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Lindfield Learning Village Phase 2 & 3

Revised Noise Impact Assessment

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Table of Contents

1	Introduction	4
2	Site Location	9
3	Proposed Development.....	10
4	Existing Acoustic Environment.....	11
4.1	Noise Survey Results	12
5	Operational Noise Level Criteria	14
5.1	Ku-ring-gai Local Environmental Plan 2015	14
5.2	NSW Environmental Protection Authority, Noise Policy for Industry	14
5.3	AAAC Guideline for Child Care Centre Acoustic Assessment.....	17
6	Noise Emissions Assessment.....	19
6.1	Mechanical Plant and Equipment.....	19
6.1.1	Major Plant Items	20
6.2	Noise from Outdoor Play Areas	23
6.2.1	Mitigation of Outdoor Play Area Noise including Bells and PA Systems	27
6.3	Noise from Internal Areas.....	28
6.4	Use of the Gymnasium, Squash Courts and Auditorium	29
6.5	Other Impacts.....	30
6.6	Cumulative Noise Assessment.....	30
6.7	Noise from use of the Extended Driveway	34
6.7.1	Possible treatments and mitigations.....	39
7	Construction Noise Assessment	40
7.1	Proposed Appliances.....	41
7.2	Construction Noise Criteria	41
7.2.1	Interim Construction Noise Guideline	41
7.3	Construction Vibration Criteria	43
7.3.1	Vibration Criteria – Human Comfort.....	44
7.3.2	Vibration Criteria – Building Contents and Structure	45
7.3.3	Standard BS 7385 Part 2 - 1993	45
7.4	Construction Noise Management – Qualitative Assessment.....	47
7.5	Construction Noise Assessment – Quantitative Assessment.....	48
7.6	Community Engagement and Notification	49
8	Conclusion	50
9	Appendix A – Glossary of Terms	51
10	Appendix B – Staging Drawings.....	53

1 Introduction

This Revised Noise Impact Assessment has been prepared by White Noise Acoustics on behalf of the NSW Department of Education and School Infrastructure NSW (the Applicant). It accompanies a supplementary Response to Submissions Report in support of State Significant Development Application (SSD 16_8114) for Lindfield Learning Village (the site) following the recent public exhibition period in July 2020. This Revised Noise Impact Assessment has been amended to address the comments received from EPA and DPIE.

On 24 October 2018 the Minister for Planning granted partial development consent to SSD 8114 for Phase 1 construction and operation of a new school for 350 students. The remainder of SSD 8114 (as originally proposed) has not yet been granted consent and has been subject to further investigation, assessment and engagement with the relevant agencies (DPIE, RFS, OEH, RMS, TfNSW and the EPA) and Council.

The Response to Submissions and supporting documents seek approval for the remainder of SSD 8114, being:

Phase 2(b)

- Works to accommodate 1,050 students (including the approved 350 in Phase 1 and 35 in the modification to Phase 1).
- Repurposing of the Phase 1 area.
- An extended driveway for car and bus access within the eastern portion of the site from Eton Road. A fire trail linking the new extended driveway to Dunstan Grove is proposed for access by emergency vehicles.

Phase 3

- Works to accommodate an additional 950 students in the western wing of the building.

The SSD does not seek approval for vegetation management outside the site boundary. Any vegetation management outside the site boundary is the subject of separate approval.

The purpose of this Noise Impact Assessment is to investigate the suitability of the site regarding acoustic impacts on surrounding receivers.

Response to Submissions

This Revised Noise Impact Assessment has considered the issues raised by agencies during exhibition of SSD 8114 and subsequent Response to Submissions for Phase 1 and the EPA and DPIE during the July 2020 public exhibition of Phases 2 and 3 of SSD 8114.

This table identifies the agency issue and where it has been addressed within this report.

Table 1 - Agency Comment and Relevant Reference

Comments from EPA and DPIE	Response
<p>A1</p> <p>The PANLs contained with Table 4 of the revised NIA have not been correctly determined as per the procedure in Section 2.4 of the Noise Policy for Industry (EPA, 2017) (NPfI). The Table 4 figures are the 'Recommended Amenity Noise Levels' from Table 2.2 of the NPfI, however the procedure for determining the PANL requires several more steps. The PANLs presented within Table 4 – which in turn determine the PNTLs for the project – are considered too high. The calculations used to determine PANLs should be corrected. If not, then sufficient justification should be provided as to why the 'Recommended Amenity Noise Levels' have been used in lieu of complete application of the NPfI procedure. As this will likely modify the PNTLs, the EPA would expect that all other calculations relating to acceptable noise levels at the receiver locations will also require modification, including those from the use of the extended driveway and the use of the internal spaces within the development.</p>	<p>It is noted that the previously conducted site wide Lindfield Learning Village, Noise Impact Assessment conducted by Acoustic Logic Consultancy (ref: 20160433.2/0303A/R6/HP) and dated 13/6/2018 was undertaken in accordance with the EPA's Industrial Noise Policy.</p> <p>Since the initial drafting of the Noise Assessment in June 2017, the EPA has adopted a new Noise Policy for Industry (October 2017). The revised report includes an assessment with the current requirements of the EPA's Noise Policy for Industry which results in slightly lower project trigger noise levels. Refer to Section 5.2.</p> <p>The determination of noise trigger levels in the Noise Assessment uses the required methodology of the NPfI including amenity and intrusive noise assessment. As the site is not in a high noise area with significant traffic or industrial use, as such the additional modifying factors detailed in the EPA NPfI is required to be applied.</p>

B. Community Consultation	<p>The EPA notes that a quantitative assessment of noise levels from construction has now been included in the revised NIA (Table 16). However, the mitigation strategy shown within Section 7.4 of the assessment does not contain adequate planning for community consultation and communication. This is important for this development due to the proximity of the receivers and the likelihood of those receivers being “noise affected” and/or “highly noise affected”.</p>	<p>Community consultation and communication during the construction phase of the project is addressed in Section 7.6.</p>
C. Mechanical Plant	<p>The EPA acknowledges that the design of the mechanical plant may not yet be advanced enough to predict noise levels. However, an in-depth assessment should be made as to the likely scope and severity of the noise control measures required, given that the noise from the development is already likely to be at or just below the PNTLs without the inclusion of mechanical plant noise. It is considered that the design of the mechanical plant mitigation will be important and should be based upon any revision to the PNTLs derived from a correct application of the NPfI.</p>	<p>Whilst the specific mechanical plant has not yet been selected for the project, a further assessment of the potential noise associated with the likely mechanical plant has been provided at Section 6.1.</p>
D. On-site Traffic Noise Impacts	<p>The EPA acknowledges that the loop road entering off Dunstan Avenue is no longer proposed and is to be replaced with an “extended driveway with bus turnaround and new car pick up road” on the eastern side of the site (supplementary RtS, Table 5). The supplementary RtS report does not include an assessment of the revised on-site traffic arrangements against the NPfI criteria, which was included in the White Noise Acoustic report dated 20 November 2019 (submitted as Appendix I to the original RtS). On-site traffic movements remain relevant for assessment against the requirements contained in the NPfI. The noise levels contained within Table 7 of the RtS acoustic report (White Noise, 20.11.19) indicate that the use of the loop road would be noncompliant with the PNTLs derived from the NPfI. As such, an assessment of reasonable and feasible mitigation measures is required.</p>	<p>The noise assessment of the extended driveway (refer Section 6.7) has been amended to ensure consistency with the earlier Noise Impact Assessment from November 2019 and includes an assessment of the on-site traffic arrangements against the EPA criteria. An assessment of reasonable and feasible mitigation measures is also provided at Section 6.7.1.</p> <p>The assessment include the period when maximum noise levels will potentially impact on the residence on Tubbs View and the potential for unreasonable impacts.</p>

E.	Internal Noise Assessment & Phase 1 Cumulative Noise Levels
E1	<p>There is no quantitative assessment of noise from the internal spaces of the school presented within the report. There are details within Section 6.5 of the revised NIA outlining the nominal performance requirements of the façades, however there is no assessment of whether existing façades are meeting the nominated requirements. The noise reduction performance of the existing façades should be determined through detailed inspection and /or field acoustic testing.</p> <p>The areas listed within the report, including the auditorium, squash courts, woodworking and performing arts room will all have significant potential to contribute to the overall noise level from the development. A quantitative assessment of these spaces is required to be undertaken, including predicted internal source noise levels within relevant internal spaces at the school, and predicted noise levels at the receivers. This assessment is required to determine whether existing building facades will require upgrades to meet acceptable off-site noise levels.</p> <p>In addition to the above, all noise predictions made within the revised NIA for Phase 2 and 3 are to include the cumulative impact of Phase 1, 2 and 3.</p> <p>The Noise Assessment has been revised to include a cumulative assessment of noise from the site (refer Section 6.6) and includes the cumulative impact of Phases 1, 2 and 3.</p> <p>The design of the Phase 2 and 3 development has taken into consideration the results of noise testing of Phase 1 operations and includes suitable mitigations to ensure the future cumulative noise emissions comply with the relevant noise emissions.</p>

F Outdoor Play

F1

The revised RtS indicates that the extended driveway option will have positive benefits in terms of increased outdoor play areas. The applicant needs to confirm that the increased outdoor play areas have been considered in the revised noise impact assessment. Further, the revised NIA identifies that outdoor play area noise goals will be significantly exceeded however no physical mitigation measures are proposed. Any planning determination for this project will need to consider the potential impacts of outdoor play areas and consider these impacts in the project's determination.

The increased outdoor play areas have been considered in the revised Noise Impact Assessment, refer Section 6.2. Over 60% of the new play areas are to the south at a lower level than the school building with the built form protecting nearby residents from noise impacts. The eastern portion of the playground will be available to children at designated times throughout the day.

The play area to the south of the site is surrounded by significant mature vegetation which while having limited noise attenuation properties will have some impact and will heavily reduce any visual impacts associated with any noise from the area.

The use of the outdoor play areas will be limited to periods including times before school commences, lunch times and periods after school. The resulting noise level impacts to surrounding receivers will be limited to these periods and will not include a continuous period throughout the day. Use of the play areas will not include evening or night time periods.

This assessment includes the acoustic investigation into the potential for noise impacts from the operation of the Lindfield Learning Village Phase 2 and 3 project, including the previously approved site wide noise emissions criteria detailed within the '*Lindfield Learning Village, Noise Impact Assessment*' Ref: 20160433.2/0303A/R6/HP and dated 13th June, 2018.

2 Site Location

The Lindfield Learning Village is located on the site located to the south of Dunstan Grove on the old UTS Kuring-Gai Campus.

The site location is detailed in Figure 1 below.

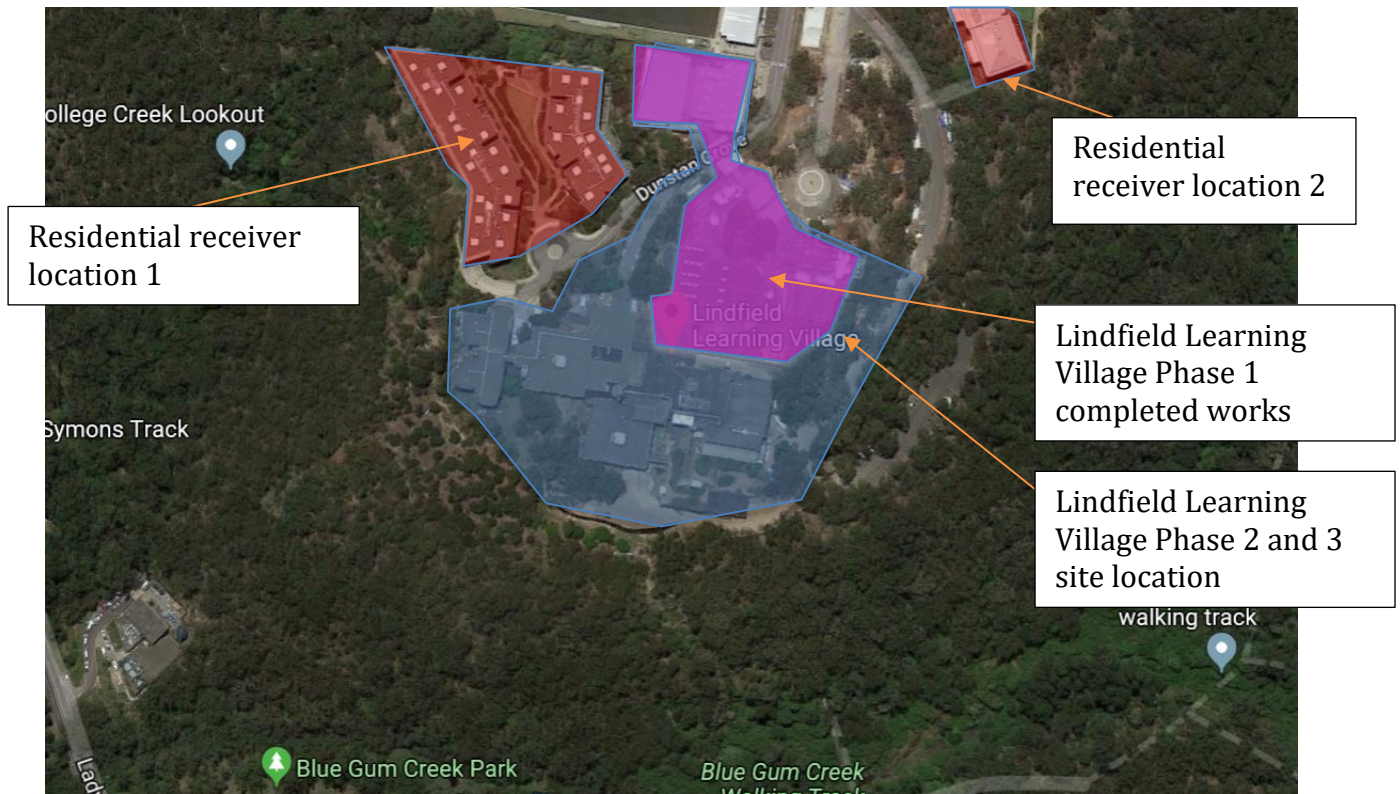


Figure 1 – Site Location including surrounding residential receivers

The proposed Lindfield Learning Village Phase 2 and 3 project includes the reuse of the existing building fabric to include the future learning facility. The proposed development includes areas for external play and a extended driveway for the use of buses for extended driveway and pick up that are located to the south and east of the existing building and screened from the residential receivers which are located to the north of the site.

The architectural plans for Phases 2 and 3 are included in Appendix B.

3 Proposed Development

The proposed Lindfield Learning Village Phase 2 and 3 project includes the redevelopment of the existing building structure located on the site to include the future Lindfield Learning Village. The proposed development includes a number of areas with the potential to generated noise emissions from the operation of the site and have been assessed as part of this report. These areas include the following:

1. Mechanical Plant and Equipment.
2. Noise from the use of outdoor play areas.
3. Noise from the use of the extended driveway by buses and cars for morning and afternoon drop off/pick up.
4. Noise from other areas of the site including internal areas of the project.

The proposed Phase 2 and 3 project includes 5 Homebase including the following student numbers and operational conditions:

1. Phase 1:
 - School Staff: 45
 - OOSH Staff: 3
 - Aurora Staff: 0
 - Staff Total: 48
 - Students 385
2. Phase 2:
 - School Staff: 135
 - OOSH Staff: 8
 - Aurora Staff: 21
 - Staff Total: 164
 - 1,050 students (inclusive of approved 350 in Phase 1)
3. Phase 3:
 - School Staff: 275
 - OOSH Staff: 16
 - Aurora Staff: 21
 - Total: 312
 - 2000 students (inclusive of Phase 1 and 2)

4 Existing Acoustic Environment

The Lindfield Learning Village site is located on the site formally used as the UTS Ku-Ring-Gai Campus. The site is located within an area which does not include significant transportation industrial or commercial noise sources.

The previously conducted '*Lindfield Learning Village, Noise Impact Assessment*' Ref: 20160433.2/0303A/R6/HP and dated 13th June, 2018 has undertaken a noise survey at the site and the resulting noise emissions criteria approved in this report has been used as the basis of this assessment.

An additional assessment of background noise levels has been undertaken and is detailed within the *Lindfield Learning Village - Response to EPA Queries* dated 13/8/2018. The results of background noise level monitoring presented in this report are also included in this assessment.

The site is located to the south of Dunstan Grove and the surrounding areas include the following receivers:

1. Residential receivers located to the north of the site on Dunstan Grove – Residential Receiver Location1
2. Residential receivers located to the east of the site on Tubbs View – Residential Receiver Location 2.

Compliance at the locations above represents compliance at all surrounding receivers.

The previously conducted '*Lindfield Learning Village, Noise Impact Assessment*' Ref: 20160433.2/0303A/R6/HP and dated 13th June, 2018 has investigated the potential for noise associated from additional traffic on surrounding roadways and generated from the entire site (including carparking and school pick up and drop offs).

4.1 Noise Survey Results

The previously conducted '*Lindfield Learning Village, Noise Impact Assessment*' Ref: 20160433.2/0303A/R6/HP and dated 13th June, 2018 and *Lindfield Learning Village - Response to EPA Queries* dated 13/8/2018 has undertaken a noise survey at the site and the resulting noise emissions criteria approved in this report has been used as the basis of this assessment.

A summary of the existing background noise levels at the site (as detailed within the '*Lindfield Learning Village, Noise Impact Assessment*') are detailed in the Table 1 below.

Table 2 – Summary of Existing Site Noise Levels

Location	Time of Day	L _{AeqT} , dB(A)	<i>Lindfield Learning Village, Noise Impact Assessment</i> L _{A90, 15min} dB(A)	<i>Lindfield Learning Village - Response to EPA Queries</i> L _{A90, 15min} dB(A)
Residential Receiver Location 1 – Dunstan Grove	Day – 7am to 6pm	56 (15 hour) 59 (worst 1 hour)	42	42
	Evening – 6pm to 10pm	56 (15 hour) 59 (worst 1 hour)	41	40
	Night – 10pm to 7am	47 (9 hour) 52 (worst 1 hour)	39	38
Residential Receiver Location 2 – Tubbs View	Day – 7am to 6pm	56 (15 hour) 59 (worst 1 hour)	44	40
	Evening – 6pm to 10pm	51 (15 hour) 53 (worst 1 hour)	42	39
	Night – 10pm to 7am	47 (9 hour) 51 (worst 1 hour)	38	35

To supplement the previously conducted noise survey an additional acoustic survey of the site was undertaken as part of this assessment to confirm the noise levels detailed in the *'Lindfield Learning Village, Noise Impact Assessment'* remain accurate for the assessment of Phases 2 and 3. As part of this assessment additional noise level measurements were conducted at the site on the 12th May, 2019. The results of the additional noise level measurements are detailed in the table below.

Table 3 – Results of Additional Noise Survey at the Site

Measurement Location	Time of Measurement	L _{Aeq} , 15min dB(A)	L _{A90} , 15min dB(A)	Comments
Residential Receiver Location 1 – Dunstan Grove	6.45pm to 7.00pm	56	41	Noise levels at this location as a result of general noise levels from sources not within close proximity to the site and the surrounding natural environment
Residential Receiver Location 2 – Tubbs View	7.10pm to 7.25pm	53	40	Noise levels at this location as a result of general noise levels from sources not within close proximity to the site and the surrounding natural environment

Based on the results of the additional noise level measurements conducted at the site the noise levels and resulting noise emission criteria detailed within the *'Lindfield Learning Village, Noise Impact Assessment'* remain accurate for the site.

5 Operational Noise Level Criteria

This section of the report details the relevant noise level criteria for noise emissions from the site once completed.

As the site includes a facility containing a school or learning centre there are no relevant Environmental Protection Authority (EPA) criteria. There are a number of relevant authority and guidelines which provide suitable acoustic criteria for noise emissions from a school site, including the following:

1. The Educational Facilities Standards design Guide.
2. NSW Environmental Protection Authority, Noise Policy for Industry (formally the Industrial Noise Policy) – Suitable for the assessment of mechanical services noise emissions from the site.

It is noted that the previously conducted site wide *Lindfield Learning Village, Noise Impact Assessment* conducted by Acoustic Logic Consultancy (ref: 20160433.2/0303A/R6/HP) and dated 13/6/2018 has been undertaken in accordance with the EPA's *Industrial Noise Policy*.

Since the time of the drafting of the report above the EPA has updated the policy which is now the *Noise Policy for Industry*. This report includes an assessment with the current requirements of the EPA's *Noise Policy for Industry*.

3. The Ku-ring-gai Local Environmental Plan 2015.
4. Association of Australian Acoustical Consultants (AAAC) guideline for Child Care Centre Acoustic Assessment, October 2013 – Including recommended criteria for noise emissions generated from use of Outdoor Play Areas.

Details of the resulting acoustic criterion based on the standards detailed above are included in the following sections.

5.1 Ku-ring-gai Local Environmental Plan 2015

A review of the Ku-ring-gai Local Environmental Plan 2015 has been undertaken and there are no relevant controls for potential noise emission from the operation of schools or learning facilities within the plan.

5.2 NSW Environmental Protection Authority, Noise Policy for Industry

The NSW Environmental Protection Authority (EPA) Noise Policy for Industry (NPfI), previously Industrial Noise Policy, details noise criteria for the control of noise generated from the operation of developments and the potential for impact on surrounding receivers.

The NPfI includes both intrusive and amenity criteria which are summarised below. This criterion has been used for the assessment of noise emission from the site.

- Intrusive noise level criteria, The NPfI states the following:

'The intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (represented by the LAeq descriptor), measured over a 15minute period, does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment.'

- Amenity noise level criteria, The NPfI states the following:

'To limit continuing increases in noise levels from application of the intrusiveness level alone, the ambient noise level within an area from all industrial noise sources combined should remain below the recommended amenity noise levels specified in Table 2.2 where feasible and reasonable. The recommended amenity noise levels will protect against noise impacts such as speech interference, community annoyance and some sleep disturbance.'

Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB(A)

Where the resultant project amenity noise level is 10 dB or more lower than the existing industrial noise level. In this case the project amenity noise levels can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.

The LAeq is determined over a 15-minute period for the project intrusiveness noise level and over an assessment period (day, evening and night) for the project amenity noise level. This leads to the situation where, because of the different averaging periods, the same numerical value does not necessarily represent the same amount of noise heard by a person for different time periods. To standardise the time periods for the intrusiveness and amenity noise levels, this policy assumes that the LAeq,15min will be taken to be equal to the LAeq, period + 3 decibels (dB), unless robust evidence is provided for an alternative approach for the particular project being considered.

Project amenity noise level (ANL) is urban ANL (Table 2.1) minus 5 dB(A) plus 3 dB(A) to convert from a period level to a 15-minute level (dB = decibel; dB[A] = decibel [A-weighted]; RBL = rating background noise level).

Noise level used in the assessment of noise emission from the site have been based on the noise level survey conducted at the site and detailed in this section of the report.

Consequently, the resulting noise level criteria are summarised in the table below. The criteria are nominated for the purpose of determining the operational noise limits for the site including mechanical plant associated with the development which can potentially affect noise sensitive receivers and operational noise levels from the school. For each assessment period, the lower (i.e. the more stringent) of the amenity or intrusive criteria are adopted. The calculated *Project Amenity Noise Level* includes either the Recommended Amenity Noise Level minus 5 dB(A) plus 3 dB(A) (for a 15minum period) or the measured existing Leq noise level – 10 dB if this is greater as determined by the NPfI. The resulting noise emission criteria is summarised in the table below.

Table 4 – External Noise Level Criteria in Accordance with the NSW NPI

Location	Time of Day	Project Amenity Noise Level, LAeq, period ¹ (dBA)	LA90, 15 min (RBL) ² (dBA)	LAeq, period Noise Level (dBA)	Intrusive LAeq, 15 min Criterion for New Sources (dBA)
Residential Receiver Location 1 – Dunstan Grove	Day	53	42	56	47
	Evening	43	40	56	45
	Night	38	38	47	43
Residential Receiver Location 2 – Tubbs View	Day	53	40	56	45
	Evening	43	39	51	44
	Night	38	35	47	40
<p>Note 1: Project Amenity Noise Levels corresponding to “Suburban Residential” areas, recommended noise levels.</p> <p>Note 2: LA90 Background Noise or Rating Background Level</p> <p>Note 3: Project Noise Trigger Levels are shown in bold</p>					

The project amenity noise levels have been based on the *Suburban Residential* definition of the EPA *Noise Policy for Industry*, which includes the following:

Suburban – an area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has the following characteristic: evening ambient noise levels defined by the natural environment and human activity.

The definition of a Suburban area included in the EPA’s *Noise Policy for Industry* and detailed above defines the area of the Lindfield Learning Village.

The additional methodologies including the modifying factors as defined by the EPA *Noise Policy for Industry* including Section 2.4.1 *Amenity noise levels in areas of high traffic noise*, Section 2.4.2 *Amenity noise levels in areas near an existing or proposed cluster of industry* and Section 2.4.3 *Effects of changing land use* are not to be applied to the recommended amenity noise level as the site is not located in an area with high traffic noise, in an area of industrial use or a residential redevelopment.

5.3 AAAC Guideline for Child Care Centre Acoustic Assessment

Noise from the use of the external play areas on the site can not be assessed using the standard EPA or council guidelines. Noise generated from the use of outdoor play areas does not include noise that is similar to typical industrial noise sources such as mechanical equipment, heavy vehicles, manufacturing or the like. Noise associated from the use of outdoor play areas associated with schools is generally assessed to a less stringent requirement than the noise emission criteria detailed within the EPA NPI (detailed in the section above) for a number of reasons including the following:

1. Noise generated from the use of outdoor play areas from schools is identified as being for the benefit of the general community.
2. Noise generated from outdoor play areas will be generated during limited periods of the day, typically non-teaching period of the day including lunch breaks and after school. Organised play and use of the school will generally be limited to Monday to Friday.
3. Noise generated from the use of outdoor play areas does not result in noise with the potential to impact on the reasonable amenity of residential receivers compared to industrial or commercial noise emissions. Noise from the use of students during normal operating hours will include supervision by teaching staff.
4. Methods of noise control from outdoor play areas can be limited. The treatments required to reduce noise from outdoor play areas to within EPA NPI noise criteria would result in significant impact as a result of acoustic screenings, buildings or the like. All possible acoustic treatments should be applied to the use of the outdoor play areas to mitigate noise impacts to surrounding receivers.

The Association of Australian Acoustical Consultants (AAAC) Child Care Centre Acoustic Assessment includes recommended acoustic criteria for the assessment of noise from outdoor play areas. This is not a mandatory criteria, but includes guidance for the assessment of noise from outdoor play areas in the absence of criteria within any other standards or guidelines.

The Association of Australian Acoustical Consultants (AAAC) Child Care Centre Acoustic Assessment includes the following with regards to the assessment of noise emissions from the use of outdoor play areas within childcare centres.

Residential Receptors

Outdoor Play Area

For most centres as the duration of time that children are allowed to play outside is reduced then the overall noise impact reduces. Therefore, it is reasonable to allow a higher level of noise impact for a shorter duration of outdoor play. AAAC members regard that a total time limit of approximately 2 hours outdoor play per day (eg 1 hour in the morning and 1 hour in the afternoon) should allow an additional emergence above the background of 5 dB.

Up to 2 hours (total) per day - The $L_{eq,15\text{ minute}}$ noise level emitted from the outdoor play area shall not exceed the background noise level by more than 10 dB at the assessment location.

More than 2 hours per day - The $L_{eq,15\text{ minute}}$ noise level emitted from the outdoor play area shall not exceed the background noise level by more than 5 dB at the assessment location.

The assessment location is defined as the most affected point on or within any residential receiver property boundary. Examples of this location may be:

- 1.5 m above ground level;
- On a balcony at 1.5 m above floor level;
- Outside a window on the ground or higher floors.

Based on the recommended noise levels in the AAAC Assessment, a background + 10dB(A) criteria has been applied to the use of the Lindfield Learning Village outdoor play areas.

Based on the existing background noise levels recorded at the site as part of the *'Lindfield Learning Village, Noise Impact Assessment'* Ref: 20160433.2/0303A/R6/HP and dated 13th June, 2018 the resulting noise emission criteria use in this assessment are detailed in the following table.

Table 5 – Summary of Outdoor Play Areas Noise Emission Criteria

Location	Time of Day	Background Noise Level $L_{A90, 15\text{min}}$ dB(A)	Noise Emission Goals for Outdoor Play Areas L_{AeqT} , dB(A)
Residential Receiver Location 1 – Dunstan Grove	Day – 7am to 6pm	42	52
Residential Receiver Location 2 – Tubbs View	Day – 7am to 6pm	40	50

Note: As outdoor play areas will only be used during daytime hours the noise emission criteria for the corresponding criteria has been presented in the table above.

6 Noise Emissions Assessment

An assessment of noise generated on the site has been undertaken in this section of the report. The assessment of noise levels generated on the site are summarised below:

1. Mechanical Plant and Equipment.
2. Noise from the use of outdoor play areas.
3. Noise from the use of the extended driveway by buses and cars for morning and afternoon drop off/pick up.
4. Noise from other areas of the site including internal areas of the project.

The detailed assessment of the items detailed above are included in the following sections.

6.1 Mechanical Plant and Equipment

The proposed development will include various items of mechanical plant and equipment including heating and cooling equipment, supply and exhaust fans.

At this stage of the project, the location of major plant items have been selected, however the exact selection to be installed is not known. As such a detailed assessment of noise associated from engineering services cannot be undertaken.

To ensure that future selections of plant items meet external noise levels at neighbouring properties a proof of concept approach has been considered.

In our experience and based on the Phase 1 operations, for this type of development the following mechanical systems may be installed, and their associated sound power levels are outlined below.

- Ventilation fans – 80dB(A) (Lw)
- Toilet exhaust fans – 65dBA (Lw)
- Air Conditioning Condensers – 80dBA (Lw)
- Chiller equipment for specific air conditions, which is assessed in the following point in Section 6.1.1 as a major item of plant.

For the proposed ventilation systems, it is anticipated that the physical fans would be installed on a plant area of the roof of the building with mechanical ductwork moving air from the internal areas to the roof as required.

On the assumption of the Sound Power Level above and the ductwork that is installed is acoustically treated with 50mm internal lining or attenuators (depending on the exact location), compliance would be achieved.

Toilet exhaust fans for the units will individually discharge from the amenity areas of the building using in ceiling or roof top mounted fans.

It is recommended that 1m with acoustic flexible ducting is installed to the intake and discharge side of the fans or a section of internally lined ductwork to

fans. Providing the above is installed compliance with internal and external noise levels would be achieved.

Details of the required mechanical services equipment and acoustic treatments to ensure the relevant noise level criteria is achieved will be provided as part of the will comply with standard conditions of consent.

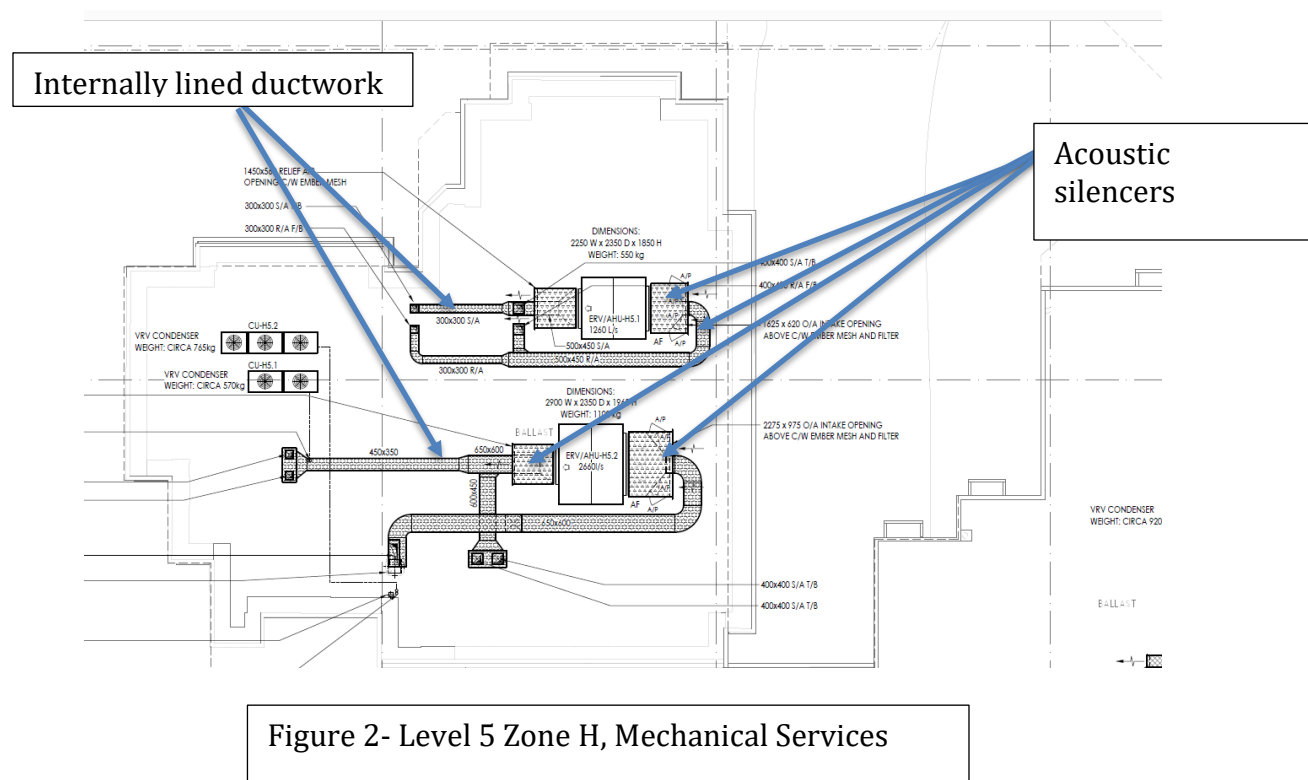
Experience with similar projects confirms that the acoustic treatment of mechanical services is both possible and practical to ensure noise emission criteria is achieved.

6.1.1 Major Plant Items

The proposed development includes a number of major plant items associated with the mechanical services reticulation for the project. These items include equipment located on the external roof areas of the project.

Based on the proposed equipment acoustic mitigation is required, including internally lined ductwork and acoustic silencers.

Details of the proposed plant and equipment (and acoustic treatments) are included in the following figures.



Internally lined ductwork

Acoustic silencers

Figure 3- Level 5 Zone M, Mechanical Services

Internally lined ductwork

Acoustic silencers

Figure 4- Level 6 Zone K, Mechanical Services

Acoustic silencers

Figure 5- Level 6 Zone G, Mechanical Services

As highlighted previously, the specific plant and equipment has not been selected and therefore a detailed assessment of the required acoustic treatments required to ensure noise levels comply with noise emission criteria detailed in Section 5.2 above cannot be provided at this time.

Experience with similar projects confirms that compliance with the relevant noise emission criteria for the site can be achieved. Details of the specific acoustic treatments will be undertaken as part of the ongoing project design and provided as part of the CC submission of the project.

Possible acoustic treatment to the major plant items expected on the site are summaries below:

1. Cooling equipment – acoustic silencers and or louvers may be required to the intake and exhaust of cooling equipment. Equipment will be installed with Variable Speed Devices (VSD) to reduce capacity and noise levels as required.
2. Supply fans – supply fans on the site will include acoustic treatments including internally lined ductwork and/or silencers as required to ensure noise emission criteria is achieved.
3. Exhaust fans – exhaust fans on the site will include acoustic treatments including internally lined ductwork and/or silencers as required to ensure noise emission criteria is achieved.
4. Emergency Equipment – mechanical services equipment associated with the site will be acoustically treated using lined ductwork and/or silencers such that the requirements of AS1668 are complied with.
5. Pumps, heaters, boilers and the like – other general equipment such as pumps, heaters, boilers and the like will be housed within the level 6 plantroom or other internal areas. Treatment to the building façade including linings and/or treatment to openings in the building such as acoustic louvers or lined ducting will be included to ensure noise levels comply with the projects noise emission criteria.

Experience with similar projects confirms that all proposed plant and equipment required on the site can be acoustically treated using those detailed in the points above. Selections of the plant and equipment items and the resulting acoustic treatments will be undertaken as part of the ongoing design of the project and provided as part of the CC submission of the project.

The relevant project noise emission criteria are detailed in this report to which all future design of the mechanical equipment is required to comply with and includes the Background + 5 dB(A) criteria.

Based on the required cumulative assessment detailed in Section 6.8 of this report, the future mechanical plant is to be designed to provide a magnitude of noise of 40 dB(A) at the surrounding residential receivers to ensure overall noise levels comply with the project noise emission criteria. Based on the location of the proposed plant and the proposed acoustic details included in this section of the report compliance with the proposed contribution of noise of 40 dB(A) from mechanical equipment can be achieved.

6.2 Noise from Outdoor Play Areas

The proposed Lindfield Learning Village Phase 2 and 3 project includes a number of outdoor play areas (including the covered outdoor learning area on Level 2) which are located to the south and east of the site as detailed in the Figures below, it.

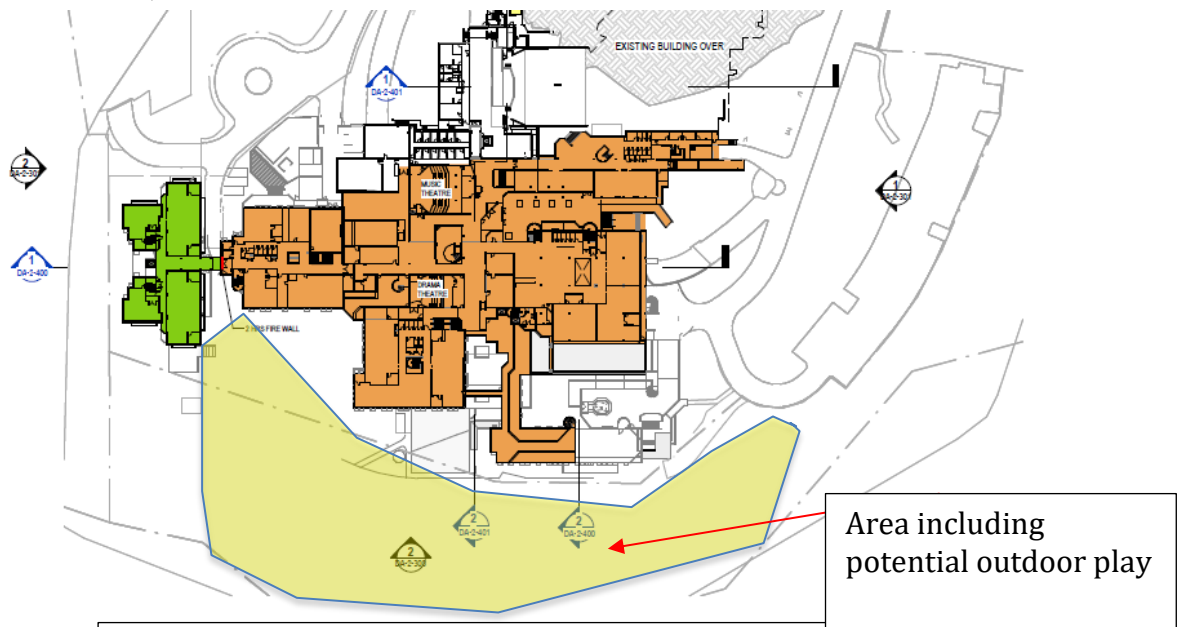


Figure 6 – Areas with Outdoor Play

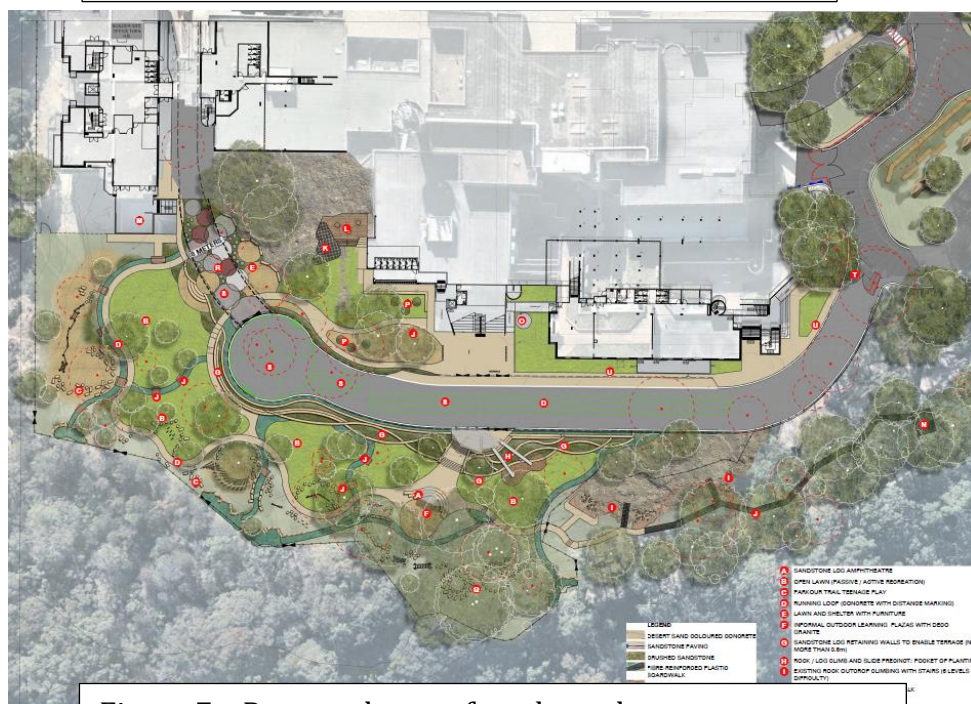


Figure 7 – Proposed area of outdoor play

There are a number of courtyard areas which will include outdoor play areas on Levels 2, 3, and 4 of the project and are detailed in the Figures below.

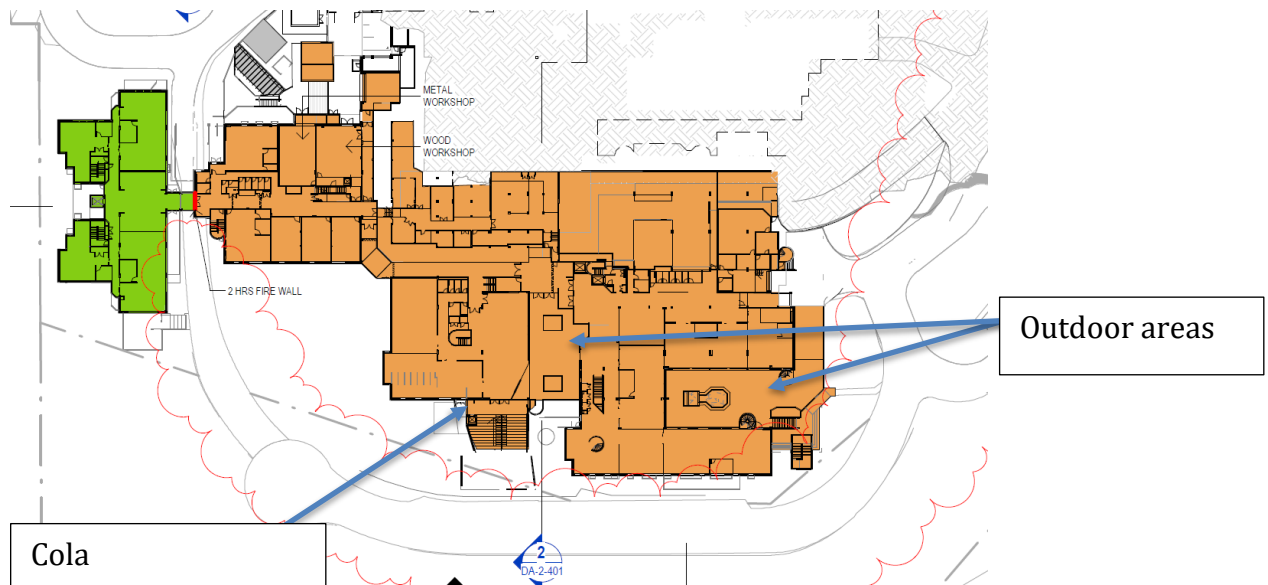


Figure 8 – Level 2 Cola and Terrace Play Area

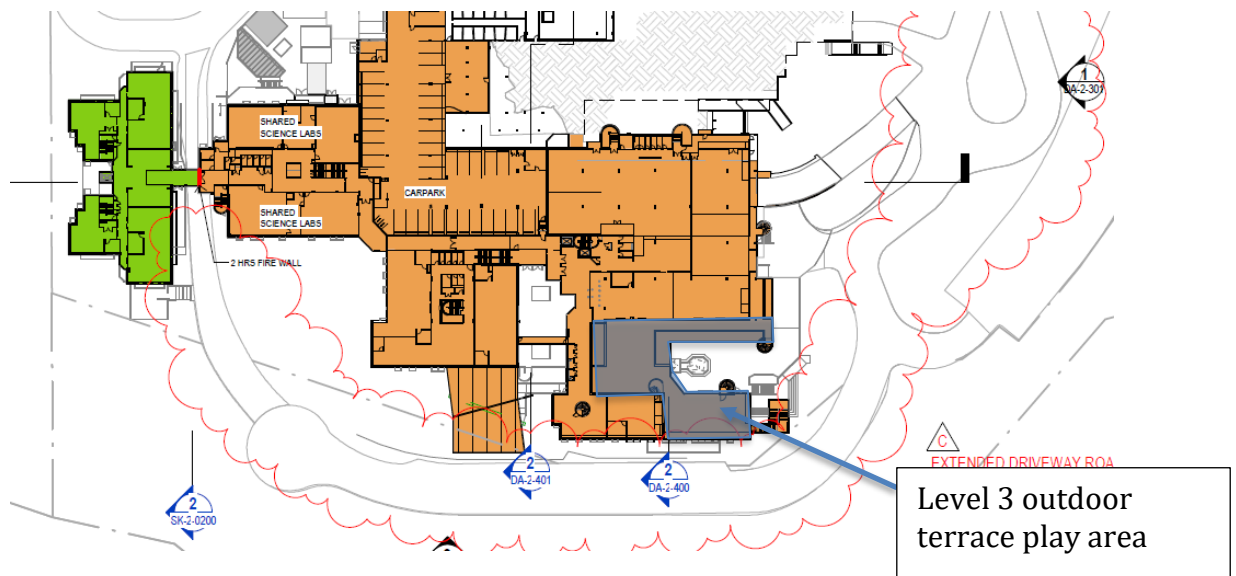


Figure 9 – Level 3 Outdoor Terrace Area

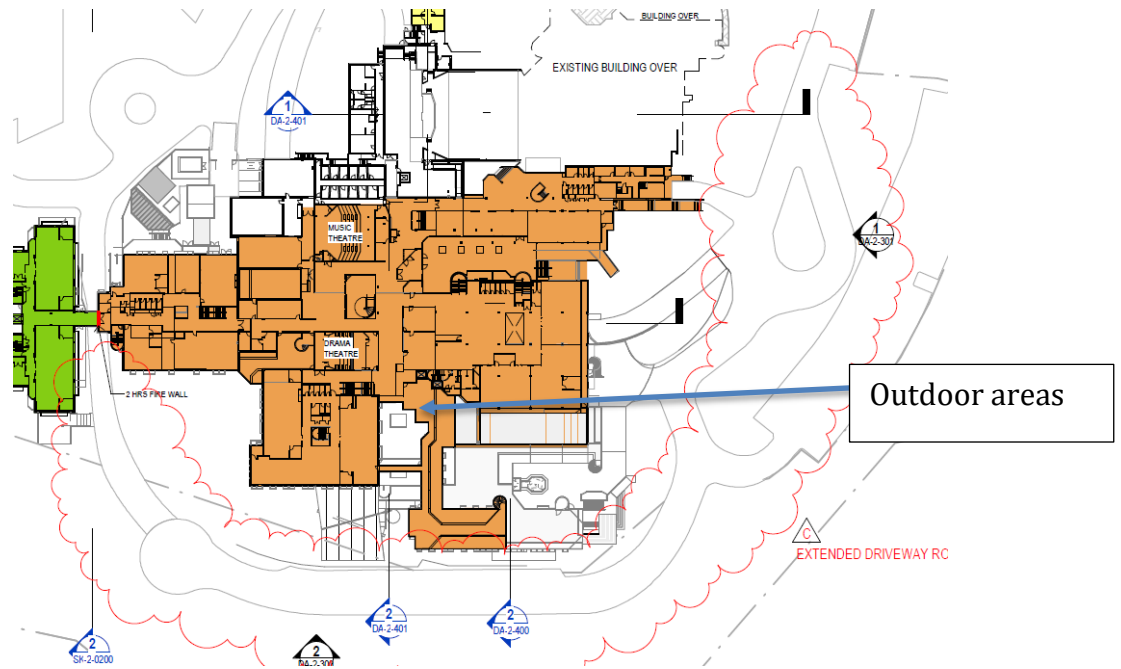


Figure 10 – Level 4 Outdoor Terrace Play Area

A detailed assessment for the potential noise impact from the use of the proposed areas with potential outdoor play has been undertaken in this section of the report. The location of the proposed areas for outdoor play are located to the south of the Lindfield Learning Village building and the stage 1 external play area with increased capacity. The location of the areas of outdoor play are such that the building will act as an acoustic screen to the residential receivers located to north of the site on Dunstan Grove and Tubbs View.

Additionally, the exiting Phase 1 project will include an increase in the number of children which may use the outdoor area. The increased number of children with the Phase 1 areas of the Lindfield Learning Village includes numbers increasing from 385 to 460 children. The resulting noise levels from the additional number of children has been assessed in this report and will not result in a significant increase in noise levels to surrounding residential receivers.

Based on the outdoor play areas the following assumptions regarding noise generated from these areas has been used in this assessment:

1. The outdoor terrace play areas on level 2, 3 and 4 are located to the south of the building structure and such that there is no line of sight to neighbouring residential receivers and the building structure will provide significant acoustic screening to these receivers.
2. Outdoor play areas will be used during periods of the day and can include the total number of students which are housed within the Lindfield Learning Village.
3. All areas of outdoor play will include supervision by teaching staff during the daytime hours of the school breaks.
4. Noise generated from the use of the outdoor play areas is based on the following:

- a. Source noise levels from active play based on SWL of 80 dB(A) Leq.

The source noise level is within the range detailed within the AAAC's Guideline for Child Care Centre Acoustic Assessment, for groups of children playing age group including 3-6.

The proposed source noise level is in the lower range of the AAAC expected source noise level for 3 to 6 year old's of 84-90 dB(A) for 10 children. Based on experience with similar school facilities to that of the Lindfield Learning Centre, the proposed source noise level of 80 dB(A) is suitable for the proposed use at the site as the site will include older students and will be supervised.

- b. A source noise levels will be based on 1 in 2 children generating noise at any time.
- c. Source noise levels have been based on population number on each of the external play areas including the following:
 - i. Level 3 roof area – up to 60 students
 - ii. Level 5 roof areas – up to 150 students
 - iii. External Play areas to the South on ground level – up to 1500 students.

Based on the assumptions above an acoustic assessment of noise emission impacts to the surrounding residential receives has been undertaken and compared to the project noise level criteria for outdoor play of background + 10 dB(A). The results of the acoustic assessment are detailed in the table below.

Table 6 – Result of the Acoustic Assessment of Outdoor Play

Location	Time of Day	Calculated Noise Emissions from Outdoor Play Areas L _{Aeq} 15min, dB(A)	Noise Emission Goals for Outdoor Play Areas L _{Aeq} 15min, dB(A)	Comments
Residential Receiver Location 1 – Dunstan Grove	Day time play periods	Up to 65	52	See Comments Details in Section 6.3 below
Residential Receiver Location 2 – Tubbs View	Day time play periods	Up to 60	50	See Comments Details in Section 6.3 below

Based on the results of the noise impact assessment, the use of the outdoor play areas has the potential to exceed noise goals. The resulting impact to the surrounding receivers and possible acoustic mitigations to future reduce noise from external play areas are discussed in Section 6.3 below.

6.2.1 Mitigation of Outdoor Play Area Noise including Bells and PA Systems

The assessment in Section 6.2 of noise generated from outdoor play areas has identified the potential has revealed the potential for noise goals to be exceeded. Based on this exceedance and additional assessment including the potential impact of the predicted noise level and possible mitigations are detailed in this section of the report.

Based on the results of the noise assessment noise associated with the use of the outdoor play areas is discussed below:

1. Predicted noise levels are based on possible maximum student numbers using the outdoor areas. It is likely that that all students will not use external areas simultaneously, but rather a significant number will utilise internal areas of the facility during breaks including libraries, indoor breakout areas, cafeterias and the like. Although it is not possible to calculate the number of students who will use external areas it is possible there would be significantly less than the possible maximum number that would use external areas during breaks and hence a significant reduction in the predicted noise levels at the affected receivers would also result.
2. Noise from the use of the external areas would be limited to periods of breaks used within the Lindfield Learning Village and would not impact receivers for extended periods of the day.
3. Noise levels from the use of the external play areas are based on theoretical maximum levels being experienced for a continuous 15-minute period. During the use of the play areas the possible maximum noise levels generated by students would be limited to a short period and would be significantly less than 15 minutes. This is expected to be the case within the Lindfield Learning Village as the external play areas will include supervision by staff during the scheduled breaks in the school day.
4. The nature of noise generated from children at play is generally not as annoying in characteristic to that of mechanical equipment, movement of vehicles or use of industrial equipment. Additionally, the magnitude of the predicted noise levels at the affected residential receivers of up to 65 dB(A) Leq is similar to that of a normal human conversation.

Based on the predicted possible maximum noise impacts to the surrounding residential receivers and the comments detailed in the points above, noise from the use of the outdoor play areas within the Lindfield Learning Village would not result in a negative acoustic amenity at the surrounding residential receivers and are therefore acoustically acceptable.

The predicted noise levels from the proposed outdoor play areas are similar to noise levels generated from other schools within the area and are considered to be acoustically acceptable.

To further mitigate noise the use of the proposed outdoor play areas of the site the following acoustic treatments and controls are possible:

1. All audible bells and speaker are to be located such that they face away from the residential receivers and set to an appropriate noise level of 70-75dB(A) @ 3m.
2. The use of directional speakers should be utilised on the external areas of the site.
3. No additional acoustic treatments required to the level 2, 3 and 4 external bus COLA or terrace areas.

6.3 Noise from Internal Areas

This section does not include a quantitative assessment as requested by EPA as the site cumulative assessment is included in Section 6.8.

All internal areas of the Lindfield Learning Village will be located within the building envelope including a closable external façade with a minimum acoustic performance of Rw 30 which includes 6.38mm laminated glazing (or greater) and solid leigh weight or concrete building elements. The existing building fabric includes a construction equivalent to the performance detailed above.

The potentially high noise generating sources within the building including the music and drama theatres are located without external opening to the external environment.

Provided the external façade openings of the building are closed during periods of high noise activities are being generated, such as the metal/wood work shop ,then noise levels at all surrounding receivers including the residence on Dunstan Grove and Tubbs View will comply with the noise emission criteria detailed in Section 5.2 of this report and will be acoustically acceptable.

6.4 Use of the Gymnasium, Squash Courts and Auditorium

The proposed gymnasium, squash courts and auditorium located within the site are proposed for use outside of normal school hours. The proposed use of the areas are summaries below:

1. Gymnasium – used for general activities by the school or rental by others for sporting activities or the like.
2. Squash courts – use by the school or others for playing of squash.
3. Auditorium – use by the school or others for events or performances such as plays, playing of music, presentations or the like.

All the proposed events detailed above would be conducted within the building structure of the school and would not include use of the external areas of the school. Providing all events are contained within the building envelope and the following management controls are included the use of the gymnasium, squash courts and auditorium will be acoustically acceptable during evening and night-time hours including 6pm to midnight.

1. All proposed activities are to be conducted within the building structure will all external façade openings are closed.
2. No playing of amplified or live music or events external to the building.
3. The departure of patrons from the building is monitored to ensure they leave in a orderly manner and do not congregate outside of the building, including on the street or in the associated car parking areas.
4. Signs reminding patrons that they are existing the building within an area with residential receivers and should leave in a manner generating as little noise as possible should be installed at the exists to the building.
5. During periods when the gymnasium or auditorium is to be used for events there is a site security or management control presence such that the event is undertaken in compliance with the recommendations in this report.

The proposed events to be conducted on the site would not include events similar to a bar or club and as such would not have the potential to generate excessive noise levels which can result from patrons congregating on surrounding external areas under the influence of alcohol.

Providing the events are conducted within the building envelope with the external openings of the building closed noise levels will comply with the relevant noise level criteria detailed in this report.

6.5 Other Impacts

The control of noise generated on the site from a number of other activities has been undertaken and the following management is required to mitigate noise impacts on surrounding receivers.

1. Waste collection from the site is required to be undertaken in compliance with councils policies including times when waste is removed from the site. Where possible waste should be collected from the site during daytime hours.
2. The use of noise generating equipment for ground maintenance and upkeep (such as leave blowers, brush cutters, lawn mowers and the like) are only to be used on the site during daytime hours.

6.6 Cumulative Noise Assessment

This section of the report details the cumulative noise levels resulting from the proposed use of the Lindfield Learning Village. The assessment has been undertaken to include noise levels including the following:

1. Operation of the Phase 1 project, including results of the Marshall Day – *Acoustic Compliance Measurements* which includes noise levels resulting from the operation of the completed Phase 1 project. The report is included in Appendix C.
2. Predicted noise levels from the option of the mechanical equipment associated with the Phase 2 and 3.
3. Noise from the proposed internal areas of the internal use of proposed Phase 2 and 3 development.
4. Noise emissions resulting from the proposed external play areas of Phase 2 and 3.

An assessment of the noise contributions from the potentially high noise generating sources within the development have has been conducted and the resulting noise contributions from each source is detailed in the table below.

Table 7 – Calculated Source Noise Levels within the Phase 2 and 3 – Dunstan Grove

Source	Expected Noise Level	TL of the Building	Distance Correction	Resulting Noise Level
Internal Teaching Areas	Up to 80 dB(A) Sound Pressure Level	-27 dB for 6.38mm Laminated Glass	45m -41.1 dB	11.9 dB(A)
Internal Auditorium	Up to 95 dB(A) Sound Pressure Level	-45 dB Auditorium contained within the building	55m -42.8	7.2 dB(A)
Squash Courts	Up to 95 dB(A) Sound Pressure Level	-40 dB Squash courts within the building structure	25m -36	19 dB(A)
Woodworking area	Up to 90 dB(A) Sound Pressure Level	-27 dB for 6.38mm Laminated Glass	45m -41.1 dB	21.8 dB(A)
Performing arts areas of the school	Up to 90 dB(A) Sound Pressure Level	-27 dB for 6.38mm Laminated Glass	45m -41.1 dB	21.8 dB(A)

Table 8 – Calculated Source Noise Levels within the Phase 2 and 3 – Tubbs View

Source	Expected Noise Level	TL of the Building	Distance Correction	Resulting Noise Level
Internal Teaching Areas	Up to 80 dB(A) Sound Pressure Level	-27 dB for 6.38mm Laminated Glass	100m -48 dB	5 dB(A)
Internal Auditorium	Up to 95 dB(A) Sound Pressure Level	-45 dB Auditorium contained within the building	100m -48	2 dB(A)
Squash Courts	Up to 95 dB(A) Sound Pressure Level	-40 dB Squash courts within the building structure	120m -49.6	9.4 dB(A)
Woodworking area	Up to 90 dB(A) Sound Pressure Level	-27 dB for 6.38mm Laminated Glass	100m -48 dB	15 dB(A)
Performing arts areas of the school	Up to 90 dB(A) Sound Pressure Level	-27 dB for 6.38mm Laminated Glass	100m -48 dB	15 dB(A)

Predictions have been undertaken based on the calculated noise emissions from various areas of the project, as detailed above, which are included in the following tables and based on the contributions detailed above.

Table 9 – External Noise Emission Predictions – Internal Activities

Location	Time of Day	Predicted Noise Emissions LAeq, 15min (dBA)								Cumulative Predicted Noise Levels LAeq, 15min (dBA)	Project Noise Level Criteria LAeq, 15min (dBA)
		Sources (See list below)									
		1	2	3	4	5	6	7	8		
Residence on Dunstan Grove	Day	11.9	7.2	19	21.8	21.8	45	40	41	47	47
Residence on Tubbs View	Day	5	2	9.4	15	15	43	40	38	45	45

Calculated noise emissions from the use of internal areas of Phase 2 and 3 with maximum expected noise levels within areas Lindfield Learning Village including the following sources:

- Source 1 - Teaching areas within the school including source noise levels of up to 80 dB(A) LAeq 15min SPL.*
- Source 2 – Internal Auditorium (contained within the building) up to 95 B(A) LAeq 15min SPL.*
- Source 3 – Squash Courts (internally without windows) up to 95 B(A) LAeq 15min SPL.*
- Source 4 – Woodworking area within the school including source noise levels of up to 90 dB(A) LAeq 15min SPL.*
- Source 5 – Performing arts area within the school including source noise levels of up to 90 dB(A) LAeq 15min SPL.*
- Source 6 – Existing noise levels from Phase 1.*
- Source 7 – Contribution of noise from mechanical plant.*
- Source 8 – Contribution of noise from external play areas*

Predictions have been undertaken for the contribution of noise from the existing noise source from Phase 1 including the noise contributions from the internal uses of the space. Noise source from Phases 2 and 3 assume all external openings in the building are closed and the recommendations detailed in this report are included the design, construction and operation of the project. The cumulative assessment assumes all noise sources are being conducted simultaneously.

Currently the main source of noise is resulting from the operation of the Phase 1 development which includes the main contribution of noise to the surrounding receivers.

The design of the Phase 2 and 3 development has included this source noise and includes suitable constructions to ensure the future noise emissions cumulative comply with the relevant noise emissions.

The existing building facades do not need to be upgraded to meet acceptable off-site noise levels based on the existing glassing including minimum 6.38mm laminated glass.

6.7 Noise from use of the Extended Driveway

This section of the report details the acoustic assessment of noise generated from the extended driveway for bus and car access to the east and south of the site.

The assessment has been undertaken based on the proposed future operation of the site and detailed within the ARUP *Lindfield Learning Village, Travel Plan* dated 1 July, 2020. The report includes the summary of travel movements for the site including the following:

Table 3: Projected student travel pattern in Stage 2

	Year	Classes	Class size	Enrolled Students	Bus		Walk/cycle		Car	
					%	No	%	No	%	No
Primary	K	3	20	60	30%	18	10%	6	60%	36
	1	3	22	66	30%	20	10%	7	60%	40
	2	3	24	72	30%	22	10%	7	60%	43
	3	3	30	90	60%	54	10%	9	30%	27
	4	3	30	90	60%	54	10%	9	30%	27
	5	3	30	90	60%	54	10%	9	30%	27
	6	3	30	90	60%	54	10%	9	30%	27
Secondary	7	3	30	90	80%	72	10%	9	10%	9
	8	3	30	90	80%	72	10%	9	10%	9
	9	3	30	90	80%	72	10%	9	10%	9
	10	3	30	90	90%	81	10%	9	0%	0
	11	3	24	72	90%	65	10%	7	0%	0
	12	3	24	72	90%	65	10%	7	0%	0
Total				1062		702		106		254

Table 4: Projected student travel pattern in Stage 3

	Year	Classes	Class size	Enrolled Students	Bus		Walk/cycle		Car	
					%	No	%	No	%	No
Primary	K	6	20	120	30%	36	10%	12	60%	72
	1	6	22	132	30%	40	10%	13	60%	79
	2	6	24	144	30%	43	10%	14	60%	86
	3	6	30	180	60%	108	10%	18	30%	54
	4	6	30	180	60%	108	10%	18	30%	54
	5	6	30	180	60%	108	10%	18	30%	54
	6	6	30	180	60%	108	10%	18	30%	54
Secondary	7	6	30	180	80%	144	10%	18	10%	18
	8	5.5	30	165	80%	132	10%	17	10%	17
	9	5	30	150	80%	120	10%	15	10%	15
	10	5	30	150	90%	135	10%	15	0%	0
	11	5	24	120	90%	108	10%	12	0%	0
	12	5	24	120	90%	108	10%	12	0%	0
Total				2,000		1,298		200		503

The remaining 1100 students travelling by bus will be assigned to a new school bus service. As a result, 15 new bus services will be needed to meet this future demand.

The operational conditions of the proposed extended driveway will include the following which have been used in this assessment:

1. The extended driveway has a point of access to the existing public roadways of Dunstan Grove to the north east of the site as detailed in Figure 11 below.
2. The extended driveway will be used for bus and car pick up and drop of during school morning and afternoon periods. The expected vehicle movements on the extended driveway way are based on the maximum operational conditions for the completed project (Stage 3 completion) and the ARUP traffic volumes and include the following:

Stage 3 - 2000 students

Drop-off

Start	bus pass	565 bus pass	school buses	car pass	cars
7.00-8.00am	0	0	0	140	88
8.00-8.45am	1082	167	12	363	227
8.45-9.15am	216	33	2	0	0
	1298	200	14	503	314

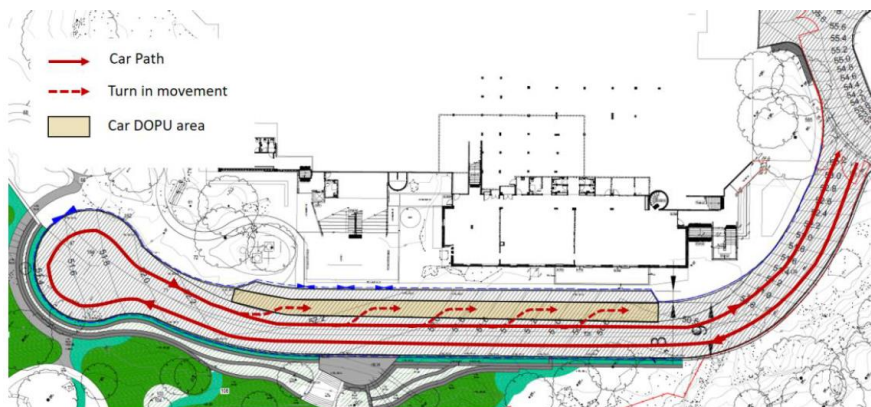
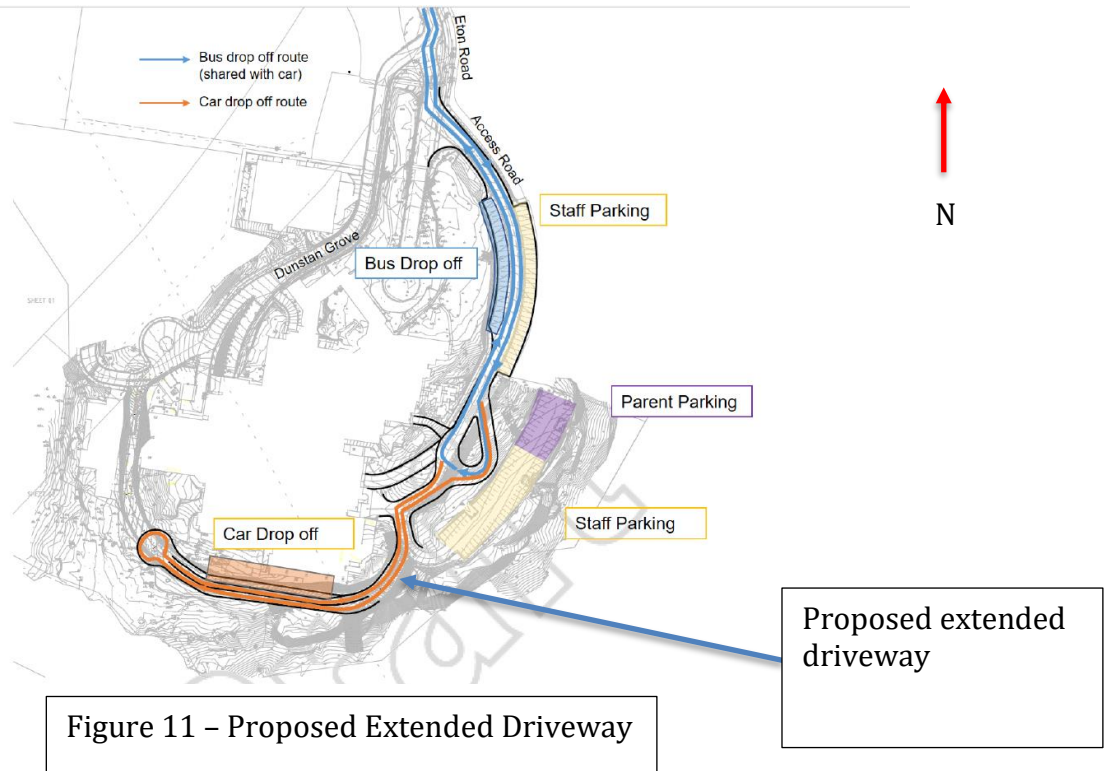
Pick-up

Finish	bus pass	565 bus pass	school buses	car pass	cars
2.50pm	551	85	6	214	134
3.10pm	531	82	6	50	31
3.30pm	216	33	2	0	0
4.00-6.00pm	0	0	0	240	150
	1298	200	14	503	314

3. The expected number of buses will include 14 buses during the morning and evening periods arriving over a period of 1.5 hours, or approximately 2 bus passbys in every 15 minute period during pickup/drop off period.
4. The expected number of cars will include up to 314 cars during the morning and evening periods arriving over a period of 1.5 hours, or approximately 50 car passbys in every 15 minute period during pickup/drop off period.
5. Vehicles will use the extended driveway as detailed in Figure 11 below.
6. An assessment of noise from the use of the buses on the site has been undertake assuming the recommended acoustic controls detailed in Section 6.4.1 are included.
7. The source noise level of a bus using the extended Driveway will be no greater than SWL 105 dB(A) and SWL 95 dB(A) for cars.

8. Period of noise generated by buses and cars using the extended driveways will only affect the neighbouring residential receivers to the north east of the site on Tubbs View. Once vehicles enter the site and pass the residence noise levels will reduce as the vehicles move away from the residence, see figure below.

The proposed location of the 'extended driveway' is detailed in the figure below.



The assessment of noise from the use of the extended driveway has been undertaken using both the EPA's Road Noise Policy for New Local Road as a guide. The EPA's Road Noise Policy recommends noise levels from the operation of new local roads on existing residential receivers which is detailed in Section 2.3.1 of the policy, Table 3, which is included below.

Table 3 Road traffic noise assessment criteria for residential land uses

Road category	Type of project/land use	Assessment criteria – dB(A)	
		Day (7 a.m.–10 p.m.)	Night (10 p.m.–7 a.m.)
Freeway/ arterial/ sub-arterial roads	1. Existing residences affected by noise from new freeway/arterial/sub-arterial road corridors	L _{Aeq} , (15 hour) 55 (external)	L _{Aeq} , (9 hour) 50 (external)
	2. Existing residences affected by noise from redevelopment of existing freeway/arterial/sub-arterial roads	L _{Aeq} , (15 hour) 60 (external)	L _{Aeq} , (9 hour) 55 (external)
	3. Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments		
Local roads	4. Existing residences affected by noise from new local road corridors	L _{Aeq} , (1 hour) 55 (external)	L _{Aeq} , (1 hour) 50 (external)
	5. Existing residences affected by noise from redevelopment of existing local roads		
	6. Existing residences affected by additional traffic on existing local roads generated by land use developments		

Suitable application of the proposed extended driveway

The results of the acoustic assessment as a result of cars and buses using the extended driveway on the potentially affected residential receivers is detailed in the table below.

Table 10 – Result of the Acoustic Assessment of Buses using Extended Driveway

Location	Time of Day	Calculated Noise Emissions from Buses and cars using Extended Driveway Road L _{Aeq} 15min, dB(A)	EPA's Road Noise Policy for new Local Roads L _{Aeq} 1hour, dB(A)	Comments
Residential Receiver Location 1 – Dunstan Grove	Day time Pick Up and Drop off	No change to existing conditions	55	Compliant
Residential Receiver Location 2 – Tubbs View	Day time Pick Up and Drop off	Up to 58	55	Limited Periods of Exceedance with EPA's RNP, See comments below

Based on the assessment of buses using the proposed expanded round about and drop off area to the east of the school a period of exceedance is predicted during the peak pick up and drop of period from use of the buses and cars. This will be limited to the period when buses and cars are using the extended access road and are within close proximity to the residential receivers located to the east of the site on Tubbs View only. The predicted noise level of up to 61 dB(A) is less than the noise levels generated from a normal human conversation of 60-65 dB(A). The calculated noise levels include the expected maximum noise levels impacting the residence from the use of the access road on the site and noise levels will be less during periods outside of the peak morning and afternoon periods

The calculated noise levels at the affected receivers will not impact on normal residential activities from being able to be conducted such as conducting conversations on external balconies.

Based on the results of the assessment of noise generated from the use of the proposed extended access will be acoustically acceptable and will not result in an unacceptable acoustic impact of the amenity of the surrounding residential receivers.

In addition to the assessment detailed above comments regarding the resulting noise levels resulting from the use of the extended driveway as a result of the morning and afternoon peak periods follow:

1. The noise associated with the morning and afternoon peak periods will be limited to a period of generally 7.30am to 9am and an afternoon period of 2.30pm to 3.30pm.
2. During the peak periods noise generated from a bus passing will result in a noise impact on the residential receivers on Tubbs Way as each bus

travels along the extended driveway. Based on the expected travel speeds of a bus of 10-15km/h the resulting period when noise from each bus passing will be approximately 30 seconds. Based on the proposed 14 bus movements entering and 14 movements exiting (28 total movements) the noise from bus movements will be approximately 14 minutes in any given peak morning or afternoon period

3. Noise levels generated from vehicles using the extended driveway will be mitigated from the distance separation between the driveway and the residence which is approximately 30m.
4. The Proposed car drop-off and pick-up area is located to the south of the site which is well away from residents in Tubbs View and Dunstan Grove.
5. In the event residence of the building choose to have the external building openings closed (including windows and doors) then a further reduction in the resulting noise level to the internal areas of the residential dwellings will result.

6.7.1 Possible treatments and mitigations

The possible acoustic treatments and controls to the extended access to mitigate noise levels at the affected residential receives include the following:

1. The car set down and collection point is located directly to the south of the Lindfield Learning Village building, which includes a significant distance to the surrounding residential receivers.
2. Buses are not to wait or be stacked on the site or on the local roadways. A no stopping zone is to be sign posted and enforced for the roadways outside of the pickup location.
3. Buses are to be scheduled to arrive at the site such that there is appropriate period between each arrival.
4. The management of the Extended Driveway for use by cars during morning drop off and afternoon pick up is required to be managed in accordance with the ARUP Traffic Management plan.
5. Cars and buses to be limited to a speed limit of no greater than 15km/h when using the Extended Driveway.

Other possible feasible treatment to the access road have been considered:

1. Inclusion of an acoustic barrier between the access road and the residence on Tubbs View. This treatment has been investigated and is not possible based on the requirements to comply with visual, safety and other requirements of the authorities.

Based on the detailed assessment included in this section of the report and the comments above the proposed extended driveway will be acoustically acceptable based on the proposed future use as part of the Phase 2 and 3 project as all reasonable and feasible treatments are included in the design of the project.

7 Construction Noise Assessment

This section of the report details the assessment of noise associated with the proposed demolition activities associated with the development. The assessment has been undertaken to assess the potential noise impacts from construction and demolition on surrounding receivers to the site.

The proposed construction and demolition activities to be undertaken on the site include the strip out of the existing areas of the existing building and demolition limited areas of the external façade elements. The development will then be constructed using normal construction processes.

The EPA's Interim Construction Noise Guideline defines normal day time hours as the following:

2.2 Recommended standard hours

The recommended standard hours for construction work are shown in Table 1; however, they are not mandatory. There are some situations, as described below, where construction work may need to be undertaken outside of these hours. The likely noise impacts and the ability to undertake works during the recommended standard hours should be considered when scheduling work.

Table 1: Recommended standard hours for construction work

Work type	Recommended standard hours of work*
Normal construction	Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays
Blasting	Monday to Friday 9 am to 5 pm Saturday 9 am to 1 pm No blasting on Sundays or public holidays

* The relevant authority (consent, determining or regulatory) may impose more or less stringent construction hours.

7.1 Proposed Appliances

The proposed appliances which will be used as part of the demolition required as part of the development are detailed in the table below (including internal strip out/demolition):

Table 11 – Noise Level from Expected Demotion Appliances

Tasks	Equipment	Sound Power Levels per task dB(A) L ₁₀	Aggregate Sound Power Level per Task dB(A) L ₁₀
Site Demolition works	Jack hammer mounted on skid steer	118	122
	Hand held jack hammer	111	
	Concrete saw	119	
	Skid steer	110	
	Power hand tools	109	
Construction Works	Piling	115	120
	Welder	101	
	Saw cutter	109	
	Dump truck	109	
	Concrete saw	119	
	Power hand tools	109	
	Cranes	110	

Notes: Noise levels of proposed equipment to be used on the site based on the Australian Standard AS2436-2010 and noise level measurements previously undertaken of similar equipment on construction sites.

7.2 Construction Noise Criteria

This section of the report details the relevant construction noise criteria which is applicable to the site.

7.2.1 Interim Construction Noise Guideline

Noise criteria for construction and demolition activities are discussed in the *Interim Construction Noise Guideline* (ICNG). The ICNG also recommends procedures to address potential impacts of construction noise on residences and other sensitive land uses. The main objectives of the ICNG are summarised as follows:

- Promote a clear understanding of ways to identify and minimise noise from construction works;
- Focus on applying all “feasible” and “reasonable” work practices to minimise construction noise impacts;
- Encourage construction to be undertaken only during the recommended standard hours unless approval is given for works that cannot be undertaken during these hours;
- Streamline the assessment and approval phases and reduce time spent dealing with complaints at the project implementation phase; and

- Provide flexibility in selecting site-specific feasible and reasonable work practices in order to minimise noise impacts.

The ICNG contains a quantitative assessment method which is applicable to this project. Guidance levels are given for airborne noise at residences and other sensitive land uses.

The quantitative assessment method involves predicting noise levels at sensitive receivers and comparing them with the Noise Management Levels (NMLs). The NML affectation categories for receivers have been reproduced from the guideline and are listed in the table below.

Table 12 – Noise Management Levels from Construction – Quantitative Assessment

Receiver Type	Time of Day	Noise Management Level LAeq(15minute) ^{1,2}	How to Apply
Residential	Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <ul style="list-style-type: none"> • Where the predicted or measured LAeq(15minute) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
		Highly noise affected 75 dBA	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <ul style="list-style-type: none"> • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: <ol style="list-style-type: none"> 1. Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. 2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
	Outside recommended standard hours	Noise affected RBL + 5 dB	<ul style="list-style-type: none"> • A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.

Table 10 – Continued

Receiver Type	Time of Day	Noise Management Level LAeq(15minute) ^{1,2}	How to Apply
offices, retail outlets: external	When is use	LAeq (15 min) 70 dB(A)	During construction, the proponent should regularly update the occupants of the commercial and industrial premises regarding noise levels and hours of work.
<p><i>Note 1</i> Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.</p> <p><i>Note 2</i> The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW Industrial Noise Policy (EPA 2000).</p>			

Based on the table above the suitable construction noise management levels for works undertaken on the site is detailed in Table 10 below.

Table 13 – Site Construction Noise Management Levels

Noise Source	Time Period	Receiver Type	Construction Noise Management Level	'High Noise Affected' Level
Construction Noise	Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Residential	52 dB(A) LAeq (15min)	75 dB(A) LAeq (15min)
		Commercial	-	70 dB(A) LAeq (15min)
	When in Use	Schools, internally	45 dB(A) Leq (15 min)	
<i>Note 1: Construction noise management levels based on the Interim Construction Noise Guideline</i>				

7.3 Construction Vibration Criteria

Effects of ground borne vibration on buildings may be segregated into the following three categories:

- Human comfort – vibration in which the occupants or users of the building are inconvenienced or possibly disturbed. Refer to further discussion in Section 7.3.1.
- Effects on building contents – where vibration can cause damage to fixtures, fittings and other non-building related objects. Refer to further discussion in Section 7.3.2 and 7.3.3.
- Effects on building structures – where vibration can compromise the integrity of the building or structure itself. Refer to further discussion in Section 7.3.2 and 7.3.3.

7.3.1 Vibration Criteria – Human Comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled “*Assessing Vibration – A Technical Guideline*”. (AVTG) This type of impact can be further categorised and assessed using the appropriate criterion as follows:

- Continuous vibration – from uninterrupted sources (refer to Table 14).
- Impulsive vibration – up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (refer to Table 15).
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 16).

Table 14 Continuous vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
		0.04	0.029	0.080	0.058
Workshops	Day or night-time	0.04	0.029	0.080	0.058

Table 15 Impulsive vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 16 Intermittent vibration impacts criteria (m/s^{1.75}) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred Values	Maximum Values	Preferred Values	Maximum Values
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

7.3.2 Vibration Criteria – Building Contents and Structure

The vibration effects on the building itself are assessed against international standards as follows:

- For transient vibration: British Standard BS 7385: Part 2-1993 “Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration” (BSI 1993); and
- For continuous or repetitive vibration: German DIN 4150: Part 3 – 1999 “Effects of Vibration on Structure” (DIN 1999).

7.3.3 Standard BS 7385 Part 2 - 1993

For transient vibration, as discussed in standard BS 7385 Part 2-1993, the criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised in Table 17 and illustrated in the Figure below.

Table 17 Transient vibration criteria as per standard BS 7385 Part 2 - 1993

Line in Figure below	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Standard BS 7385 Part 2 – 1993 states that the values in Table 17 relate to transient vibration which does not cause resonant responses in buildings. Where the dynamic loading caused by continuous vibration events is such as that results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 17 may need to be reduced by up to 50% (refer to Line 3 in the Figure below).

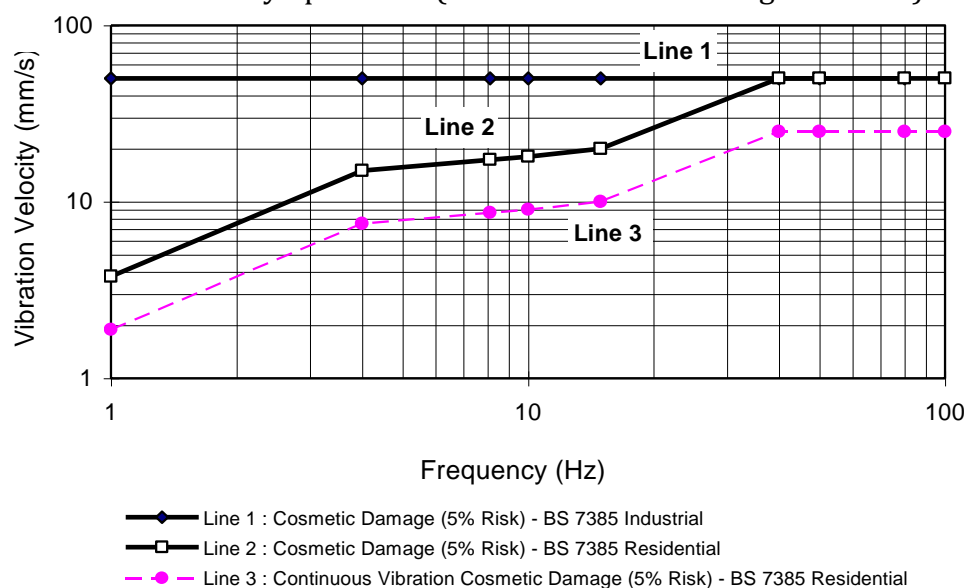


Figure 10 - BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage

In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 17, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 17 should not be reduced for fatigue considerations.

7.3.3.1 Standard DIN 4150 Part 3 - 1999

For continuous or repetitive vibration, standard DIN 4150 Part 3-1999 provides criteria based on values for peak particle velocity (mm/s) measured at the foundation of the building; these are summarised in Table 18. The criteria are frequency dependent and specific to particular categories of structures.

Table 18 Structural damage criteria as per standard DIN 4150 Part 3 - 1999

Type of Structure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz ¹	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8
<i>Note 1: For frequencies above 100Hz, at least the values specified in this column shall be applied.</i>				

7.4 Construction Noise Management – Qualitative Assessment

Based on the assessment conducted of the expected construction noise levels generated from the Lindfield Learning Village site noise levels are generally expected to require the building contractor to engage in management of activities on the site and engagement with the local community.

Notwithstanding, the following management controls are recommended to mitigate construction noise levels on the site:

1. All plant and equipment are to be maintained such that they are in good working order.
2. A register of complaints is to be recorded in the event of complaints being received, including location, time of complaint, nature of the complaint and actions resulting from the complaint.
3. If required a noise level measurement of the offending plant item generating complaints is to be conducted and noise mitigations undertaken to reduce noise levels to within Noise Management levels in the event magnitude of noise levels is found to be above suitable levels.
4. The use of percussive and concrete sawing should be undertaken behind a closed façade when possible.
5. For works undertaken outside of normal day time hours (proposed to include the period 6pm to 6am) the external façade of the building should be closed. In the event there are temporary openings in the façade these should be closed using a solid material such as 6mm FC sheet or 12mm plywood.
6. The use of high noise generating equipment including hydraulic hammers, rock cutters or the like should not be undertaken prior to 8am Monday to Friday or 8.30am Saturdays.
7. The loading of trucks should be conducted such that there is not a requirement to stack truck on the roadways adjacent to the residence on Dunstan Grove and or Tubbs view.
8. Where possible to use of squawkers or the like should be used in place of reversing alarms.

In addition to the recommended mitigations above details of the proposed construction (including demolition) works to be conducted on the site, including type of activities to be conducted as well as the expected duration of activities should be provided to the neighbouring receivers.

A detailed construction noise and vibration management plan is to be provided by the building contractor.

7.5 Construction Noise Assessment – Quantitative Assessment

A quantitative assessment of the construction noise levels resulting from the proposed works to be undertaken as part of the Lindfield Learning Village project on surrounding residential receivers has been undertaken.

The assessment has been based on the expected noise levels to be generated on the site including those detailed in Section 7.1 above. Calculations of the resulting construction noise levels of the residential receivers within proximity to the site is detailed in the table below.

Table 19 Quantitative Assessment of Construction Noise to Neighboring Residence

Source Noise	Equipment	Sound Power Levels dB(A) L ₁₀	Aggregate Sound Power Level dB(A) L ₁₀	Calculated Construction Noise Level – Dunstan Grove	Calculated Construction Noise Level – Tubbs View
Site Demolition works	Jack hammer mounted on skid steer	118	122	Up to 75 dB(A) when items used externally	Up to 70 dB(A) when items used externally
	Hand held jack hammer	111		Up to 50 dB(A) when items used within the building with a closed façade	Up to 45 dB(A) when items used within the building with a closed façade
	Concrete saw	119			
	Skid steer	110			
	Power hand tools	109			
Construction Works	Piling	115	120	Up to 73 dB(A) when items used externally	Up to 68 dB(A) when items used externally
	Welder	101		Up to 48 dB(A) when items used within the building with a closed façade	Up to 43 dB(A) when items used within the building with a closed façade
	Saw cutter	109			
	Dump truck	109			
	Concrete saw	119			
	Power hand tools	109			
	Cranes	110			
Notes: Calculated qualitative noise levels are based on the overall Aggregate Sound Power Level for the expected demolition and construction works to be undertaken in the site.					

Based on the qualitative assessment of construction noise suitable management controls and community notifications are required to be conducted.

The required management of construction noise impacts are include in Section 7.4 above.

7.6 Community Engagement and Notification

During the proposed construction of the project (including demolition, excavation and construction) the building contractor is required to engage in community interaction. The community interaction and notification is required to include the following:

1. Notification of the proposed works to be undertaken on the site and the periods when works will be conducted, including information regarding the programme of works such as demolition and excavation. This should include the expected period when activities such as hydraulic hammering, rock breaking, concrete or rock sawing is required to be undertaken.
2. Details of the relevant site representative where complaints can be registered.
3. Details of the methodology to respond to complaints raised from the surrounding receivers.
4. A register of complaints, to be kept on site including record of time and nature of the complaint as well as the outcomes and comments regarding investigations resulting from the complaint.

SINSW has a Community Engagement Plan for the Lindfield Learning Village project. The objectives of this plan are to:

- Promote the benefits of the project.
- Build key schools community stakeholder relationships and maintain goodwill with impacted communities.
- Manage community expectations and build trust by delivering on our commitments.
- Provide timely information to impacted stakeholders, schools and broader communities.
- Address and correct misinformation in the public domain.
- Reduce the risk of project delays caused by negative third party intervention.
- Leave a positive legacy in each community.

The Community Engagement Plan includes a Three-Month Lookahead (Communications Implementation Plan) which ensures key stakeholders are informed of construction activities and that any risks associated with construction are mitigated. It focuses on activities up to three months in advance and will be updated regularly.

With specific relation to community consultation, the project team adheres to mandatory notification periods and issues effective communications prior to noisy works. Past written notifications have been both emailed and letterbox dropped to adjacent neighbors. These notifications outline the need for the works and the timeframes.

The Community Engagement Plan will be updated once a building contractor has been appointed, to ensure it is aligned with the builder's construction management plan.

8 Conclusion

This report details the Revised Noise Impact Assessment of the proposed Lindfield Learning Village Phase 2 and 3 project.

Based on the results of this assessment noise levels associated with the future operation of the project, including the proposed outdoor play areas, future extended driveway, mechanical plant and equipment and internal areas of the project.

The assessment undertakes the required investigations, including EPA Noise Policy for Industry (previously the Industrial Noise Policy) and Road Noise Policy.

Providing the recommended treatments and controls detailed in this report are included in the design and operation of the Lindfield Learning Village noise emissions from the site will be acoustically acceptable at all surrounding receivers including the residential receivers on Dunstan Grove and Tubbs View.

Additionally, noise and vibration generated during the proposed construction period of the project (including demolition activities) can be suitably managed in accordance with the EPA's Interim Construction Noise Guideline.

For any additional information please do not hesitate to contact the person below.

Regards



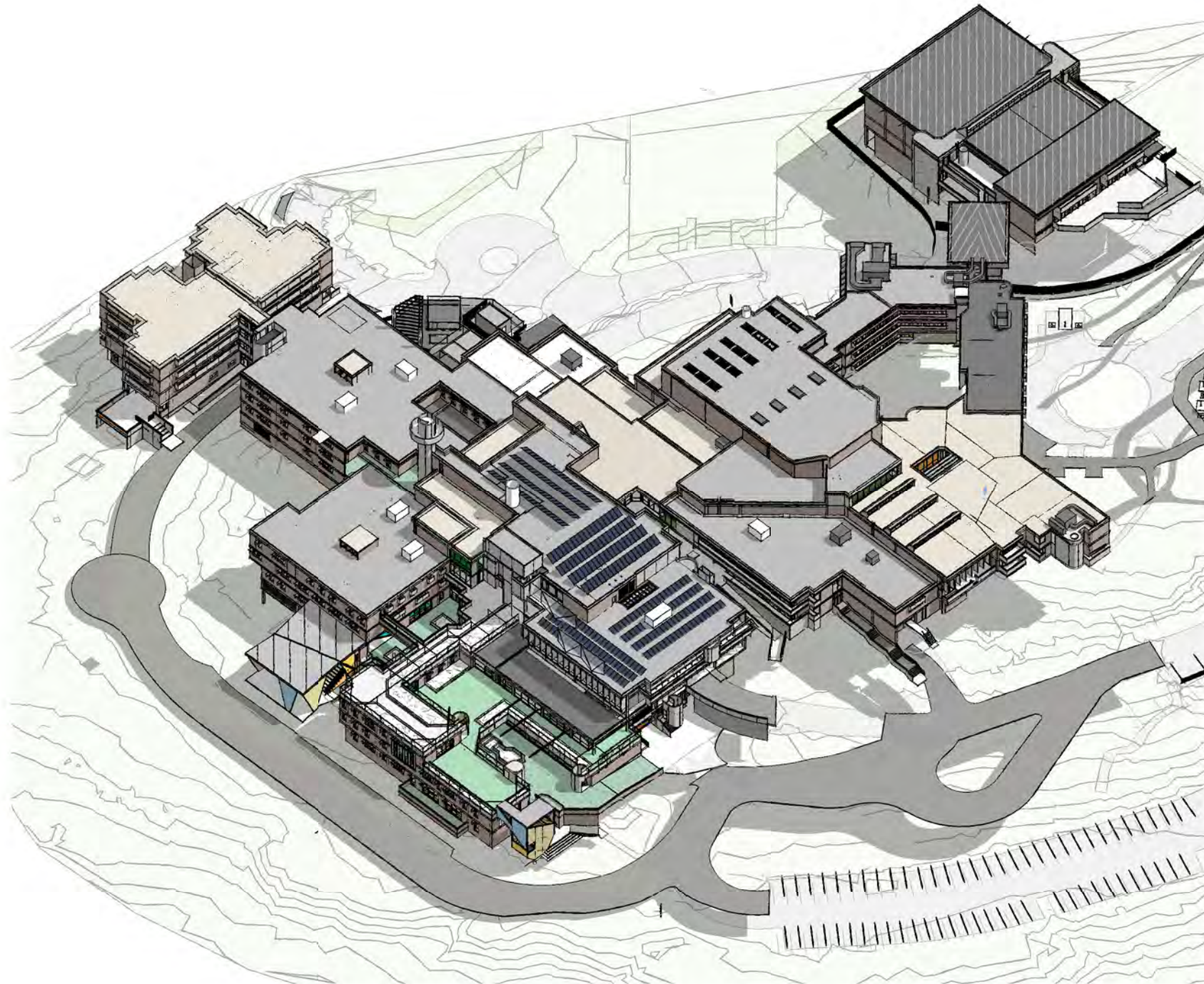
Ben White
Director
White Noise Acoustics

9 Appendix A – Glossary of Terms

<i>Ambient Sound</i>	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
<i>Audible Range</i>	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
<i>Character, acoustic</i>	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
<i>Decibel [dB]</i>	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; <ul style="list-style-type: none"> 0dB the faintest sound we can hear 30dB a quiet library or in a quiet location in the country 45dB typical office space. Ambience in the city at night 60dB Martin Place at lunch time 70dB the sound of a car passing on the street 80dB loud music played at home 90dB the sound of a truck passing on the street 100dB the sound of a rock band 115dB limit of sound permitted in industry 120dB deafening
<i>dB(A)</i>	<i>A-weighted decibels</i> The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.
<i>Frequency</i>	Frequency is synonymous to <i>pitch</i> . Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
<i>Loudness</i>	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
<i>L_{Max}</i>	The maximum sound pressure level measured over a given period.
<i>L_{Min}</i>	The minimum sound pressure level measured over a given period.
<i>L₁</i>	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
<i>L₁₀</i>	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
<i>L₉₀</i>	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L ₉₀ noise level expressed in units of dB(A).
<i>L_{eq}</i>	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
<i>Background Sound Low</i>	The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted, external ambient noise sources. Usually taken to mean the L _{A90} value
<i>Ctr</i>	A frequency adaptation term applied in accordance with the procedures described in ISO 717.
<i>dB (A)</i>	'A' Weighted overall sound pressure level

<i>Noise Reduction</i>	The difference in sound pressure level between any two areas. The term “noise reduction” does not specify any grade or performance quality unless accompanied by a specification of the units and conditions under which the units shall apply
<i>NR Noise Rating</i>	Single number evaluation of the background noise level. The NR level is normally around 5 to 6 dB below the “A” weighted noise level. The NR curve describes a spectrum of noise levels and is categorised by the level at 1000 Hz ie the NR 50 curve has a value of 50 dB at 1000 Hz. The NR rating is a tangential system where a noise spectrum is classified by the NR curve that just encompasses the entire noise spectrum consideration.
<i>R_w</i>	Weighted Sound Reduction Index - Laboratory test measurement procedure that provides a single number indication of the acoustic performance of a partition or single element. Calculation procedures for R _w are defined in ISO 140-2:1991 “Measurement of Sound Insulation in Buildings and of Building Elements Part 2: Determination, verification and application of precision data”.
<i>R'_w</i>	Field obtained Weighted Sound Reduction Index - this figure is generally up to 3-5 lower than the laboratory test determined level data due to flanked sound transmission and imperfect site construction.
<i>Sound Isolation</i>	A reference to the degree of acoustical separation between any two areas. Sound isolation may refer to sound transmission loss of a partition or to noise reduction from any unwanted noise source. The term “sound isolation” does not specify any grade or performance quality and requires the units to be specified for any contractual condition
<i>Sound Pressure Level, L_p dB</i>	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
<i>Sound Power Level, L_w dB</i>	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt
<i>Speech Privacy</i>	A non-technical term but one of common usage. Speech privacy and speech intelligibility are opposites and a high level of speech privacy means a low level of speech intelligibility. It should be recognised that acceptable levels of speech privacy do not require that speech from an adjacent room is inaudible.
<i>Transmission Loss</i>	Equivalent to Sound Transmission Loss and to Sound Reduction Index in terminology used in countries other than Australia. A formal test rating of sound transmission properties of any construction, by usually a wall, floor, roof etc. The transmission loss of all materials varies with frequency and may be determined by either laboratory or field tests. Australian Standards apply to test methods for both situations.

10 Appendix B – Staging Drawings



DRAWING LIST - DA

SHEET NUMBER	SHEET NAME	REVISION
DA-2-000	COVER SHEET	D
DA-2-100	SITE PLAN	C
DA-2-101	INDICATIVE CONSTRUCTION MANAGEMENT PLAN	D
DA-2-102	PHASE 1-3 SITE PLAN	C
DA-2-103	LOT BOUNDARY PLAN	B
DA-2-120	CONSTRUCTION STAGING PLAN - LEVEL 0	B
DA-2-121	CONSTRUCTION STAGING PLAN - LEVEL 1	C
DA-2-122	CONSTRUCTION STAGING PLAN - LEVEL 2	C
DA-2-123	CONSTRUCTION STAGING PLAN - LEVEL 3	C
DA-2-124	CONSTRUCTION STAGING PLAN - LEVEL 4	C
DA-2-125	CONSTRUCTION STAGING PLAN - LEVEL 5	C
DA-2-126	CONSTRUCTION STAGING PLAN - LEVEL 6	C
DA-2-127	CONSTRUCTION STAGING PLAN - LEVEL 7	C
DA-2-128	CONSTRUCTION STAGING PLAN - ROOF	C
DA-2-200	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 0	B
DA-2-201	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 1	D
DA-2-202	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 2	D
DA-2-203	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 3	D
DA-2-204	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 4	D
DA-2-205	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 5	D
DA-2-206	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 6	D
DA-2-207	PHASE 2 & 3 - PROPOSED ROOF PLAN	C
DA-2-300	NORTH & SOUTH BUILDING ELEVATION	C
DA-2-301	EAST & WEST BUILDING ELEVATION	C
DA-2-400	BUILDING SECTIONS - SHEET 1	B
DA-2-401	BUILDING SECTIONS - SHEET 2	B
DA-2-901	BUILDING PERSPECTIVES	C

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Figured dimensions take preference to scale readings. Verify all dimensions on site.
Report any discrepancies to the Architect for decision before proceeding with the work.

Nominated Architects
Anthony Quan 5421 | Sandeep Amin 7337 | Ian Armstrong 7260 | Richard Does 8126

No	DATE	REVISIONS	BY
A	12/06/2019	PRELIMINARY DA	AH
B	16/07/2019	PRELIMINARY DA	PA
C	28/08/2019	SSDA ISSUE	TG
D	17/04/2020	SSD REVISION	PA

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

COVER SHEET

DRAWN BY	TG, RK, NT, DM, DL, PA
SCALES	NTS @A3
PLOT DATE	21/03/2017

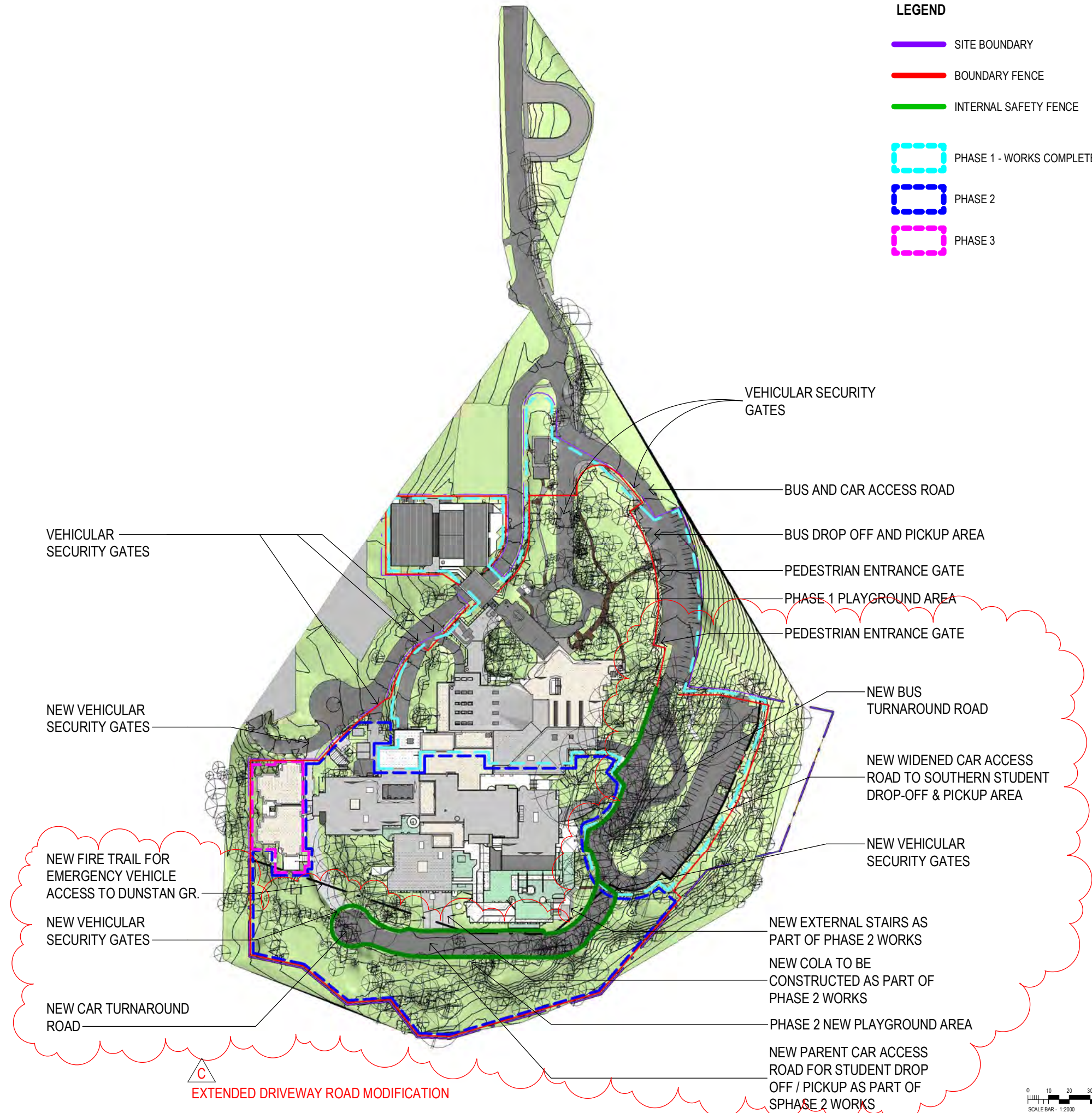
PROJECT N°.	P19-006	REVISION
DRAWING N°.	DA-2-000	D

DRAWING STATUS	REVIEWED BY	SIGNATURE	DATE
PRELIMINARY	TG		

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DEVELOPMENT APPLICATION



LEGEND

SITE BOUNDARY

BOUNDARY FENCE

INTERNAL SAFETY FENCE

PHASE 1 - WORKS COMPLETED

PHASE 2

PHASE 3

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Nominated Architects
Anthony Quan 5421 | Sandeep Amin 7337 | Ian Armstrong 7260 | Richard Does 8126

No	DATE	REVISIONS	BY
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A	23/05/2019	PRELIMINARY	PA
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B	28/08/2019	SSDA ISSUE	TG
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C	17/04/2020	SSD REVISION	PA
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ARCHITECT	DesignInc Lacoste + Stevenson bmc2 architects in association
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CLIENT	SCHOOL INFRASTRUCTURE NSW
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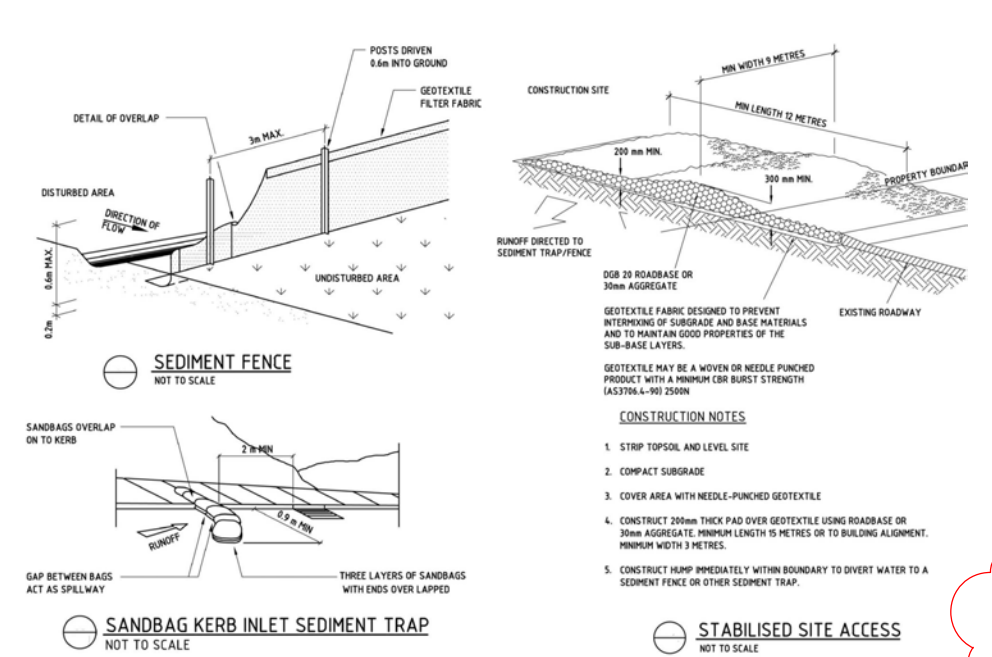
PROJECT	LINDFIELD LEARNING VILLAGE 100 ETON RD, LINDFIELD NSW 2070
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TITLE	SITE PLAN
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DRAWN BY	TG, CS, HC, RK	REVISION	C
SCALES	1 : 2000 @A3		
PLOT DATE	21/03/2017		
PROJECT N°	P19-006		
DRAWING N°	DA-2-100		
DRAWING STATUS FOR APPROVAL	REVIEWED BY RG	SIGNATURE	DATE

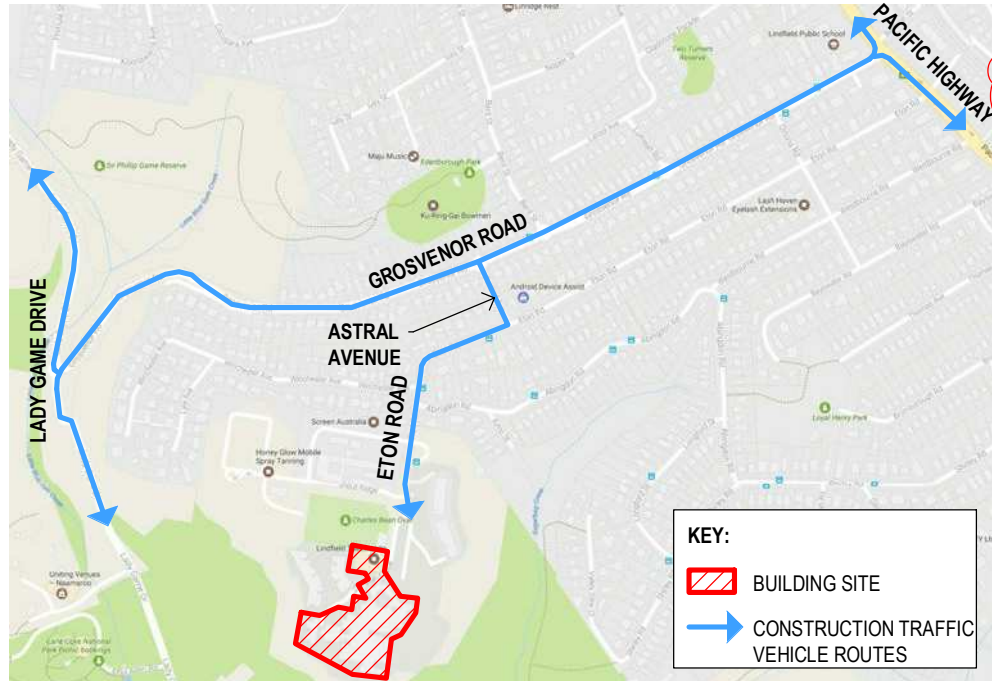
QUALITY CERTIFIED ISO 9001	Completion of the Drawing Status is evidence the design has been verified as conforming to the requirements of the Project M.S. Plan. Initiating the 'Drawn By' box confirms that this drawing has been prepared in conformity with Designinc Sydney M.S. procedures.
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DEVELOPMENT APPLICATION

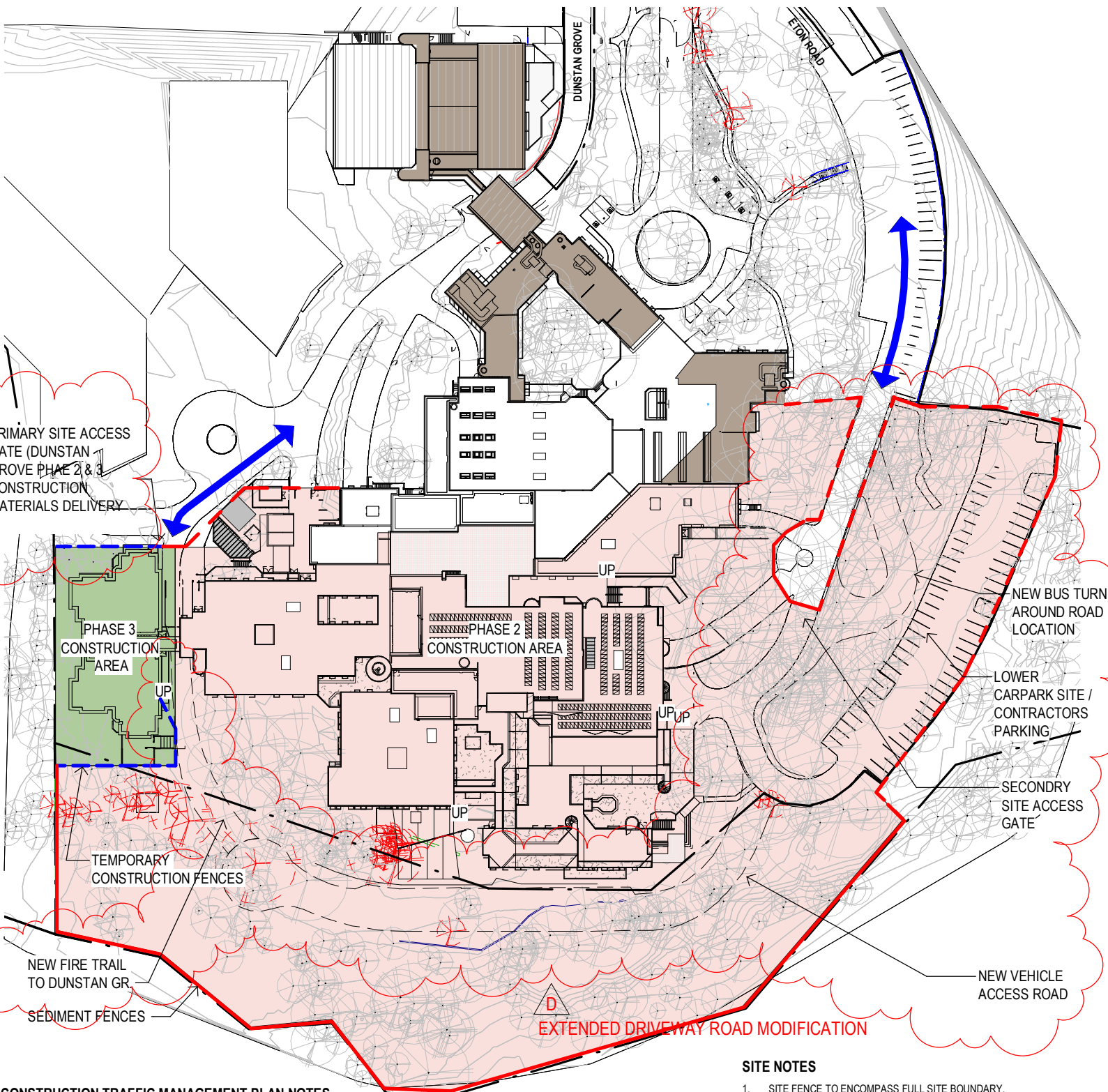


EROSION & SEDIMENT CONTROL

1. THIS PLAN SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND ENGINEERING PLANS AND ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.
2. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS SHOWN ON THIS DRAWING.
3. PROTECT ALL NEW PITS FROM SEDIMENT INFILTRATION PROGRESSIVELY, AS THEY ARE CONSTRUCTED.
4. ALL DOWNSTREAM STORMWATER PITS ARE TO BE PROTECTED FROM SEDIMENT INFILTRATION DURING CONSTRUCTION.
5. ALL SUB-CONTRACTORS ON SITE SHALL BE MADE AWARE OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO WATER COURSES AND WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SIDE SHALL BE KEPT AS LOW AS POSSIBLE. TO ACHIEVE, WORKS SHOULD BE CARRIED OUT AS FOLLOWS.
6. 1) INSTALL ANY NECESSARY SECURITY/BOUNDARY FENCES FOR THE SITE.
2) CONSTRUCT 'SILT' FENCING AS DETAILED ALONG BOTH DOWNSLOPE BOUNDARIES.
7. DURING WINDY WEATHER, LARGE UNPROTECTED AREAS SHALL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
8. FINAL SITE LANDSCAPING SHALL BE UNDERTAKEN AS SOON AS POSSIBLE, AND WITHIN TWENTY WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.
9. SAND USED IN THE CONCRETE CURING PROCESS SHALL BE REMOVED ASAP, AND WITHIN TEN WORKING DAYS FROM PLACEMENT.
10. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM, UNLESS IT IS RELATIVELY SEDIMENT-FREE; ie. THE CATCHMENT AREA HAS BEEN LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
11. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
12. THE CONTRACTOR SHALL PROVIDE ACCEPTABLE RECEPTORS FOR CONCRETE & MORTAR SLURRIES, PAINTS, ACID WASHINGS. LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
13. RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT.
14. EVERY WEEK, FOR THE DURATION OF WORKS THE CONTRACTOR SHALL INSPECT THE SITE FOR THE FOLLOWING ITEMS:
 - ENSURE DRAINS OPERATE EFFECTIVELY, AND INITIATE REPAIR OR MAINTENANCE AS REQUIRED.
 - REMOVE SPILLED SAND (OR OTHER MATERIALS) FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 2 METRES FROM AREAS OF CONCENTRATED OR HIGH-VELOCITY FLOWS SUCH AS WATERCOURSES, OVERLAND FLOW PATHS, GUTTERS, PAVED AREAS, DRIVEWAYS AND ROADS.
15. CONSTRUCT ADDITIONAL EROSION AND/OR SEDIMENT WORKS IS NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS, ie. MAKE ONGOING CHANGES TO THE PLAN.
16. MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN A FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE REHABILITATED.
17. REMOVE TEMPORARY SOIL CONSERVATION STRUCTURES AS A LAST ACTIVITY IN THE REHABILITATION PROGRAM.



LOCATION PLAN & CONSTRUCTION VEHICLE ROUTES



CONSTRUCTION TRAFFIC MANAGEMENT PLAN NOTES

- Construction Activity:**
1. The key proposed building works involve demolition of internal fixtures and the rebuilding of internal fixtures to the new room layouts. No major external works are proposed.
 2. The Contractor's compound will be set up within the existing building.
 3. Sections to the southern site areas and lower carpark will be available for site drop off, loading and deliveries.
 4. The lower and internal carpark will be available for Contractors onsite parking.
- Access:**
1. Site Access: Primary Vehicular Access to and from the site shall be from Dunstan Grove. The site access gate will be set up at the end of Dunstan Grove within the Site. Access to Dunstan Grove and Shout Ridge Road shall be unaffected.
 2. Road Access: The main arterial road to the North East of the site is the Pacific Highway and to the South West is Lady Game Drive, with Grosvenor Road used as the main link road between the two. See the Construction traffic vehicle route diagram.
- Traffic Management:**
1. Local Impact: The site is accessed by the existing road network and no significant impact to the local traffic or the local environment is envisaged.
 2. Traffic Control: Disruption to all road users during the construction period would be kept to a minimum.

For further information see Arup Traffic and Transport Assessment dated August 2019 - Construction Traffic Management Plan.

SITE NOTES

1. SITE FENCE TO ENCOMPASS FULL SITE BOUNDARY.
2. ALL ACCOMMODATION / CRANEAGE TO BE CONTAINED WITHIN THE SITE.
3. TRAFFIC CONTROLS IN PLACE FOR TRUCKS ENTERING / EXITING THE SITE.
4. SPECIFIC TP2/ MEASURES TO BE IDENTIFIED FOR TREES TO BE RETAINED.

LEGEND

- TEMPORARY SITE FENCE PHASE 2
- TEMPORARY SITE FENCE PHASE 3
- ← SITE ACCESS
- PHASE 2 CONSTRUCTION AREA
- PHASE 3 CONSTRUCTION AREA
- REPURPOSING OF PHASE 1 CONSTRUCTION AREA

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No	DATE	REVISIONS	BY
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B	17/06/2019	PRELIMINARY - FOR REVIEW	PA
C	28/08/2019	SSDA ISSUE	TG
D	17/04/2020	SSD REVISION	PA

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CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

INDICATIVE CONSTRUCTION MANAGEMENT PLAN

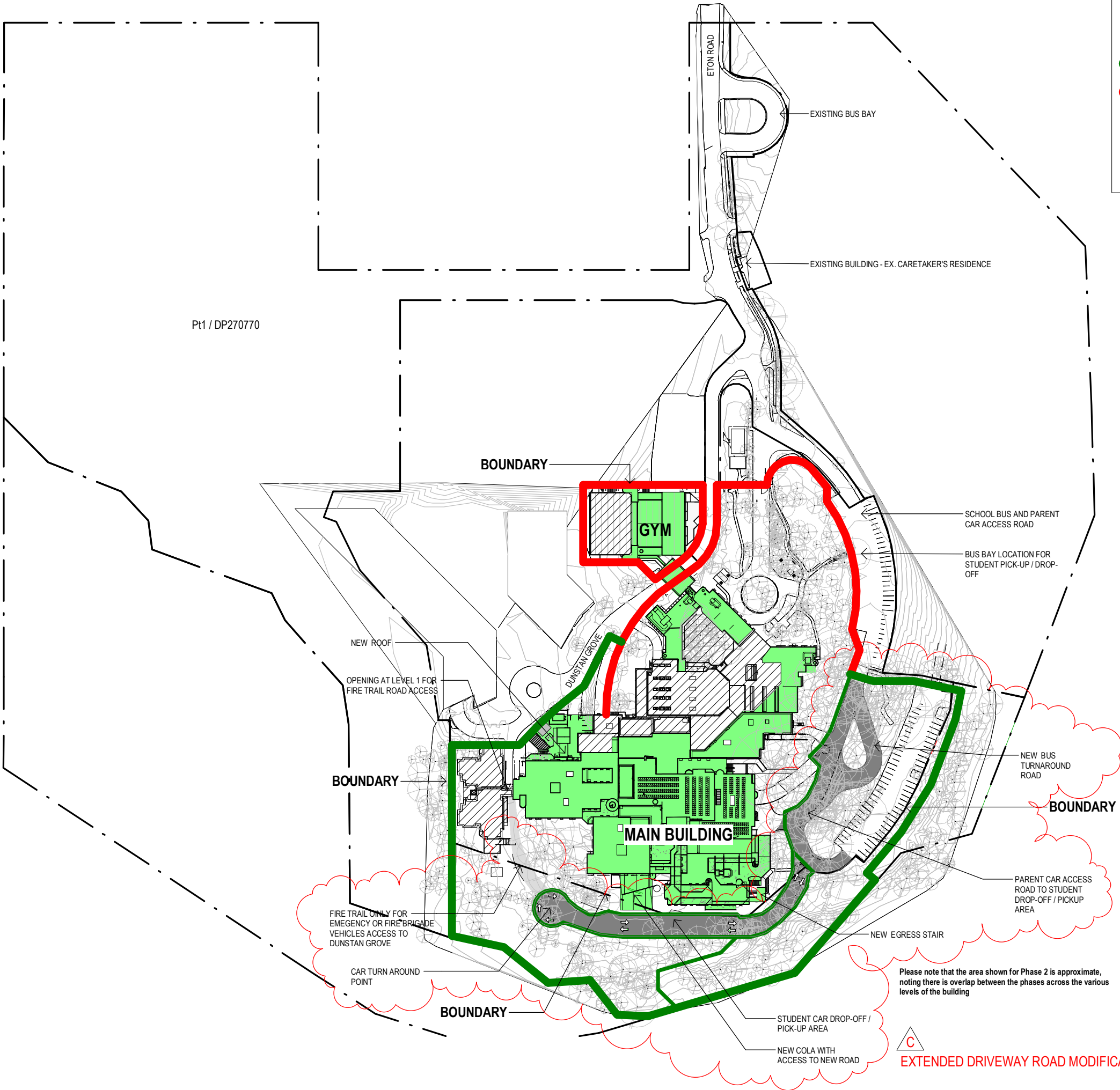
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SCALES NTS @A3
PLOT DATE 29/03/2017

PROJECT N°	P19-006	REVISION
DRAWING N°	DA-2-101	D
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DEVELOPMENT APPLICATION



LEGEND:

PHASE 2

PHASE 1 & 3

PHASE 2 FENCE

EXISTING FENCE

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B	28/08/2019	SSDA ISSUE	TG
C	17/04/2020	SSD REVISION	PA

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

PHASE 1-3 SITE PLAN

N

DRAWN BY TG

SCALES As indicated @A3

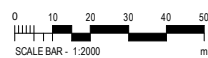
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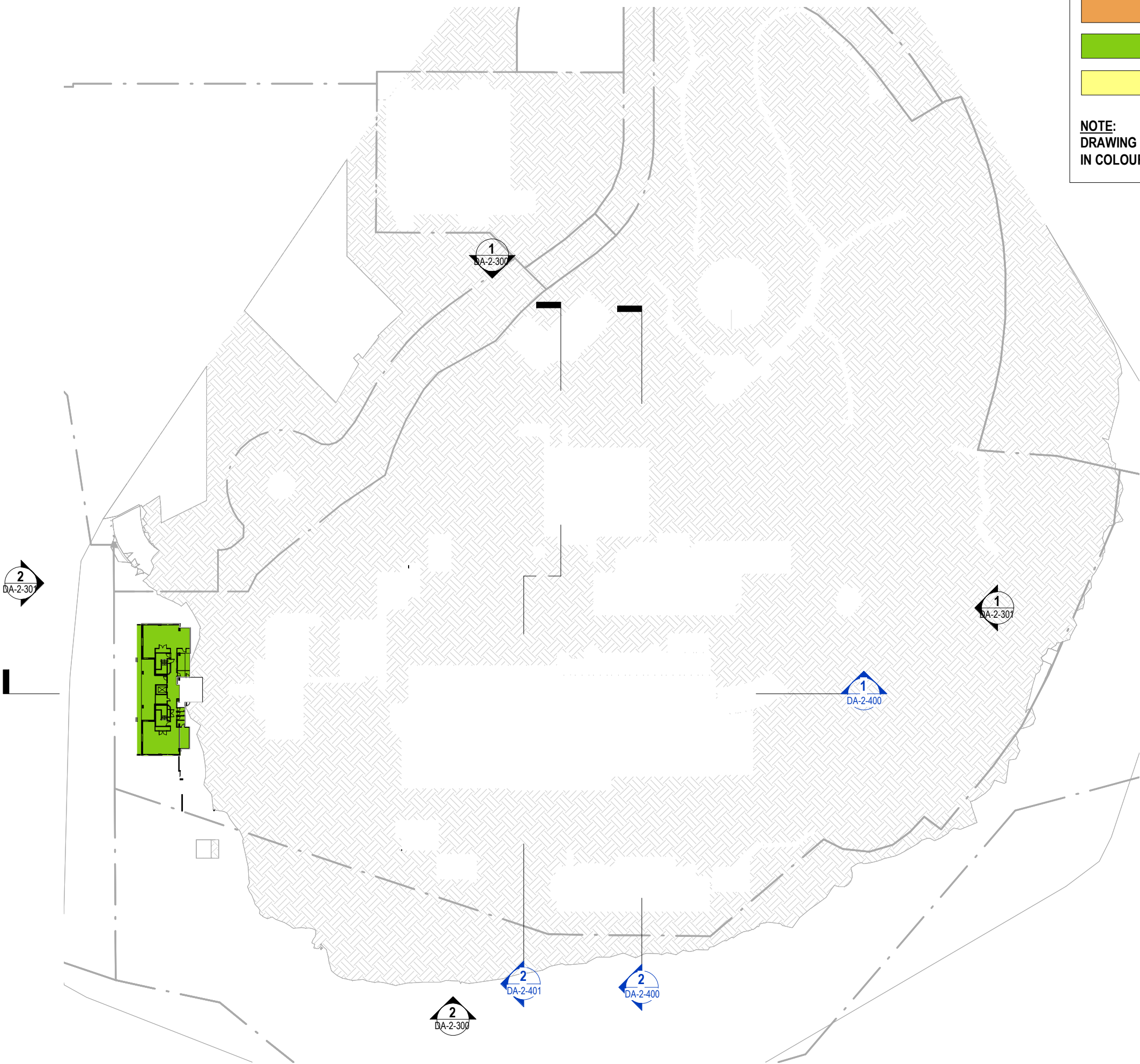
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DRAWING N°	DA-2-102		
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DEVELOPMENT APPLICATION





LEGEND:

- PHASE 2
- PHASE 3
- REPURPOSING PHASE 1

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B	28/08/2019	SSDA ISSUE	TG

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FIRE ENGINEER

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE

100 ETON RD,

LINDFIELD NSW 2070

TITLE

CONSTRUCTION STAGING PLAN - LEVEL 0

N

SCALE

PLOT

TG, RK, NT, DM, DL, PA

As indicated @A3

06/06/19

PROJECT N°.

DRAWING N°.

DRAWING STATUS

P19-006

DA-2-120

TG

REVISIO

B

REVIEWED

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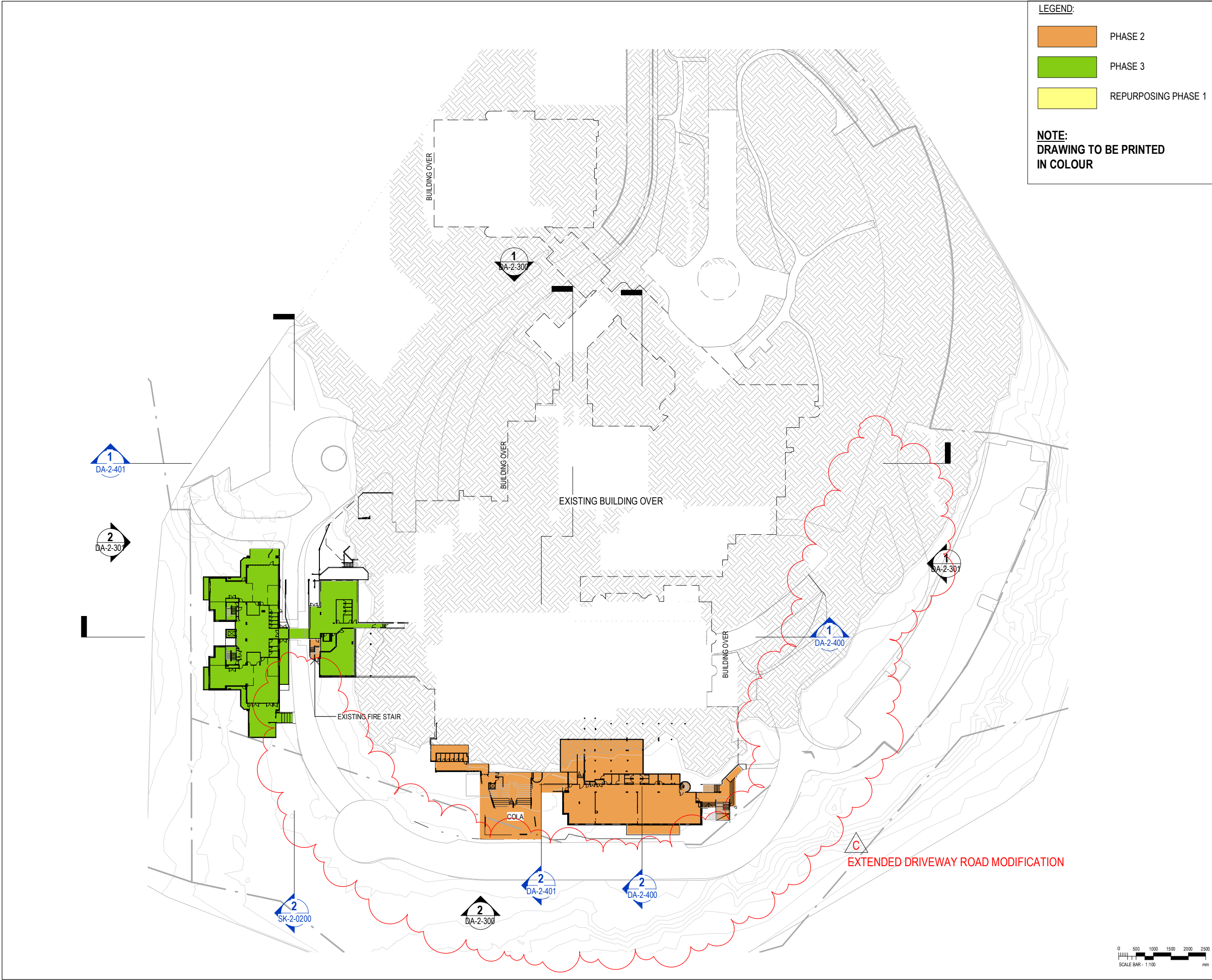
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LEGEND:

PHASE 2

PHASE 3

REPURPOSING PHASE 1

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CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

CONSTRUCTION STAGING PLAN - LEVEL 1

N

DRAWN BY TG, RK, NT, DM, DL, PA

SCALES As indicated @A3

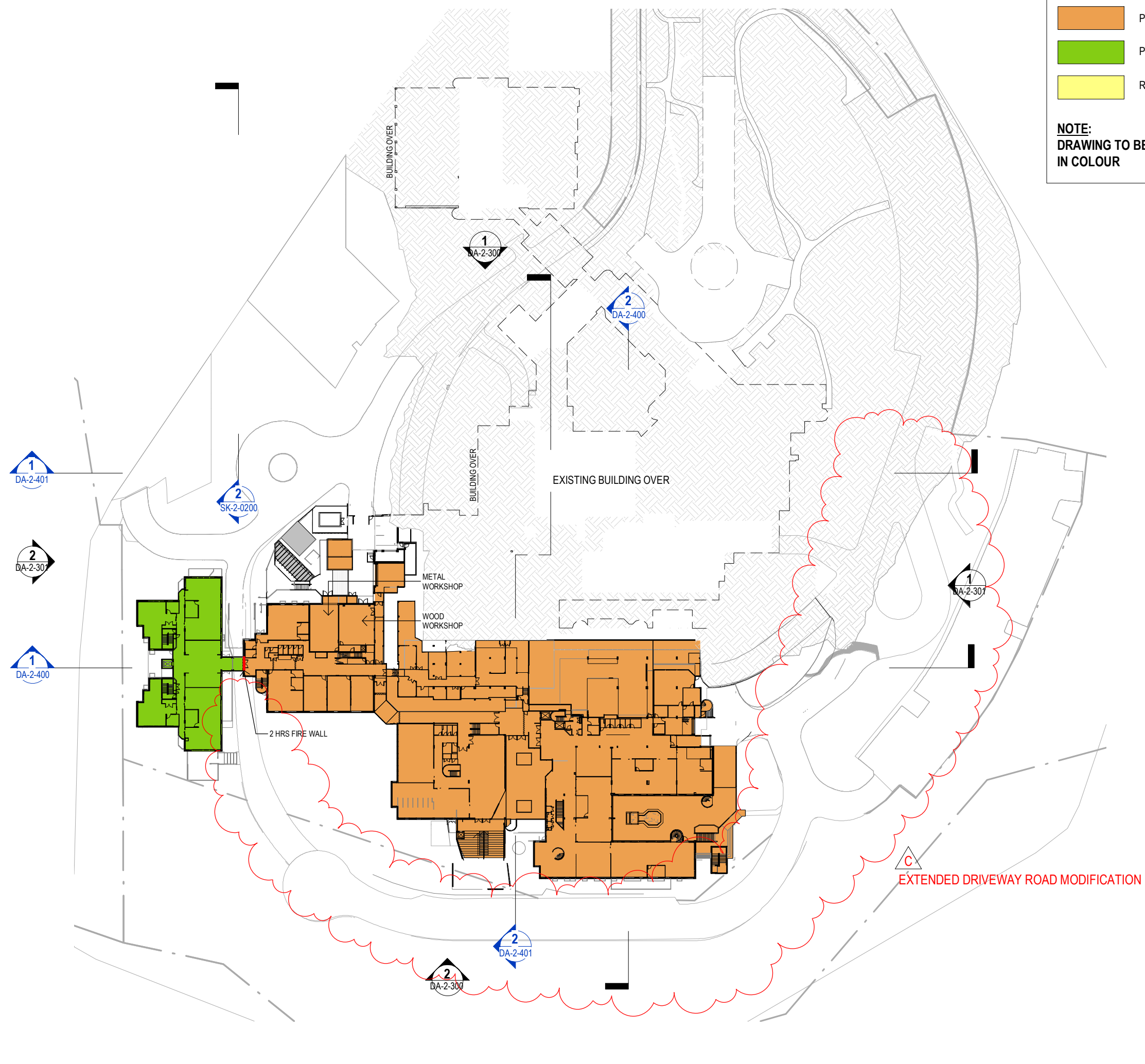
PLOT DATE 05/20/19

PROJECT N°	P19-006	REVISION
DRAWING N°	DA-2-121	C
DRAWING STATUS	REVIEWED BY TG	SIGNATURE
		DATE

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DEVELOPMENT APPLICATION



LEGEND:

PHASE 2

PHASE 3

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

CONSTRUCTION STAGING PLAN - LEVEL 2

N

SCALES
As indicated @A3

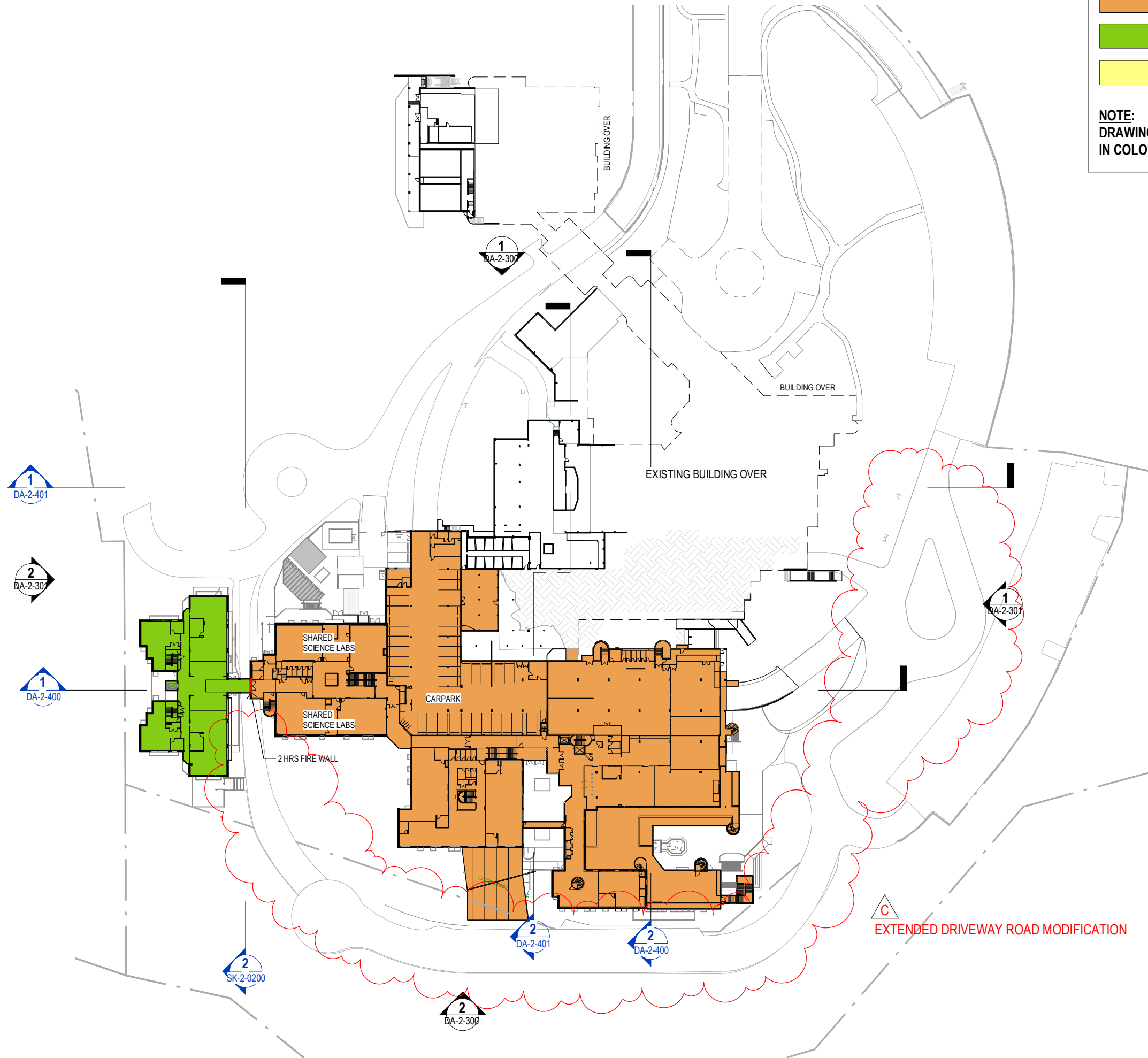
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06/06/19

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DRAWING N°	DA-2-122		
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LEGEND:

PHASE 2

PHASE 3

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PROJECT MANAGER	SAVILLS Ph: (02) 8215 8888

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

CONSTRUCTION STAGING PLAN - LEVEL 3

N

DRAWN BY

TG, RK, NT, DM, DL, PA

SCALES

As indicated @A3

PLOT DATE

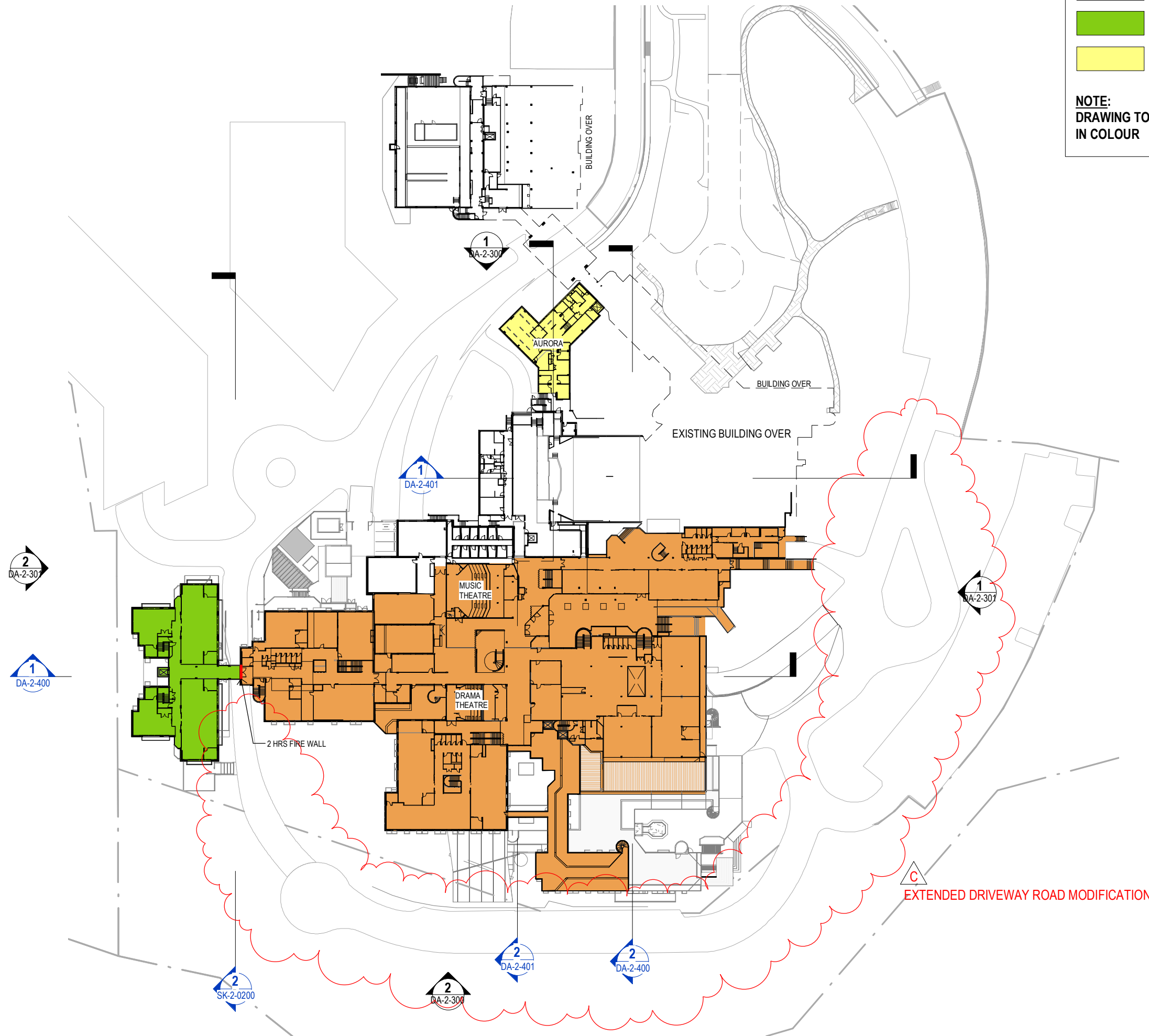
05/20/19

PROJECT N°	P19-006	REVISION	C
DRAWING N°	DA-2-123		
DRAWING STATUS	REVIEWED BY	SIGNATURE	DATE
	TG		

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DEVELOPMENT APPLICATION



LEGEND:

PHASE 2

PHASE 3

REPURPOSING PHASE 1

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Nominated Architects
Anthony Quen 5421 | Sandeep Amin 7337 | Ian Armstrong 7260 | Richard Does 8126

No	DATE	REVISIONS	BY
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B	28/08/2019	SSDA ISSUE	TG
C	17/04/2020	SSD REVISION	PA

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

CONSTRUCTION STAGING PLAN - LEVEL 4

N

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SCALES As indicated @A3

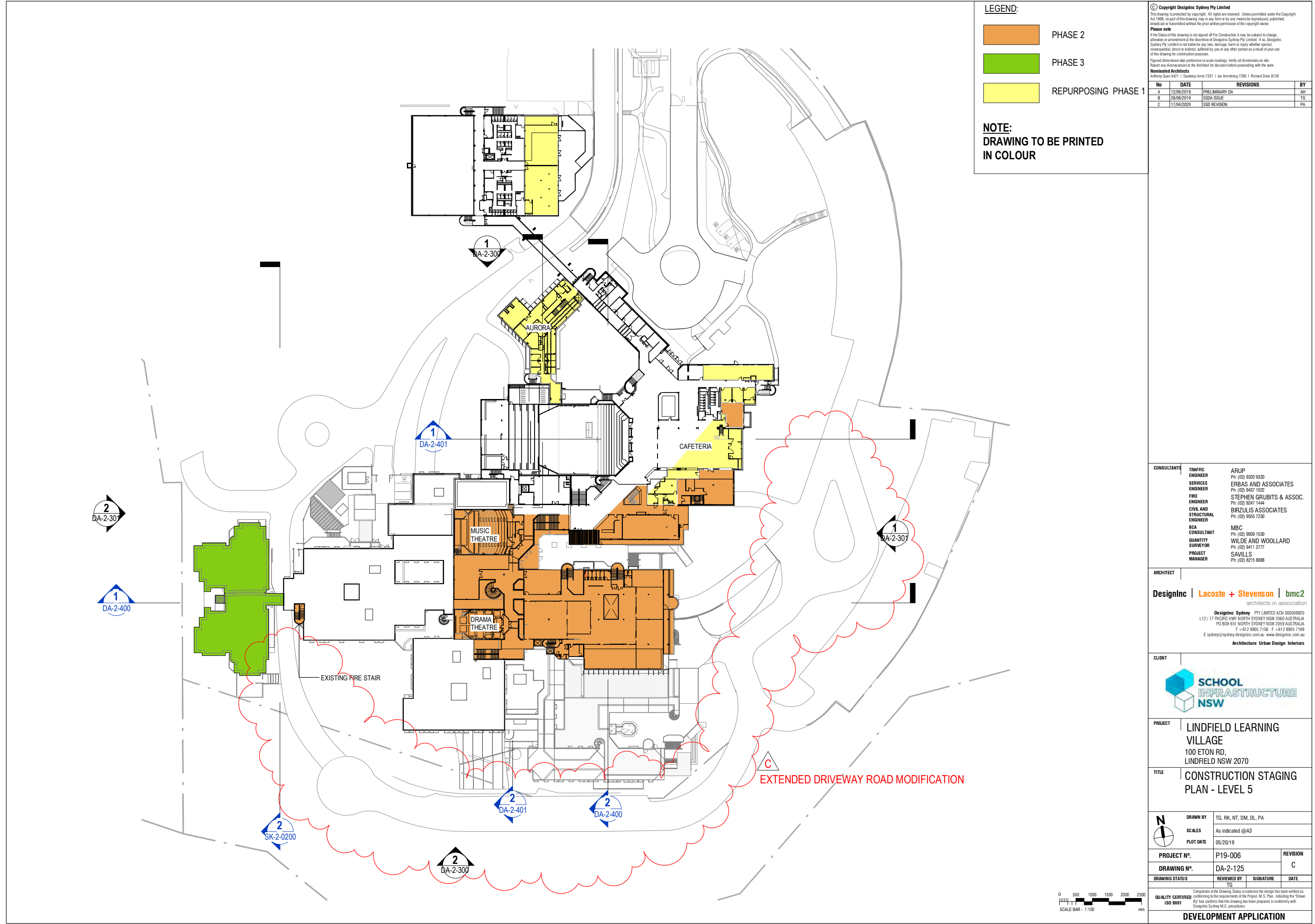
PLOT DATE 05/20/19

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DRAWING N°	DA-2-124	C				
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REVIEWED BY	TG	SIGNATURE	DATE			

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DEVELOPMENT APPLICATION



LEGEND:

- PHASE 2
- PHASE 3
- REPURPOSING PHASE 1

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BCA CONSULTANT	MBC Ph: (02) 9939 1530
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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

CONSTRUCTION STAGING PLAN - LEVEL 5

N

DRAWN BY

TG, RK, NT, DM, DL, PA

SCALES

As indicated @A3

PLOT DATE

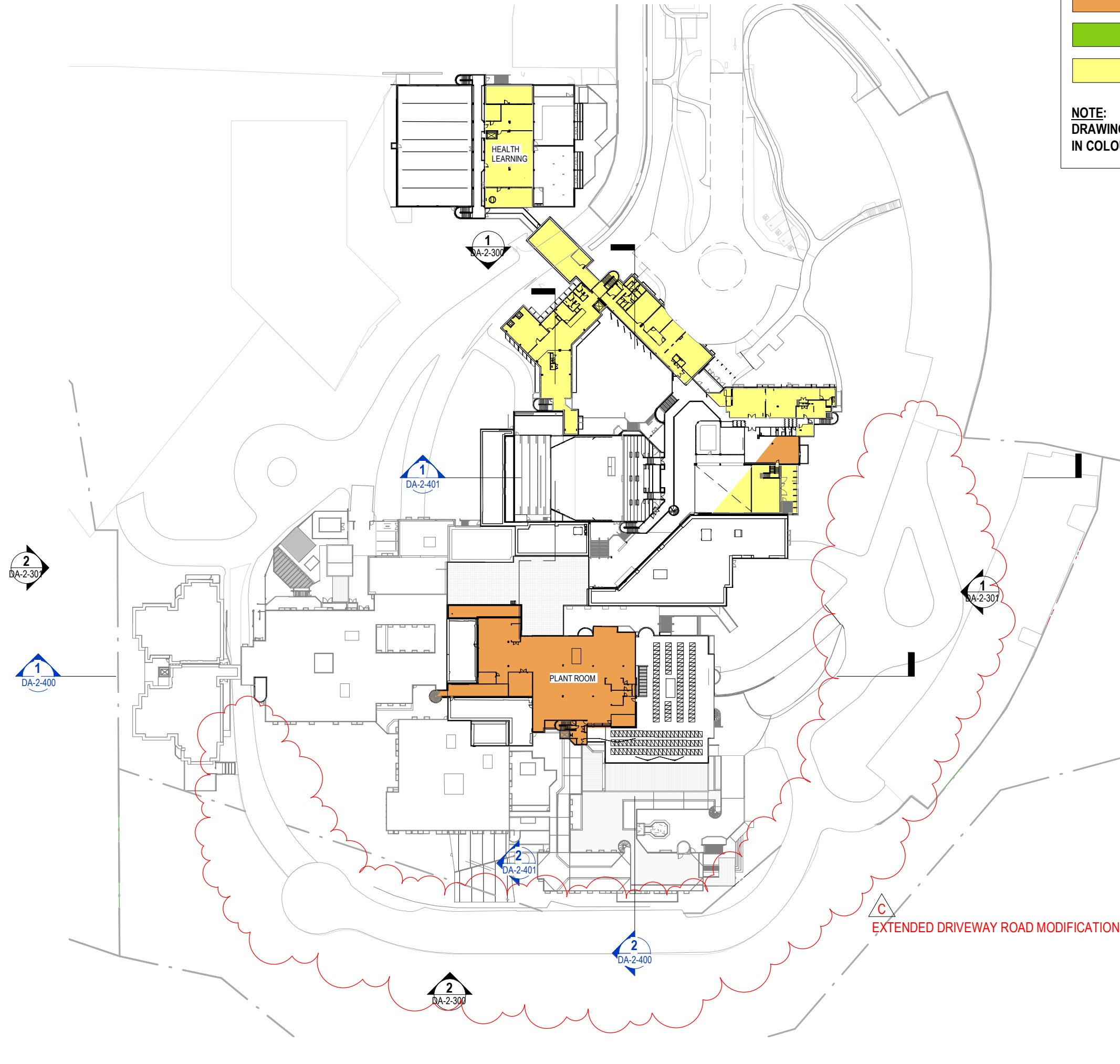
05/20/19

PROJECT N°	P19-006	REVISION	C
DRAWING N°	DA-2-125		
DRAWING STATUS	REVIEWED BY	SIGNATURE	DATE
	TG		

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DEVELOPMENT APPLICATION



LEGEND:

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- REPURPOSING PHASE 1

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C	17/04/2020	SSD REVISION	PA

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ARCHITECT	DesignInc Lacoste + Stevenson bmc2 architects in association
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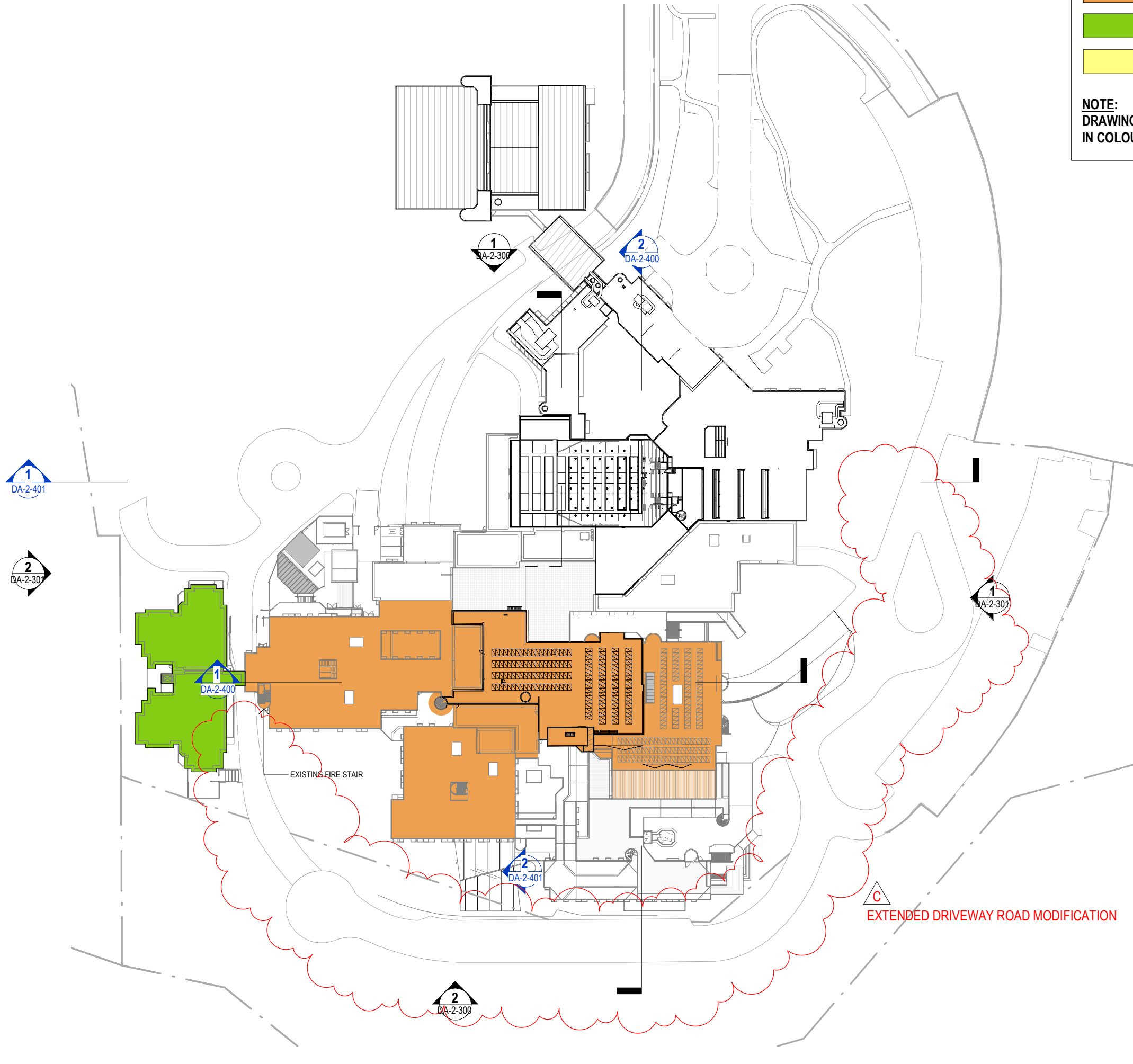
PROJECT	LINDFIELD LEARNING VILLAGE 100 ETON RD, LINDFIELD NSW 2070
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TITLE	CONSTRUCTION STAGING PLAN - LEVEL 6
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	SCALES	As indicated @A3		
	PLOT DATE	05/20/19		
PROJECT N°.		P19-006		REVISION
DRAWING N°.		DA-2-126		C
DRAWING STATUS	REVIEWED BY	SIGNATURE	DATE	
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DEVELOPMENT APPLICATION



LEGEND:

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- PHASE 3
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PROJECT MANAGER	SAVILLS Ph: (02) 8215 8888	

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

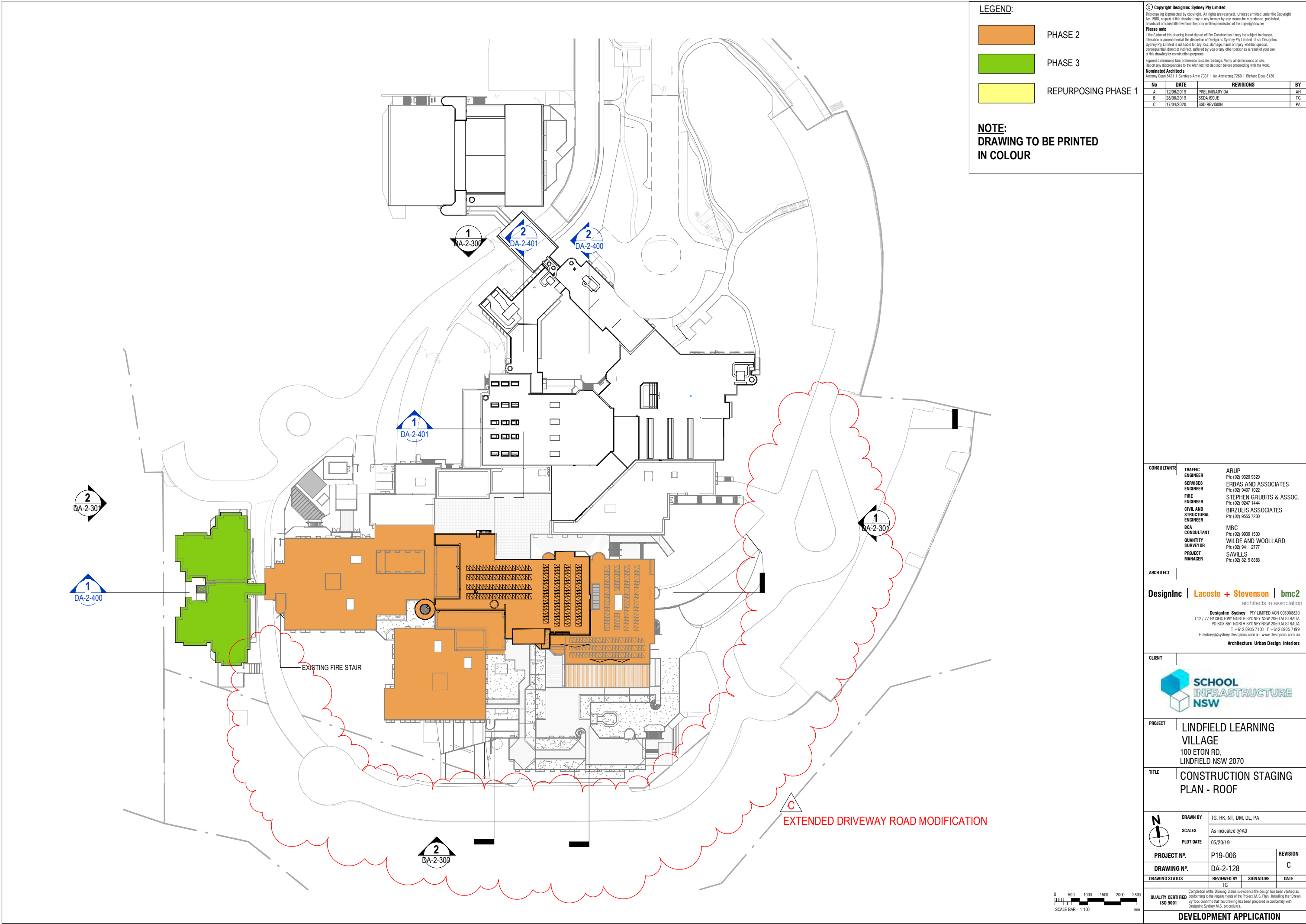
CONSTRUCTION STAGING PLAN - LEVEL 7

DRAWN BY	TG, RK, NT, DM, DL, PA	
	As indicated @A3	
SCALES	05/20/19	
PLOT DATE	REVISION	
PROJECT N°	P19-006	C
DRAWING N°	DA-2-127	
DRAWING STATUS	REVIEWED BY	SIGNATURE
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DEVELOPMENT APPLICATION



LEGEND:

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- PHASE 3
- REPURPOSING PHASE 1

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C	17/04/2020	SSD REVISION	PA

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CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

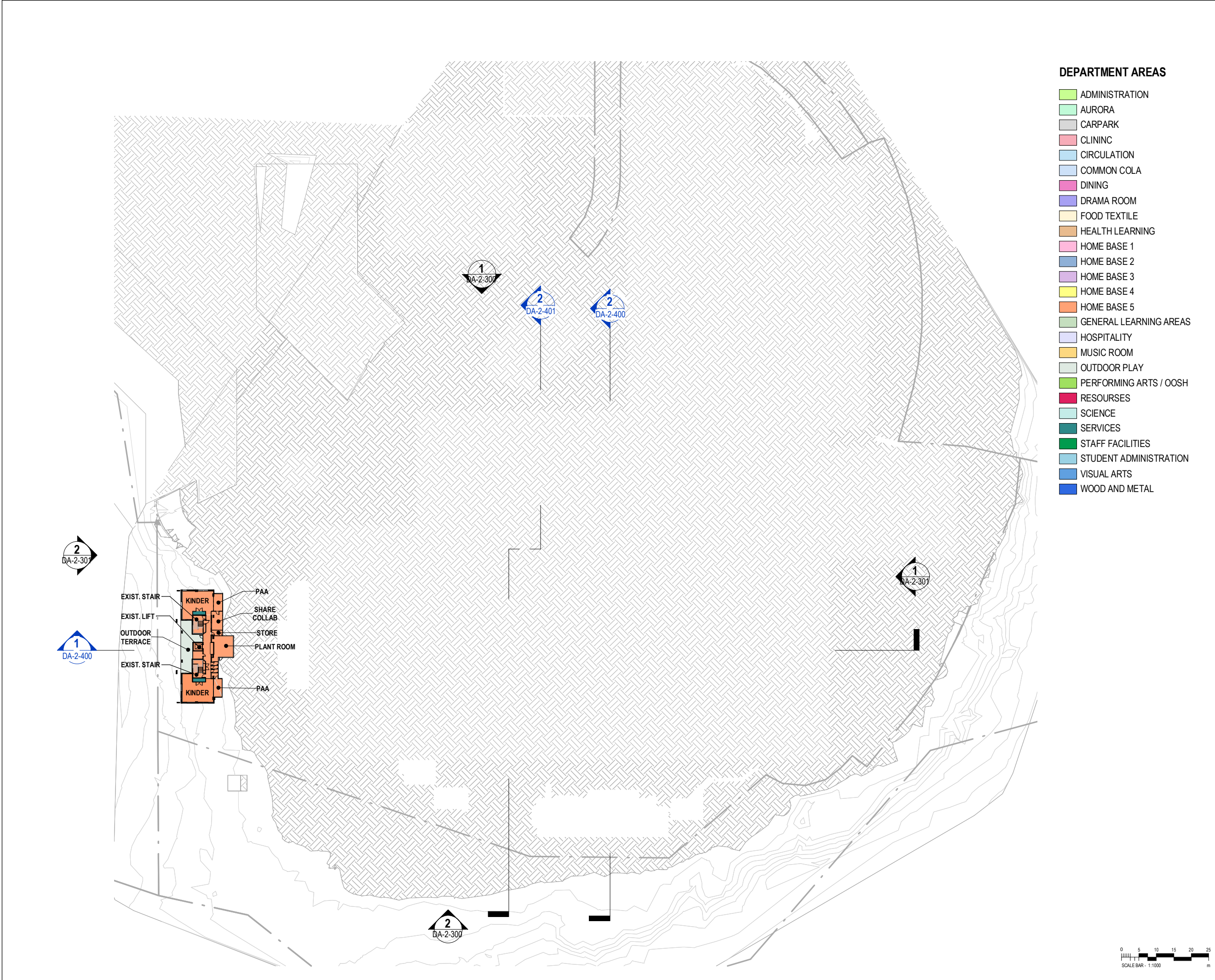
CONSTRUCTION STAGING PLAN - ROOF

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	SCALES	As indicated @A3	
	PLOT DATE	05/20/19	
PROJECT N°	P19-006	REVISION	C
DRAWING N°	DA-2-128		
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DEVELOPMENT APPLICATION



DEPARTMENT AREAS

- ADMINISTRATION
- AURORA
- CARPARK
- CLININC
- CIRCULATION
- COMMON COLA
- DINING
- DRAMA ROOM
- FOOD TEXTILE
- HEALTH LEARNING
- HOME BASE 1
- HOME BASE 2
- HOME BASE 3
- HOME BASE 4
- HOME BASE 5
- GENERAL LEARNING AREAS
- HOSPITALITY
- MUSIC ROOM
- OUTDOOR PLAY
- PERFORMING ARTS / OOSH
- RESOURCES
- SCIENCE
- SERVICES
- STAFF FACILITIES
- STUDENT ADMINISTRATION
- VISUAL ARTS
- WOOD AND METAL

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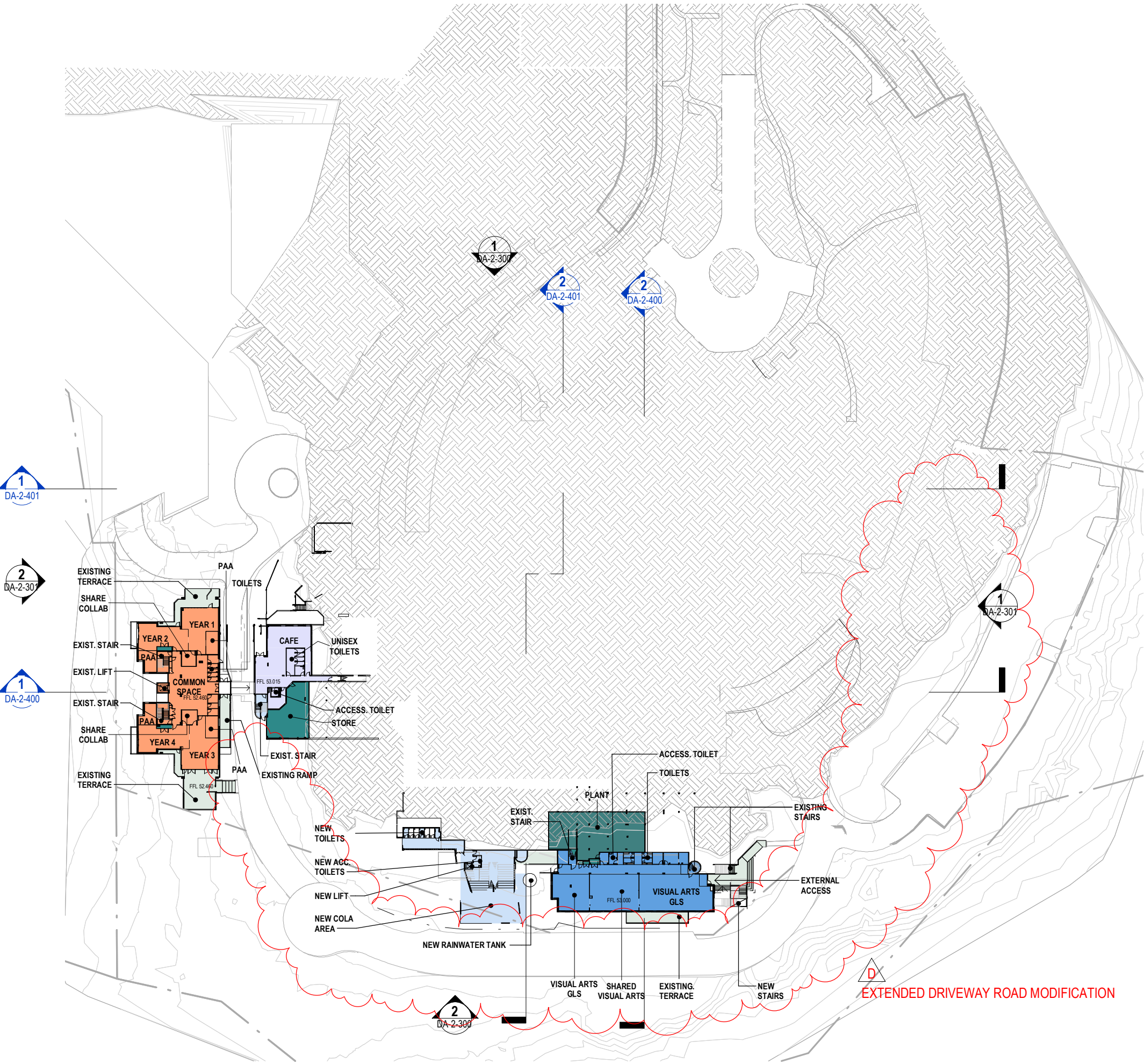
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CLIENT		
PROJECT	LINDFIELD LEARNING VILLAGE 100 ETON RD, LINDFIELD NSW 2070	
TITLE	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 0	
	DRAWN BY	TG, CS, HC, RK
	SCALES	1:1000 @A3
	PLOT DATE	21/03/2017
	PROJECT N°	P19-006
	DRAWING N°	DA-2-200
	DRAWING STATUS	REVIEWED BY
	FOR APPROVAL	RG
	SIGNATURE	DATE
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	DEVELOPMENT APPLICATION	



- DEPARTMENT AREAS**
- ADMINISTRATION
 - AURORA
 - CARPARK
 - CLINIC
 - CIRCULATION
 - COMMON COLA
 - DINING
 - DRAMA ROOM
 - FOOD TEXTILE
 - HEALTH LEARNING
 - HOME BASE 1
 - HOME BASE 2
 - HOME BASE 3
 - HOME BASE 4
 - HOME BASE 5
 - GENERAL LEARNING AREAS
 - HOSPITALITY
 - MUSIC ROOM
 - OUTDOOR PLAY
 - PERFORMING ARTS / OOSH
 - RESOURCES
 - SCIENCE
 - SERVICES
 - STAFF FACILITIES
 - STUDENT ADMINISTRATION
 - VISUAL ARTS
 - WOOD AND METAL

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B	16/07/2019	PRELIMINARY DA	PA
C	28/08/2019	SSDA ISSUE	TG
D	17/04/2020	SSD REVISION	PA

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ARCHITECT

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 1

N

DRAWN BY

TG, CS, HC, RK

SCALES

1:1000 @A3

PLOT DATE

21/03/2017

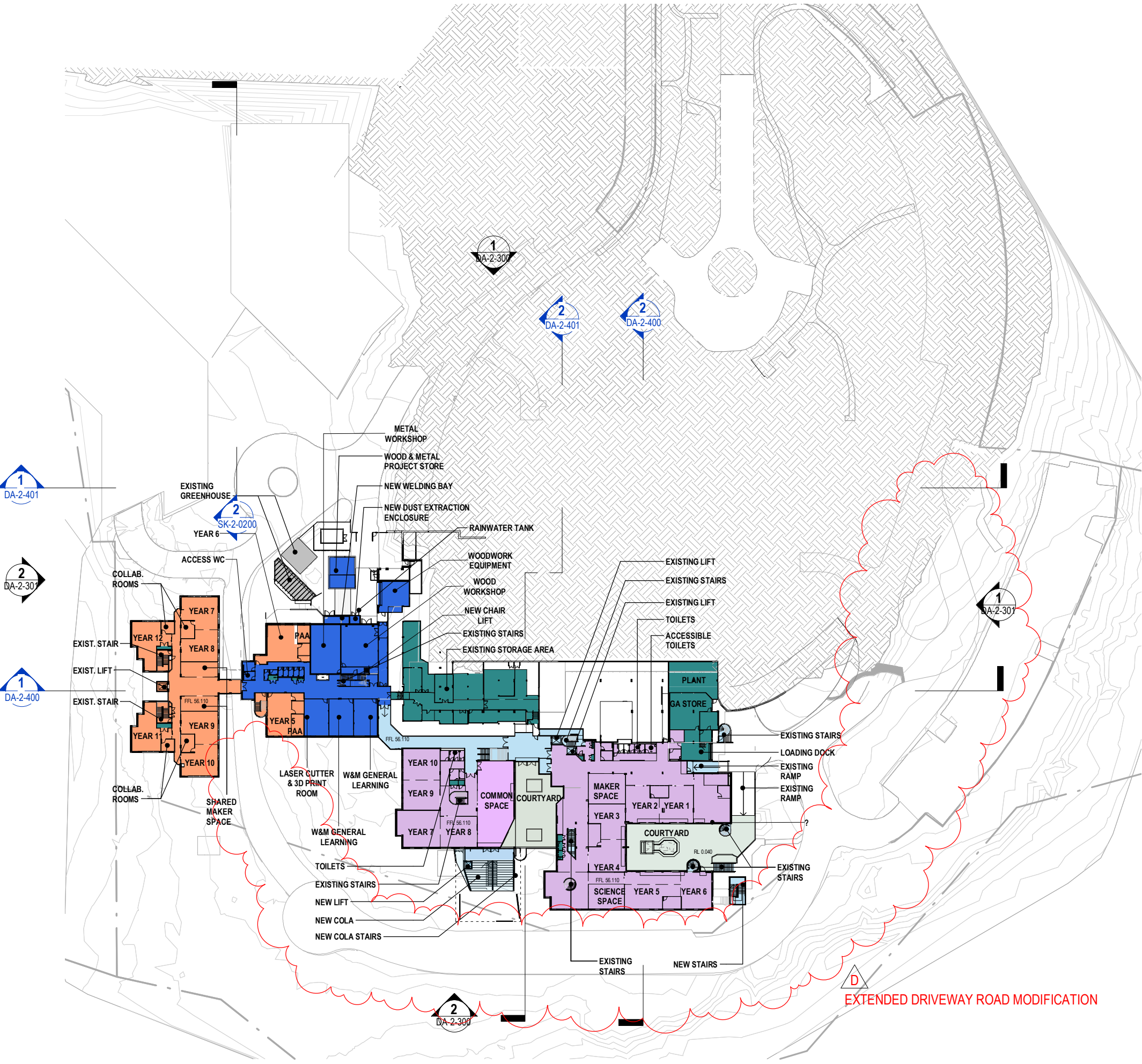
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DRAWING N°	DA-2-201		
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DEVELOPMENT APPLICATION



DEPARTMENT AREAS

- ADMINISTRATION
- AURORA
- CARPARK
- CLINIC
- CIRCULATION
- COMMON COLA
- DINING
- DRAMA ROOM
- FOOD TEXTILE
- HEALTH LEARNING
- HOME BASE 1
- HOME BASE 2
- HOME BASE 3
- HOME BASE 4
- HOME BASE 5
- GENERAL LEARNING AREAS
- HOSPITALITY
- MUSIC ROOM
- OUTDOOR PLAY
- PERFORMING ARTS / OOSH
- RESOURCES
- SCIENCE
- SERVICES
- STAFF FACILITIES
- STUDENT ADMINISTRATION
- VISUAL ARTS
- WOOD AND METAL

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C	28/08/2019	SSDA ISSUE	TG
D	17/04/2020	SSD REVISION	PA

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	FIRE ENGINEER	STEPHEN GRUBITS & ASSOC. Ph: (02) 9247 1444
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	PROJECT MANAGER	SAVILLS Ph: (02) 8215 8888

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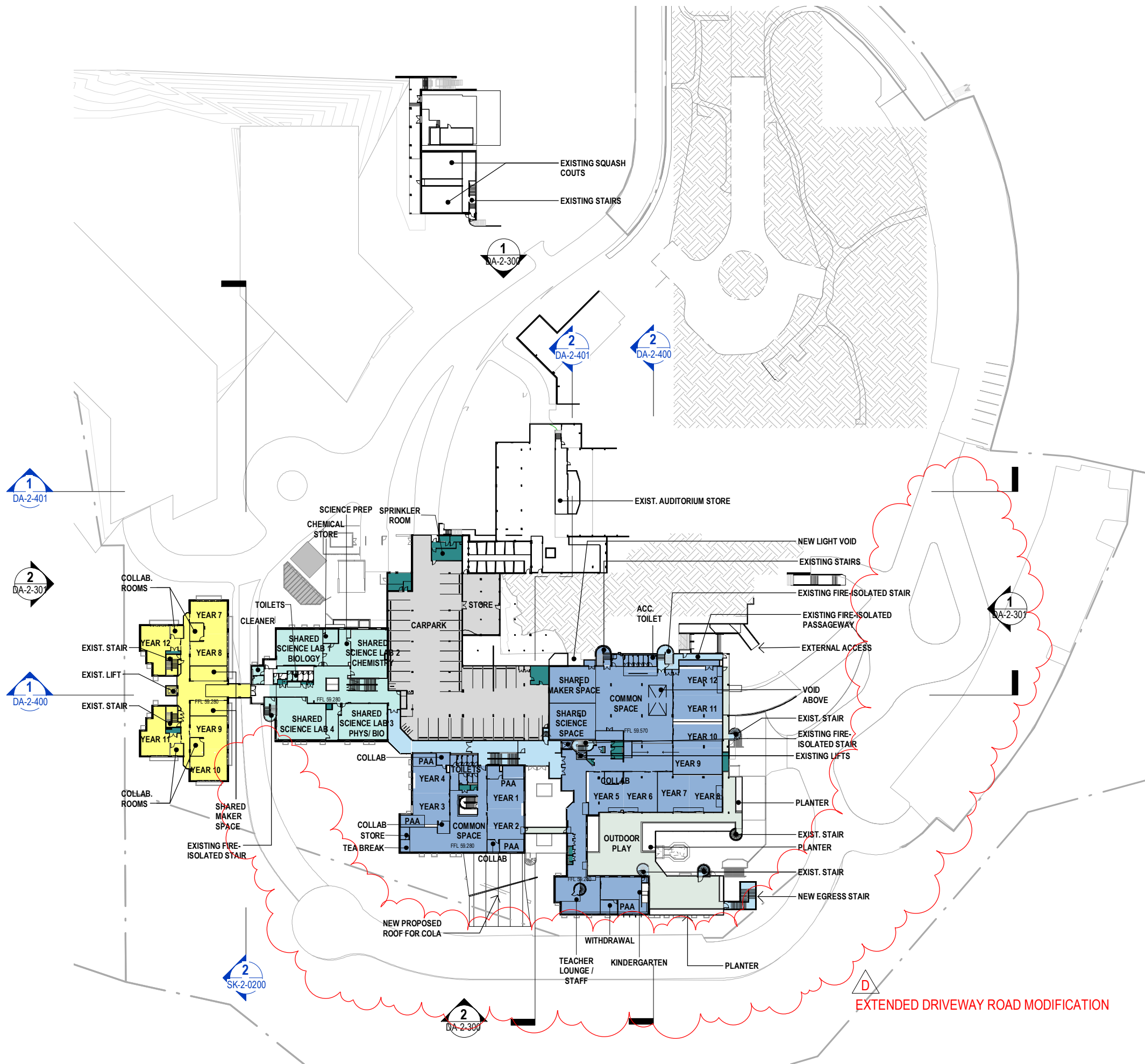
PROJECT
LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE
PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 2

DRAWN BY	TG, CS, HC, RK		
SCALES	1:1000 @A3		
PLOT DATE	21/03/2017		
PROJECT N°	P19-006	REVISION	D
DRAWING N°	DA-2-202		
DRAWING STATUS FOR APPROVAL	REVIEWED BY RG	SIGNATURE	DATE

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DEVELOPMENT APPLICATION



DEPARTMENT AREAS

- ADMINISTRATION
- AURORA
- CARPARK
- CLININC
- CIRCULATION
- COMMON COLA
- DINING
- DRAMA ROOM
- FOOD TEXTILE
- HEALTH LEARNING
- HOME BASE 1
- HOME BASE 2
- HOME BASE 3
- HOME BASE 4
- HOME BASE 5
- GENERAL LEARNING AREAS
- HOSPITALITY
- MUSIC ROOM
- OUTDOOR PLAY
- PERFORMING ARTS / OOSH
- RESOURCES
- SCIENCE
- SERVICES
- STAFF FACILITIES
- STUDENT ADMINISTRATION
- VISUAL ARTS
- WOOD AND METAL

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Nominated Architects
Anthony Quen 5421 | Sandeep Amin 7337 | Ian Armstrong 7260 | Richard Does 8126

No	DATE	REVISIONS	BY
A	12/06/2019	PRELIMINARY DA	AH
B	16/07/2019	PRELIMINARY DA	PA
C	28/08/2019	SSDA ISSUE	TG
D	17/04/2020	SSD REVISION	PA

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	BCA CONSULTANT	ABC Ph: (02) 9939 1530
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	PROJECT MANAGER	SAVILLS Ph: (02) 8215 8888

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SCHOOL INFRASTRUCTURE NSW

PROJECT
LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE
PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 3

N

DRAWN BY TG, CS, HC, RK

SCALES 1:1000 @A3

PLOT DATE 21/03/2017

PROJECT N°	P19-006	REVISION
DRAWING N°	DA-2-203	D

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		RG		

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- AURORA
- CARPARK
- CLININC
- CIRCULATION
- COMMON COLA
- DINING
- DRAMA ROOM
- FOOD TEXTILE
- HEALTH LEARNING
- HOME BASE 1
- HOME BASE 2
- HOME BASE 3
- HOME BASE 4
- HOME BASE 5
- GENERAL LEARNING AREAS
- HOSPITALITY
- MUSIC ROOM
- OUTDOOR PLAY
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- RESOURCES
- SCIENCE
- SERVICES
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- STUDENT ADMINISTRATION
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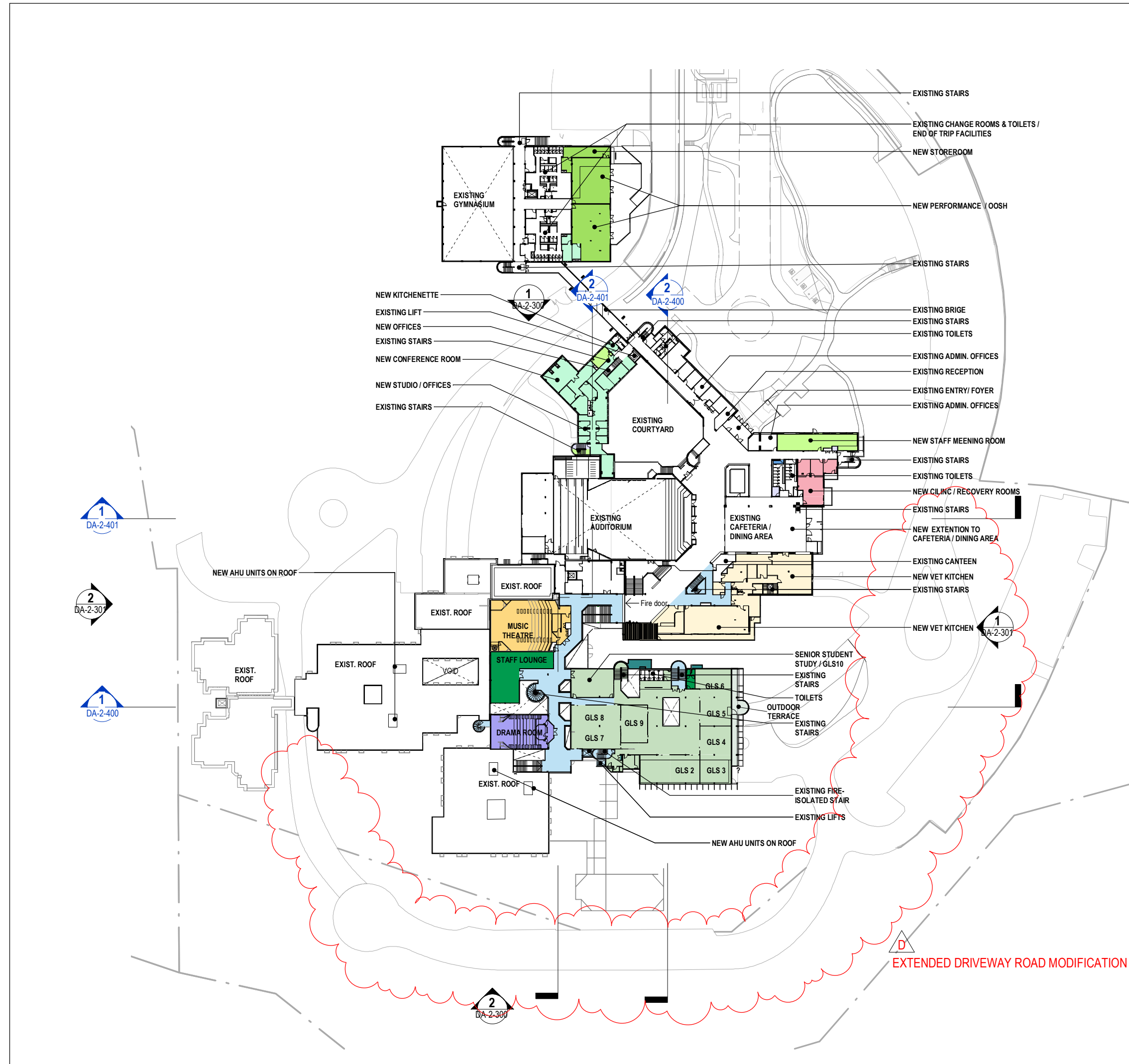
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No	DATE	REVISIONS	BY
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C	28/08/2019	SSDA ISSUE	TG
D	17/04/2020	SSD REVISION	PA

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CLIENT		
PROJECT	LINDFIELD LEARNING VILLAGE 100 ETON RD, LINDFIELD NSW 2070	
TITLE	PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 4	
DRAWN BY	TG, CS, HC, RK	
SCALES	1:1000 @A3	
PLOT DATE	21/03/2017	
PROJECT N°	P19-006	REVISION D
DRAWING N°	DA-2-204	
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DEVELOPMENT APPLICATION		



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- ADMINISTRATION
- AURORA
- CARPARK
- CLININC
- CIRCULATION
- COMMON COLA
- DINING
- DRAMA ROOM
- FOOD TEXTILE
- HEALTH LEARNING
- HOME BASE 1
- HOME BASE 2
- HOME BASE 3
- HOME BASE 4
- HOME BASE 5
- GENERAL LEARNING AREAS
- HOSPITALITY
- MUSIC ROOM
- OUTDOOR PLAY
- PERFORMING ARTS / OOSH
- RESOURCES
- SCIENCE
- SERVICES
- STAFF FACILITIES
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Nominated Architects

Anthony Quan 5421 | Sandeep Amin 7337 | Ian Armstrong 7260 | Richard Does 8126

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C	28/08/2019	SSDA ISSUE	TG
D	17/04/2020	SSD REVISION	PA

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	PROJECT MANAGER	SAVILLS Ph: (02) 8215 8888

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 5

DRAWN BY

TG, CS, HC, RK

SCALES

1:1000 @A3

PLOT DATE

21/03/2017

PROJECT N°

P19-006

DRAWING N°

DA-2-205

DRAWING STATUS

FOR APPROVAL

REVIEWED BY

RG

SIGNATURE

DATE

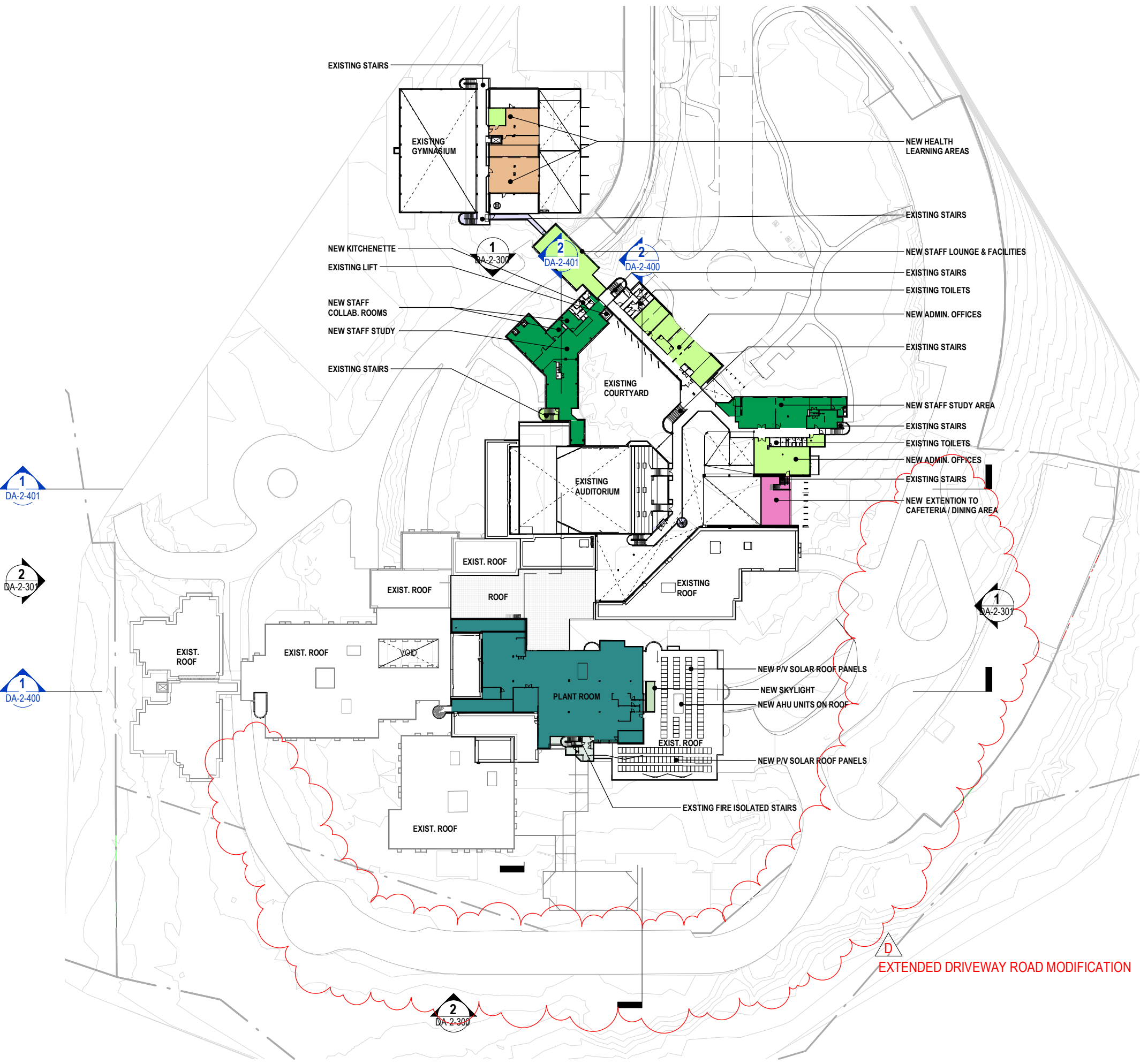
REVISION

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DEVELOPMENT APPLICATION



1
DA-2-401

2
DA-2-300

1
DA-2-400

2
DA-2-300

1
DA-2-301

D
EXTENDED DRIVEWAY ROAD MODIFICATION

- ### DEPARTMENT AREAS
- ADMINISTRATION
 - AURORA
 - CARPARK
 - CLININC
 - CIRCULATION
 - COMMON COLA
 - DINING
 - DRAMA ROOM
 - FOOD TEXTILE
 - HEALTH LEARNING
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D	17/04/2020	SSD REVISION	PA

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CLIENT
SCHOOL INFRASTRUCTURE NSW

PROJECT
LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE
PHASE 2 & 3 - PROPOSED FLOOR PLAN LEVEL 6

DRAWN BY	TG, CS, HC, RK		
SCALES	1:1000 @A3		
PLOT DATE	21/03/2017		
PROJECT N°	P19-006	REVISION	D
DRAWING N°	DA-2-206		
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DEVELOPMENT APPLICATION

DEPARTMENT AREAS

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- AURORA
- CARPARK
- CLININC
- CIRCULATION
- COMMON COLA
- DINING
- DRAMA ROOM
- FOOD TEXTILE
- HEALTH LEARNING
- HOME BASE 1
- HOME BASE 2
- HOME BASE 3
- HOME BASE 4
- HOME BASE 5
- GENERAL LEARNING AREAS
- HOSPITALITY
- MUSIC ROOM
- OUTDOOR PLAY
- PERFORMING ARTS / OOSH
- RESOURCES
- SCIENCE
- SERVICES
- STAFF FACILITIES
- STUDENT ADMINISTRATION
- VISUAL ARTS
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B	28/08/2019	SSDA ISSUE	TG
C	17/04/2020	SSD REVISION	PA

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	PROJECT MANAGER	SAVILLS Ph: (02) 8215 8888
	ARCHITECT	
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CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

PHASE 2 & 3 - PROPOSED ROOF PLAN

N

0 5 10 15 20 25
SCALE BAR - 1:1000
m

DRAWN BY	TG, CS, HC, RK		
SCALES	1:1000 @A3		
PLOT DATE	21/03/2017		
PROJECT N°	P19-006	REVISION	C
DRAWING N°	DA-2-207		
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DEVELOPMENT APPLICATION



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No	DATE	REVISIONS	BY
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B	16/07/2019	PRELIMINARY DA	PA
C	28/08/2019	SSDA ISSUE	TG


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PROJECT MANAGER	SAVILLS Ph: (02) 8215 8888

ARCHITECT

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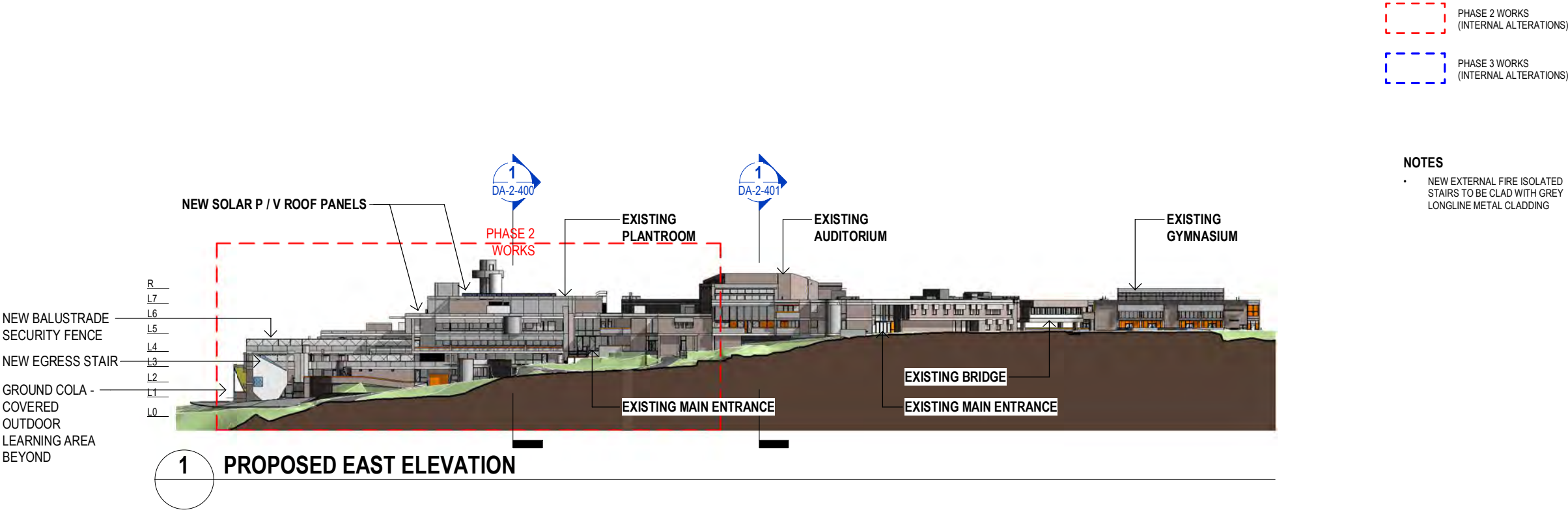
PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

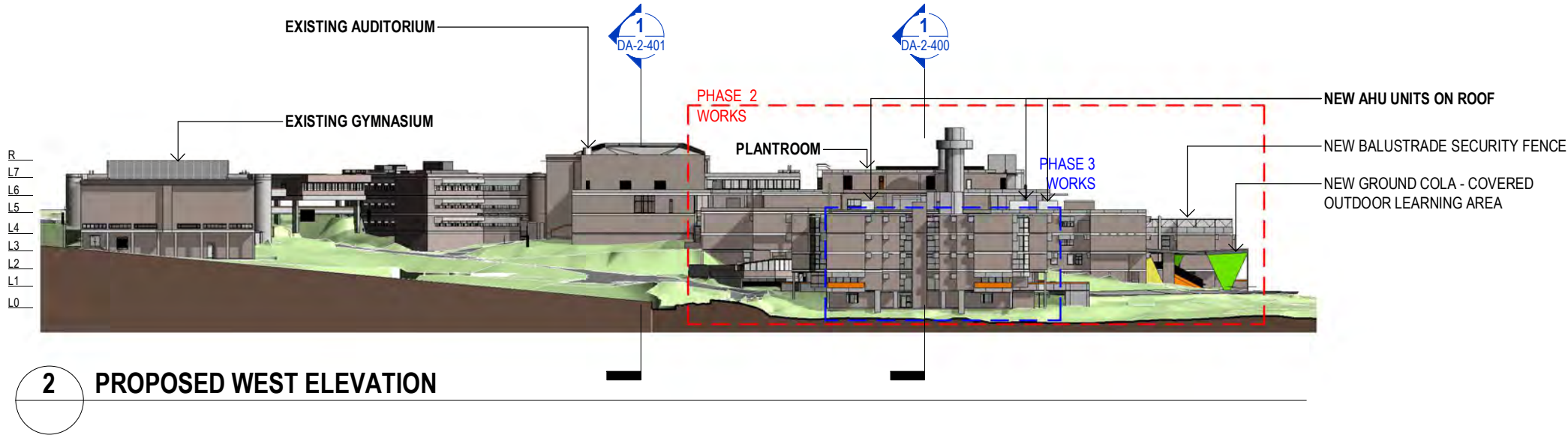
TITLE

EAST & WEST BUILDING ELEVATION

DRAWN BY	TG, CS, HC, RK, AH		
SCALES	As indicated @A3		
PLOT DATE	21/03/2017		
PROJECT N°	P19-006	REVISION	C
DRAWING N°	DA-2-301		
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DEVELOPMENT APPLICATION			



1 PROPOSED EAST ELEVATION

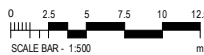


2 PROPOSED WEST ELEVATION

NOTE: REPURPOSING OF PHASE 1 DOES NOT REQUIRE ADDITIONAL EXTERNAL ALTERATIONS

DRAWING TO BE PRINTED IN COLOUR





28/08/2019 12:16:31 PM C:\Users\tgarry\Documents\P19-006-AR-LLV-SHEETS_STAGES 2 3_CENTRAL_R18_tgarry.rvt

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No	DATE	REVISIONS	BY
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B	28/08/2019	SSDA ISSUE	TG

CONSULTANTS

TRAFFIC ENGINEER

SERVICES ENGINEER

FIRE ENGINEER

CIVIL AND STRUCTURAL ENGINEER

BCA CONSULTANT

QUANTITY SURVEYOR

PROJECT MANAGER

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WILDE AND WOOLLARD

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Architecture Urban Design Interiors

CLIENT

SCHOOL INFRASTRUCTURE NSW

PROJECT

LINDFIELD LEARNING VILLAGE
100 ETON RD,
LINDFIELD NSW 2070

TITLE

BUILDING SECTIONS - SHEET 1

DRAWN BY

TG, CS, HC, RK

SCALES

1 : 500 @A3

PLOT DATE

21/03/2017

PROJECT N°.

P19-006

REVISION B

DRAWING N°.

DA-2-400

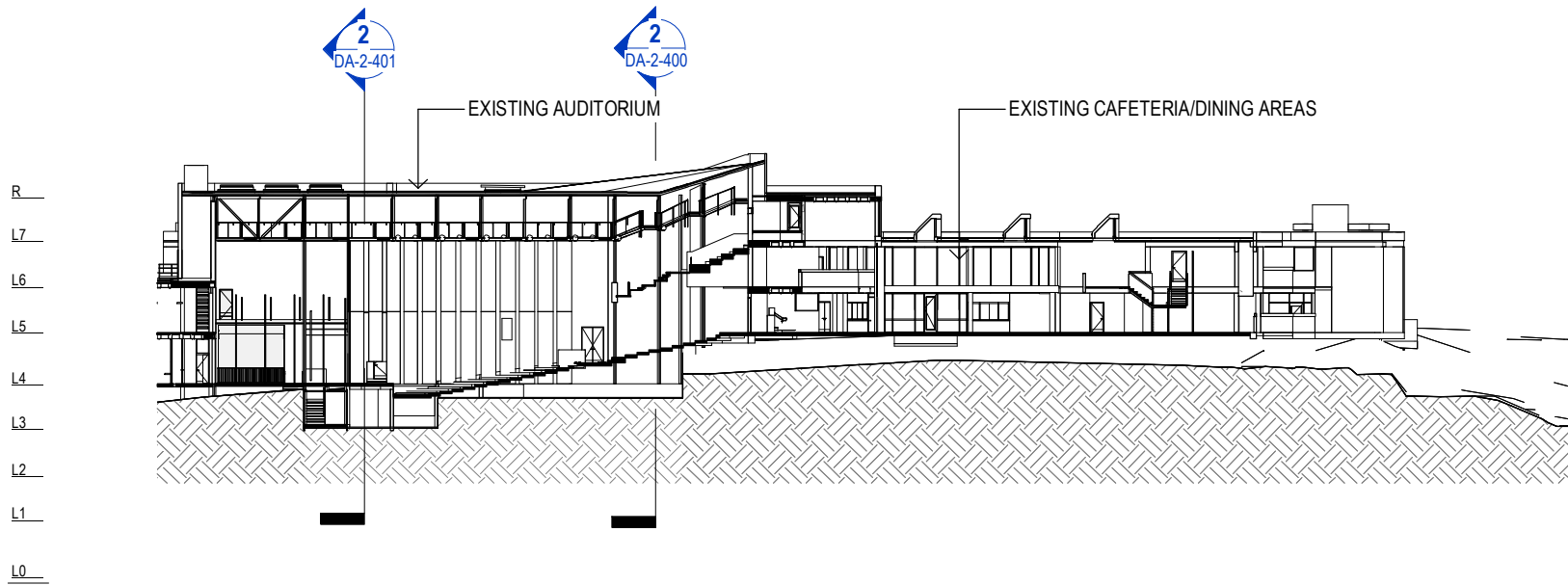
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REVIEWED BY SIGNATURE DATE

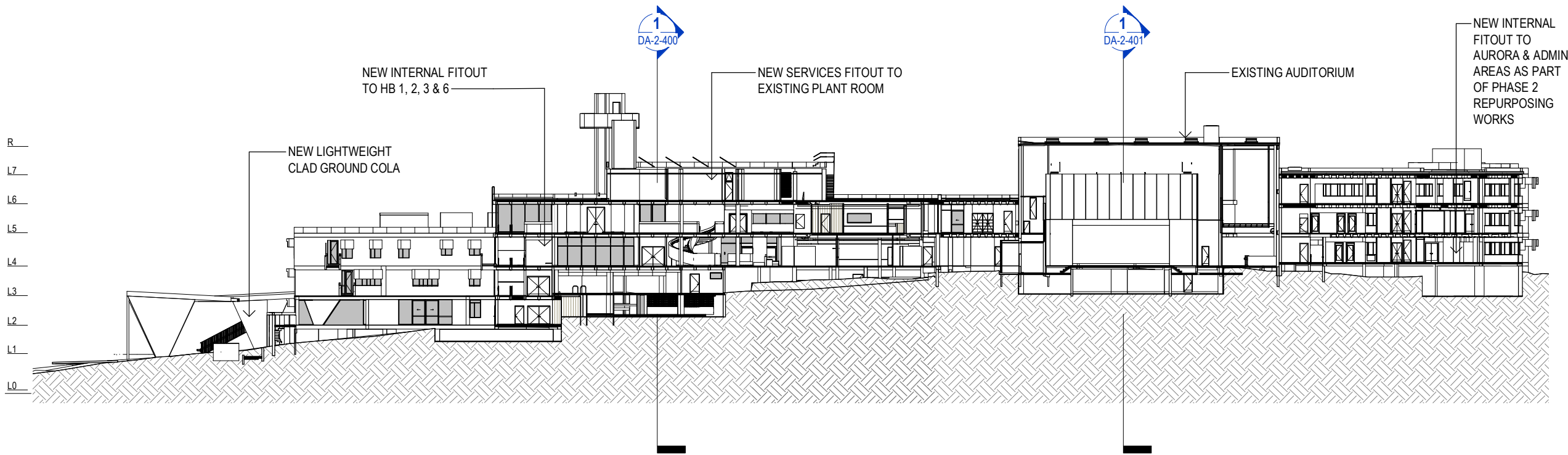
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BUILDING APPLICATION



1 SECTION 3



2 SECTION 4

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A	12/06/2019	PRELIMINARY DA	AH																																																									
B	28/08/2019	SSDA ISSUE	TG																																																									
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NEW COLA ENTRANCE HOMEBASE 2 - PHASE 2

C
NEW STAIR COLOUR AMENDED



NEW EGRESS STAIR - HOME BASE 4 & 5 - PHASE 2

C
NEW STAIR COLOUR AMENDED



NEW BALUSTRADE COURTYARD - HOMEBASE 3 - PHASE 2

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Figured dimensions take preference to scale readings. Verify all dimensions on site. Report any discrepancies to the Architect for decision before proceeding with the work.

Nominated Architects

Anthony Quan 5421 | Sandeep Amin 7337 | Ian Armstrong 7260 | Richard Does 8126

No	DATE	REVISIONS	BY
A	12/06/2019	PRELIMINARY DA	AH
B	28/08/2019	SSDA ISSUE	TG
C	17/04/2020	SSD REVISION	PA

CONSULTANTS	TRAFFIC ENGINEER	ARUP Ph: (02) 9320 9320
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	ARCHITECT	
	DesignInc Lacoste + Stevenson bmc2 architects in association	
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CLIENT	SCHOOL INFRASTRUCTURE NSW	
PROJECT	LINDFIELD LEARNING VILLAGE 100 ETON RD, LINDFIELD NSW 2070	
TITLE	BUILDING PERSPECTIVES	
DRAWN BY	TG, CS, HC, RK	
SCALES	NTS @A3	
PLOT DATE	7/04/2017	
PROJECT N°	P19-006	REVISION C
DRAWING N°	DA-2-901	
DRAWING STATUS FOR APPROVAL	REVIEWED BY RG	SIGNATURE DATE
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DEVELOPMENT APPLICATION		

11 Appendix C – Marshall Day, Phase 1 Compliance Noise Testing Report

2 April 2019

Taylor Construction
Level 13, 157 Walker Street
North Sydney NSW 2060

Attention: Daniel Pribadi

Dear Daniel

LINDFIELD LEARNING VILLAGE - ACOUSTIC COMPLIANCE MEASUREMENTS

Marshall Day Acoustics (MDA) has been engaged by Taylor Construction to conduct acoustic compliance measurements for newly re-developed Lindfield Learning Village located at 100 Eton Road, Lindfield, NSW, 2070.

Our instructions were to carry out certification measurements to satisfy development conditions E7 and E8 only.

CRITERIA

We have been provided with the Development Consent Conditions by Taylor Construction, the relevant consent conditions E7 & E8 have been listed below.

Operational Noise Limits

- E7.** Noise associated with the operation of any plant, machinery, School public address system, School bell or other equipment on the Subject Site and community use of the School hall outside of school hours, must not exceed 5 dB(A) above the background noise level when measured at the boundary of any sensitive receiver.
- E8.** The Applicant must undertake short term noise monitoring in accordance with the *Noise Policy for Industry* where valid data is collected following the commencement of use of the development. The monitoring program must be carried out by an appropriately qualified person and a monitoring report must be submitted to the Planning Secretary within two months of commencement use of each stage of the development to verify that operational noise levels do not exceed the recommended noise levels for mechanical plant identified in condition B40. Should the noise monitoring program identify any exceedance of the recommended noise levels referred to above, the Applicant is required to implement appropriate noise attenuation measures so that operational noise levels do not exceed the recommended noise levels or provide attenuation measures at the affected noise sensitive receivers.

For the purpose of our assessment we have been advised by Taylor Construction via email on 20 March 2019 that all requirements of Condition B40 (as referred to in Condition E8) have been met prior to our compliance measurements. Copies of the certification certificates for condition B40 are provided in Appendix A.

MEASUREMENT PROCEDURE

On-site measurements were conducted on 12 March 2019 between 1600hrs and 1830hrs and 30 March 2019 between 0900-1100hrs, using the following sound level meters for attended and simultaneous measurements:

- Brüel and Kjær G4 Type 2250 Hand-held Analyzer, S/N: 3010249.
- 01dB Smart Monitor, S/N: DUO10496
- 01dB Smart Monitor, S/N: DUO10419

All units were calibrated before and after testing using a 01dB Stell acoustic calibrator and showed no significant signs of calibration drift.

Taylor Construction staff were on site to confirm mechanical plant was switched on/off and also to talk into the school PA/Bell during compliance testing.

Compliance measurements were conducted at the 3 most affected residential receiver locations R1, R2 & R3 as marked in Figure 1 below.

Figure 1: Compliance Measurement Locations



AMBIENT BACKGROUND NOISE MEASUREMENTS

For the purpose of our assessment and to satisfy the relevant consent conditions above, background noise levels were measured on the evening of our compliance measurements during a period with no operational noise sources on 12 March 2019 at locations R1, R2 and R3. These background measurements and noise criteria are provided in Table 1 below.

During this period there was no adverse weather conditions influencing the noise data, eg wind or rain.

Table 1: Background noise measurements and criteria

Measurement Location	dB L _{A90}	Criteria = dB L _{A90} + 5dB _A
R1	44	49
R2	43	48
R3 ¹	46 ¹	51

Note ¹: Measured on 30 March 2019 after basketball game measurements.

OPERATIONAL NOISE MEASUREMENTS

Mechanical services

Two sets of measurements were carried out to assess the noise emissions from the mechanical plant:

- Plant switched off, with background noise levels as reported in Table 1
- Plant switched on, with noise levels and compliances reported in Table 2.

Note that the mechanical plant was switched off during the measurement of the Basketball Court, Auditorium and School PA Bell System.

Basketball Court

The basketball court measurements were conducted on 30 March 2019 with an average internal noise level of 68dB L_{Aeq15min} and 81dB L_{Amax}. Measurements were conducted during a basketball game which was organised out of school hours for the purpose of compliance measurements.

The basketball game consisted of 6 people playing a regular 3 vs 3 basketball game at a competitive level to give a representative noise level of a regular-noisy basketball game. During breaks between games all players were bouncing basketballs and practicing shooting so there were no gaps in the noise data over the measurement period.

A background noise measurement was conducted after the basketball game had finished to set the noise criteria for certification.

Auditorium

The Auditorium measurements were conducted by playing constant pink noise through the auditorium's PA system. A constant noise level of 94dB_A was calibrated and measured at the auditorium mixing desk location. This level was derived from the predicted maximum auditorium internal noise levels in Acoustic Logic Report '*Lindfield Learning Village - Noise Impact Assessment*' –Dated 13 June 2018.

School PA Bell System

The school PA/Bell system was measured with the assistance of a staff member talking into the PA system at a 'normal' announcement level constantly throughout the measurement. The staff member was asked to talk constantly with minimal gaps or pauses between speech.

It should be noted that all compliance measurements for the basketball court, auditorium and School PA Bell System were conducted with all external mechanical plant switched off as advised by Taylor Construction.

RESULTS OF MEASUREMENTS

Table 2: Compliance Measurement Test Results

Element measurement	Measurement Location	Measured Noise Level	Criteria	Compliance
<i>Mechanical Plant</i>				
All External Mechanical Plant On	R1	43	49	✓
All External Mechanical Plant On	R2	47	48	✓
Basketball Court	R3 ¹	50	51	✓
Auditorium (94dbA Internal)	R1	45	49	✓
Auditorium (94dbA Internal)	R2	45	48	✓
School PA Test (constant talking)	R1	41	49	✓
School PA Test (constant talking)	R2	45	48	✓

Note¹: Basketball court noise emission measurements were conducted at the worst affected location (R3) along the site fence-line boundary directly below the louvres. Compliance at R3 during use of the basketball court will result in compliance at all other receiver locations.

As presented in Table 2, cumulative operational noise has not been measured as part of our compliance assessment at this stage.

CONCLUSION

Based on the test results summarised in Table 2 above we make the following comments:

Noise compliance testing to satisfy conditions E7 and E8 have been conducted.

All operational noise levels from the external mechanical plant, school bell/announcement system, basketball court and auditorium comply with the noise criteria set out in this report at the most sensitive residential receiver boundaries.

Yours faithfully

MARSHALL DAY ACOUSTICS PTY LTD



Nick Lynar

Consultant

APPENDIX A B40 CERTIFICATION CERTIFICATES



sydney
melbourne
manila

22/10/2018

DesignInc

Level 2, 77 Pacific Highway
North Sydney, NSW 2060

Attention: **Mr Timothy Garry**

Dear Sir,

CERTIFICATE OF DESIGN - MECHANICAL SERVICES

Project: UTS Ku-Ring-Gai Campus, Lindfield REF Scope of Works

Pursuant to the provisions of Clause A2.2 of the National Construction Code of Australia (NCC), we hereby certify that the above design is in accordance with the normal engineering practice and meets the requirements of the Building Code of Australia and relevant Australian Standards as applicable. In particular the following NCC Sections/clauses and Australian Standards:

NCC (2016): Section C - Part C3.15, Section E - Part E2.2, Section F - Parts 4.5 to 4.7, 4.9 & 4.12, and Section J - Part J5

Australian Standards: AS 1668 Part 1 & 2

Specifically, the following measures are factored into the design:

Measure and/or system	Standard of Performance
Air-handling systems	BCA2016 Clause E2.2(b) & (c)
Automatic shutdown of air-handling systems	BCA2016 NSW Table E2.2b & Clause 5 of Specification E2.2a
Smoke exhaust system to the Performing Arts Auditorium fire compartment	BCA2016 NSW Table E2.2b & Specification E2.2b (including Figure 2).
Mechanical ventilation	BCA2016 Clause F4.5, F4.9(b)(ii) & AS 1668.2-2012
Air-conditioning and ventilation systems	BCA2016 Part J5 (energy efficiency) AS 3666.1-2011
Kitchen exhaust	Clause F4.12 of BCA2016, and AS/NZS 1668.1 and AS1668.2.
Service penetrations for mechanical ventilation or air-conditioning systems through fire rated elements	BCA2016 Clause C3.15

We are appropriately qualified and as such we certify that the design complies with the above as detailed on the following documentation:

Drawings:					
Title	Rev	Title	Rev	Title	Rev
SYD18152-LI-M000	B	SYD18152-LI-M300	B	SYD18152-LI-M301	B
SYD18152-LI-M302	B	SYD18152-LI-M303	B	SYD18152-LI-M-A104	B
SYD18152-LI-M-A105	B	SYD18152-LI-M-A106	B	SYD18152-LI-M-A107	B
SYD18152-LI-M-B104	B	SYD18152-LI-M-B105	B	SYD18152-LI-M-B106	B
SYD18152-LI-M-B107	B	SYD18152-LI-M-C104	B	SYD18152-LI-M-C105	B
SYD18152-LI-M-C106	B	SYD18152-LI-M-C107	B	SYD18152-LI-M-D105	B
SYD18152-LI-M-D106	B	SYD18152-LI-M-D107	B	SYD18152-LI-M-E104	B
SYD18152-LI-M-E105	B	SYD18152-LI-M-F104	B	SYD18152-LI-M-F105	B
SYD18152-LI-M-F106	B	SYD18152-LI-M-F107	B	SYD18152-LI-M-G105	B
SYD18152-LI-M-G106	B	SYD18152-LI-M-J102	B		
Specifications					
Mechanical Specification		Rev A			

We also confirm compliance with the following council consent conditions:

B40 - Prior to commencement of construction, plant and equipment must be selected and designed to achieve the relevant intrusiveness criteria set out in Table 2 of the letter titled 'Lindfield Learning Village – Response to EPA Queries' prepared by Acoustic Logic, dated 13 August 2018. The Certifier must verify that all reasonable and feasible noise mitigation measures have been incorporated into the design to ensure the development will not exceed the recommended operational noise levels identified.

B41 - The school PA system and bells must be designed in accordance with the design criteria outlined in the letter titled 'Lindfield Learning Village – Response to EPA Queries' prepared by Acoustic Logic, dated 13 August 2018 and installed to facilitate adjustment in response to any complaints of offence noise that may be received during its operation.

Note; This condition relates to installation that can facilitate adjustment. Evacuation alarms, PA performances and Bells would need to achieve the performance of audibility to meet the Standards. Any adjustment or alteration would likely compromise required performance and must be consulted by erbas™ & the Principal Certifier prior to any amendments being made to any related systems on site.

B50 – All mechanical ventilation systems must be designed in accordance with Part F4.5 of the BCA and must comply with the AS 1668.2-2012 The use of air-conditioning in buildings – Mechanical ventilation in buildings and AS/NZS 3666.1:2011 Air handling and water systems of buildings–Microbial control to ensure adequate levels of health and amenity to the occupants of the building and to ensure environment protection. Details must be submitted to the satisfaction of the Certifier prior to the commencement of construction.



sydney
melbourne
manila

Company:	Erbas and Associates Pty Ltd
Project Number:	SYD18152
Full Name of the Certifier:	Mark Albertella
Position:	Associate Mechanical Engineer
Qualifications:	BE (mech)

Signature:

Date: 03/10/2018

A handwritten signature in black ink, appearing to be "Mark Albertella". The signature is fluid and cursive, with the first letter of the first name being a large, stylized capital 'M'.

24 October 2018

Rebecca Willott
Senior Project Director
Department of Education
259 George Street
Sydney NSW 2000

Savills Project Management Pty Ltd
ABN 59 129 012 700
sedmondson@savills.com.au
0413 316 315

Level 25, Governor Phillip Tower
1 Farrer Place, Sydney NSW 2000
T: +61 (0) 2 8215 8888
F: 02 8215 8828
savills.com.au

SSDA Application Number: SSD16_8114
Lindfield Learning Village – Condition B40 Design of Mechanical Plant and Equipment - Noise Mitigation

Dear Rebecca,

SSD Condition:

Design of Mechanical Plant and Equipment

~~B41~~B40. Prior to commencement of construction, plant and equipment must be selected and designed to achieve the relevant intrusiveness criteria set out in Table 2 of the letter titled 'Lindfield Learning Village – Response to EPA Queries' prepared by Acoustic Logic, dated 13 August 2018. The Certifier must verify that all reasonable and feasible noise mitigation measures have been incorporated into the design to ensure the development will not exceed the recommended operational noise levels identified.

Document Reference:

Document	Dated
181022_Mechanical Design Certificate_3	22 nd October 2018

Savills Review:

Savills has reviewed the documents as submitted, and appended, in conjunction with the scope required as outlined in the SSD Conditions of Consent. In our opinion, the information provided adequately addresses the condition.

Erbus Engineering has provided a certificate confirming compliance with this condition under the REF scope and is again submitted herewith to satisfy the identical SSDA condition.

Please confirm the Department's concurrence with the above, after which, please forward on to DPE if required as noted below.

Please note we have issued this package to the certifier for their records and action as required.

Issue to:

Department of Education					
For Review:	YES	For Approval	YES	Other:	N/A
Planning Secretary					

For Information:	N/A	For Approval	N/A	Other:	N/A
Private Certifying Authority					
For Information:	YES	For Approval	YES	Other:	N/A

Yours sincerely,



Sasha Serrao

Project Manager

Savills Project Management

CC: Andrew Kyraicou – Department of Education
 Jim Lewis - Department of Education
 Robert Walker – Savills Project Management
 Stewart Boyce – BCA Logic Pty Ltd
 Sarita Ellison - BCA Logic Pty Ltd