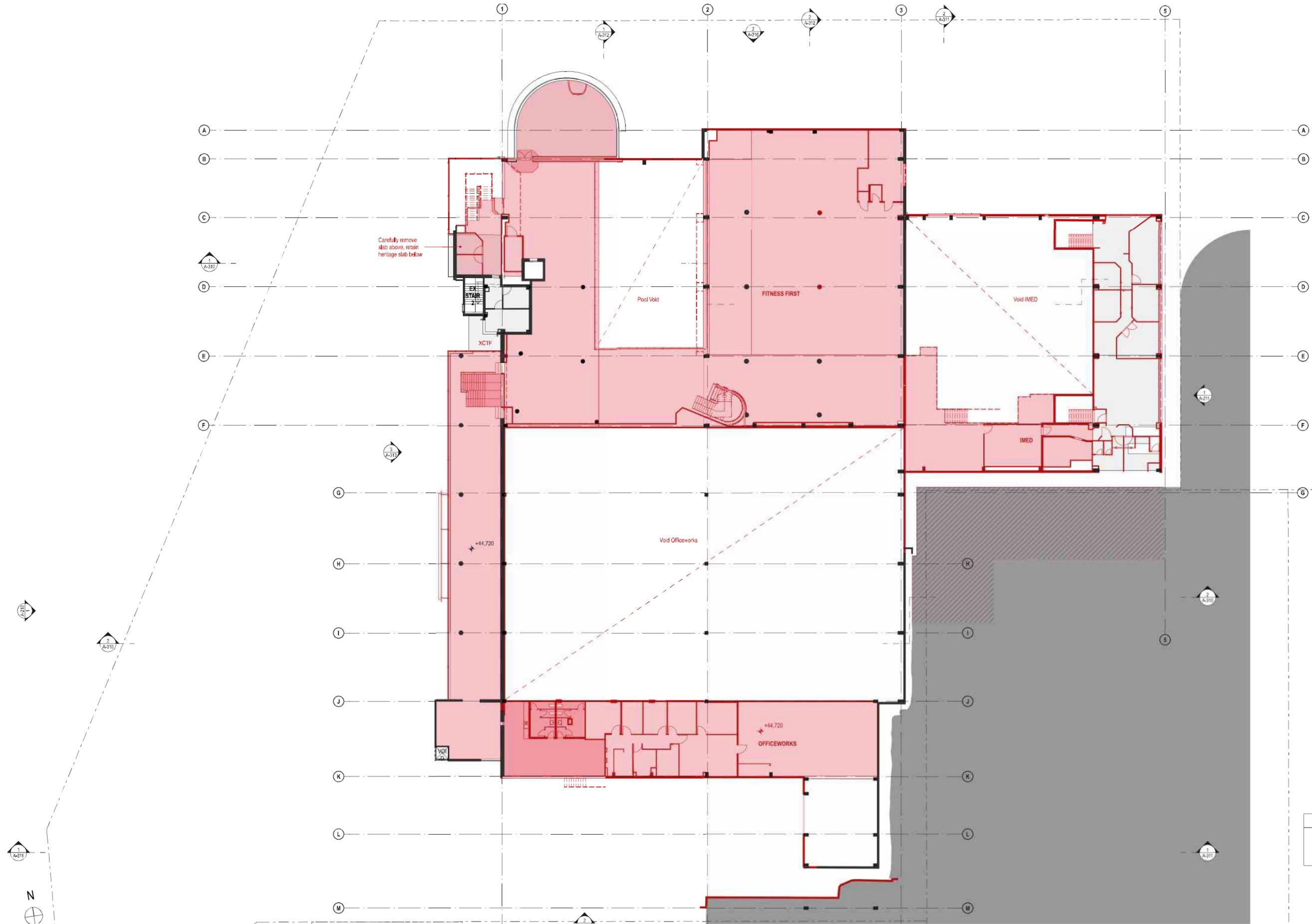
LEGEND	
	Existing to be retained
	Existing to be demolished

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA

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DRAWING TITLE:	800 PITTWATER ROAD LEVEL 1 DEMOLITION PLAN_800
SCALES AT A1:	1:200
PHASE:	SSDA
DRAWING NO:	A-031
DATE:	October 2019
REV:	A

PROJECT:	ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS	ARCHITECT:	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au	DRAWING TITLE:	800 PITTWATER ROAD LEVEL 1 DEMOLITION PLAN_800	DRAWN BY:	RM + CE + EG
ARCHITECT:	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au	DRAWING TITLE:	800 PITTWATER ROAD LEVEL 1 DEMOLITION PLAN_800	SCALES AT A1:	1:200	CHECKED:	PT
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PHASE:	SSDA	DRAWING NO:	A-031	DATE:	October 2019	REV:	A



LEGEND	
	Existing to be retained
	Existing to be demolished

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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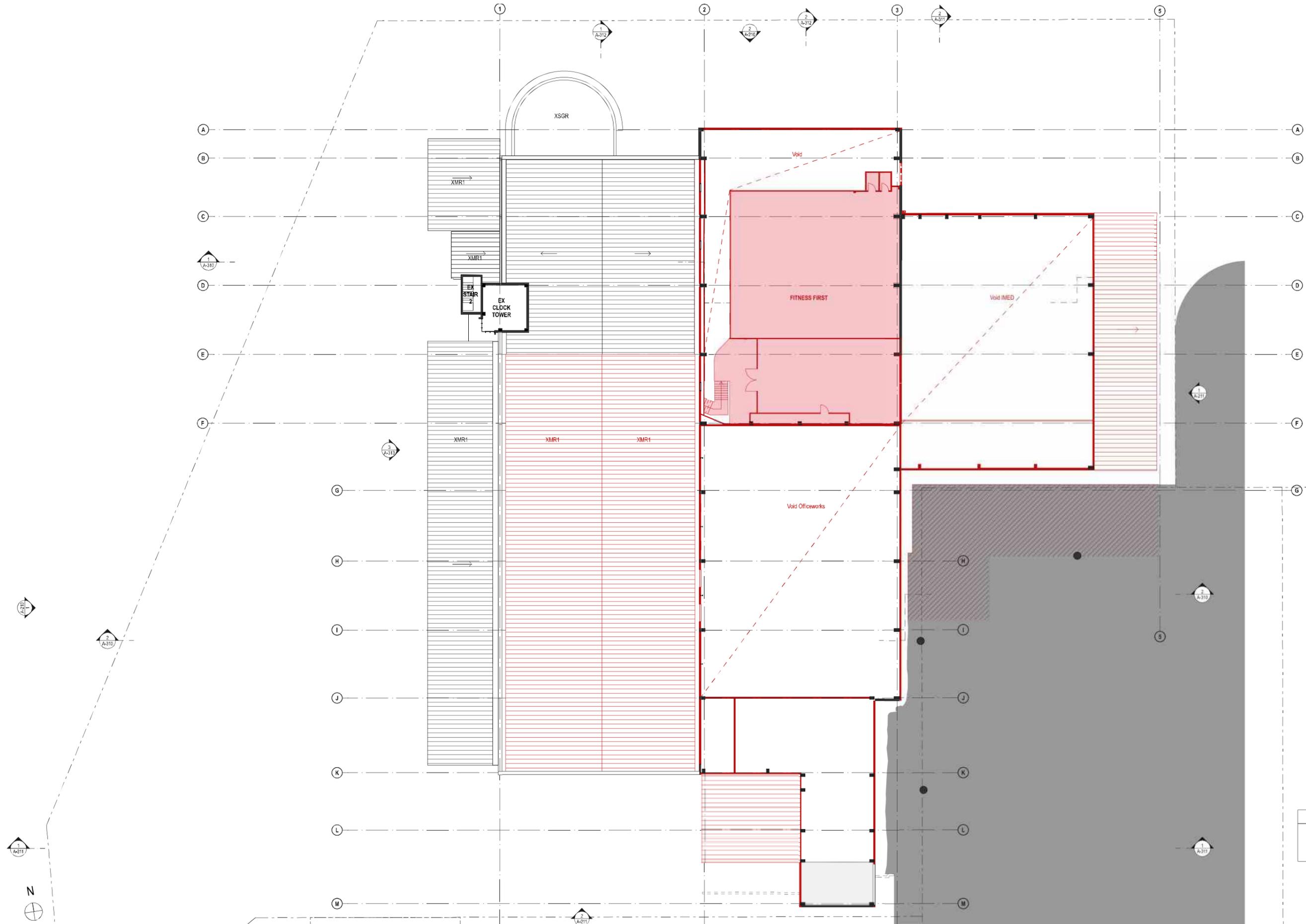
PROJECT :
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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DRAWING TITLE
 800 PITTWATER ROAD
LEVEL 2 DEMOLITION PLAN_800
 SCALES AT A1

PHASE SSDA	DRAWING NO A-032	DATE October 2019	REV A
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DRAWN BY
RM + CE + EG
 CHECKED
PT
 DATE
October 2019
 REV
A

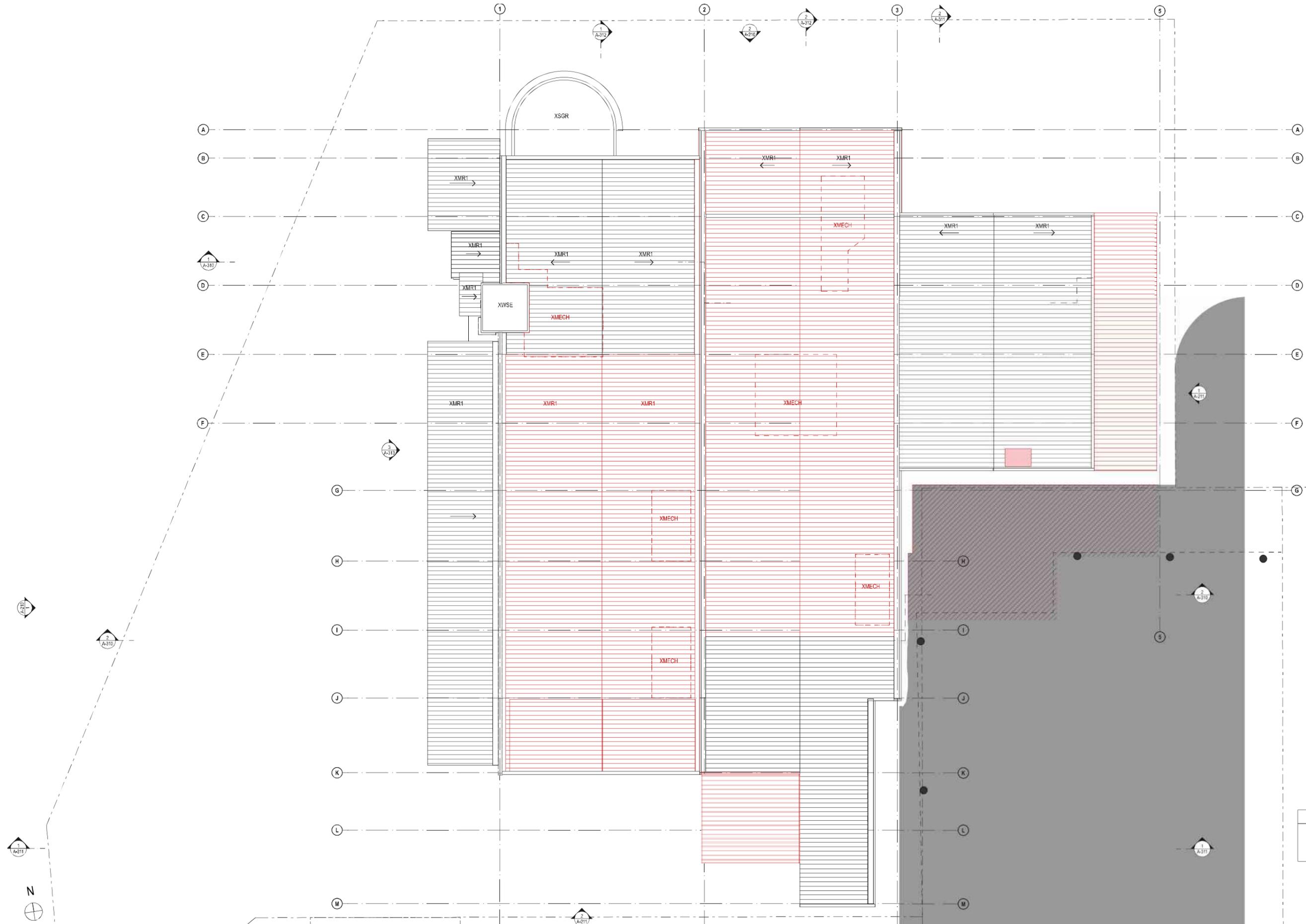


LEGEND	
	Existing to be retained
	Existing to be demolished

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS <small>800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099</small> PROJECT NO : 18032		ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS <small>117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au</small>		DRAWING TITLE 800 PITTWATER ROAD LEVEL 3 DEMOLITION PLAN_800 SCALES AT A1 PHASE SDA		DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A	
			1:200		DRAWING NO A-033		

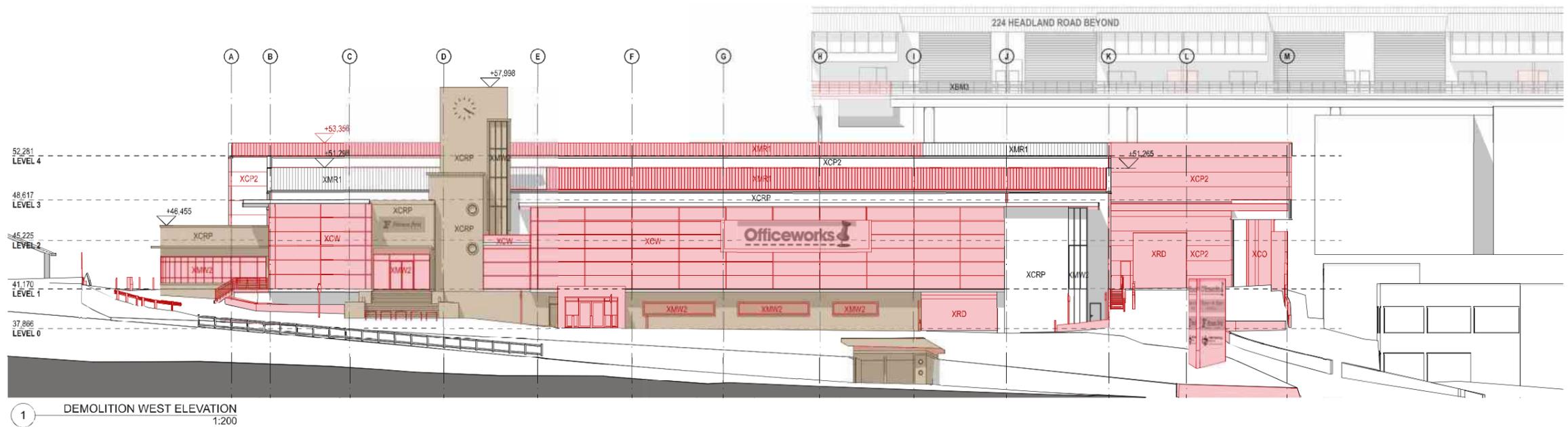


LEGEND	
■	Existing to be retained
■	Existing to be demolished

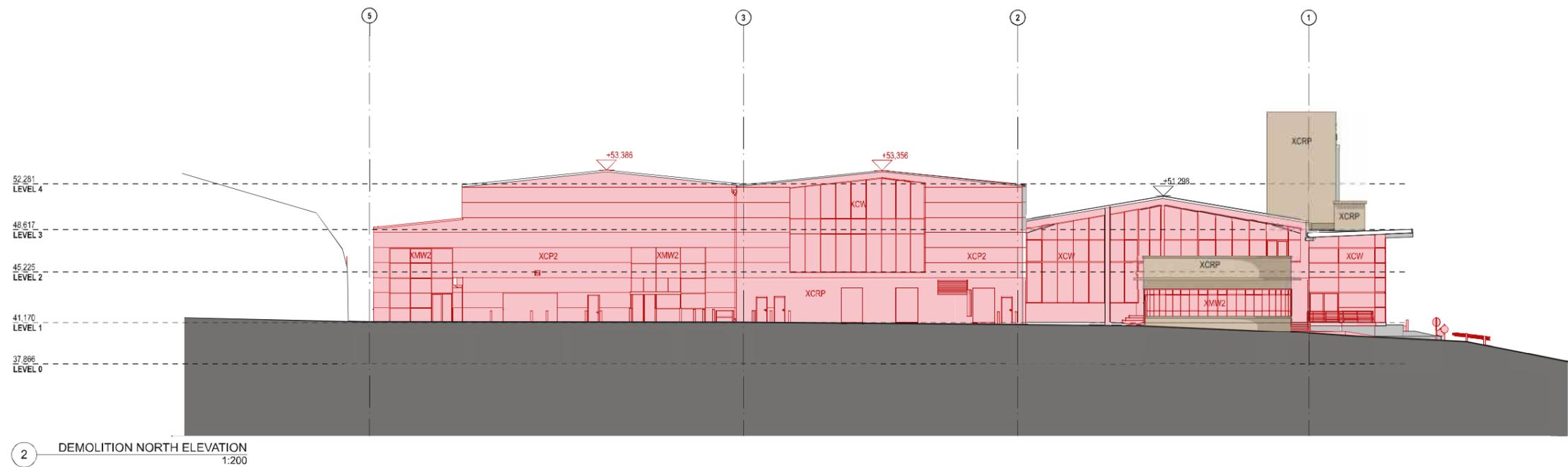
DATE	REV	DESCRIPTION
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PHASE SSDA		DRAWING NO A-034		1:200			



1 DEMOLITION WEST ELEVATION
1:200



2 DEMOLITION NORTH ELEVATION
1:200

LEGEND	
	Existing to be retained
	Existing to be demolished
	Existing, significant heritage item

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
800 Pittwater Road + 224 Headland Road
Dee Why NSW 2099 North Curl Curl NSW 2099
PROJECT NO : 18032

ARCHITECT
TONKIN ZULAIKHA GREER ARCHITECTS
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F: (02) 9215 4901
EMAIL: info@tzg.com.au
WEB: www.tzg.com.au

tonkin zulaikha greer architects

DRAWING TITLE
GENERAL
WEST + NORTH DEMOLITION ELEVATIONS_800
SCALES AT A1
PHASE
SSDA

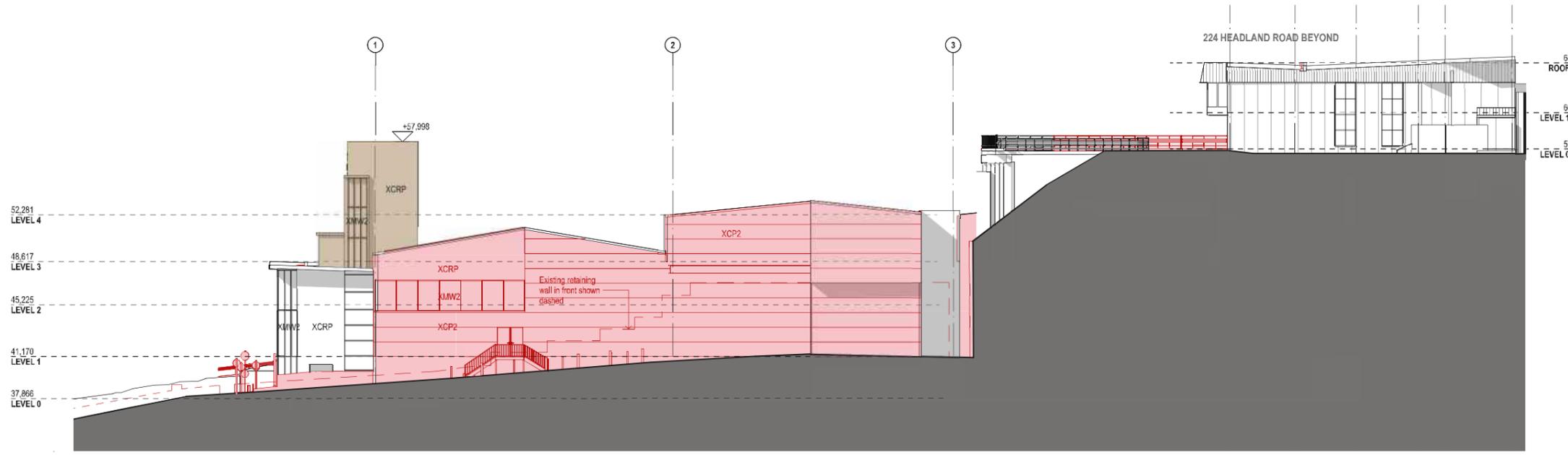
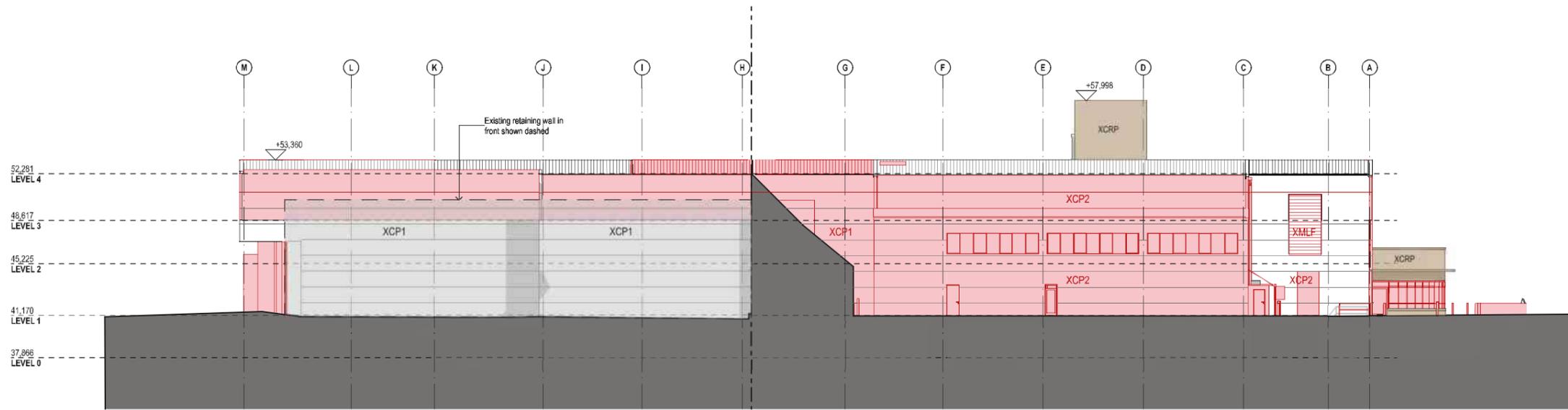
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RM + CE + EG
CHECKED
PT
DATE
October 2019
REV
A

1:200

REV

A-035

A



LEGEND	
	Existing to be retained
	Existing to be demolished
	Existing, significant heritage item

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

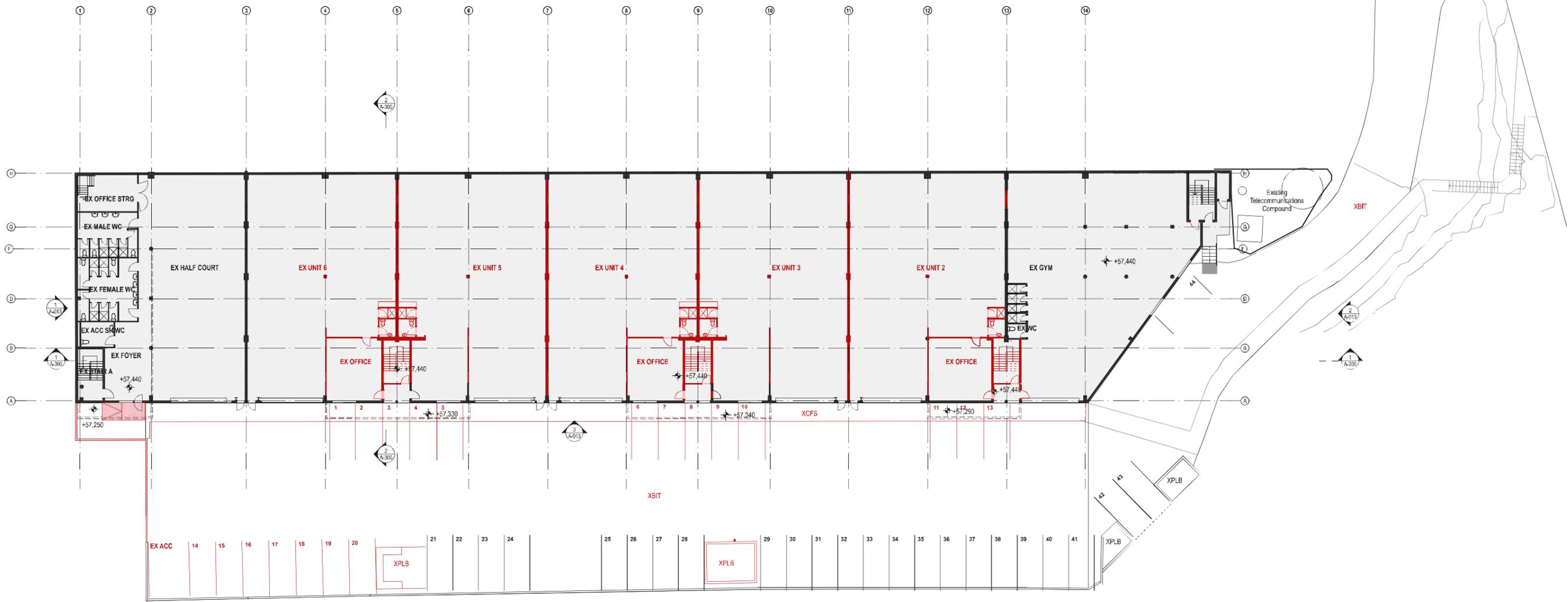
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PROJECT :
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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 EMAIL: info@tzg.com.au
 WEB: www.tzg.com.au

DRAWING TITLE
 GENERAL
EAST + SOUTH DEMOLITION ELEVATIONS_800
 SCALES AT A1

DRAWN BY RM + CE + EG	CHECKED PT	DATE October 2019
PHASE SSDA	DRAWING NO A-036	REV A



LEGEND	
	Existing to be retained
	Existing to be demolished

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

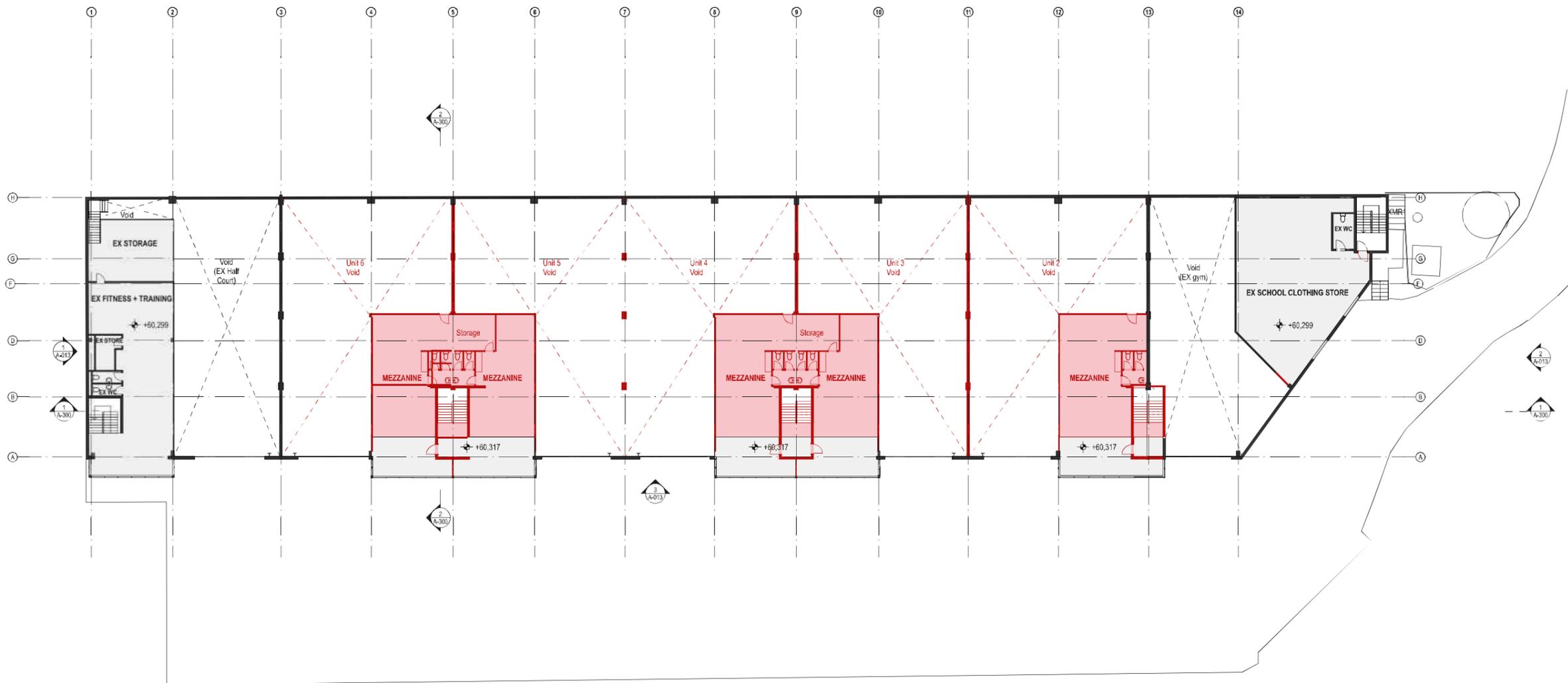
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APPLICANT:
 ST LUKE'S GRAMMAR SCHOOL
 Mrs. Jane Hughes (Business Manager)
 210 Headland Road
 Dee Why NSW 2099

PROJECT:
 ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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 EMAIL: info@tjg.com.au
 WEB: www.tjg.com.au

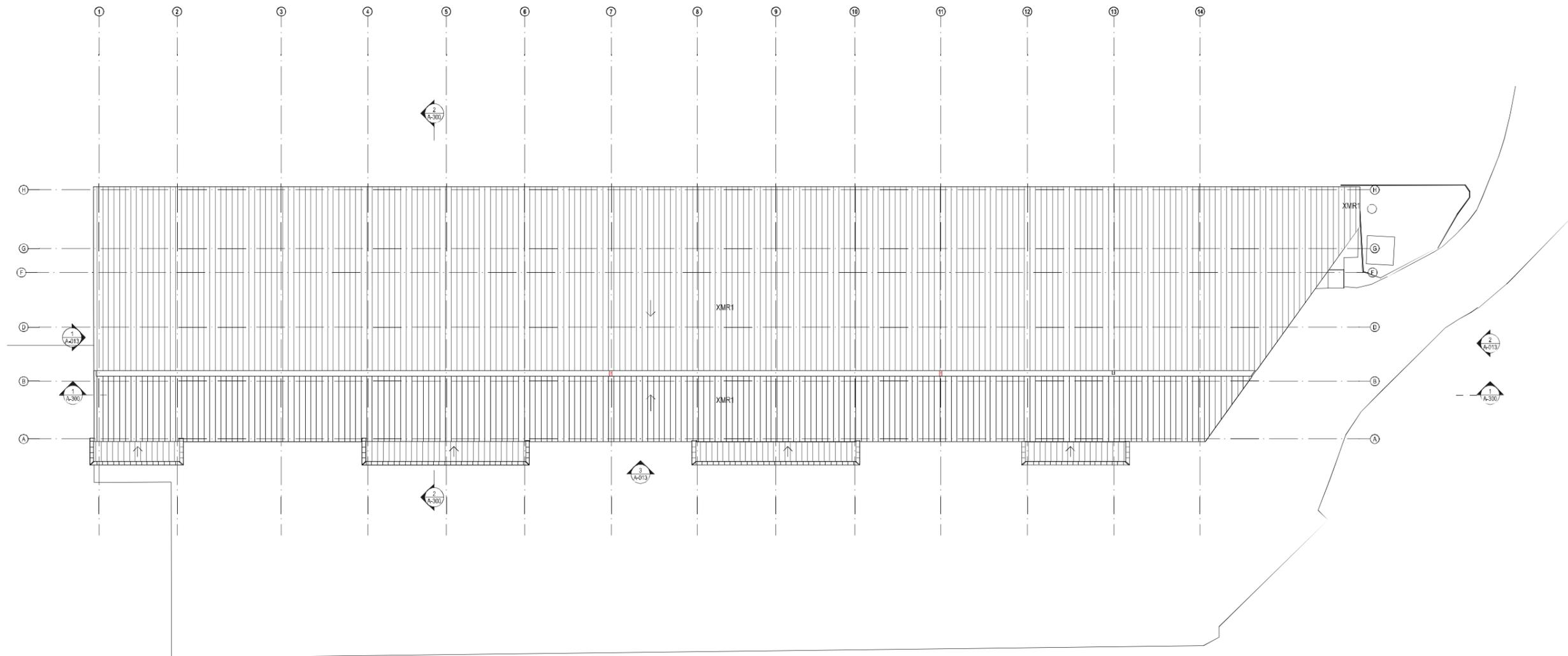
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224 HEADLAND ROAD LEVEL 0 DEMOLITION PLAN_224		RM + CE + EG	
SCALES AT A1		CHECKED PT	
1:200		DATE October 2019	
PHASE SSDA	DRAWING NO A-040	REV	A



LEGEND	
	Existing to be retained
	Existing to be demolished



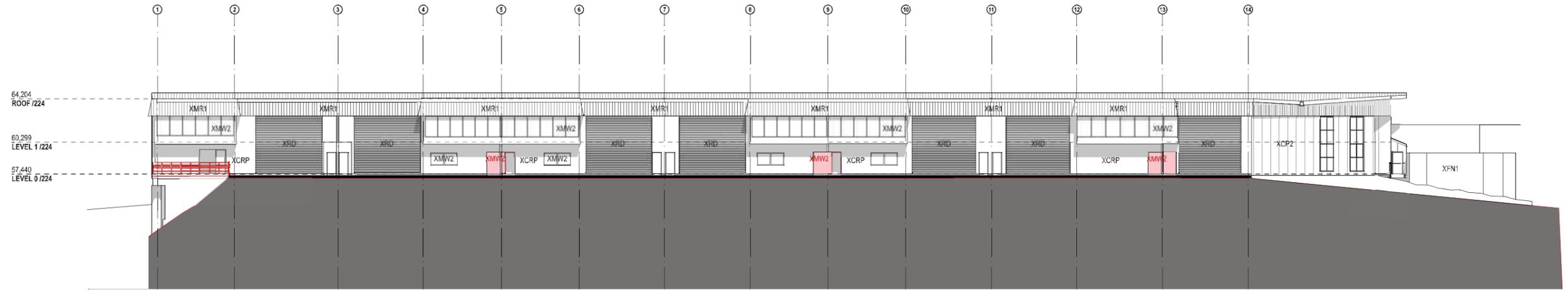
DATE 29/OCT/2019	REV A	DESCRIPTION: ISSUE FOR SSDA	NOTES: Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd. and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	APPLICANT: ST LUKE'S GRAMMAR SCHOOL Mrs Jane Hughes (Business Manager) 210 Headland Road Dee Why NSW 2099	PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099 PROJECT NO : 18032	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au	DRAWING TITLE 224 HEADLAND ROAD LEVEL 1 DEMOLITION PLAN_224 SCALES AT A1 PHASE SSDA	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A
							DRAWING NO A-041	1:200



LEGEND	
■	Existing to be retained
■	Existing to be demolished



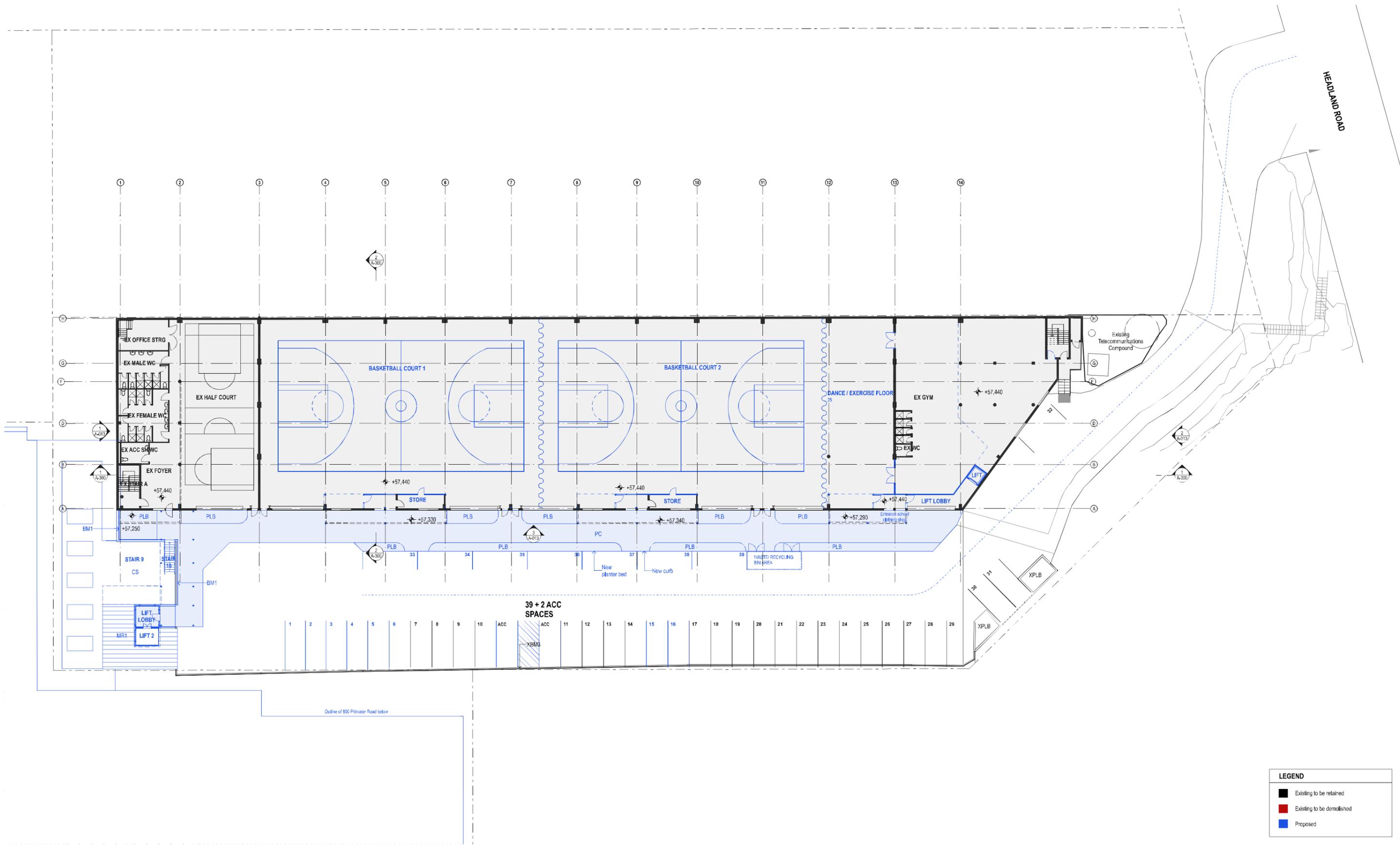
DATE 29/OCT/2019	REV A	DESCRIPTION: ISSUE FOR SDA	NOTES: Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd. and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	APPLICANT: ST LUKE'S GRAMMAR SCHOOL Mrs Jane Hughes (Business Manager) 210 Headland Road Dee Why NSW 2099	PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099 PROJECT NO : 18032	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzig.com.au WEB: www.tzig.com.au	DRAWING TITLE 224 HEADLAND ROAD ROOF DEMOLITION PLAN_224 SCALES AT A1 PHASE SSDA	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A
							DRAWING NO A-042	1:200



1 E7 WEST ELEVATION - DEMOLITION
1:200

LEGEND	
■	Existing to be retained
■	Existing to be demolished

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				PHASE SSDA	DRAWING NO A-043			



LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed



DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

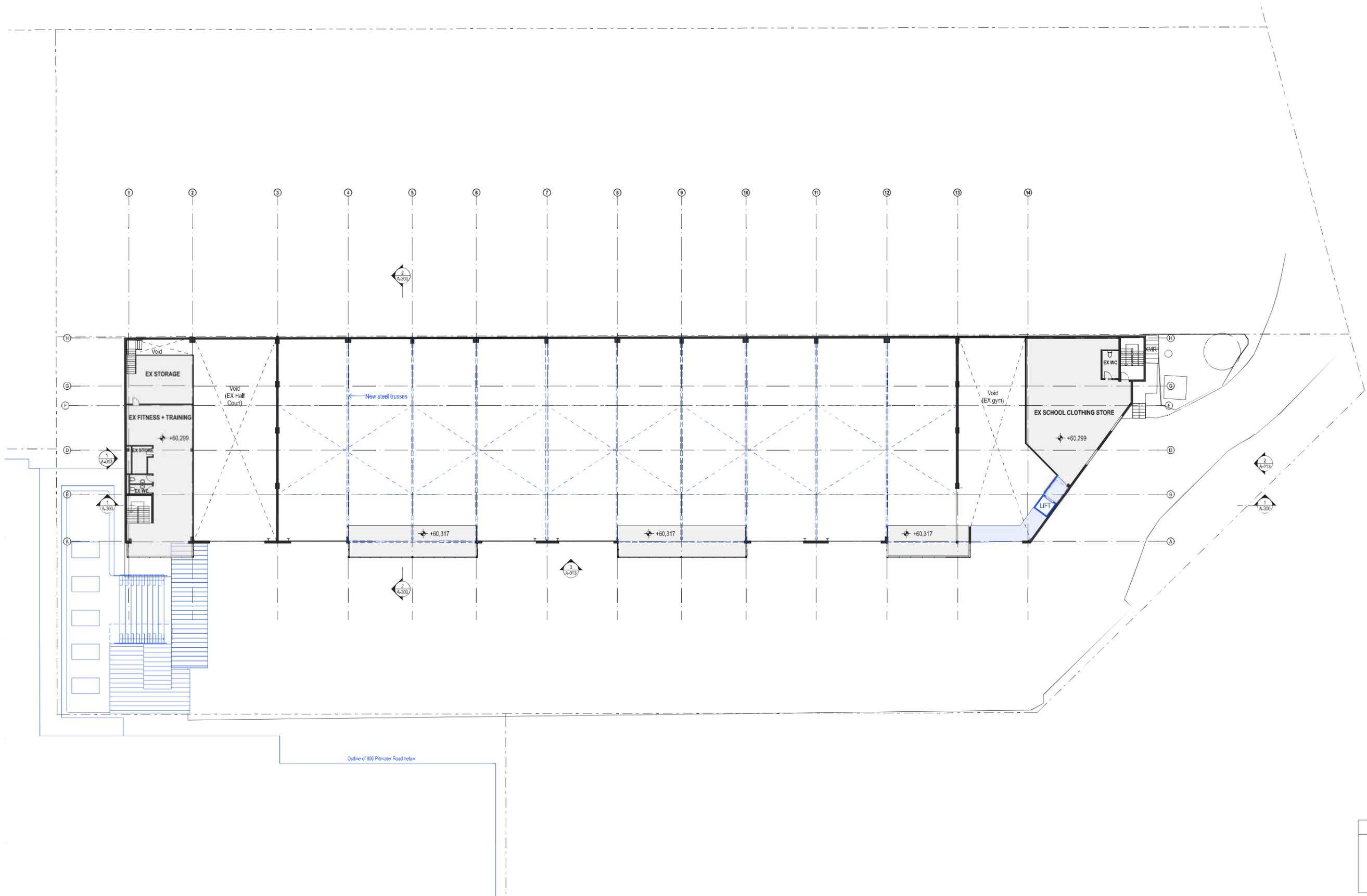
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APPLICANT:
 ST LUKE'S GRAMMAR SCHOOL
 Mrs Jane Hughes (Business Manager)
 210 Headland Road
 Dee Why NSW 2099

PROJECT:
 ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pitwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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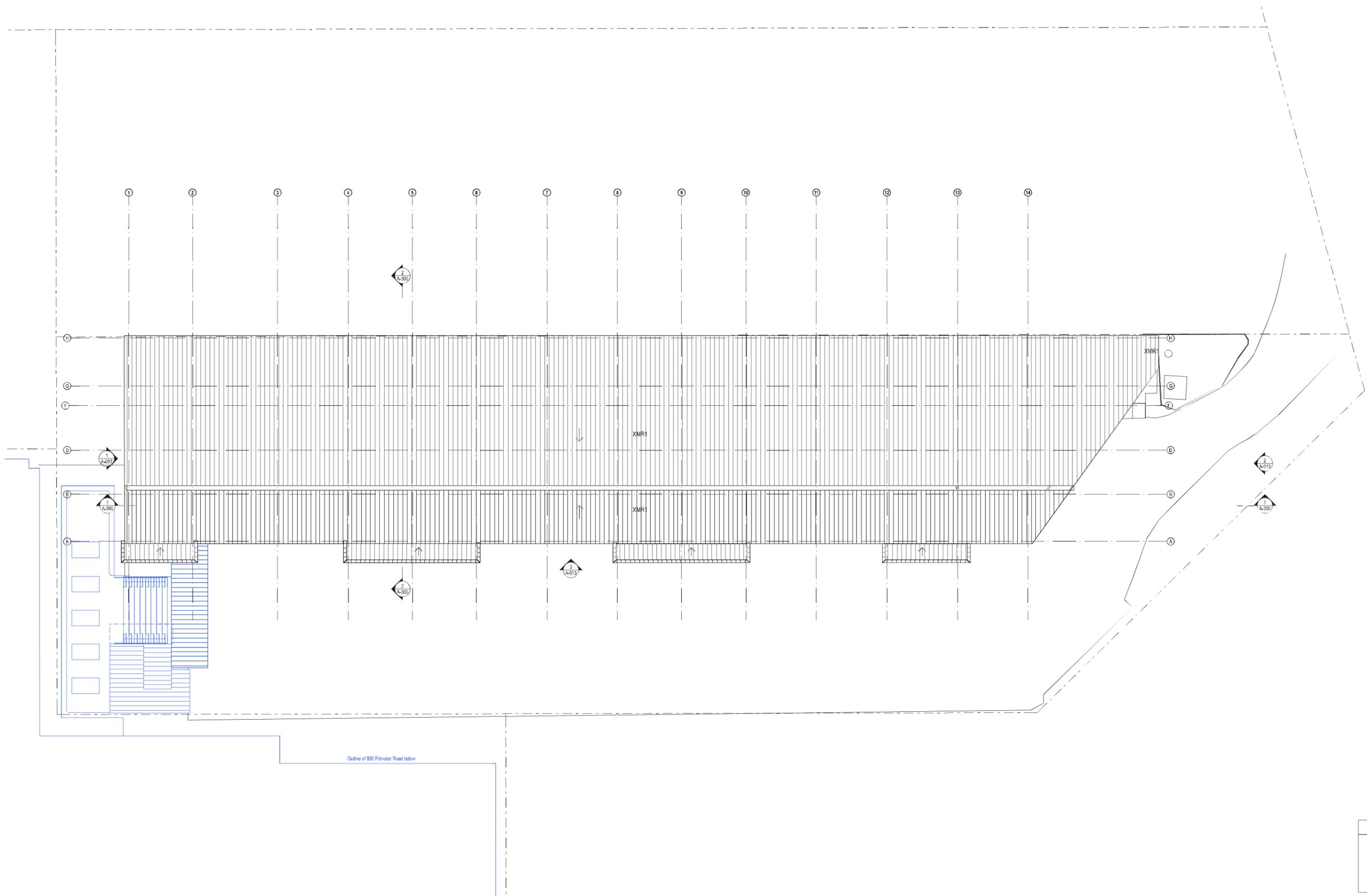
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SCALES AT A1		CHECKED PT
PHASE SSDA	DRAWING NO A-100	DATE October 2019
		REV A



LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed



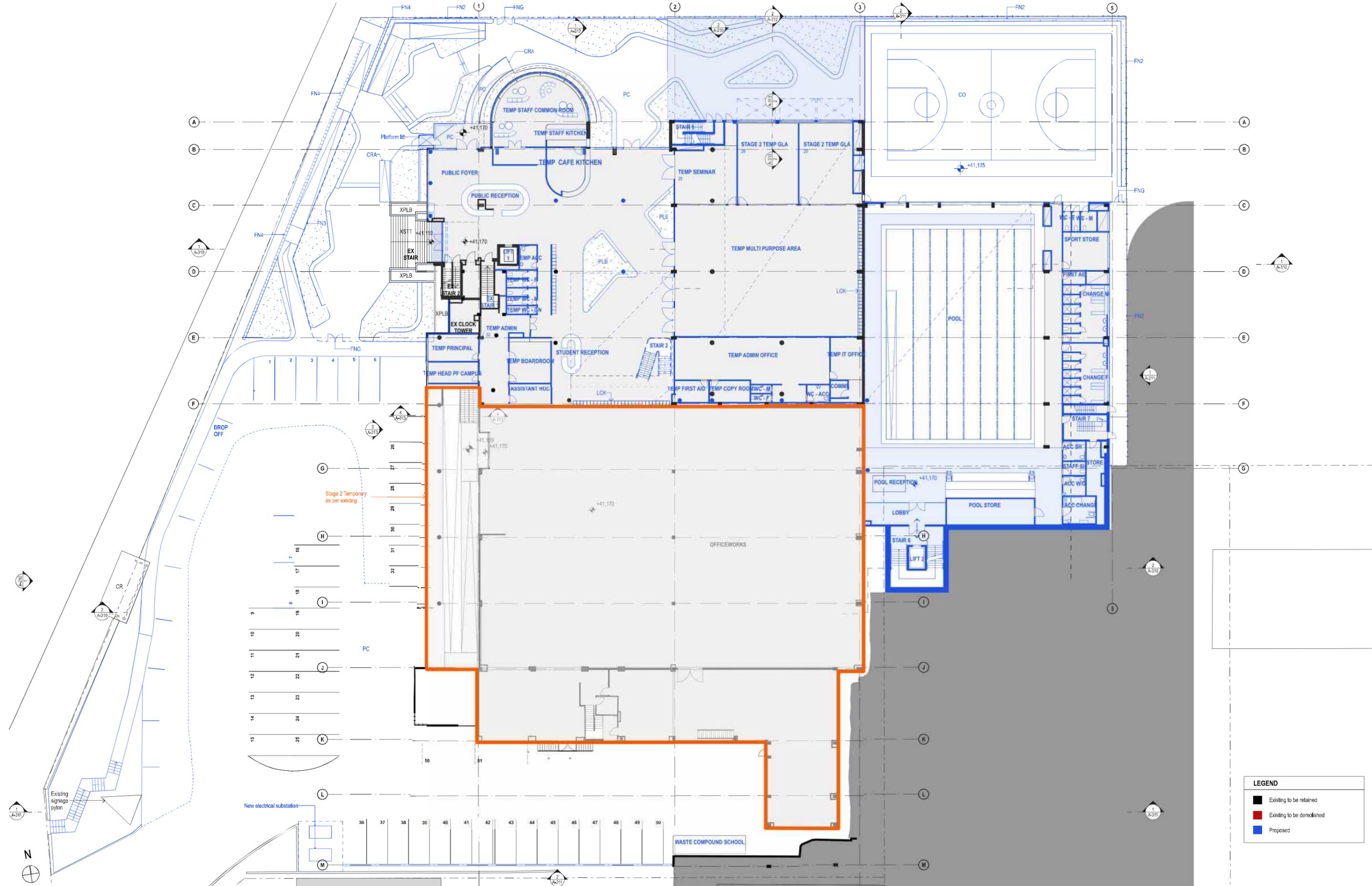
DATE 29/OCT/2019	REV A	DESCRIPTION: ISSUE FOR SSDA	NOTES: Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd. and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	APPLICANT: ST LUKE'S GRAMMAR SCHOOL Mrs Jane Hughes (Business Manager) 210 Headland Road Dee Why NSW 2099	PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099 PROJECT NO : 18032	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au	DRAWING TITLE 224 HEADLAND ROAD LEVEL 1 PLAN_224 SCALES AT A1 PHASE SSDA	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A
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LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed



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							DRAWING NO A-102	



LEGEND

- Existing to be retained
- Existing to be demolished
- Proposed

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA

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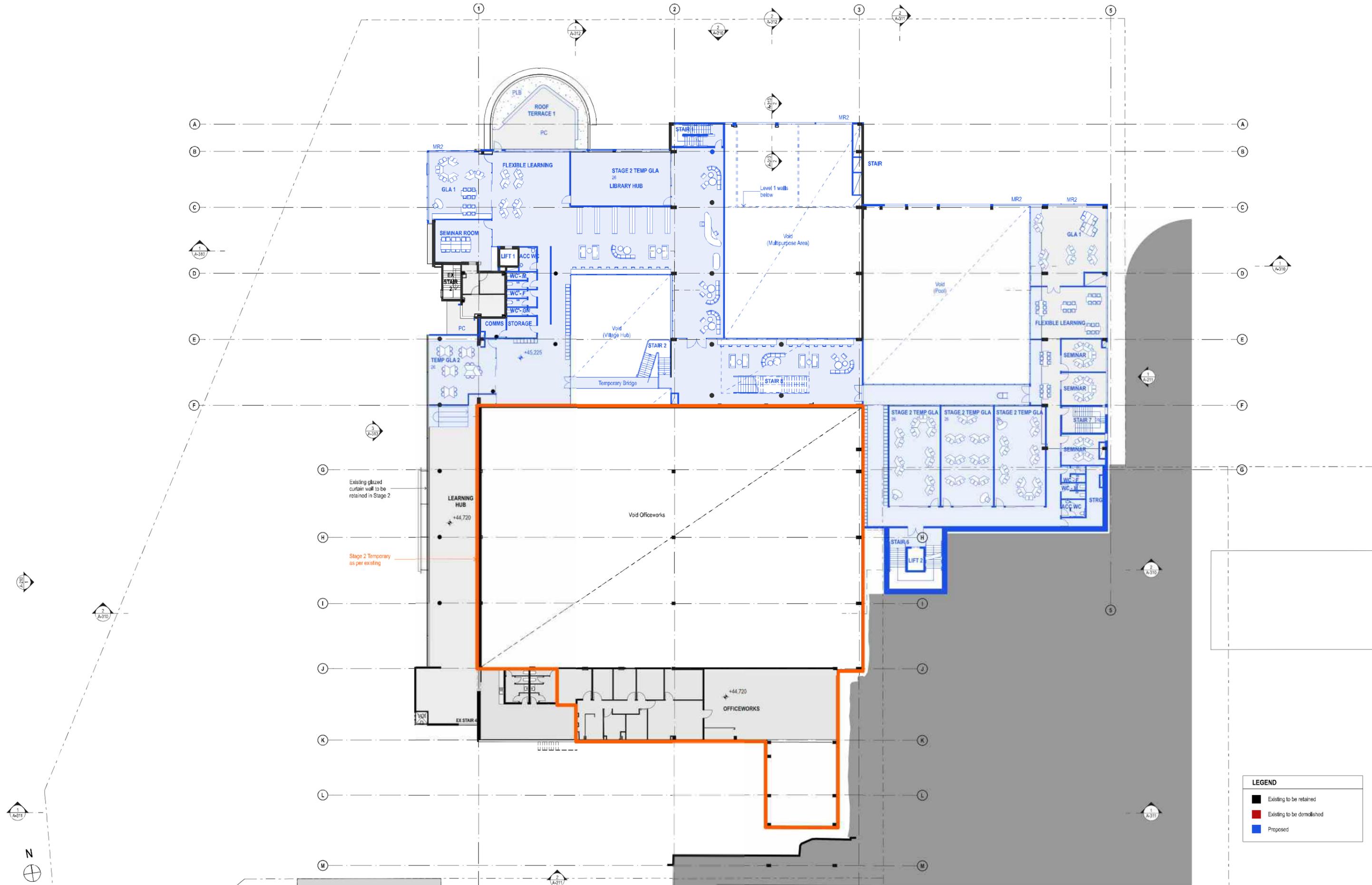
PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road, 224 Headland Road, Dee Why NSW 2099, North Curl Curl NSW 2099
 PROJECT NO: 18032

ARCHITECT: TONKIN ZULAIKHA GREER ARCHITECTS
 117 Reservoir Street, ABN: 4600272349, P: (02) 9215 4900, F: (02) 9215 4901, EMAIL: info@tzg.com.au, WEB: www.tzg.com.au

DRAWING TITLE: 800 PITTWATER ROAD LEVEL 1 PLAN - STAGE 2_800
 SCALES AT A1
 PHASE: SSDA

DRAWN BY: RM + CE + EG
 CHECKED: PT
 DATE: October 2019
 REV: A

DATE	REV	DESCRIPTION	DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA	October 2019	A	



LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road, Dee Why NSW 2099 • 224 Headland Road, North Curl Curl NSW 2099
 PROJECT NO: 18032

ARCHITECT:
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 P: (02) 9215 4900
 F: (02) 9215 4901
 EMAIL: info@tzig.com.au
 WEB: www.tzig.com.au

DRAWING TITLE:
 800 PITTWATER ROAD
LEVEL 2 PLAN - STAGE 2_800
 SCALES AT A1

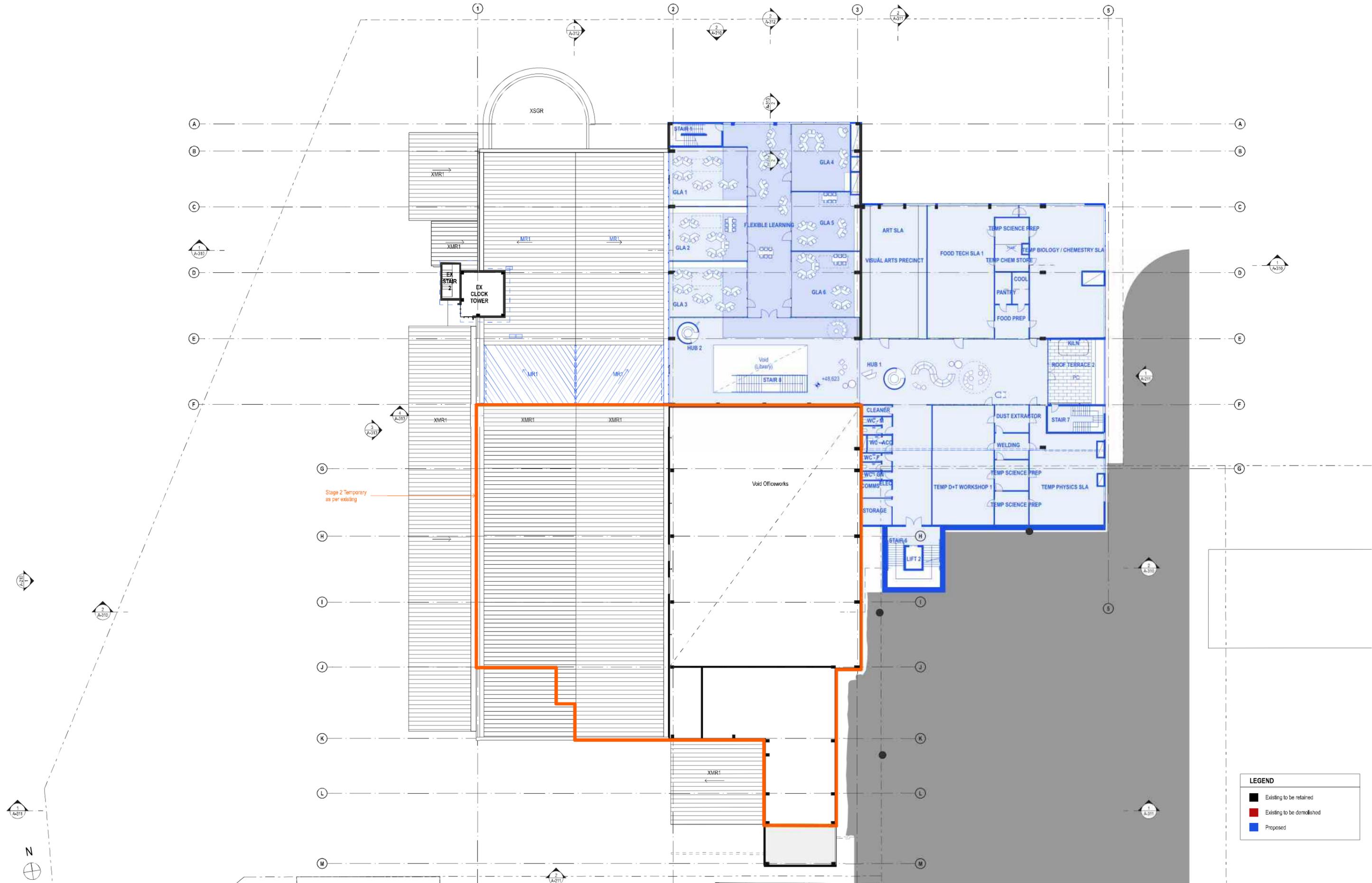
PHASE:
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DRAWING NO:
A-112

DATE:
 October 2019

REV
A

DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A	1:200
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LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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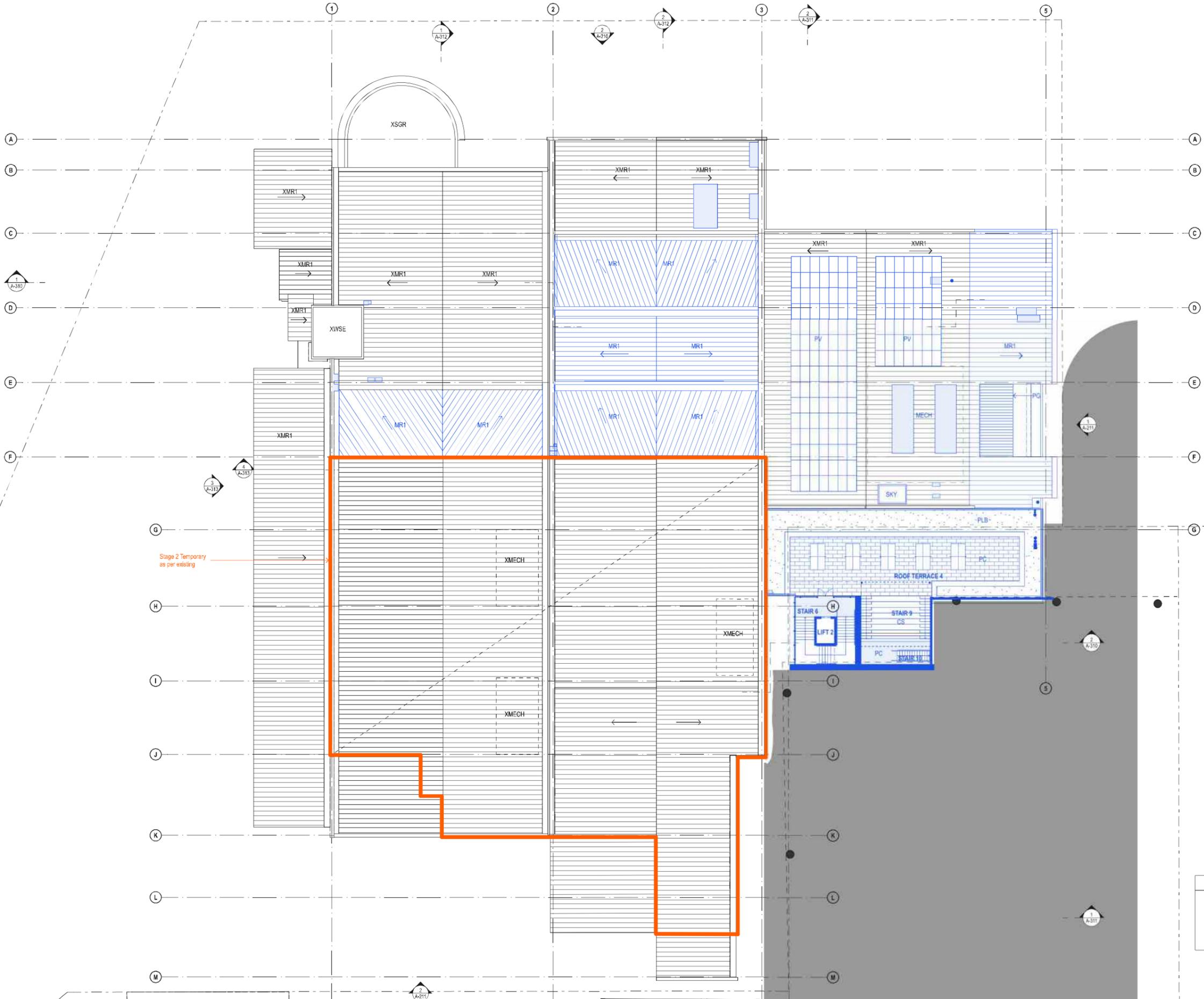
PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road, Dee Why NSW 2099
 PROJECT NO: 18032

ARCHITECT
TONKIN ZULAIKHA GREER ARCHITECTS
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 ABN: 4602722349
 P: (02) 9215 4900
 F: (02) 9215 4901
 EMAIL: info@tzg.com.au
 WEB: www.tzg.com.au

DRAWING TITLE
 800 PITTWATER ROAD
LEVEL 3 PLAN - STAGE 2_800

SCALES AT A1
 PHASE SDA

DRAWN BY RM + CE + EG	CHECKED PT	DATE October 2019
REV A	DRAWING NO A-113	SCALE 1:200



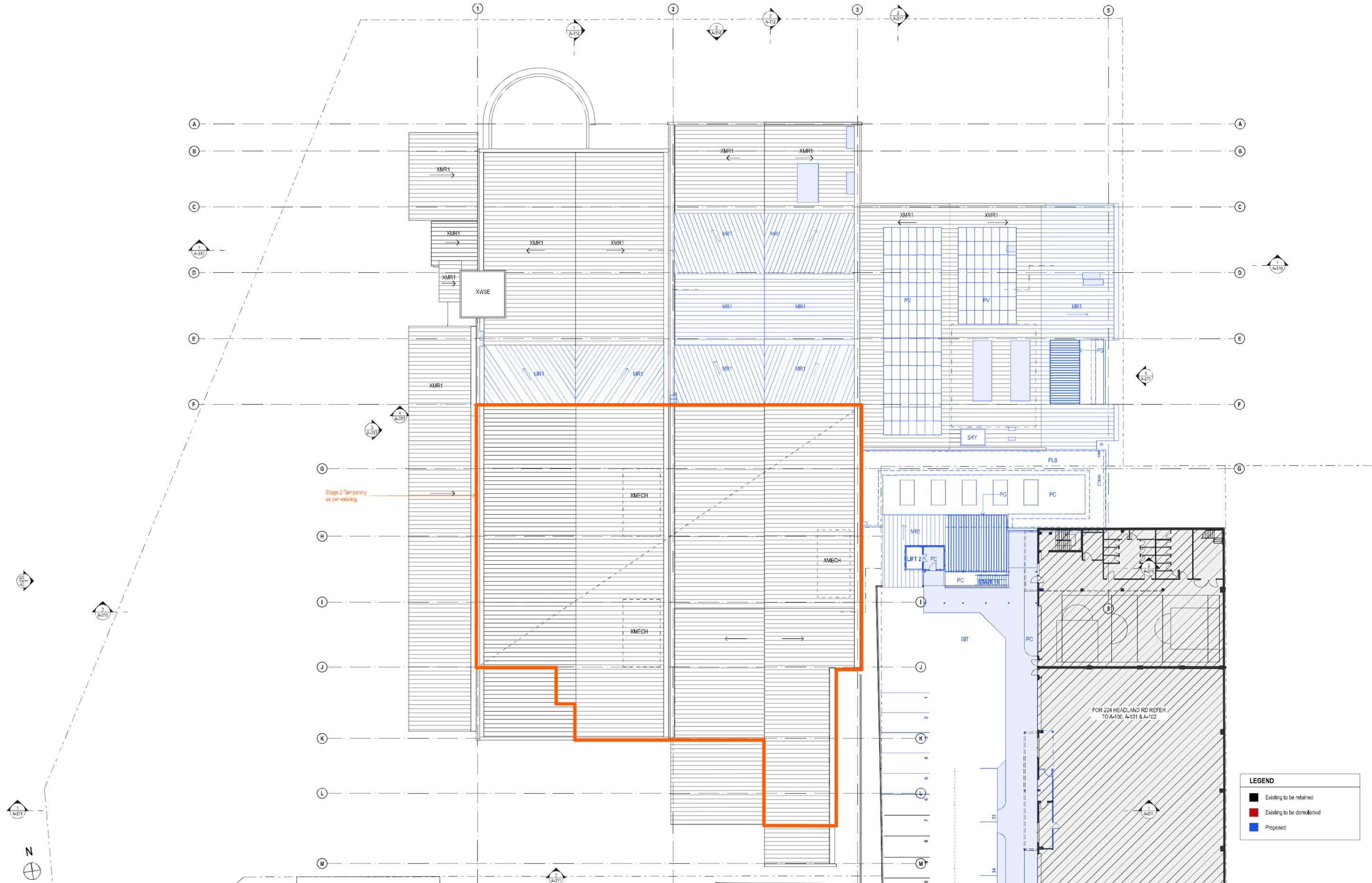
Stage 2 Temporary
as per existing

LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

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29/OCT/2019	A	ISSUE FOR SDA

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PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road Dee Why NSW 2099	ARCHITECT: TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au	DRAWING TITLE: 800 PITTWATER ROAD LEVEL 4 PLAN - STAGE 2_800 SCALES AT A1	DRAWN BY: RM + CE + EG CHECKED: PT DATE: October 2019 REV: A
PROJECT NO: 18032		PHASE: SSDA	DRAWING NO: A-114



DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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PROJECT:
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 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

ARCHITECT
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 WEB: www.tզg.com.au

DRAWING TITLE
 800 PITTWATER ROAD
LEVEL 5 PLAN - STAGE 2_800
 SCALES AT A1

DATE
 1:200
 October 2019

PHASE
 SDA

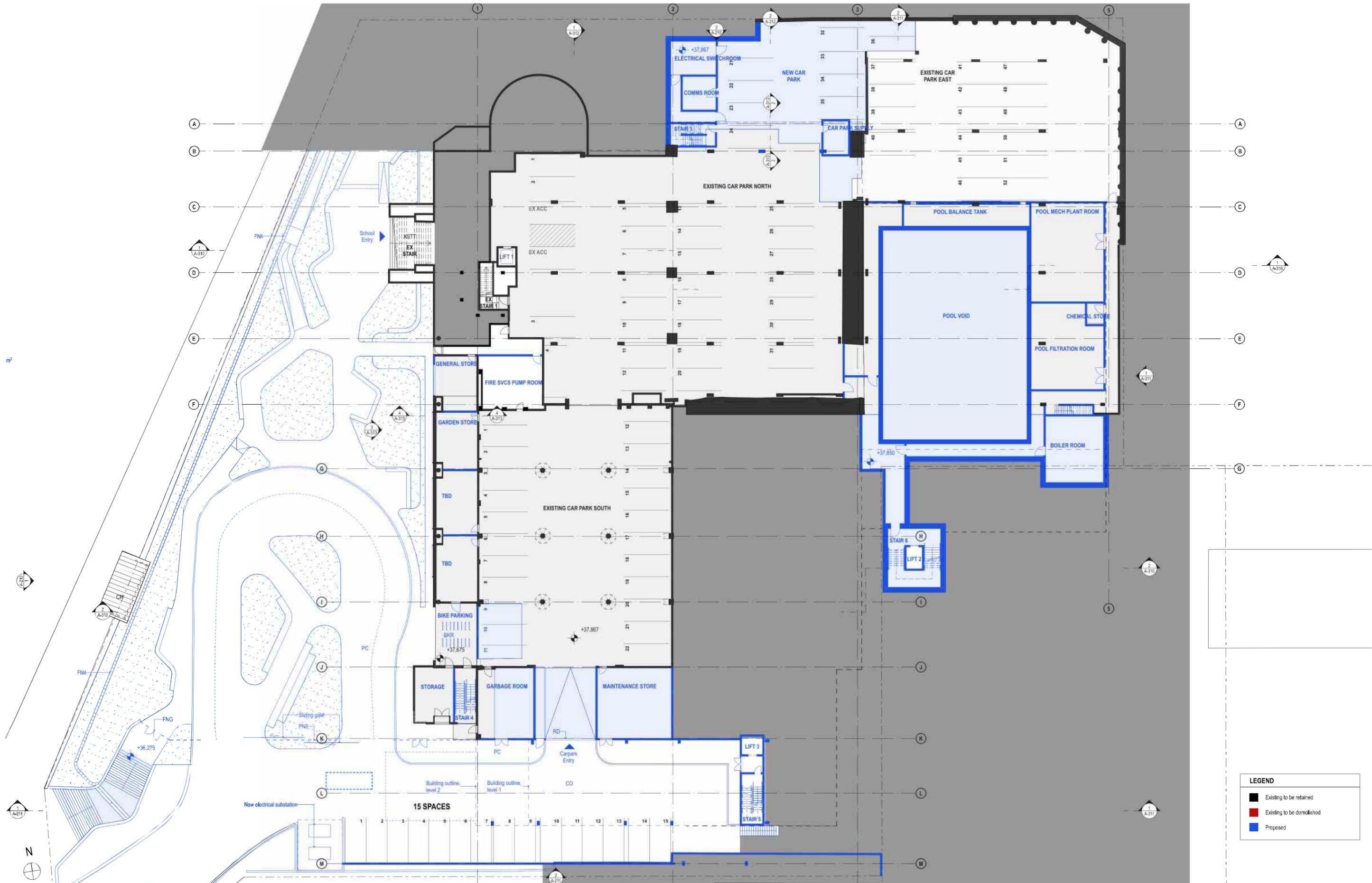
DRAWING NO
A-115

DRAWN BY
 RM + CE + EG

CHECKED
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DATE
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REV
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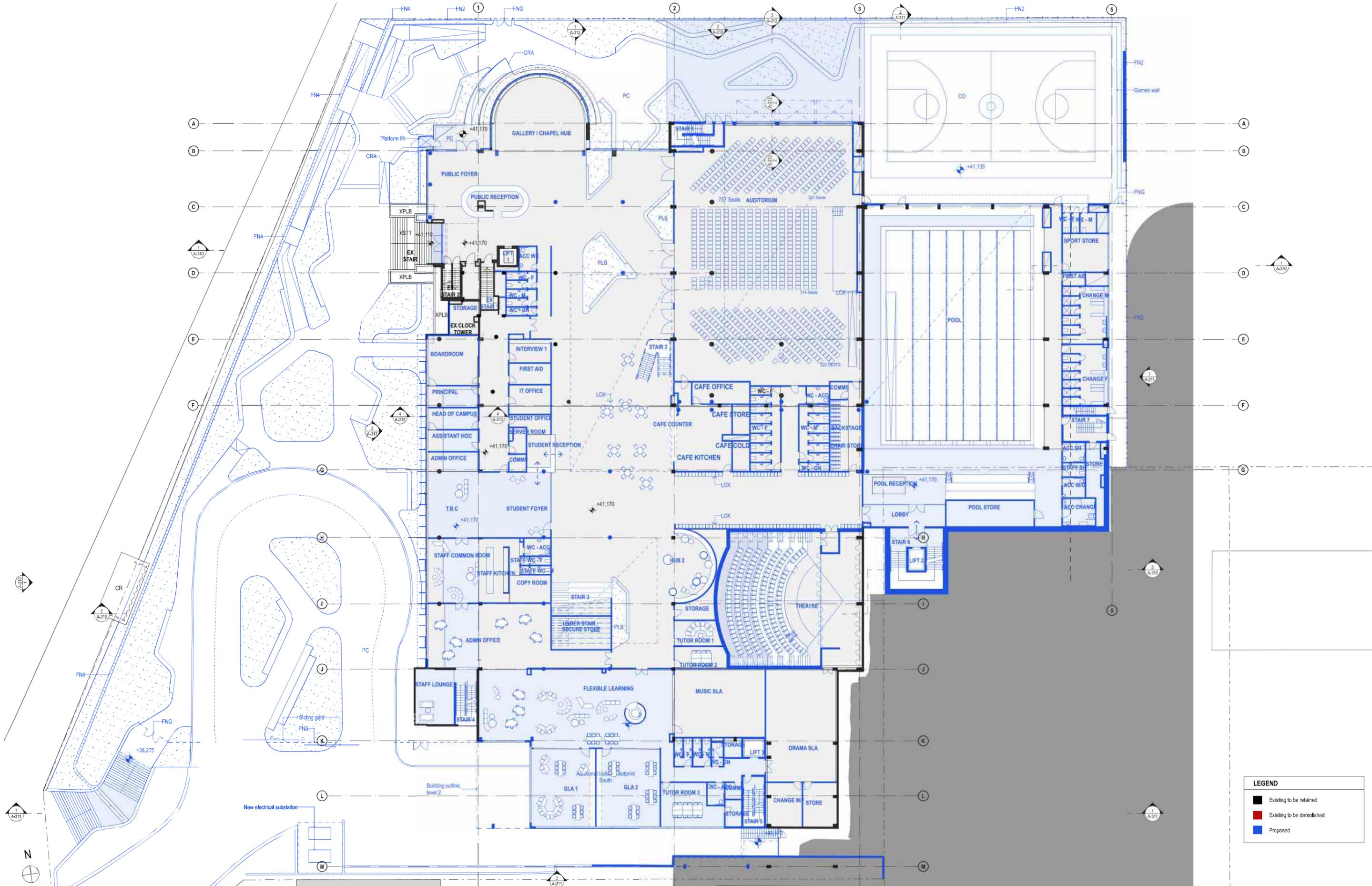
LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA

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PROJECT:	ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
ARCHITECT:	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au
DRAWING TITLE:	800 PITTWATER ROAD LEVEL 0 PLAN - STAGE 3_800
SCALES AT A1:	1:200
PHASE:	SSDA
DRAWING NO:	A-116
DATE:	October 2019
REV:	A

PROJECT:	800 Pittwater Road Dee Why NSW 2099
ARCHITECT:	TONKIN ZULAIKHA GREER ARCHITECTS 224 Headland Road North Curl Curl NSW 2099
DRAWING TITLE:	ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
SCALES AT A1:	1:200
PHASE:	SSDA
DRAWING NO:	A-116
DATE:	October 2019
REV:	A

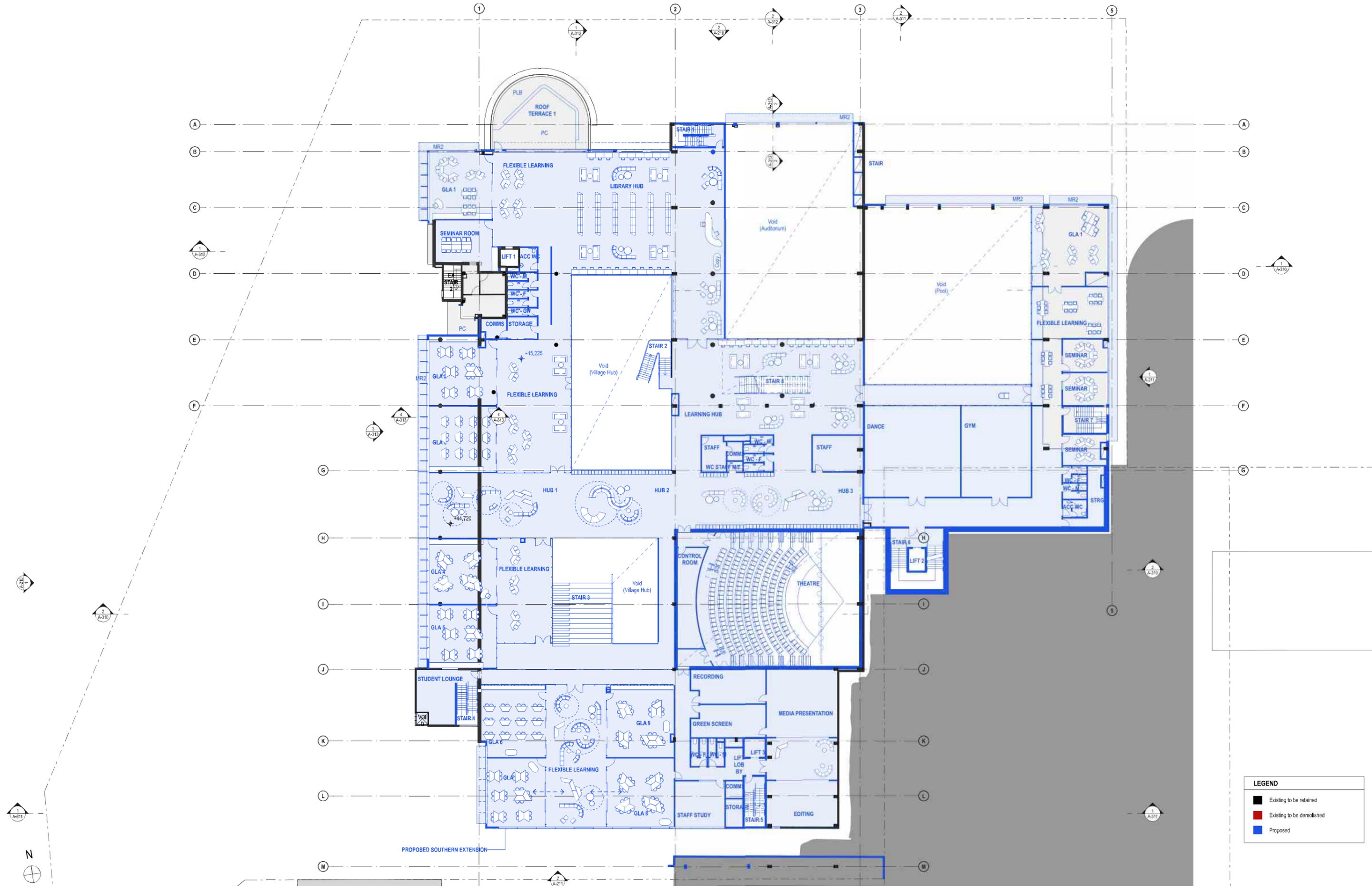


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ARCHITECT:	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au
DRAWING TITLE:	800 PITTWATER ROAD LEVEL 1 PLAN - STAGE 3_800
SCALES AT A1:	1:200
PHASE:	SSDA
DRAWING NO:	A-117
PROJECT NO.:	18032

DRAWN BY:	RM + CE + EG
CHECKED:	PT
DATE:	October 2019
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LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

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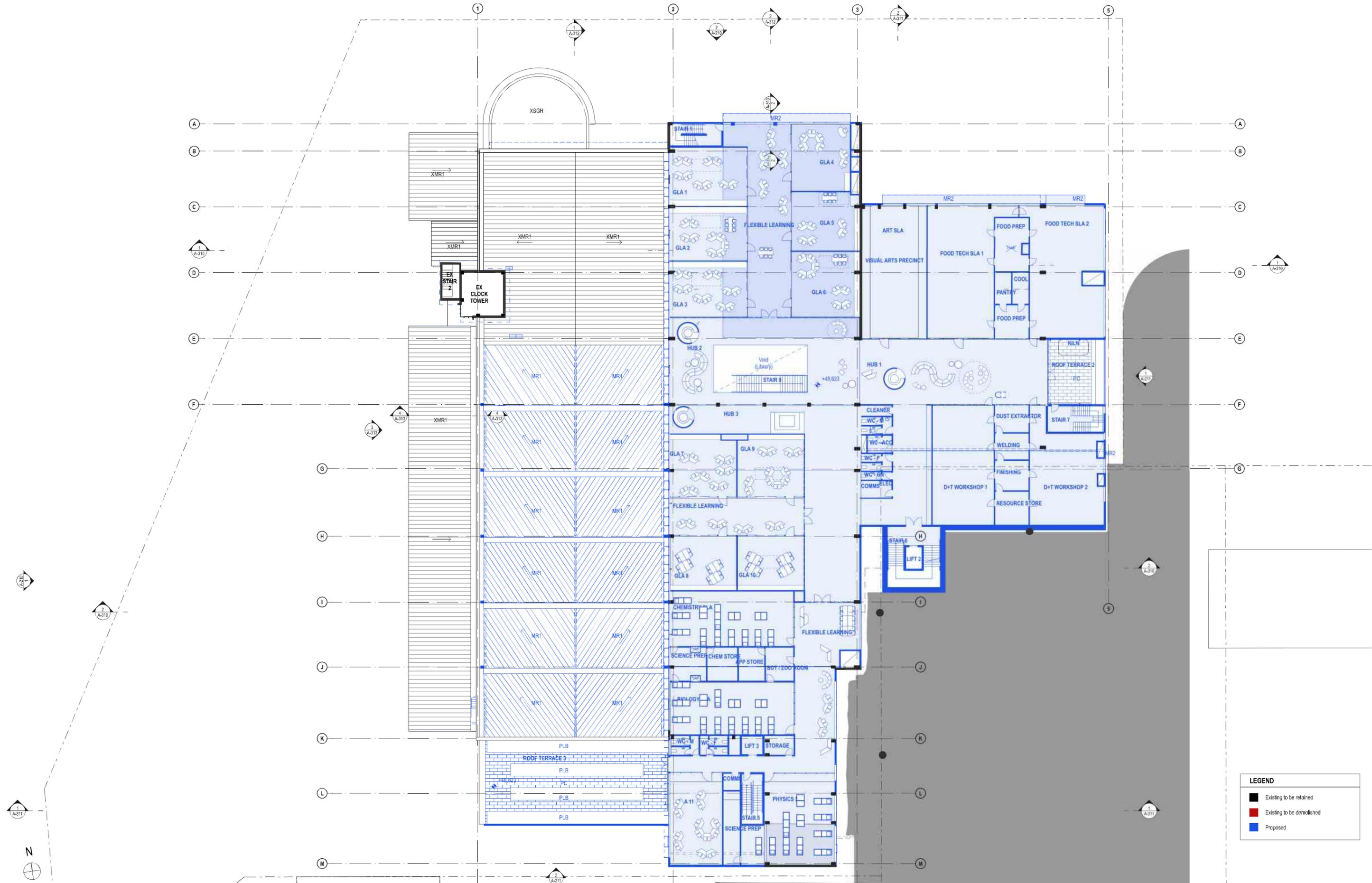
PROJECT:
 ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2098
 PROJECT NO : 16032

ARCHITECT:
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 F: (02) 9215 4901
 EMAIL: info@tzg.com.au
 WEB: www.tzg.com.au

DRAWING TITLE:
 800 PITTWATER ROAD
 LEVEL 2 PLAN - STAGE 3_800
 SCALES AT A1
 PHASE
 SSDA

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 RM + CE + EG
CHECKED:
 PT
DATE:
 October 2019
REV:
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1:200
A-118



LEGEND

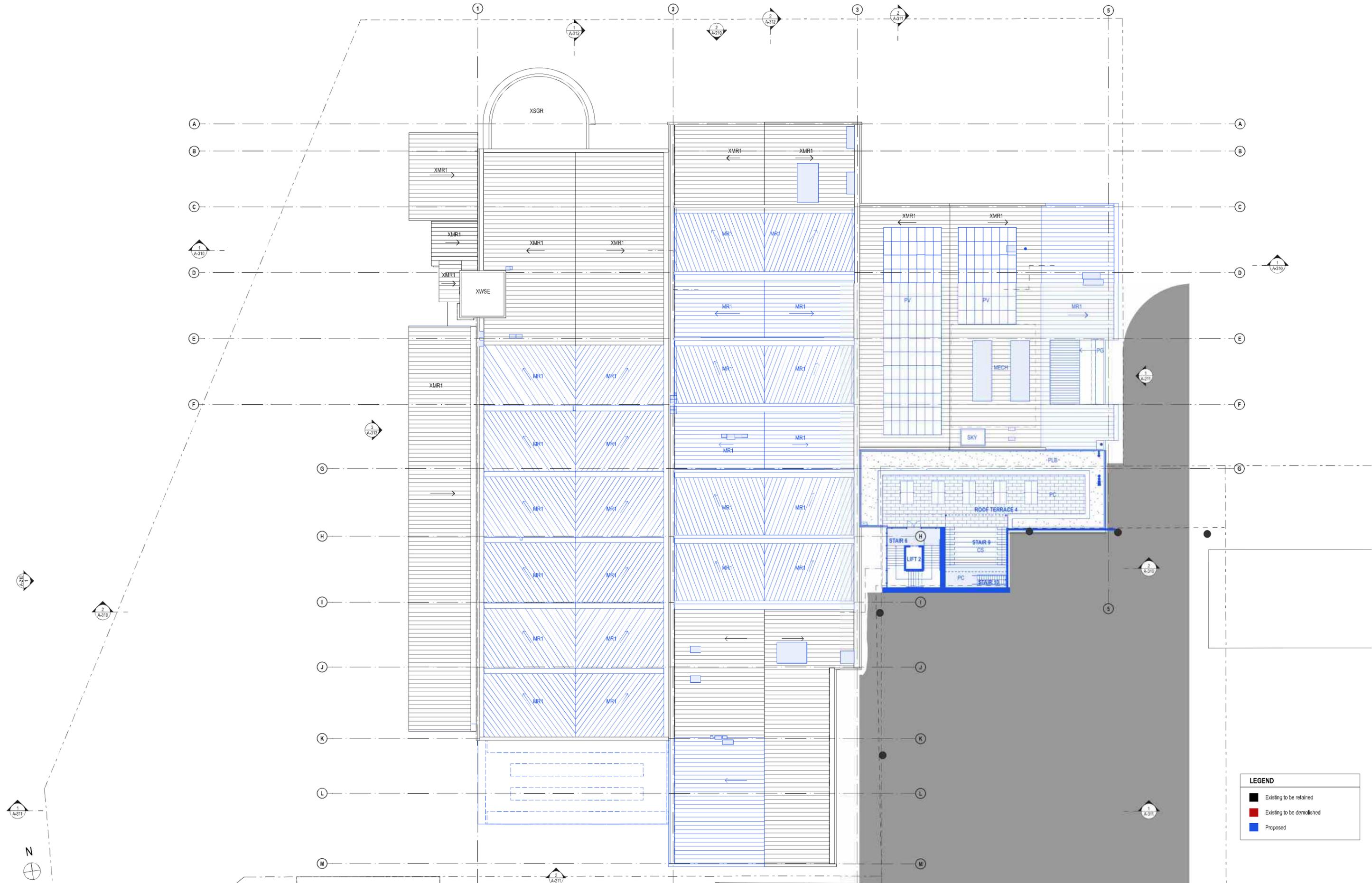
- Existing to be retained
- Existing to be demolished
- Proposed

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PROJECT:	ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
ARCHITECT:	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzig.com.au WEB: www.tzig.com.au
DRAWING TITLE:	800 PITTWATER ROAD LEVEL 3 PLAN - STAGE 3_800
SCALES AT A1:	1:200
PHASE:	SSDA
DRAWING NO:	A-119
DATE:	October 2019
REV:	A

PROJECT NO:	18032
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DATE:	October 2019
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 PROJECT NO: 18032

ARCHITECT
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 117 Reservoir Street, ABN: 4600272349, P: (02) 9215 4900, F: (02) 9215 4901, EMAIL: info@tzg.com.au, WEB: www.tzg.com.au

DRAWING TITLE
800 PITTWATER ROAD LEVEL 4 PLAN - STAGE 3_800

SCALES AT A1

PHASE
 SDA

DRAWN BY
 RM + CE + EG

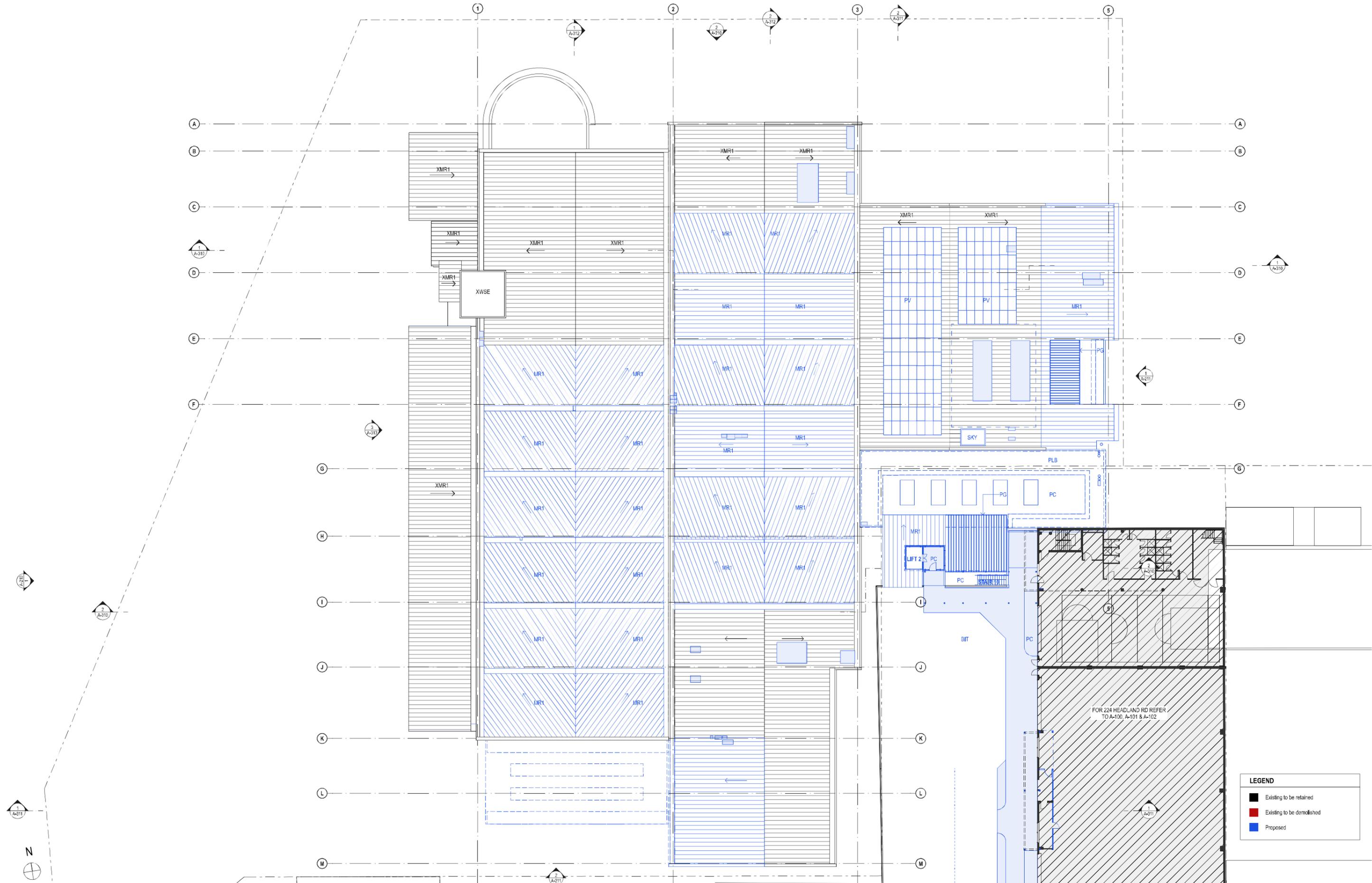
CHECKED
 PT

DATE
 October 2019

REV
 A

1:200

DRAWING NO
A-120



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PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Headland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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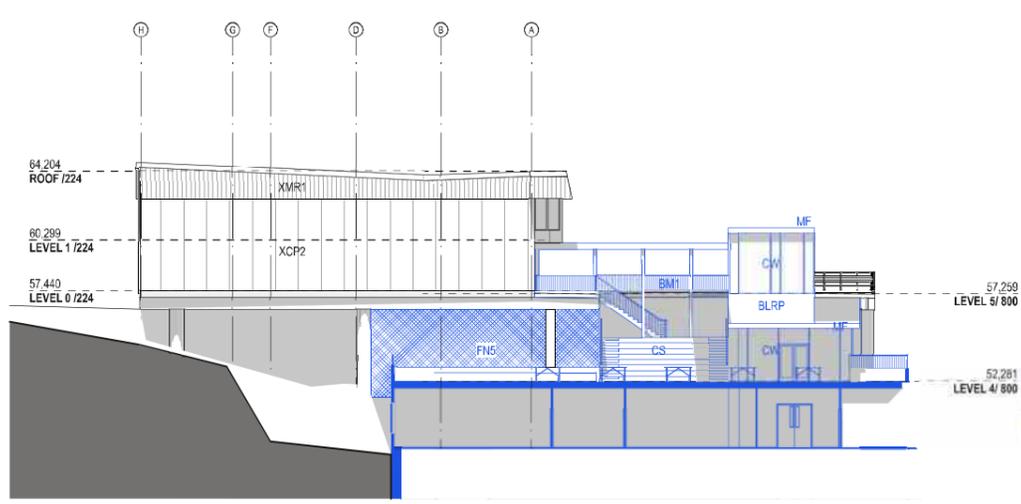
DRAWING TITLE
 800 PITTWATER ROAD
LEVEL 5 PLAN - STAGE 3_800
 SCALES AT A1

DATE
 October 2019
 REV
A

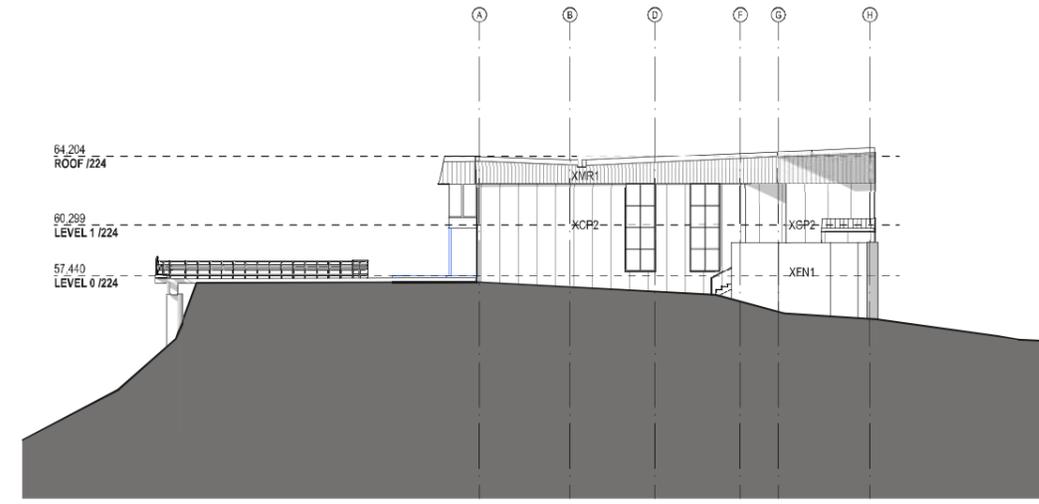
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 PHASE
 SSDA
 DRAWING NO
A-121

LEGEND

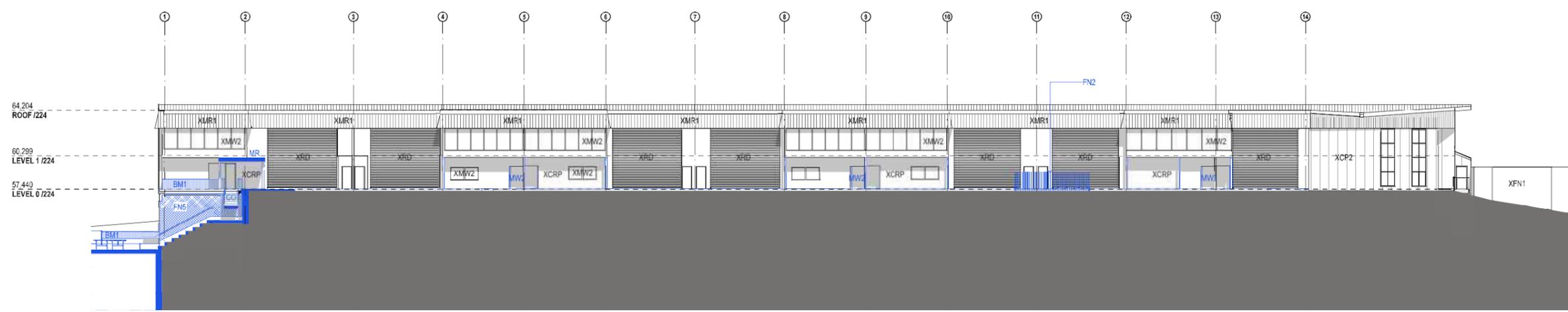
	Existing to be retained
	Existing to be demolished
	Proposed



1 NORTH ELEVATION
1:200



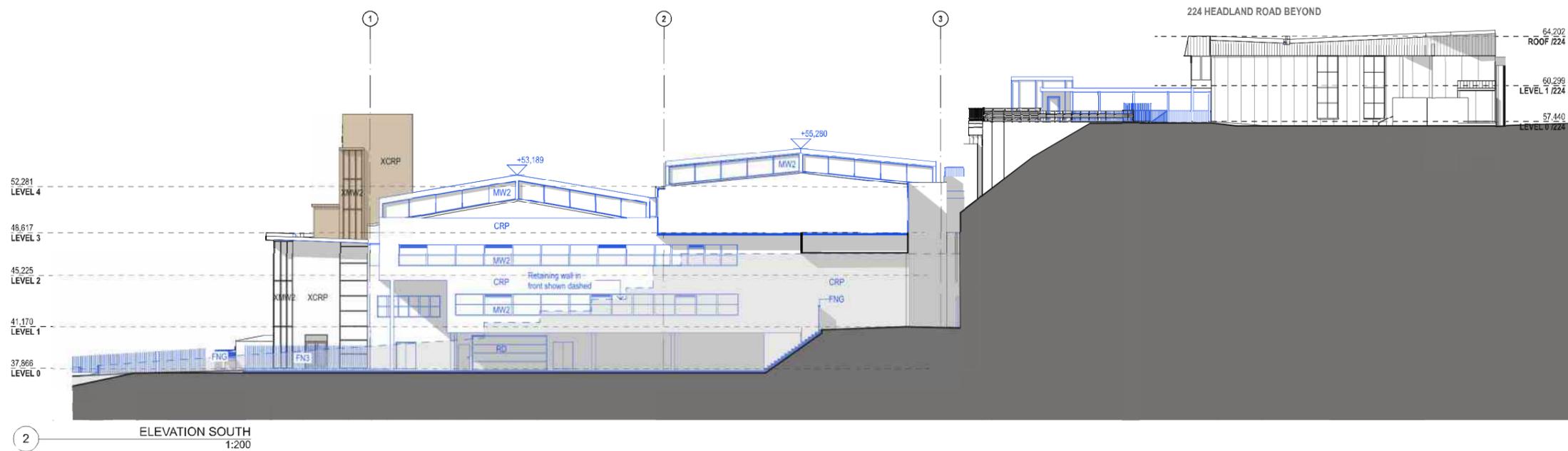
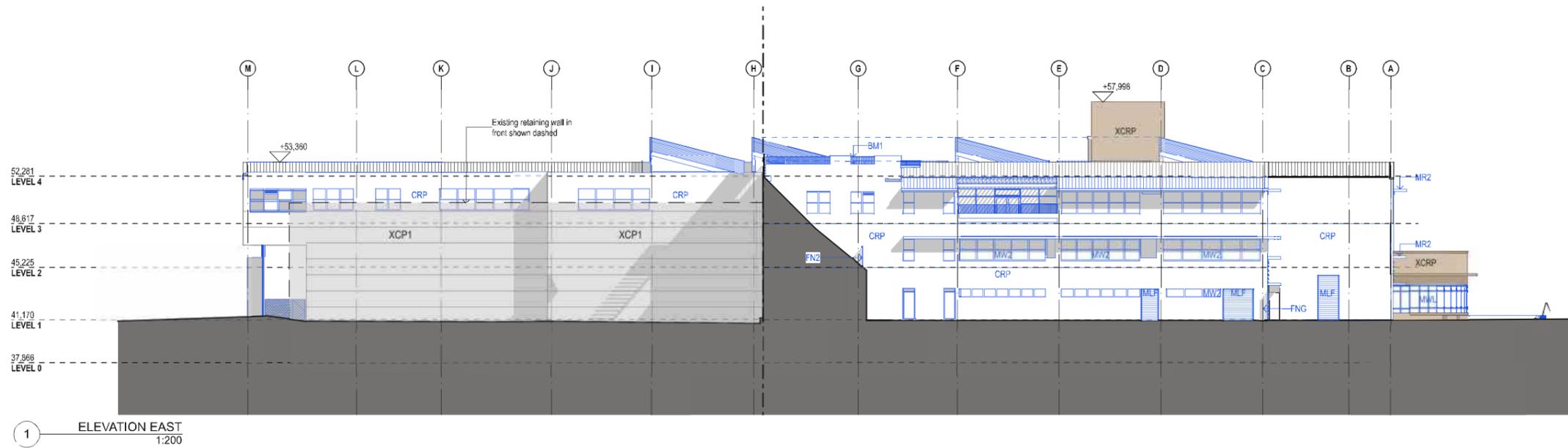
2 SOUTH ELEVATION
1:200



3 WEST ELEVATION
1:200

LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed
	Existing, significant heritage item

DATE 29/OCT/2019	REV A	DESCRIPTION: ISSUE FOR SDA	NOTES: Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd. and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	APPLICANT: ST LUKE'S GRAMMAR SCHOOL Mrs Jane Hughes (Business Manager) 210 Headland Road Dee Why NSW 2099	PROJECT: ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099 PROJECT NO : 18032	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au	DRAWING TITLE 224 HEADLAND ROAD ELEVATIONS_224 SCALES AT A1 PHASE SSDA	DRAWING NO A-200	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019 REV A
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LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed
	Existing, significant heritage item

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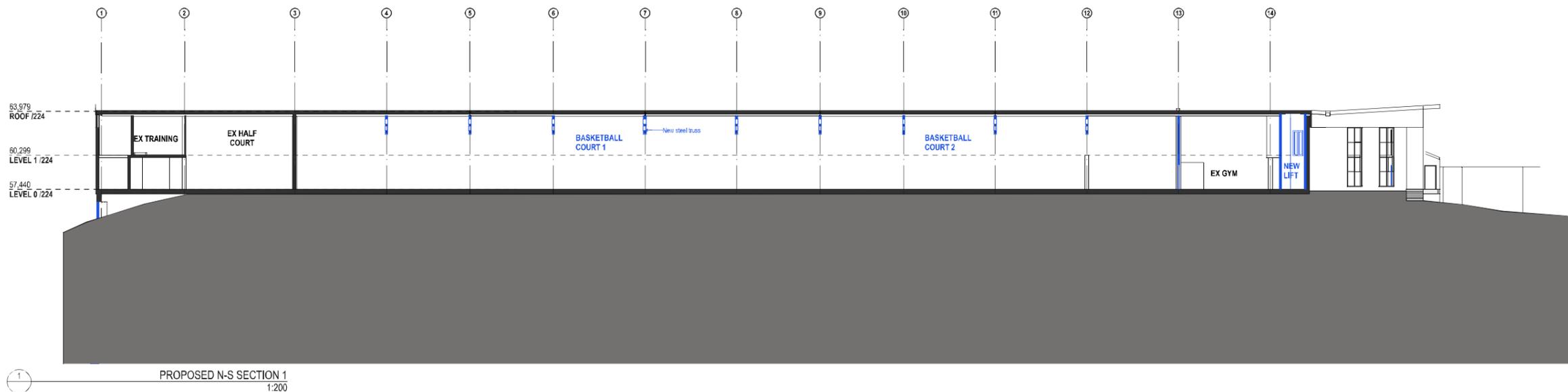
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800 Pittwater Road + 224 Headland Road
Dee Why NSW 2099 North Curl Curl NSW 2099
PROJECT NO : 18032

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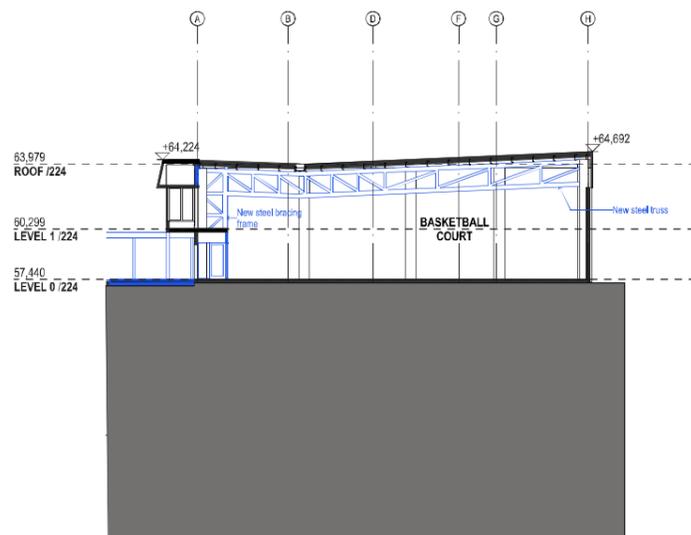
DRAWING TITLE
800 PITTWATER ROAD
ELEVATIONS EAST + SOUTH_800
SCALES AT A1
PHASE
SSDA

DRAWING NO
A-211

DRAWN BY
RM + CE + EG
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PT
DATE
October 2019
REV
A



PROPOSED N-S SECTION 1
1:200



PROPOSED E-W SECTION 1
1:200

LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

DATE	REV	DESCRIPTION:
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APPLICANT:
ST LUKE'S GRAMMAR SCHOOL
Mrs Jane Hughes (Business Manager)
210 Headland Road
Dee Why NSW 2099

PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
800 Pittwater Road + 224 Headland Road
Dee Why NSW 2099 North Curl Curl NSW 2099
PROJECT NO : 18032

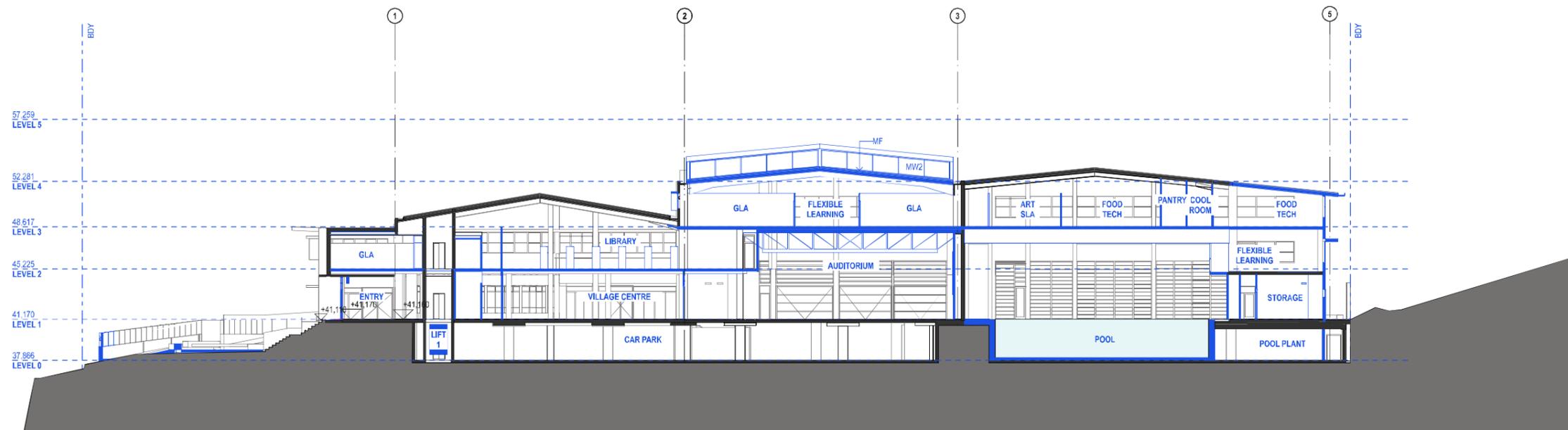
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DRAWING TITLE
224 HEADLAND ROAD
SECTIONS 1_224
SCALES AT A1
PHASE
SSDA

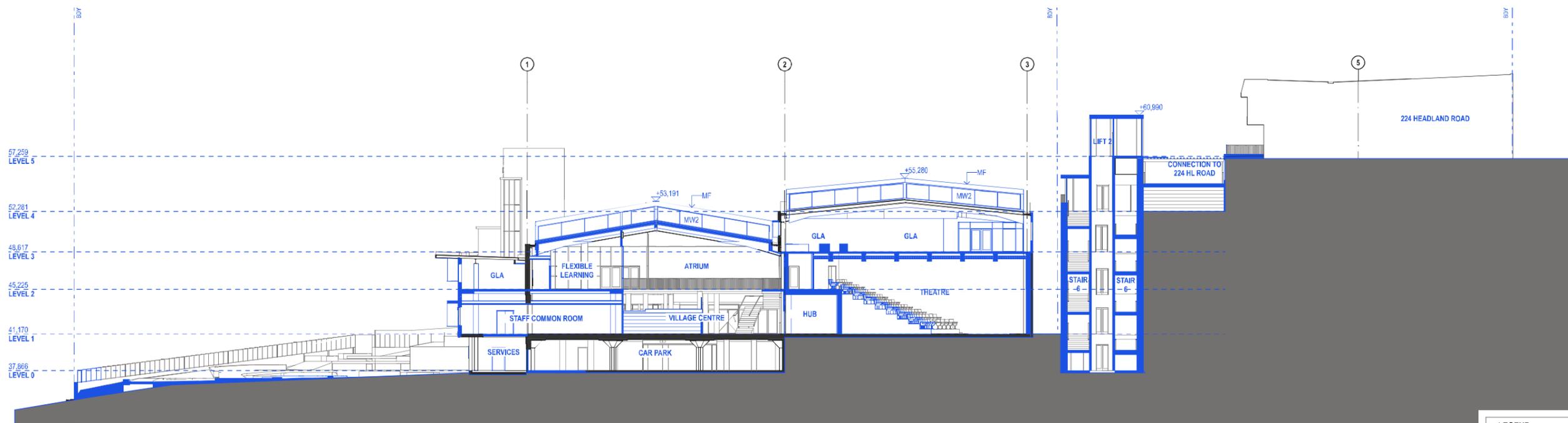
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A

1:200

A-300



PROPOSED E-W SECTION 1
1:200



PROPOSED E-W SECTION 2
1:200

LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA

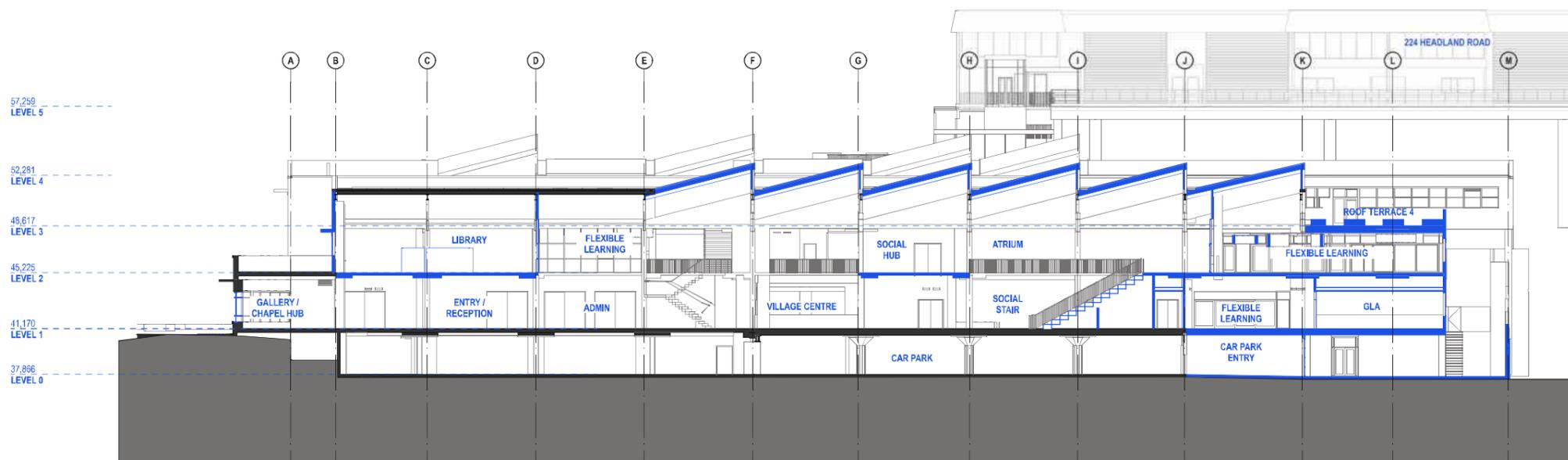
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800 Pittwater Road, Dee Why NSW 2099
PROJECT NO: 18032

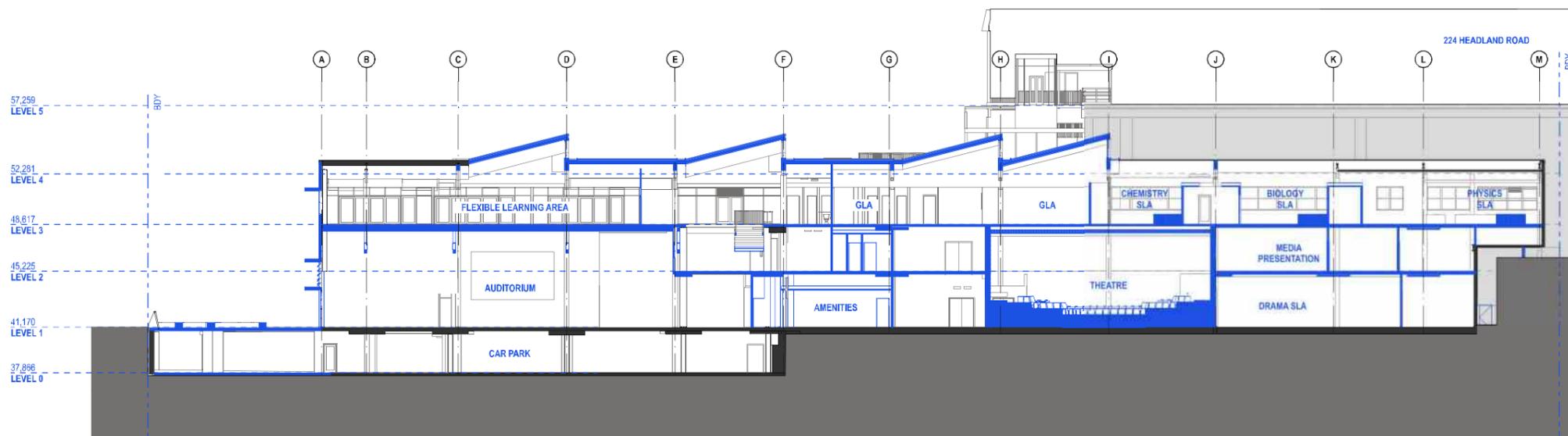
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DRAWING TITLE
800 PITTWATER ROAD
SECTIONS 1_800
SCALES AT A1
PHASE
SSDA

DRAWN BY
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PT
DATE
October 2019
REV
A
DRAWING NO
A-310



1 PROPOSED N-S SECTION 1
1:200



2 PROPOSED N-S SECTION 2
1:200

LEGEND	
	Existing to be retained
	Existing to be demolished
	Proposed

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SSDA

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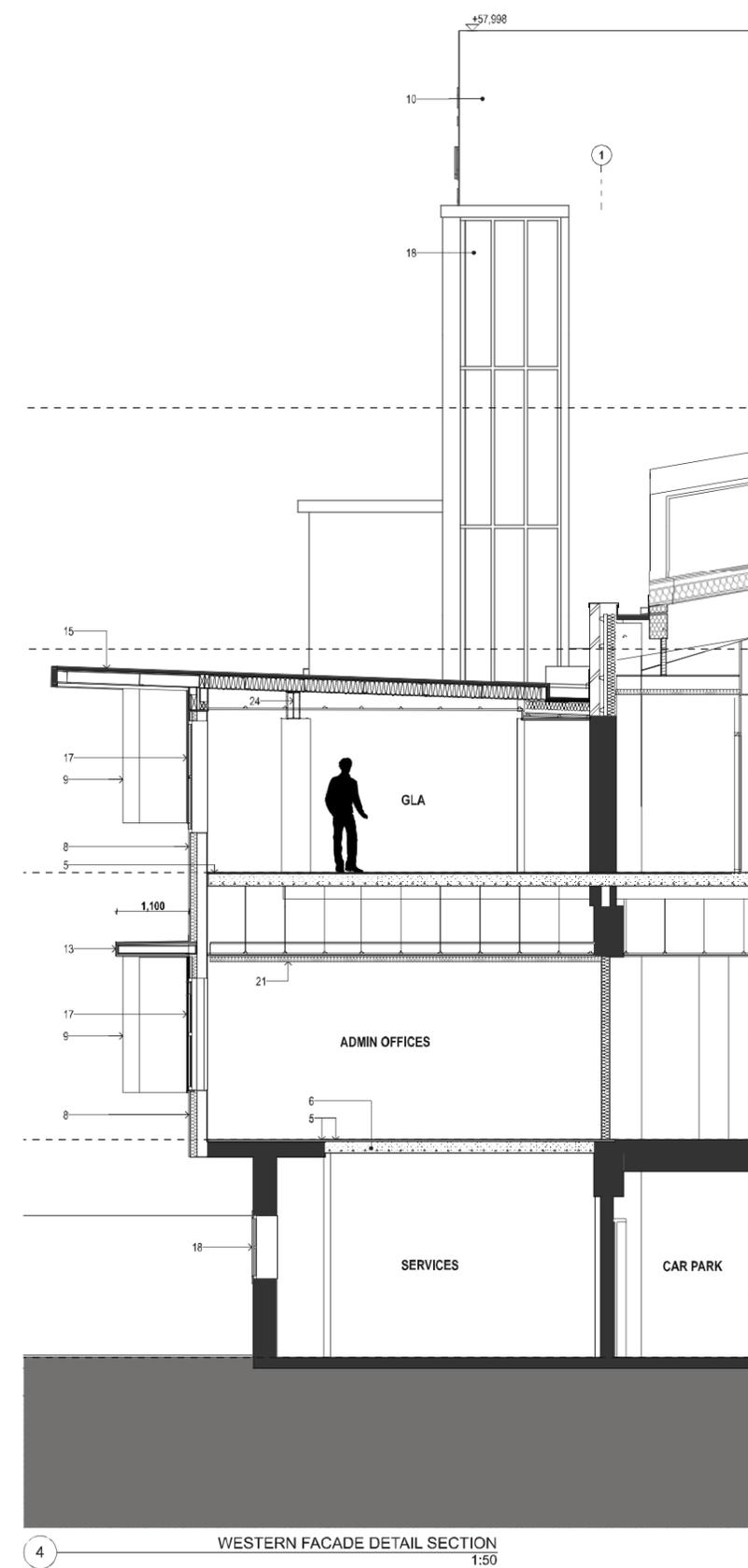
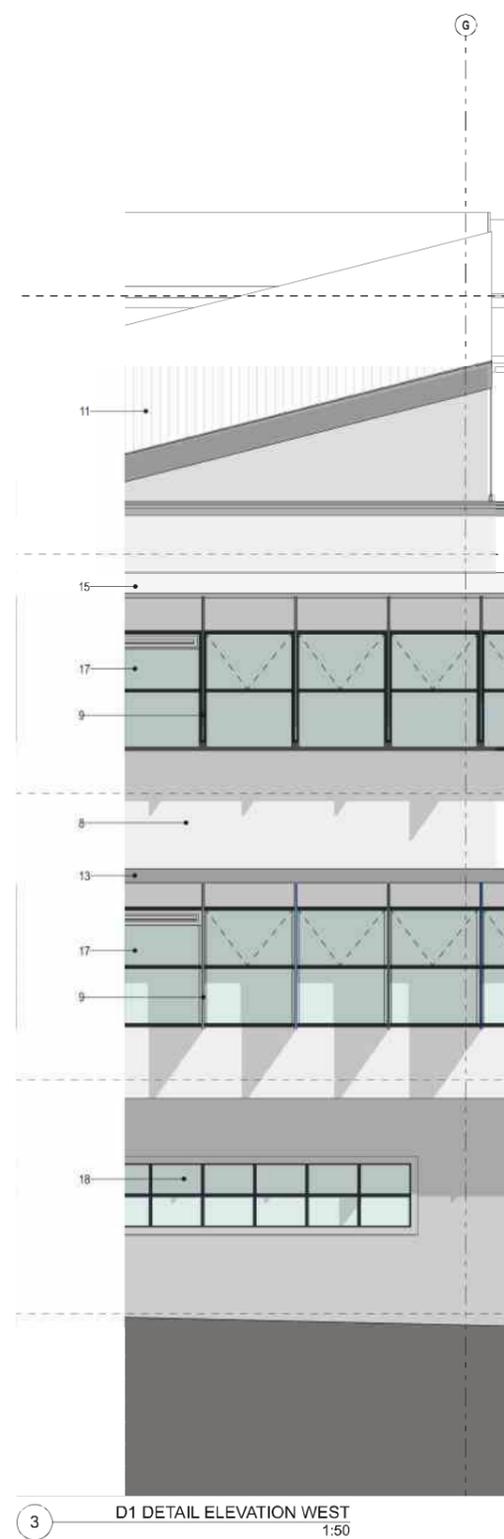
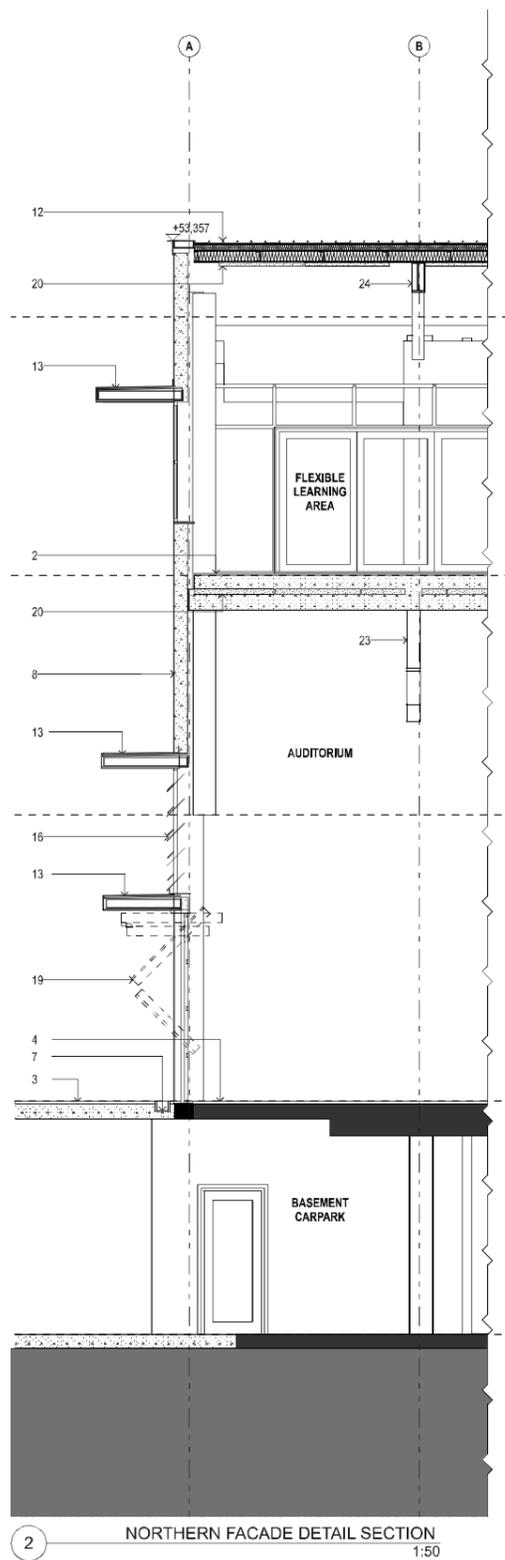
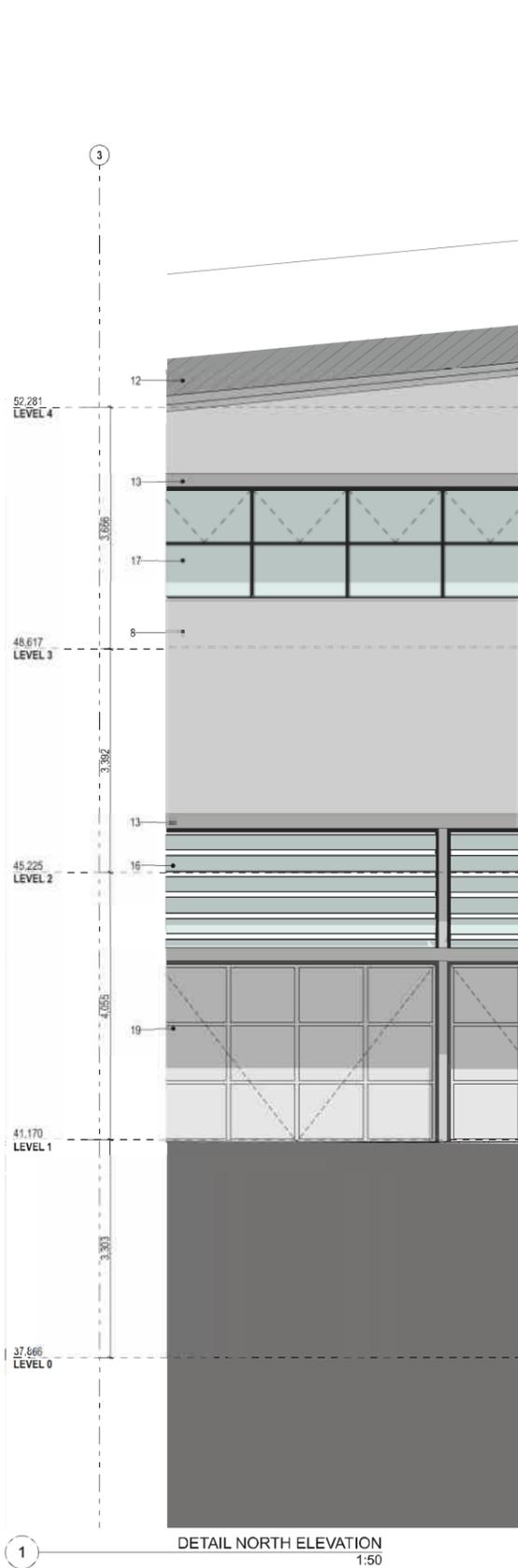
PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
800 Pittwater Road + 224 Headland Road
Dee Why NSW 2099 North Curl Curl NSW 2099
PROJECT NO : 18032

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DRAWING TITLE
800 PITTWATER ROAD
SECTIONS 3_800
SCALES AT A1
PHASE
SSDA

DRAWN BY
RM + CE + EG
CHECKED
PT
DATE
October 2019
REV
A
DRAWING NO
A-312



- LEGEND**
- 1 New slab
 - 2 Resilient floor with acoustic underlay on new slab
 - 3 External paving on new slab
 - 4 Sprung floor on existing slab
 - 5 Carpet tile on slab
 - 6 Infill slab
 - 7 Threshold flush sump drain
 - 8 Reinforced panel facade system with cement render finish fixed to new lightweight framing
 - 9 Pre-finished compressed fibre cement panel fixed to new lightweight framing
 - 10 Existing masonry wall with cement render, paint finish
 - 11 Klip-lock metal roof sheeting
 - 12 Klip-lock metal roof sheeting on new layer of purlins to accommodate new valley gutters at roof skylight pop out structures
 - 13 Framed lightweight awning with metal cladding
 - 14 Existing parapet
 - 15 Existing metal roof
 - 16 Aluminium framed double glazed operable louvers
 - 17 Double glazed Aluminium framed windows
 - 18 Double glazed Aluminium framed windows to existing heritage window opening
 - 19 Aluminium framed double glazed tilt up doors
 - 20 Acoustic panel lining to underside of roof
 - 21 Suspended insulated acoustic plasterboard ceiling, paint finish
 - 22 Existing steel column with new concrete encasing
 - 23 Long span truss
 - 24 Existing steel beam with fire rated cladding
 - 25 Vertical shading fin

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				PHASE SSDA	DRAWING NO A-313	SCALE AT A1 1:50	REV A

GFA AREA SCHEDULE - 224HL LEVEL 0			
Home Story Name	Zone Name	Measured Area	Net Volume
LEVEL 0 / 224			
	A1	119.00	321.31
	A2	2,002.62	12,015.72
	A3	139.32	376.17
	A4	24.01	64.83
	A5	23.93	64.60
		2,308.88 m²	12,842.63 m³

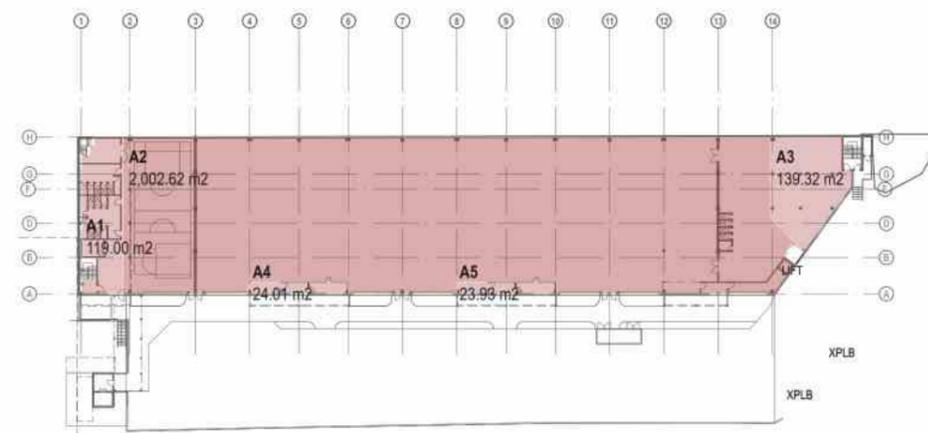
1 GFA AREA SCHEDULE - 224 HEADLAND ROAD LEVEL 0

GFA AREA SCHEDULE - 224HL LEVEL 1			
Home Story Name	Zone Name	Measured Area	Net Volume
LEVEL 1 / 224			
	A6	140.70	379.58
	A7	139.82	377.51
		280.52 m²	757.39 m³

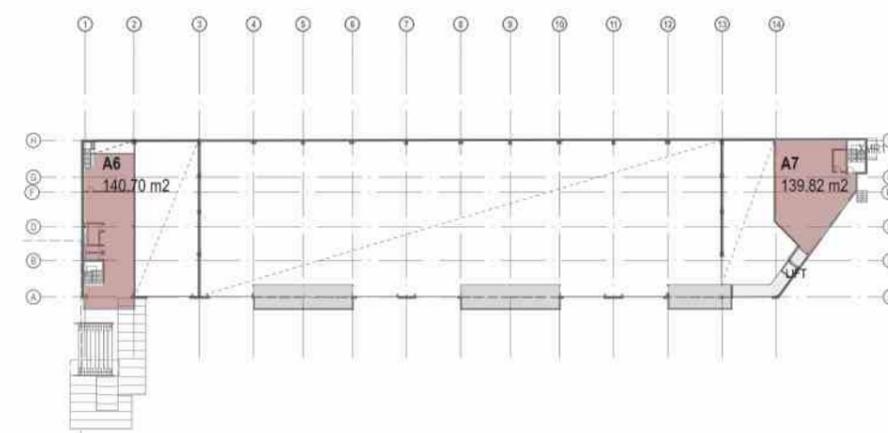
2 GFA AREA SCHEDULE - 224 HEADLAND ROAD LEVEL 1

FSR CALCULATION
224 HEADLAND ROAD

Site Area 5,234.88m²
Total GFA 2,589.40m²
FSR 1 : 0.49

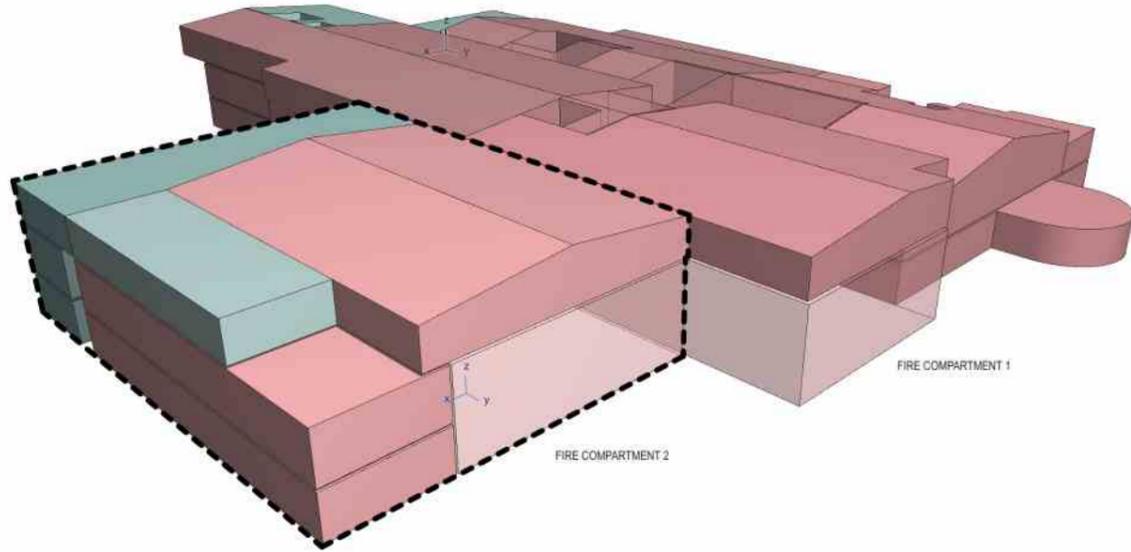


3 LEVEL 0 - GFA AREAS
1:500



4 LEVEL 1 - GFA AREAS
1:500

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							DRAWING NO A-400	



2 3D VIEW 1

800 PITTWATER ROAD - PROPOSED GFAAREA SCHEDULE			
Home Story Name	Zone Name	Measured Area	Net Volume
LEVEL 1			
	B01 /1	262.38	878.99
	B02 /1	266.46	892.64
	FF /1	1,027.22	3,441.21
	FF /2	404.50	2,933.68
	FF /3	177.63	1,799.56
	OW /1	95.31	965.61
	OW /2	1,541.50	5,163.99
	OW /3	107.31	1,087.18
	OW /4	282.89	2,051.75
	IMED /1	475.27	3,446.95
	IMED /2	336.41	1,126.98
		4,976.88 m²	23,786.54 m³
LEVEL 2			
	B01 /1	395.06	1,462.79
	B02 /1	318.59	1,179.65
	FF /1	77.52	287.02
	FF /2	483.62	3,385.36
	FF /3	191.01	707.26
	FF /4	367.35	1,360.17
	FF /5	66.06	660.60
	FF /6	52.07	192.80
	OW /1	581.19	4,068.31
	OW /2	657.08	2,432.97
	IMED /1	262.04	970.24
		3,451.60 m²	16,707.17 m³
LEVEL 3			
	B01 /1	274.40	802.23
	B02 /1	149.16	517.68
	B03 /1	103.37	302.21
	FF /1	672.69	2,378.49
	OW /1	995.79	3,563.59
	IMED /1	653.81	3,922.88
		2,848.22 m²	11,487.08 m³
		11,277.70 m²	51,982.79 m³

GFA AREA SCHEDULE 800PW - COMPARTMENT 1			
Home Story Name	Zone Name	Measured Area	Net Volume
LEVEL 1			
	B02 /1	266.46	892.64
	FF /1	1,027.22	3,441.21
	FF /2	404.50	2,933.68
	FF /3	177.63	1,799.56
	OW /1	95.31	965.61
	OW /2	1,541.50	5,163.99
	OW /3	107.31	1,087.18
	OW /4	282.89	2,051.75
		3,902.82 m²	18,335.62 m³
LEVEL 2			
	B02 /1	318.59	1,179.65
	FF /1	77.52	287.02
	FF /2	483.62	3,385.36
	FF /3	191.01	707.26
	FF /4	367.35	1,360.17
	FF /5	66.06	660.60
	FF /6	52.07	192.80
	OW /1	581.19	4,068.31
	OW /2	657.08	2,432.97
		2,794.50 m²	14,274.14 m³
LEVEL 3			
	B02 /1	149.16	517.68
	FF /1	672.69	2,378.49
	OW /1	995.79	3,563.59
		1,817.64 m²	6,459.76 m³
		8,514.96 m²	39,069.52 m³

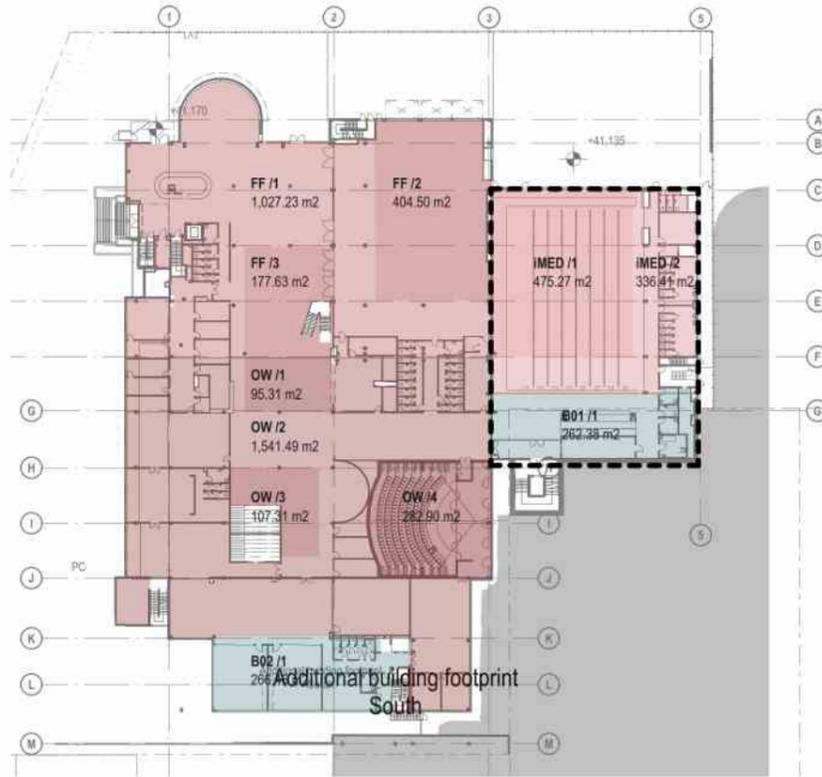
14 GFA AREA SCHEDULE 800PW - COMPARTMENT 1

GFA AREA SCHEDULE 800PW - COMPARTMENT 2			
Home Story Name	Zone Name	Measured Area	Net Volume
LEVEL 1			
	B01 /1	262.38	878.99
	IMED /1	475.27	3,446.95
	IMED /2	336.41	1,126.98
		1,074.06 m²	5,452.92 m³
LEVEL 2			
	B01 /1	395.06	1,462.79
	IMED /1	262.04	970.24
		657.10 m²	2,433.03 m³
LEVEL 3			
	B01 /1	274.40	802.23
	B03 /1	103.37	302.21
	IMED /1	653.81	3,922.88
		1,031.58 m²	5,027.32 m³
		2,762.74 m²	12,913.27 m³

15 GFA AREA SCHEDULE 800PW - COMPARTMENT 2

FSR CALCULATION	
800 PITTWATER ROAD	
Site Area	10,239.83m2
Total GFA	11,277.70m2
FSR	1 : 1.1

3 GFA AREA SCHEDULE 800PW - TOTAL



4 LEVEL 1 - GFA AREAS 1:500

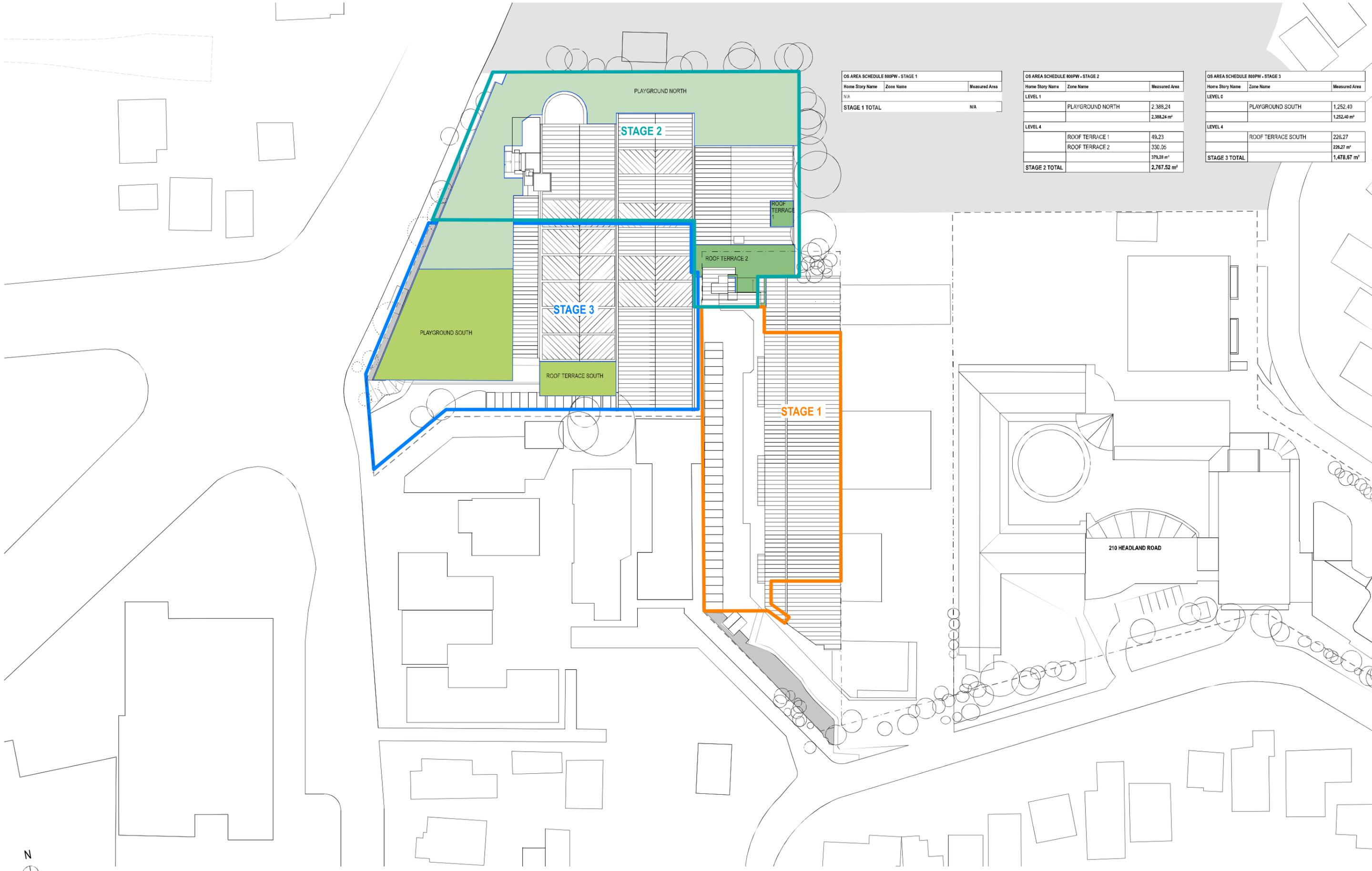


5 LEVEL 2 - GFA AREAS 1:500



6 LEVEL 3 - GFA AREAS 1:500

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OS AREA SCHEDULE 800PW - STAGE 1		
Home Story Name	Zone Name	Measured Area
N/A		
STAGE 1 TOTAL		N/A

OS AREA SCHEDULE 800PW - STAGE 2		
Home Story Name	Zone Name	Measured Area
LEVEL 1		
	PLAYGROUND NORTH	2,388.24
		2,388.24 m²
LEVEL 4		
	ROOF TERRACE 1	49.23
	ROOF TERRACE 2	330.05
		379.28 m²
STAGE 2 TOTAL		2,767.52 m²

OS AREA SCHEDULE 800PW - STAGE 3		
Home Story Name	Zone Name	Measured Area
LEVEL 0		
	PLAYGROUND SOUTH	1,252.40
		1,252.40 m²
LEVEL 4		
	ROOF TERRACE SOUTH	226.27
		226.27 m²
STAGE 3 TOTAL		1,478.67 m²

210 HEADLAND ROAD

DATE	REV	DESCRIPTION
29/OCT/2019	A	ISSUE FOR SDA

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PROJECT:
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099
PROJECT NO : 18032

ARCHITECT
TONKIN ZULAIKHA GREER ARCHITECTS
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DRAWING TITLE
GENERAL
OPEN SPACE CALCULATION
SCALES AT A1
PHASE SDA
DRAWING NO
A-402
DRAWN BY
RM + CE + EG
CHECKED
PT
DATE
October 2019
REV
A

224 HEADLAND ROAD ACCOMODATION SCHEDULE

ACCOMODATION SCHEDULE - 224		
STORY	ZONE NAME	AREA
LEVEL 0 /224		
		4.95
	AIR LOCK	8.53
	AIR LOCK	8.81
	EX ACC SHWC	7.67
	EX FEMALE WC	35.78
	EX FOYER	22.64
	EX GYM	318.85
	EX HALF COURT	228.56
	EX MALE WC	25.24
	EX OFFICE STRG	20.34
	EX STAIR A	12.14
	EX WC	2.45
	MULTI PURPOSE HALL / BASKETBALL	1,401.56
	STORE	8.68
	STORE	8.82
LEVEL 0 TOTAL		2,115.12 m²
LEVEL 1 /224		
		29.08
		46.08
		46.39
	EX FITNESS + TRAINING	93.30
	EX SCHOOL CLOTHING STORE	136.22
	EX STORAGE	36.35
	EX STORE	5.46
	EX WC	5.46
	EX WC	5.76
LEVEL 1 TOTAL		484.11 m²
TOTAL AREA		2,519.23 m²

DATE 29/OCT/2019	REV A	DESCRIPTION: ISSUE FOR SDA	NOTES: Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd. and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.	APPLICANT: ST LUKE'S GRAMMAR SCHOOL Mrs Jane Hughes (Business Manager) 210 Headland Road Dee Why NSW 2099	PROJECT : ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS 800 Pittwater Road + 224 Headland Road Dee Why NSW 2099 North Curl Curl NSW 2099 PROJECT NO : 18032	ARCHITECT TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 46002722349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tzg.com.au WEB: www.tzg.com.au	DRAWING TITLE 224 HEADLAND ROAD ACCOMMODATION SCHEDULE 224 SCALES AT A1	DRAWN BY RM + CE + EG CHECKED PT DATE October 2019	
							PHASE SSDA	DRAWING NO A-403	REV A

800 PITTWATER ROAD

STAGE 2 ACCOMMODATION SCHEDULE

ACCOMMODATION SCHEDULE - STAGE 2_800					
STORY	ZONE NAME	AREA	GLA	SLA	SEMINAR
LEVEL 0, SERVICE					
	BOILER ROOM	55.98	0	0	0
	CAR PARK SUPPLY	12.01	0	0	0
	CHEMICAL STORE	5.00	0	0	0
	COMMS ROOM	16.00	0	0	0
	ELECTRICAL SWITCHROOM	21.60	0	0	0
	FIRE SVCS PUMP ROOM	45.95	0	0	0
	POOL BALANCE TANK	38.72	0	0	0
	POOL FILTRATION ROOM	89.75	0	0	0
	POOL MECH PLANT ROOM	101.76	0	0	0
LEVEL 0 TOTAL		386.77 m²	0	0	0
LEVEL 1, ADMIN + STAFF					
	ASSISTANT HOC	11.80	0	0	0
	PUBLIC FOYER	91.59	0	0	0
	PUBLIC RECEPTION	27.66	0	0	0
	STUDENT RECEPTION	9.59	0	0	0
	TEMP ADMIN	120.22	0	0	0
	TEMP ADMIN OFFICE	106.21	0	0	0
	TEMP BOARDROOM	23.74	0	0	0
	TEMP COPY ROOM	12.17	0	0	0
	TEMP FIRST AID	10.21	0	0	0
	TEMP HEAD PF CAMPUS	14.81	0	0	0
	TEMP IT OFFICE	19.61	0	0	0
	TEMP PRINCIPAL	19.22	0	0	0
	TEMP STAFF COMMON ROOM	81.20	0	0	0
	TEMP STAFF KITCHEN	12.87	0	0	0
LEVEL 1, AMENITIES STAFF					
	ACC SH	6.10	0	0	0
	STAFF SH	4.25	0	0	0
	WC - ACC	5.42	0	0	0
	WC - F	2.31	0	0	0
	WC - M	2.31	0	0	0
LEVEL 1, AMENITIES STUDENTS					
	ACC CHANGE	12.32	0	0	0
	ACC W/C	6.24	0	0	0
	CHANGE F	38.18	0	0	0
	CHANGE M	36.45	0	0	0
	TEMP ACC	5.72	0	0	0
	TEMP WC - F	7.03	0	0	0
	TEMP WC - GN	3.30	0	0	0
	TEMP WC - M	7.02	0	0	0
	WC - F	4.69	0	0	0
	WC - M	4.50	0	0	0
LEVEL 1, CAFE					
	CAFE COUNTER	4.53	0	0	0
	TEMP CAFE KITCHEN	22.67	0	0	0
LEVEL 1, HUMANITIES					
	STAGE 2 TEMP GLA	62.30	1	0	0
	STAGE 2 TEMP GLA	68.94	1	0	0
	TEMP MULTI PURPOSE AREA	348.34	0	0	0
	TEMP SEMINAR	49.06	1	0	0
LEVEL 1, SERVICE					
	COMMS	4.00	0	0	0
	SPORT STORE	24.01	0	0	0
	STORE	15.48	0	0	0
	WASTE COMPOUND SCHOOL	16.66	0	0	0
LEVEL 1, WELLNESS					
	FIRST AID	4.02	0	0	0
	POOL	430.00	0	0	0
	POOL AREA	803.74	0	0	0
	POOL RECEPTION	7.77	0	0	0
	POOL STORE	34.22	0	0	0
LEVEL 1 TOTAL		2,604.48 m²	3	0	0
LEVEL 2, AMENITIES STAFF					
	ACC WC	5.85	0	0	0
LEVEL 2, AMENITIES STUDENTS					

ACCOMMODATION SCHEDULE - STAGE 2_800					
STORY	ZONE NAME	AREA	GLA	SLA	SEMINAR
	ACC WC	5.85	0	0	0
	WC - F	5.88	0	0	0
	WC - F	7.03	0	0	0
	WC - GN	3.30	0	0	0
	WC - M	5.20	0	0	0
	WC - M	7.03	0	0	0
LEVEL 2, COMMON SPACES					
	LEARNING HUB	261.98	0	0	0
	LIBRARY HUB	501.49	0	0	0
LEVEL 2, HUMANITIES					
	FLEXIBLE LEARNING	38.82	0	0	0
	GLA 1	58.72	1	0	0
	SEMINAR ROOM	33.79	0	0	1
	STAGE 2 TEMP GLA	71.90	1	0	0
	STAGE 2 TEMP GLA	71.90	1	0	0
	STAGE 2 TEMP GLA	73.66	1	0	0
	STAGE 2 TEMP GLA	75.71	1	0	0
	TEMP GLA 2	60.95	1	0	0
LEVEL 2, SERVICE					
	COMMS	4.00	0	0	0
	COMMS	4.01	0	0	0
	STORAGE	9.10	0	0	0
	STRG	16.30	0	0	0
LEVEL 2, WELLNESS					
	FLEXIBLE LEARNING	83.17	0	0	0
	GLA 1	81.25	1	0	0
	SEMINAR	17.11	0	0	1
	SEMINAR	20.22	0	0	1
	SEMINAR	20.77	0	0	1
LEVEL 2 TOTAL		1,544.79 m²	7	0	4
LEVEL 3, AMENITIES STUDENTS					
	WC - ACC	6.01	0	0	0
	WC - F	7.56	0	0	0
	WC - GN	3.63	0	0	0
	WC - M	7.56	0	0	0
LEVEL 3, COMMON SPACES					
	HUB 1	75.49	0	0	0
	HUB 2	43.47	0	0	0
LEVEL 3, DESIGN + TECHNOLOGY					
	COOL	7.29	0	0	0
	DUST EXTRACTOR	12.93	0	0	0
	FOOD PREP	16.04	0	0	0
	FOOD TECH SLA 1	129.97	0	1	0
	MATERIALS RACKS	8.60	0	0	0
	PANTRY	7.29	0	0	0
	TEMP D+T WORKSHOP 1	105.21	0	1	0
	WELDING	12.50	0	0	0
LEVEL 3, GREEN AREA					
	ROOF TERRACE 2	50.42	0	0	0
LEVEL 3, SCIENCE + MATHS					
	TEMP BIOLOGY / CHEMISTRY SLA	136.99	0	1	0
	TEMP CHEM STORE	13.00	0	0	0
	TEMP PHYSICS SLA	100.42	0	1	0
	TEMP SCIENCE PREP	12.82	0	0	0
	TEMP SCIENCE PREP	14.50	0	0	0
	TEMP SCIENCE PREP	16.04	0	0	0
LEVEL 3, SERVICE					
	CLEANER	4.46	0	0	0
	COMMS	4.00	0	0	0
	ELEC	0.75	0	0	0
	STORAGE	11.50	0	0	0
LEVEL 3, VISUAL ARTS					
	ART SLA	90.66	0	1	0
	ART STORE	8.92	0	0	0
	ART STORE	8.92	0	0	0

ACCOMMODATION SCHEDULE - STAGE 2_800					
STORY	ZONE NAME	AREA	GLA	SLA	SEMINAR
	FLEXIBLE LEARNING	121.05	0	0	0
	GLA 1	66.71	1	0	0
	GLA 2	60.01	1	0	0
	GLA 3	61.34	1	0	0
	GLA 4	58.35	1	0	0
	GLA 5	57.34	1	0	0
	GLA 6	62.28	1	0	0
	PROJECT STORE	3.17	0	0	0
	PROJECT STORE	3.17	0	0	0
	WET AREA	3.62	0	0	0
	WET AREA	3.62	0	0	0
LEVEL 3 TOTAL		1,416.43 m²	6	5	0
LEVEL 4, GREEN AREA					
	ROOF TERRACE 4	307.97	0	0	0
LEVEL 4 TOTAL		307.97 m²	0	0	0
STAGE 2 TOTAL		6,260.44 m²	16	5	4

DATE	REV	DESCRIPTION:	NOTES:
29/OCT/2019	A	ISSUE FOR SSDA	Do not scale off drawings. Use figured dimensions only. Report any discrepancies to the architect. These designs, plans, specifications and the copyright therein are the property of Tonkin Zulaikha Greer Architects Pty Ltd. and must not be reproduced or copied wholly or in part without written permission of Tonkin Zulaikha Greer Architects Pty Ltd.

PROJECT :	ARCHITECT	DRAWING TITLE	DRAWN BY
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au	800 PITTWATER ROAD ACCOMMODATION SCHEDULE - STAGE 2_800 SCALES AT A1	RM + CE + EG
800 Pittwater Road Dee Why NSW 2099	224 Headland Road North Curl Curl NSW 2099	PHASE SSDA	CHECKED PT
PROJECT NO : 18032		DRAWING NO A-404	DATE October 2019
		REV	A

PROJECT :	ARCHITECT	DRAWING TITLE	DRAWN BY
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS	TONKIN ZULAIKHA GREER ARCHITECTS 117 Reservoir Street ABN: 4600272349 P: (02) 9215 4900 F: (02) 9215 4901 EMAIL: info@tզg.com.au WEB: www.tզg.com.au	800 PITTWATER ROAD ACCOMMODATION SCHEDULE - STAGE 2_800 SCALES AT A1	RM + CE + EG
800 Pittwater Road Dee Why NSW 2099	224 Headland Road North Curl Curl NSW 2099	PHASE SSDA	CHECKED PT
PROJECT NO : 18032		DRAWING NO A-404	DATE October 2019
		REV	A

800 PITTWATER ROAD
STAGE 3 ACCOMODATION SCHEDULE

ACCOMMODATION SCHEDULE - STAGE 3_800					
STORY	ZONE NAME	AREA	GLA	SLA	SEMINAR
LEVEL 0, CAR PARK					
	BIKE PARKING	36.58	0	0	0
LEVEL 0, EXISTING					
	EXISTING CAR PARK NORTH	2,585.81	0	0	0
	EXISTING CAR PARK SOUTH	680.02	0	0	0
LEVEL 0, SERVICE					
	BOILER ROOM	55.98	0	0	0
	CAR PARK SUPPLY	12.01	0	0	0
	CHEMICAL STORE	5.00	0	0	0
	COMMS ROOM	16.00	0	0	0
	ELECTRICAL SWITCHROOM	21.60	0	0	0
	FIRE SVCS PUMP ROOM	45.95	0	0	0
	GARBAGE ROOM	55.36	0	0	0
	GARDEN STORE	32.64	0	0	0
	GENERAL STORE	30.99	0	0	0
	MAINTENANCE STORE	74.35	0	0	0
	POOL BALANCE TANK	38.72	0	0	0
	POOL FILTRATION ROOM	89.75	0	0	0
	POOL MECH PLANT ROOM	101.76	0	0	0
	STORAGE	28.34	0	0	0
	TBD	36.08	0	0	0
	TBD	38.61	0	0	0
LEVEL 0 TOTAL		3,985.55 m²	0	0	0
LEVEL 1, ADMIN + STAFF					
	ADMIN OFFICE	13.62	0	0	0
	ADMIN OFFICE	179.01	0	0	0
	ASSISTANT HOC	15.00	0	0	0
	BOARDROOM	35.00	0	0	0
	COPY ROOM	15.89	0	0	0
	FIRST AID	11.97	0	0	0
	HEAD OF CAMPUS	15.00	0	0	0
	INTERVIEW 1	11.16	0	0	0
	IT OFFICE	17.00	0	0	0
	PRINCIPAL	15.00	0	0	0
	PUBLIC FOYER	91.59	0	0	0
	PUBLIC RECEPTION	27.66	0	0	0
	SERVER ROOM	6.10	0	0	0
	STAFF COMMON ROOM	79.58	0	0	0
	STAFF KITCHEN	3.20	0	0	0
	STAFF LOUNGE	30.23	0	0	0
	STUDENT FOYER	47.12	0	0	0
	STUDENT OFFICE	9.51	0	0	0
	STUDENT RECEPTION	15.00	0	0	0
	T.B.C	66.19	0	0	0
LEVEL 1, AMENITIES STAFF					
	ACC SH	6.10	0	0	0
	ACC WC	5.73	0	0	0
	STAFF SH	4.25	0	0	0
	STAFF WC - F	3.43	0	0	0
	STAFF WC - M	3.44	0	0	0
	WC - ACC	5.42	0	0	0
	WC - ACC	6.34	0	0	0
	WC - F	7.03	0	0	0
	WC - GN	3.30	0	0	0
	WC - M	7.02	0	0	0
LEVEL 1, AMENITIES STUDENTS					
	ACC CHANGE	12.32	0	0	0
	ACC WC	6.24	0	0	0
	CHANGE F	38.18	0	0	0
	CHANGE M	36.45	0	0	0
	WC - ACC	5.30	0	0	0
	WC - F	4.69	0	0	0
	WC - F	6.83	0	0	0
	WC - F	7.65	0	0	0
	WC - F	27.95	0	0	0
	WC - GN	3.43	0	0	0
	WC - GN	3.71	0	0	0
	WC - M	4.50	0	0	0
	WC - M	6.82	0	0	0

ACCOMMODATION SCHEDULE - STAGE 3_800					
STORY	ZONE NAME	AREA	GLA	SLA	SEMINAR
	WC - M	24.07	0	0	0
LEVEL 1, AUDITORIUM					
	AUDITORIUM	651.20	0	0	0
	BACKSTAGE	16.72	0	0	0
LEVEL 1, CAFE					
	CAFE COLD	7.07	0	0	0
	CAFE COUNTER	19.28	0	0	0
	CAFE KITCHEN	58.63	0	0	0
	CAFE OFFICE	17.55	0	0	0
	CAFE STORE	7.06	0	0	0
LEVEL 1, COMMON SPACES					
	GALLERY / CHAPEL HUB	81.21	0	0	0
	HUB 2	32.10	0	0	0
LEVEL 1, PERFORMING ARTS					
	CHANGE M/F	22.43	0	0	0
	DRAMA SLA	111.15	0	1	0
	FLEXIBLE LEARNING	147.83	0	0	0
	GLA 1	70.06	1	0	0
	GLA 2	69.80	1	0	0
	MUSIC SLA	86.45	0	1	0
	STORE	21.03	0	0	0
	THEATRE	262.84	0	0	0
	TUTOR ROOM 1	15.41	0	0	1
	TUTOR ROOM 2	15.62	0	0	1
	TUTOR ROOM 3	38.47	0	0	1
LEVEL 1, SERVICE					
	CHAIR STORE	18.07	0	0	0
	COMMS	4.00	0	0	0
	COMMS	4.00	0	0	0
	COMMS	5.10	0	0	0
	SECURE STORE	28.08	0	0	0
	SPORT STORE	24.01	0	0	0
	STORAGE	4.62	0	0	0
	STORAGE	6.10	0	0	0
	STORAGE	13.41	0	0	0
	STORAGE	21.78	0	0	0
	STORE	15.48	0	0	0
LEVEL 1, WELLNESS					
	FIRST AID	4.02	0	0	0
	POOL	430.00	0	0	0
	POOL AREA	803.74	0	0	0
	POOL RECEPTION	7.77	0	0	0
	POOL STORE	34.22	0	0	0
LEVEL 1 TOTAL		4,122.34 m²	2	2	3
LEVEL 2, AMENITIES STAFF					
	ACC WC	5.85	0	0	0
	WC STAFF M/F	2.17	0	0	0
LEVEL 2, AMENITIES STUDENTS					
	ACC WC	5.85	0	0	0
	WC - F	5.88	0	0	0
	WC - F	6.31	0	0	0
	WC - F	7.03	0	0	0
	WC - F	7.31	0	0	0
	WC - GN	3.30	0	0	0
	WC - M	5.20	0	0	0
	WC - M	6.07	0	0	0
	WC - M	6.30	0	0	0
	WC - M	7.03	0	0	0
LEVEL 2, COMMON SPACES					
	HUB 1	53.85	0	0	0
	HUB 2	41.40	0	0	0
	HUB 3	41.74	0	0	0
	LEARNING HUB	94.56	0	0	0
	LIBRARY HUB	501.49	0	0	0
LEVEL 2, HUMANITIES					
	FLEXIBLE LEARNING	38.62	0	0	0
	FLEXIBLE LEARNING	81.36	0	0	0
	FLEXIBLE LEARNING	115.33	0	0	0
	FLEXIBLE LEARNING	119.79	0	0	0

ACCOMMODATION SCHEDULE - STAGE 3_800					
STORY	ZONE NAME	AREA	GLA	SLA	SEMINAR
	GLA 1	58.72	1	0	0
	GLA 2	62.13	1	0	0
	GLA 3	62.48	1	0	0
	GLA 4	61.85	1	0	0
	GLA 5	59.69	1	0	0
	GLA 6	60.85	1	0	0
	GLA 7	63.41	1	0	0
	GLA 8	66.43	1	0	0
	GLA 9	64.51	1	0	0
	SEMINAR ROOM	33.79	0	0	1
	STUDENT LOUNGE	30.23	0	0	0
LEVEL 2, MEDIA CENTRE					
	EDITING	45.87	0	0	0
	GREEN SCREEN	32.83	0	0	0
	MEDIA PRESENTATION	110.62	0	0	0
	RECORDING	34.46	0	0	0
LEVEL 2, PERFORMING ARTS					
	THEATRE	87.41	0	0	0
LEVEL 2, SERVICE					
	COMMS	4.00	0	0	0
	COMMS	4.00	0	0	0
	COMMS	4.01	0	0	0
	STORAGE	6.57	0	0	0
	STORAGE	9.10	0	0	0
	STRG	16.30	0	0	0
LEVEL 2, SUPPORT					
	STAFF	11.96	0	0	0
	STAFF	25.49	0	0	0
	STAFF STUDY	31.97	0	0	0
LEVEL 2, WELLNESS					
	DANCE	125.78	0	0	0
	FLEXIBLE LEARNING	83.17	0	0	0
	GLA 1	81.25	1	0	0
	GYM	90.60	0	0	0
	SEMINAR	17.11	0	0	1
	SEMINAR	20.22	0	0	1
	SEMINAR	20.77	0	0	1
LEVEL 2 TOTAL		2,643.02 m²	10	0	4
LEVEL 3, AMENITIES STUDENTS					
	WC - ACC	6.01	0	0	0
	WC - F	7.55	0	0	0
	WC - F	7.56	0	0	0
	WC - GN	3.63	0	0	0
	WC - M	7.55	0	0	0
	WC - M	7.56	0	0	0
LEVEL 3, COMMON SPACES					
	HUB 1	75.49	0	0	0
	HUB 2	43.47	0	0	0
	HUB 3	51.56	0	0	0
LEVEL 3, DESIGN + TECHNOLOGY					
	COOL	7.29	0	0	0
	D+T WORKSHOP 1	105.21	0	1	0
	D+T WORKSHOP 2	100.42	0	1	0
	DUST EXTRACTOR	12.93	0	0	0
	FINISHING	14.50	0	0	0
	FOOD PREP	16.04	0	0	0
	FOOD PREP	25.59	0	0	0
	FOOD TECH SLA 1	129.97	0	1	0
	FOOD TECH SLA 2	138.10	0	1	0
	MATERIALS RACKS	8.60	0	0	0
	PANTRY	7.29	0	0	0
	RESOURCE STORE	16.04	0	0	0
	WELDING	12.50	0	0	0
LEVEL 3, GREEN AREA					
	ROOF TERRACE 2	50.42	0	0	0
	ROOF TERRACE 3	225.52	0	0	0
LEVEL 3, SCIENCE + MATHS					
	APP STORE	12.50	0	0	0
	BIOLOGY SLA	92.23	0	1	0

ACCOMMODATION SCHEDULE - STAGE 3_800					
STORY	ZONE NAME	AREA	GLA	SLA	SEMINAR
	BOT / ZOO ROOM	13.39	0	0	0
	CHEM STORE	14.50	0	0	0
	CHEMISTRY SLA	99.13	0	1	0
	FLEXIBLE LEARNING	69.78	0	0	0
	FLEXIBLE LEARNING	106.08	0	0	0
	GLA 10	51.07	1	0	0
	GLA 11	62.47	1	0	0
	GLA 7	60.22	1	0	0
	GLA 8	51.11	1	0	0
	GLA 9	60.22	1	0	0
	PHYSICS SLA	96.76	0	1	0
	SCIENCE PREP	15.58	0	0	0
	SCIENCE PREP	17.49	0	0	0
LEVEL 3, SERVICE					
	CLEANER	4.46	0	0	0
	COMMS	4.00	0	0	0
	COMMS	4.00	0	0	0
	ELEC	0.75	0	0	0
	STORAGE	8.15	0	0	0
LEVEL 3, VISUAL ARTS					
	ART SLA	90.68	0	1	0
	ART STORE	8.92	0	0	0
	ART STORE	8.92	0	0	0
	FLEXIBLE LEARNING	121.05	0	0	0
	GLA 1	65.71	1	0	0
	GLA 2	60.01	1	0	0
	GLA 3	61.34	1	0	

CARPARKING SCHEDULE

800 PITTWATER ROAD

EXISTING		
		Quantity
LEVEL 0		
	800 PITTWATER RD EXTERNAL	65
	800 PITTWATER RD EXTERNAL ACCESSIBLE	1
	BASEMENT CARPARKING NORTH	73
	BASEMENT CARPARKING NORTH ACCESSIBLE	2
	BASEMENT CARPARKING SOUTH	19
LEVEL 1		
	800 PITTWATER RD EXTERNAL	20
	800 PITTWATER RD EXTERNAL ACCESSIBLE	1
TOTAL		182

STAGE 1		
		Quantity
LEVEL 0		
	800 PITTWATER RD EXTERNAL	66
	800 PITTWATER RD EXTERNAL ACCESSIBLE	1
	BASEMENT CARPARKING NORTH	73
	BASEMENT CARPARKING NORTH ACCESSIBLE	2
	BASEMENT CARPARKING SOUTH	19
LEVEL 1		
	800 PITTWATER RD EXTERNAL	20
	800 PITTWATER RD EXTERNAL ACCESSIBLE	1
TOTAL		182

STAGE 2		
		Quantity
LEVEL 0		
	800 PITTWATER RD DROPOFF	7
	800 PITTWATER RD EXTERNAL	50
	800 PITTWATER RD EXTERNAL ACCESSIBLE	1
	BASEMENT CARPARKING NORTH	52
	BASEMENT CARPARKING NORTH ACCESSIBLE	2
	BASEMENT CARPARKING SOUTH	19
TOTAL		131

STAGE 3		
		Quantity
LEVEL 0		
	800 PITTWATER RD EXTERNAL	15
	BASEMENT CARPARKING NORTH	52
	BASEMENT CARPARKING NORTH ACCESSIBLE	2
	BASEMENT CARPARKING SOUTH	22
TOTAL		91

224 HEADLAND ROAD

EXISTING		
		Quantity
LEVEL 0 /224		
	224 HEADLAND RD EXTERNAL	44
	224 HEADLAND RD EXTERNAL ACCESSIBLE	1
TOTAL		45

STAGE 1		
		Quantity
LEVEL 0 /224		
	224 HEADLAND RD EXTERNAL	39
	224 HEADLAND RD EXTERNAL ACCESSIBLE	2
TOTAL		41

STAGE 2		
		Quantity
LEVEL 0 /224		
	224 HEADLAND RD EXTERNAL	39
	224 HEADLAND RD EXTERNAL ACCESSIBLE	2
TOTAL		41

STAGE 3		
		Quantity
LEVEL 0 /224		
	224 HEADLAND RD EXTERNAL	39
	224 HEADLAND RD EXTERNAL ACCESSIBLE	2
TOTAL		41

EXISTING TOTAL OVERALL 227

STAGE 1 TOTAL OVERALL 223

STAGE 2 TOTAL OVERALL 172

STAGE 3 TOTAL OVERALL 132

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21 JUNE 11AM



21 JUNE 12PM

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ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
 800 Pittwater Road + 224 Hoedland Road
 Dee Why NSW 2099 North Curl Curl NSW 2099
 PROJECT NO : 18032

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DRAWING TITLE
 GENERAL
SHADOW DIAGRAMS - 21 JUNE
 SCALES AT A1
 PHASE
 SSDA

DRAWN BY
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DATE
 October 2019
REV
A

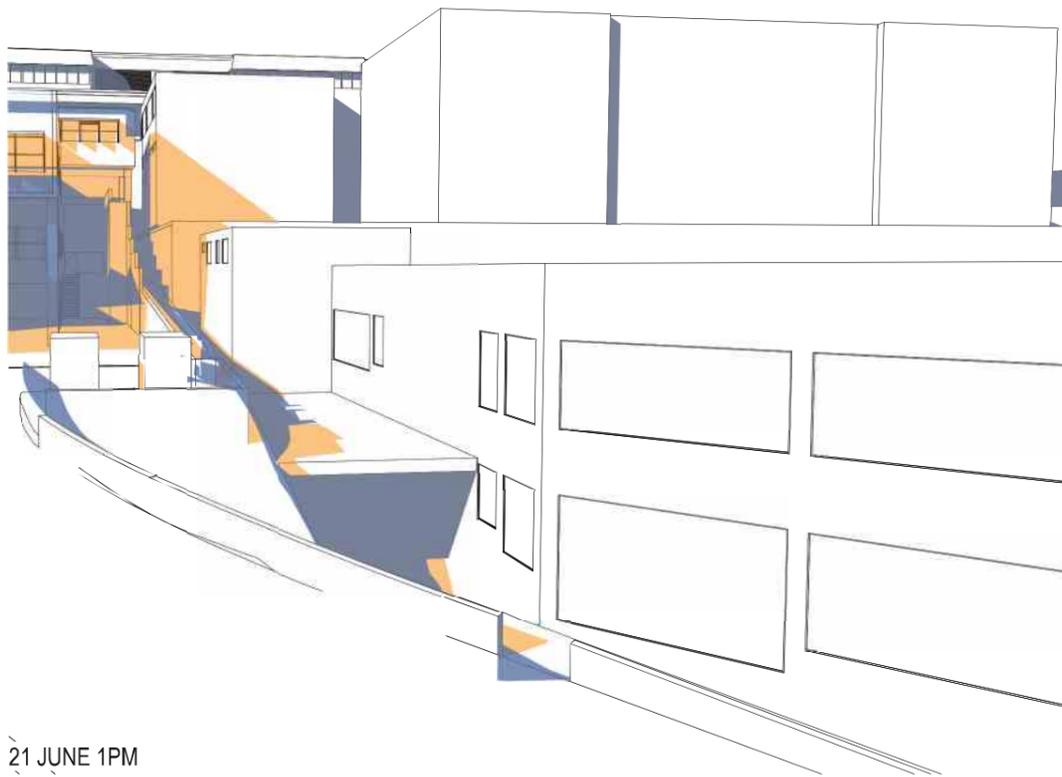
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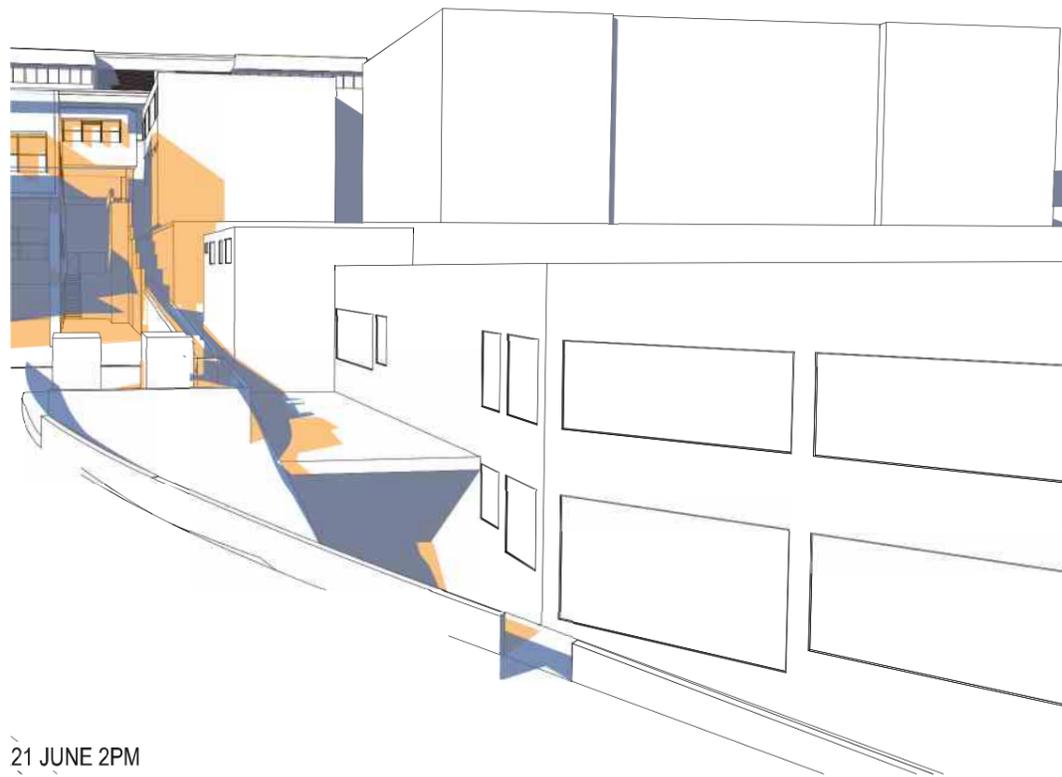
21 JUNE 11AM



21 JUNE 12PM



21 JUNE 1PM



21 JUNE 2PM

KEY

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GENERAL SHADOW DIAGRAMS - NEIGHBOURS		RM + CE + EG	
SCALES AT A1		CHECKED	
PHASE		DATE	
SSDA	DRAWING NO	October 2019	
	A-502	REV	
		A	

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SCALES AT A1		CHECKED	
PHASE		DATE	
SSDA	DRAWING NO	October 2019	
	A-502	REV	
		A	

MATERIALS STRATEGY

Exterior Wall Colours



Vitra Panel facade shading



Colour Accents



Noise Barrier Wall

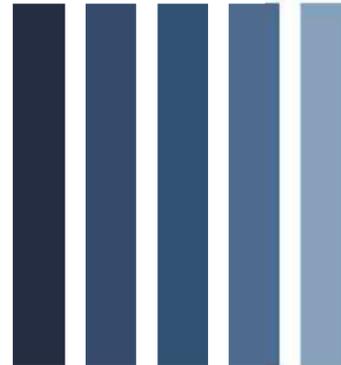


Clear Acrylic with aluminium framing and aluminium fins
Masonry wall with Sandstone cladding

Polished concrete flooring



Roof Sheeting



Concrete Paving



Timber Fence



DATE	REV	DESCRIPTION
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PROJECT :
ST. LUKE'S GRAMMAR SCHOOL - NEW SENIOR SCHOOL CAMPUS
800 Pittwater Road + 224 Hoedland Road
Dee Why NSW 2099 North Curl Curl NSW 2099
PROJECT NO : 18032

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DRAWING TITLE
GENERAL
MATERIALS SCHEDULE
SCALES AT A1
PHASE
SSDA

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DRAWING NO
A-600



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								PHASE SSDA	DRAWING NO A-601 REV A

14 Attachment D – Laboratory Summary Tables

Table D3 - TCLP

	Metals	
	Lead	Nickel
	mg/L	mg/L
EQL	0.03	0.02
NSW 2014 General Solid Waste TCLP1 (leached)	5	2
NSW 2014 Restricted Solid Waste TCLP2 (leached)	20	8

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time		
7215/BH213	7215/BH213	0.15-0.3	17/07/2019	-	0.07
7215/BH217	7215/BH217	0.4-0.6	17/07/2019	0.1	-

Statistical Summary

Number of Detects	1	1
Number of Guideline Exceedances(Detects Only)	0	0

15 Attachment E – Data Validation Report

DATA VALIDATION REPORT: 800 Pittwater Road, Dee Why and 224 Headland Road, North Curl Curl, NSW

2. Precision / Accuracy Statement

	Yes	No (Comments below)
a. Was a NATA registered laboratory used?	✓	
b. Did the laboratory perform the requested tests?	✓	
c. Were laboratory methods adopted NATA endorsed?	✓	
d. Were appropriate test procedures followed?	✓	
e. Were reporting limits satisfactory?	✓	
f. Was the NATA Seal on the reports?	✓	
g. Were reports signed by an authorised person?	✓	

COMMENTS

Precision / Accuracy of the Laboratory Report:

✓

Satisfactory

Partially Satisfactory

Unsatisfactory

DATA VALIDATION REPORT: 800 Pittwater Road, Dee Why and 224 Headland Road, North Curl Curl, NSW

3. Field Quality Assurance / Quality Control (QA/QC)

- a. Number of Primary Samples analysed
(does not include duplicates)
- b. Number of days of sampling
- c. Number and Type of QA/QC Samples analysed
 - Intra-Laboratory Field Duplicates
 - Inter-Laboratory Field triplicates
 - Trip Blanks / Spikes
 - Field Rinsate
 - Other (Field Blanks, Spikes, etc.)

Media	Number
Soil:	27
Water:	0
Material	-
	4
Soil	Water
3	-
-	-
1	-
-	-
-	-

Comments

DATA VALIDATION REPORT: 800 Pittwater Road, Dee Why and 224 Headland Road, North Curl Curl, NSW

Field Duplicates

Adequate Numbers of intra-laboratory field duplicates analysed?

Adequate Numbers of inter-laboratory field duplicates analysed?

Were field duplicate RPDs within Control Limits?

- i. Organics
- ii. Metals / Inorganics
- iii. Nutrients

Yes	No (Comments below)
✓	
✓	-
	N/A
	✓
	N/A

COMMENTS

Cadmium and lead exceeded the RPD in samples TP105 and DUP03.

This may be attributed to attributed to soil heterogeneity. All results were less than the SAC.

DATA VALIDATION REPORT: 800 Pittwater Road, Dee Why and 224 Headland Road, North Curl Curl, NSW

Summary of Quality Assurance / Quality Control (QA/QC)

QA/QC Type	Satisfactory	Partially Satisfactory	Unsatisfactory
Sample handling	✓		
Precision / Accuracy of the Laboratory Report	✓		
Field QA / QC	✓		
Laboratory Internal QA / QC		✓	

Data Usability

1. Data directly usable ✓
2. Data usable with the following corrections/modifications
(see comment below)
3. Data not usable.

COMMENTS

Field Duplicates (SOIL)
Filter: ALL

SDG	ENVIROLAB 2019-06-17T00:00:00	ENVIROLAB 2019-06-17T00:00:00	RPD	ENVIROLAB 2019-07-19T00:00:00	ENVIROLAB 2019-07-19T00:00:00	RPD
Field ID	7215/102/0.8-1.0	7215/Dup101		7215/BH202	7215/DUP01	
Sampled Date/Time	14/06/2019	14/06/2019		17/07/2019	17/07/2019	

Chem_Grd	ChemNam	Units	EQL						
Inorganics	Moisture	%	0.1	14.0	7.8	57	11.0	12.0	9
Metals	Arsenic	mg/kg	4	<4.0	<4.0	0	9.0	4.0	77
	Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0
	Chromium	mg/kg	1	9.0	7.0	25	7.0	7.0	0
	Copper	mg/kg	1	6.0	5.0	18	46.0	35.0	27
	Lead	mg/kg	1	27.0	25.0	8	19.0	19.0	0
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	1	3.0	2.0	40	<1.0	<1.0	0
	Zinc	mg/kg	1	34.0	29.0	16	2.0	3.0	40

ENVIROLAB 2019-07-19T00:00:00	ENVIROLAB 2019-07-19T00:00:00	RPD	ENVIROLAB 2019-07-19T00:00:00	ENVIROLAB 2019-07-19T00:00:00	RPD
7215/BH210	7215/DUP02		7215/TP105	7215/DUP03	
17/07/2019	17/07/2019		17/07/2019	17/07/2019	

Chem_Grd	ChemNam	Units	EQL						
Inorganics	Moisture	%	0.1	6.5	7.3	12	10.0	14.0	33
Metals	Arsenic	mg/kg	4	<4.0	<4.0	0	<4.0	<4.0	0
	Cadmium	mg/kg	0.4	<0.4	<0.4	0	0.4	<0.4	0
	Chromium	mg/kg	1	6.0	9.0	40	15.0	24.0	46
	Copper	mg/kg	1	10.0	13.0	26	43.0	40.0	7
	Lead	mg/kg	1	12.0	15.0	22	36.0	51.0	34
	Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
	Nickel	mg/kg	1	2.0	3.0	40	6.0	10.0	50
	Zinc	mg/kg	1	9.0	10.0	11	130.0	110.0	17

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

16 Attachment F – Laboratory Certificates



CERTIFICATE OF ANALYSIS 219745

Client Details

Client	Martens & Associates Pty Ltd
Attention	Gray Taylor
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	P1907215, St Luke's Grammer
Number of Samples	9 Soil
Date samples received	17/06/2019
Date completed instructions received	17/06/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	24/06/2019
Date of Issue	24/06/2019

NATA Accreditation Number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By

Analysed by Asbestos Approved Identifier: Aida Marner
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Giovanni Agosti, Group Technical Manager
Jeremy Faircloth, Operations Manager, Sydney
Matthew Tang, Asbestos Supervisor
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/06/2019	19/06/2019	19/06/2019	19/06/2019	19/06/2019
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	90	92	86	104	103

svTRH (C10-C40) in Soil						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/06/2019	19/06/2019	19/06/2019	19/06/2019	19/06/2019
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	180	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	230	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	230	<50
Surrogate o-Terphenyl	%	77	79	77	88	86

PAHs in Soil						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/06/2019	19/06/2019	19/06/2019	19/06/2019	19/06/2019
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.2	0.4	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.2	0.5	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.06	0.3	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.4	2.7	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	87	89	88	88	91

Organochlorine Pesticides in soil						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/06/2019	19/06/2019	19/06/2019	19/06/2019	19/06/2019
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	85	85	84	85	88

Organophosphorus Pesticides						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/06/2019	19/06/2019	19/06/2019	19/06/2019	19/06/2019
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	85	85	84	85	88

Acid Extractable metals in soil						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/06/2019	19/06/2019	19/06/2019	19/06/2019	19/06/2019
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	14	9	15	12
Copper	mg/kg	82	11	6	8	5
Lead	mg/kg	17	19	27	17	23
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	3	3	2	2
Zinc	mg/kg	27	7	34	30	12

Acid Extractable metals in soil		
Our Reference		219745-9
Your Reference	UNITS	7215/Dup101
Date Sampled		14/06/2019
Type of sample		Soil
Date prepared	-	19/06/2019
Date analysed	-	20/06/2019
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	7
Copper	mg/kg	5
Lead	mg/kg	25
Mercury	mg/kg	<0.1
Nickel	mg/kg	2
Zinc	mg/kg	29

Moisture						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/06/2019	19/06/2019	19/06/2019	19/06/2019	19/06/2019
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
Moisture	%	13	18	14	16	4.0

Moisture		
Our Reference		219745-9
Your Reference	UNITS	7215/Dup101
Date Sampled		14/06/2019
Type of sample		Soil
Date prepared	-	19/06/2019
Date analysed	-	20/06/2019
Moisture	%	7.8

Asbestos ID - soils						
Our Reference		219745-1	219745-2	219745-3	219745-7	219745-8
Your Reference	UNITS	7215/101/0.2-0.3	7215/102/0.3-0.4	7215/102/0.8-1.0	7215/103/1.2-1.4	7215/104/0.3-0.4
Date Sampled		14/06/2019	14/06/2019	14/06/2019	14/06/2019	14/06/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	20/06/2019	20/06/2019	20/06/2019	20/06/2019	20/06/2019
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 35g	Approx. 35g	Approx. 35g
Sample Description	-	Brown sandy soil & rocks				
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected				

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. <p>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.</p>
Org-014	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.</p>
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p>
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.</p>

Client Reference: P1907215, St Luke's Grammer

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date extracted	-			19/06/2019	[NT]	[NT]	[NT]	[NT]	19/06/2019	[NT]
Date analysed	-			20/06/2019	[NT]	[NT]	[NT]	[NT]	20/06/2019	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	114	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	108	[NT]	[NT]	[NT]	[NT]	98	[NT]

Client Reference: P1907215, St Luke's Grammer

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date extracted	-			19/06/2019	[NT]	[NT]	[NT]	[NT]	19/06/2019	[NT]
Date analysed	-			19/06/2019	[NT]	[NT]	[NT]	[NT]	19/06/2019	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	78	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	78	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-003	86	[NT]	[NT]	[NT]	[NT]	92	[NT]

Client Reference: P1907215, St Luke's Grammer

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date extracted	-			19/06/2019	[NT]	[NT]	[NT]	[NT]	19/06/2019	[NT]
Date analysed	-			20/06/2019	[NT]	[NT]	[NT]	[NT]	20/06/2019	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	126	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	98	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	92	[NT]	[NT]	[NT]	[NT]	92	[NT]

Client Reference: P1907215, St Luke's Grammer

QUALITY CONTROL: Organochlorine Pesticides in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date extracted	-			19/06/2019	[NT]	[NT]	[NT]	[NT]	19/06/2019	[NT]
Date analysed	-			20/06/2019	[NT]	[NT]	[NT]	[NT]	20/06/2019	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	89	[NT]	[NT]	[NT]	[NT]	85	[NT]

Client Reference: P1907215, St Luke's Grammer

QUALITY CONTROL: Organophosphorus Pesticides				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date extracted	-			19/06/2019	[NT]	[NT]	[NT]	[NT]	19/06/2019	[NT]
Date analysed	-			20/06/2019	[NT]	[NT]	[NT]	[NT]	20/06/2019	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Malathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Parathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Surrogate TCMX	%		Org-008	89	[NT]	[NT]	[NT]	[NT]	85	[NT]

Client Reference: P1907215, St Luke's Grammer

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date prepared	-			19/06/2019	[NT]	[NT]	[NT]	[NT]	19/06/2019	[NT]
Date analysed	-			20/06/2019	[NT]	[NT]	[NT]	[NT]	20/06/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	109	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	103	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Report Comments

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.

We cannot guarantee that these sub-samples are indicative of the entire sample.

Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples requested for asbestos testing were sub-sampled from jars provided by the client.



CERTIFICATE OF ANALYSIS 222010

Client Details

Client	Martens & Associates Pty Ltd
Attention	William Xu
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	P1907215; 800 Pittwater Rd & 224 Headland Rd
Number of Samples	30 SOIL
Date samples received	19/07/2019
Date completed instructions received	19/07/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	26/07/2019
Date of Issue	26/07/2019

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Asbestos Approved By

Analysed by Asbestos Approved Identifier: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Jaimie Loa-Kum-Cheung, Metals Supervisor
Jeremy Faircloth, Operations Manager, Sydney
Loren Bardwell, Senior Chemist
Lucy Zhu, Senior Asbestos Analyst
Nancy Zhang, Laboratory Manager, Sydney
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		222010-1	222010-2	222010-3	222010-4	222010-5
Your Reference	UNITS	7215/BH201	7215/BH202	7215/BH203	7215/BH204	7215/BH206
Depth		0.2-0.4	0.2-0.6	1.0-1.3	0.4-0.7	0.2-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	97	97	92	96	94

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		222010-6	222010-7	222010-8	222010-9	222010-10
Your Reference	UNITS	7215/BH209	7215/BH209	7215/BH210	7215/BH211	7215/BH212
Depth		0.2-0.4	0.6-0.8	0.2-0.5	0.4-0.6	0.2-0.5
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	85	94	101	97	99

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		222010-11	222010-12	222010-13	222010-14	222010-15
Your Reference	UNITS	7215/BH213	7215/BH214	7215/BH215	7215/BH215	7215/BH216
Depth		0.15-0.3	0.2-0.4	0.2-0.5	0.5-0.75	0.25-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	95	98	95	101	96

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		222010-16	222010-17	222010-18	222010-19	222010-20
Your Reference	UNITS	7215/BH217	7215/TP101	7215/TP102	7215/TP103	7215/TP104
Depth		0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.1	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	96	97	96	98	99

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		222010-21	222010-22	222010-29	222010-30
Your Reference	UNITS	7215/TP105	7215/TP106	TRIP BLANK	TRIP SPIKE
Depth		0.05-0.15	0.05-0.1	-	-
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	25/07/2019	25/07/2019	25/07/2019	25/07/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	[NA]
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	[NA]
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	109%
Toluene	mg/kg	<0.5	<0.5	<0.5	116%
Ethylbenzene	mg/kg	<1	<1	<1	120%
m+p-xylene	mg/kg	<2	<2	<2	119%
o-Xylene	mg/kg	<1	<1	<1	120%
naphthalene	mg/kg	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<3	<3	<3	[NA]
Surrogate aaa-Trifluorotoluene	%	95	92	98	91

svTRH (C10-C40) in Soil						
Our Reference		222010-1	222010-2	222010-3	222010-4	222010-5
Your Reference	UNITS	7215/BH201	7215/BH202	7215/BH203	7215/BH204	7215/BH206
Depth		0.2-0.4	0.2-0.6	1.0-1.3	0.4-0.7	0.2-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	94	112	84	84	83

svTRH (C10-C40) in Soil						
Our Reference		222010-6	222010-7	222010-8	222010-9	222010-10
Your Reference	UNITS	7215/BH209	7215/BH209	7215/BH210	7215/BH211	7215/BH212
Depth		0.2-0.4	0.6-0.8	0.2-0.5	0.4-0.6	0.2-0.5
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	24/07/2019	24/07/2019	24/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	120
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	220
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	300
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	300
Surrogate o-Terphenyl	%	81	84	84	82	88

svTRH (C10-C40) in Soil						
Our Reference		222010-11	222010-12	222010-13	222010-14	222010-15
Your Reference	UNITS	7215/BH213	7215/BH214	7215/BH215	7215/BH215	7215/BH216
Depth		0.15-0.3	0.2-0.4	0.2-0.5	0.5-0.75	0.25-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	24/07/2019	24/07/2019	24/07/2019	23/07/2019	23/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	110	350	<100	140	100
TRH C ₂₉ - C ₃₆	mg/kg	250	610	150	120	220
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	310	830	190	220	270
TRH >C ₃₄ -C ₄₀	mg/kg	110	440	<100	<100	140
Total +ve TRH (>C10-C40)	mg/kg	420	1,300	190	220	410
Surrogate o-Terphenyl	%	89	95	85	109	107

svTRH (C10-C40) in Soil						
Our Reference		222010-16	222010-17	222010-18	222010-19	222010-20
Your Reference	UNITS	7215/BH217	7215/TP101	7215/TP102	7215/TP103	7215/TP104
Depth		0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.1	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	120	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	120	<50	<50
Surrogate o-Terphenyl	%	80	82	93	85	83

svTRH (C10-C40) in Soil			
Our Reference		222010-21	222010-22
Your Reference	UNITS	7215/TP105	7215/TP106
Depth		0.05-0.15	0.05-0.1
Date Sampled		17/07/2019	17/07/2019
Type of sample		SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	24/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	140	<100
TRH C ₂₉ - C ₃₆	mg/kg	320	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	380	<100
TRH >C ₃₄ -C ₄₀	mg/kg	220	<100
Total +ve TRH (>C ₁₀ -C ₄₀)	mg/kg	600	<50
Surrogate o-Terphenyl	%	87	95

PAHs in Soil						
Our Reference		222010-1	222010-2	222010-3	222010-4	222010-5
Your Reference	UNITS	7215/BH201	7215/BH202	7215/BH203	7215/BH204	7215/BH206
Depth		0.2-0.4	0.2-0.6	1.0-1.3	0.4-0.7	0.2-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.1	0.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.2	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.06	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.5	0.90	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	69	77	78	75	74

PAHs in Soil						
Our Reference		222010-6	222010-7	222010-8	222010-9	222010-10
Your Reference	UNITS	7215/BH209	7215/BH209	7215/BH210	7215/BH211	7215/BH212
Depth		0.2-0.4	0.6-0.8	0.2-0.5	0.4-0.6	0.2-0.5
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	24/07/2019	23/07/2019	23/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.07	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.57	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	79	76	103	78	78

PAHs in Soil						
Our Reference		222010-11	222010-12	222010-13	222010-14	222010-15
Your Reference	UNITS	7215/BH213	7215/BH214	7215/BH215	7215/BH215	7215/BH216
Depth		0.15-0.3	0.2-0.4	0.2-0.5	0.5-0.75	0.25-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	71	78	84	86	84

PAHs in Soil						
Our Reference		222010-16	222010-17	222010-18	222010-19	222010-20
Your Reference	UNITS	7215/BH217	7215/TP101	7215/TP102	7215/TP103	7215/TP104
Depth		0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.1	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	82	76	76	73	78

PAHs in Soil			
Our Reference		222010-21	222010-22
Your Reference	UNITS	7215/TP105	7215/TP106
Depth		0.05-0.15	0.05-0.1
Date Sampled		17/07/2019	17/07/2019
Type of sample		SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	102	98

Organochlorine Pesticides in soil						
Our Reference		222010-1	222010-2	222010-3	222010-4	222010-5
Your Reference	UNITS	7215/BH201	7215/BH202	7215/BH203	7215/BH204	7215/BH206
Depth		0.2-0.4	0.2-0.6	1.0-1.3	0.4-0.7	0.2-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	78	78	82	80	80

Organochlorine Pesticides in soil						
Our Reference		222010-6	222010-7	222010-8	222010-9	222010-10
Your Reference	UNITS	7215/BH209	7215/BH209	7215/BH210	7215/BH211	7215/BH212
Depth		0.2-0.4	0.6-0.8	0.2-0.5	0.4-0.6	0.2-0.5
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	81	75	92	83	85

Organochlorine Pesticides in soil						
Our Reference		222010-11	222010-12	222010-13	222010-14	222010-15
Your Reference	UNITS	7215/BH213	7215/BH214	7215/BH215	7215/BH215	7215/BH216
Depth		0.15-0.3	0.2-0.4	0.2-0.5	0.5-0.75	0.25-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	77	80	84	89	86

Organochlorine Pesticides in soil						
Our Reference		222010-16	222010-17	222010-18	222010-19	222010-20
Your Reference	UNITS	7215/BH217	7215/TP101	7215/TP102	7215/TP103	7215/TP104
Depth		0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.1	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	84	85	84	86	86

Organochlorine Pesticides in soil			
Our Reference		222010-21	222010-22
Your Reference	UNITS	7215/TP105	7215/TP106
Depth		0.05-0.15	0.05-0.1
Date Sampled		17/07/2019	17/07/2019
Type of sample		SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	92	90

Organophosphorus Pesticides						
Our Reference		222010-1	222010-2	222010-3	222010-4	222010-5
Your Reference	UNITS	7215/BH201	7215/BH202	7215/BH203	7215/BH204	7215/BH206
Depth		0.2-0.4	0.2-0.6	1.0-1.3	0.4-0.7	0.2-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	78	78	82	80	80

Organophosphorus Pesticides						
Our Reference		222010-6	222010-7	222010-8	222010-9	222010-10
Your Reference	UNITS	7215/BH209	7215/BH209	7215/BH210	7215/BH211	7215/BH212
Depth		0.2-0.4	0.6-0.8	0.2-0.5	0.4-0.6	0.2-0.5
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	24/07/2019	23/07/2019	23/07/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	81	75	92	83	85

Organophosphorus Pesticides						
Our Reference		222010-11	222010-12	222010-13	222010-14	222010-15
Your Reference	UNITS	7215/BH213	7215/BH214	7215/BH215	7215/BH215	7215/BH216
Depth		0.15-0.3	0.2-0.4	0.2-0.5	0.5-0.75	0.25-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	77	80	84	89	86

Organophosphorus Pesticides						
Our Reference		222010-16	222010-17	222010-18	222010-19	222010-20
Your Reference	UNITS	7215/BH217	7215/TP101	7215/TP102	7215/TP103	7215/TP104
Depth		0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.1	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	84	85	84	86	86

Organophosphorus Pesticides			
Our Reference		222010-21	222010-22
Your Reference	UNITS	7215/TP105	7215/TP106
Depth		0.05-0.15	0.05-0.1
Date Sampled		17/07/2019	17/07/2019
Type of sample		SOIL	SOIL
Date extracted	-	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Surrogate TCMX	%	92	90

Acid Extractable metals in soil						
Our Reference		222010-1	222010-2	222010-3	222010-4	222010-5
Your Reference	UNITS	7215/BH201	7215/BH202	7215/BH203	7215/BH204	7215/BH206
Depth		0.2-0.4	0.2-0.6	1.0-1.3	0.4-0.7	0.2-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Arsenic	mg/kg	<4	9	4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	7	12	10	7
Copper	mg/kg	18	46	45	11	5
Lead	mg/kg	14	19	19	13	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	<1	15	3	3
Zinc	mg/kg	2	2	17	18	9

Acid Extractable metals in soil						
Our Reference		222010-6	222010-7	222010-8	222010-9	222010-10
Your Reference	UNITS	7215/BH209	7215/BH209	7215/BH210	7215/BH211	7215/BH212
Depth		0.2-0.4	0.6-0.8	0.2-0.5	0.4-0.6	0.2-0.5
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Arsenic	mg/kg	22	<4	<4	4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	2	6	5	12
Copper	mg/kg	10	<1	10	2	23
Lead	mg/kg	4	5	12	8	22
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	<1	2	1	7
Zinc	mg/kg	14	1	9	13	25

Acid Extractable metals in soil						
Our Reference		222010-11	222010-12	222010-13	222010-14	222010-15
Your Reference	UNITS	7215/BH213	7215/BH214	7215/BH215	7215/BH215	7215/BH216
Depth		0.15-0.3	0.2-0.4	0.2-0.5	0.5-0.75	0.25-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Arsenic	mg/kg	<4	5	<4	<4	<4
Cadmium	mg/kg	<0.4	0.7	<0.4	<0.4	1
Chromium	mg/kg	67	40	30	38	42
Copper	mg/kg	65	56	77	14	130
Lead	mg/kg	73	51	72	75	64
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	47	34	11	22	34
Zinc	mg/kg	130	190	52	51	100

Acid Extractable metals in soil						
Our Reference		222010-16	222010-17	222010-18	222010-19	222010-20
Your Reference	UNITS	7215/BH217	7215/TP101	7215/TP102	7215/TP103	7215/TP104
Depth		0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.1	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	82	14	15	8	15
Copper	mg/kg	14	11	12	7	9
Lead	mg/kg	170	45	23	10	68
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	2	5	4	3
Zinc	mg/kg	34	54	40	27	79

Acid Extractable metals in soil						
Our Reference		222010-21	222010-22	222010-26	222010-27	222010-28
Your Reference	UNITS	7215/TP105	7215/TP106	7215/DUP01	7215/DUP02	7215/DUP03
Depth		0.05-0.15	0.05-0.1	-	-	-
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Arsenic	mg/kg	<4	<4	4	<4	<4
Cadmium	mg/kg	0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	13	7	9	24
Copper	mg/kg	43	11	35	13	40
Lead	mg/kg	36	26	19	15	51
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	4	<1	3	10
Zinc	mg/kg	130	49	3	10	110

Moisture						
Our Reference		222010-1	222010-2	222010-3	222010-4	222010-5
Your Reference	UNITS	7215/BH201	7215/BH202	7215/BH203	7215/BH204	7215/BH206
Depth		0.2-0.4	0.2-0.6	1.0-1.3	0.4-0.7	0.2-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Moisture	%	10	11	12	7.1	12

Moisture						
Our Reference		222010-6	222010-7	222010-8	222010-9	222010-10
Your Reference	UNITS	7215/BH209	7215/BH209	7215/BH210	7215/BH211	7215/BH212
Depth		0.2-0.4	0.6-0.8	0.2-0.5	0.4-0.6	0.2-0.5
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Moisture	%	13	9.2	6.5	13	10

Moisture						
Our Reference		222010-11	222010-12	222010-13	222010-14	222010-15
Your Reference	UNITS	7215/BH213	7215/BH214	7215/BH215	7215/BH215	7215/BH216
Depth		0.15-0.3	0.2-0.4	0.2-0.5	0.5-0.75	0.25-0.4
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Moisture	%	7.3	8.1	14	7.6	7.9

Moisture						
Our Reference		222010-16	222010-17	222010-18	222010-19	222010-20
Your Reference	UNITS	7215/BH217	7215/TP101	7215/TP102	7215/TP103	7215/TP104
Depth		0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.1	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Moisture	%	7.4	7.2	7.6	5.4	6.0

Moisture						
Our Reference		222010-21	222010-22	222010-26	222010-27	222010-28
Your Reference	UNITS	7215/TP105	7215/TP106	7215/DUP01	7215/DUP02	7215/DUP03
Depth		0.05-0.15	0.05-0.1	-	-	-
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Moisture	%	10	2.9	12	7.3	14

Asbestos ID - soils						
Our Reference		222010-2	222010-4	222010-9	222010-10	222010-11
Your Reference	UNITS	7215/BH202	7215/BH204	7215/BH211	7215/BH212	7215/BH213
Depth		0.2-0.6	0.4-0.7	0.4-0.6	0.2-0.5	0.15-0.3
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Sample mass tested	g	Approx. 35g	Approx. 50g	Approx. 35g	Approx. 35g	Approx. 40g
Sample Description	-	Brown coarse-grained soil & rocks				
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected				
Trace Analysis	-	No asbestos detected				

Asbestos ID - soils						
Our Reference		222010-15	222010-16	222010-17	222010-18	222010-20
Your Reference	UNITS	7215/BH216	7215/BH217	7215/TP101	7215/TP102	7215/TP104
Depth		0.25-0.4	0.4-0.6	0.05-0.1	0.05-0.15	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019
Sample mass tested	g	Approx. 40g	Approx. 40g	Approx. 35g	Approx. 45g	Approx. 45g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown sandy soil	Brown sandy soil	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected				

Asbestos ID - soils		
Our Reference		222010-22
Your Reference	UNITS	7215/TP106
Depth		0.05-0.1
Date Sampled		17/07/2019
Type of sample		SOIL
Date analysed	-	23/07/2019
Sample mass tested	g	Approx. 45g
Sample Description	-	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

Misc Inorg - Soil				
Our Reference		222010-4	222010-14	222010-20
Your Reference	UNITS	7215/BH204	7215/BH215	7215/TP104
Depth		0.4-0.7	0.5-0.75	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	23/07/2019	23/07/2019	23/07/2019
Date analysed	-	23/07/2019	23/07/2019	23/07/2019
pH 1:5 soil:water	pH Units	8.7	9.3	6.3

CEC				
Our Reference		222010-4	222010-14	222010-20
Your Reference	UNITS	7215/BH204	7215/BH215	7215/TP104
Depth		0.4-0.7	0.5-0.75	0.05-0.15
Date Sampled		17/07/2019	17/07/2019	17/07/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	24/07/2019	24/07/2019	24/07/2019
Date analysed	-	24/07/2019	24/07/2019	24/07/2019
Exchangeable Ca	meq/100g	5.2	20	2.4
Exchangeable K	meq/100g	<0.1	0.2	0.3
Exchangeable Mg	meq/100g	0.63	0.99	1.2
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	6.0	21	4.0

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. <p>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.</p>
Org-014	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.</p>
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p>
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.</p>

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	222010-2
Date extracted	-			22/07/2019	1	22/07/2019	22/07/2019		22/07/2019	22/07/2019
Date analysed	-			25/07/2019	1	25/07/2019	25/07/2019		25/07/2019	25/07/2019
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	110	104
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	110	104
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	115	100
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	111	105
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	110	107
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	108	105
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	110	106
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	99	1	97	99	2	101	95

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			[NT]	11	22/07/2019	22/07/2019		22/07/2019	[NT]
Date analysed	-			[NT]	11	25/07/2019	25/07/2019		25/07/2019	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	11	<25	<25	0	108	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	11	<25	<25	0	108	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	11	<0.2	<0.2	0	115	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	11	<0.5	<0.5	0	111	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	106	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	11	<2	<2	0	105	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	106	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	11	95	86	10	101	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	22/07/2019	22/07/2019		[NT]	[NT]
Date analysed	-			[NT]	21	25/07/2019	25/07/2019		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	21	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	21	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	21	95	97	2	[NT]	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	222010-2
Date extracted	-			22/07/2019	1	22/07/2019	22/07/2019		22/07/2019	22/07/2019
Date analysed	-			23/07/2019	1	23/07/2019	23/07/2019		23/07/2019	23/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	97	90
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	89	84
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	113	73
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	97	90
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	89	84
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	113	73
Surrogate o-Terphenyl	%		Org-003	101	1	94	99	5	124	112

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			[NT]	11	22/07/2019	22/07/2019		22/07/2019	[NT]
Date analysed	-			[NT]	11	24/07/2019	24/07/2019		23/07/2019	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	11	<50	<50	0	108	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	11	110	<100	10	86	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	11	250	240	4	100	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	11	<50	<50	0	108	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	11	310	280	10	86	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	11	110	130	17	100	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	11	89	85	5	126	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	22/07/2019	22/07/2019		[NT]	[NT]
Date analysed	-			[NT]	21	23/07/2019	23/07/2019		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	21	140	<100	33	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	21	320	260	21	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	21	380	280	30	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	21	220	190	15	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	21	87	89	2	[NT]	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	222010-2
Date extracted	-			22/07/2019	1	22/07/2019	22/07/2019		22/07/2019	22/07/2019
Date analysed	-			24/07/2019	1	23/07/2019	23/07/2019		23/07/2019	23/07/2019
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	114	116
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	118	114
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	98	98
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	98	105
Pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	102	110
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	122	130
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	<0.05	<0.05	0	76	102
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	109	1	69	78	12	92	96

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			[NT]	11	22/07/2019	22/07/2019		22/07/2019	[NT]
Date analysed	-			[NT]	11	23/07/2019	23/07/2019		23/07/2019	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	117	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	112	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	113	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	101	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	107	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	134	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	11	<0.05	<0.05	0	106	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	11	71	95	29	97	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	22/07/2019	22/07/2019		[NT]	[NT]
Date analysed	-			[NT]	21	23/07/2019	23/07/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	21	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	21	102	104	2	[NT]	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Organochlorine Pesticides in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	222010-2
Date extracted	-			22/07/2019	1	22/07/2019	22/07/2019		22/07/2019	22/07/2019
Date analysed	-			24/07/2019	1	23/07/2019	23/07/2019		23/07/2019	23/07/2019
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	80	93
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	84	96
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	102
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	100
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	100	110
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	100
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	102	131
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	106	114
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	98
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	100
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	98	1	78	84	7	82	84

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Organochlorine Pesticides in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			[NT]	11	22/07/2019	22/07/2019		22/07/2019	[NT]
Date analysed	-			[NT]	11	23/07/2019	23/07/2019		23/07/2019	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	92	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	90	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	98	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	105	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	91	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	102	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	83	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	92	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	78	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	96	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	11	77	92	18	91	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	22/07/2019	22/07/2019		[NT]	[NT]
Date analysed	-			[NT]	21	23/07/2019	23/07/2019		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	21	92	93	1	[NT]	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Organophosphorus Pesticides				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	222010-2
Date extracted	-			22/07/2019	1	22/07/2019	22/07/2019		22/07/2019	22/07/2019
Date analysed	-			23/07/2019	1	23/07/2019	23/07/2019		23/07/2019	23/07/2019
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	92	107
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	100
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	94	96
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	84	86
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	112	121
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	104	110
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	104	103
Surrogate TCMX	%		Org-008	98	1	78	84	7	82	84

QUALITY CONTROL: Organophosphorus Pesticides				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			[NT]	11	22/07/2019	22/07/2019		22/07/2019	[NT]
Date analysed	-			[NT]	11	23/07/2019	23/07/2019		23/07/2019	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	97	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	93	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	91	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	76	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	130	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	85	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	106	[NT]
Surrogate TCMX	%		Org-008	[NT]	11	77	92	18	90	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Organophosphorus Pesticides				Duplicate			Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	22/07/2019	22/07/2019		[NT]	[NT]
Date analysed	-			[NT]	21	23/07/2019	23/07/2019		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	21	92	93	1	[NT]	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	222010-2
Date prepared	-			22/07/2019	1	22/07/2019	22/07/2019		22/07/2019	22/07/2019
Date analysed	-			22/07/2019	1	22/07/2019	22/07/2019		22/07/2019	22/07/2019
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	104	85
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	101	90
Chromium	mg/kg	1	Metals-020	<1	1	7	9	25	105	93
Copper	mg/kg	1	Metals-020	<1	1	18	18	0	101	79
Lead	mg/kg	1	Metals-020	<1	1	14	15	7	107	91
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	98	83
Nickel	mg/kg	1	Metals-020	<1	1	<1	<1	0	101	90
Zinc	mg/kg	1	Metals-020	<1	1	2	4	67	100	87

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date prepared	-			[NT]	11	22/07/2019	22/07/2019		22/07/2019	[NT]
Date analysed	-			[NT]	11	22/07/2019	22/07/2019		22/07/2019	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	11	<4	<4	0	103	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0	100	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	11	67	56	18	113	[NT]
Copper	mg/kg	1	Metals-020	[NT]	11	65	56	15	101	[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	73	58	23	102	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	97	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	11	47	43	9	99	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	11	130	97	29	99	[NT]

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	21	22/07/2019	22/07/2019		[NT]	[NT]
Date analysed	-			[NT]	21	22/07/2019	22/07/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	21	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	21	0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	21	15	14	7	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	21	43	38	12	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	21	36	25	36	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	21	6	7	15	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	21	130	110	17	[NT]	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Misc Inorg - Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date prepared	-			23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Date analysed	-			23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: CEC				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date prepared	-			24/07/2019	4	24/07/2019	24/07/2019		24/07/2019	[NT]
Date analysed	-			24/07/2019	4	24/07/2019	24/07/2019		24/07/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	4	5.2	6.7	25	95	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	4	<0.1	0.1	0	97	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	4	0.63	0.72	13	95	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	4	<0.1	<0.1	0	98	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Report Comments

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.

We cannot guarantee that these sub-samples are indicative of the entire sample.

Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples requested for asbestos testing were sub-sampled from jars provided by the client.



CERTIFICATE OF ANALYSIS 222010-A

Client Details

Client	Martens & Associates Pty Ltd
Attention	William Xu
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	<u>P1907215; 800 Pittwater Rd & 224 Headland Rd</u>
Number of Samples	30 SOIL
Date samples received	19/07/2019
Date completed instructions received	30/07/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	01/08/2019
Date of Issue	31/07/2019
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Loren Bardwell, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Metals in TCLP USEPA1311			
Our Reference		222010-A-11	222010-A-16
Your Reference	UNITS	7215/BH213	7215/BH217
Depth		0.15-0.3	0.4-0.6
Date Sampled		17/07/2019	17/07/2019
Type of sample		SOIL	SOIL
Date extracted	-	31/07/2019	31/07/2019
Date analysed	-	31/07/2019	31/07/2019
pH of soil for fluid# determ.	pH units	9.5	9.1
pH of soil TCLP (after HCl)	pH units	2.0	1.8
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.6	5.1
Lead in TCLP	mg/L	[NA]	0.1
Nickel in TCLP	mg/L	0.07	[NA]

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

Client Reference: P1907215; 800 Pittwater Rd & 224 Headland Rd

QUALITY CONTROL: Metals in TCLP USEPA1311				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	222010-A-16
Date extracted	-			31/07/2019	11	31/07/2019	31/07/2019		31/07/2019	31/07/2019
Date analysed	-			31/07/2019	11	31/07/2019	31/07/2019		31/07/2019	31/07/2019
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	96	90
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	11	0.07	0.07	0	100	95

Result Definitions

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INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
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>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
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Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
<p>Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.</p>	

Laboratory Acceptance Criteria

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Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

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Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.