

December 8th, 2020

Jill McLachlan
Education Director
Blue Gum Community School
1 Rosemead Road
Hornsby NSW 2077

By Email: jill@bluegum.act.edu.au

Dear Jill,

**Updated Acoustic Assessment and Report
Proposed Preschool & Community School – 1 Rosemead Road, Hornsby, NSW**

I refer to our recent communications regarding the above matter, and in particular to the updated acoustic report prepared by NG Child & Associates, and a further alternative and counter report prepared on behalf of your neighbour at 1A Rosemead Road by Noise and Sound Services.

These reports follow the original acoustic report prepared by NG Child & Associates, and an initial alternative and counter report prepared by Noise and Sound Services.

Further clarification of acoustic issues associated with the updated acoustic report were provided in a letter form report prepared by NG Child & Associates and dated November 6th, 2020.

The relevant reports are:

*Acoustic Assessment Report: Proposed Preschool & Primary School 1 Rosemead Road Hornsby NSW (NG Child & Associates; Version 3; December 5th, 2019) – “**Acoustic Report**”;*

*Proposed Community Preschool and Primary School – Noise Impact Assessment (Noise and Sound Services; Report No. nss23149 – Final; January 2020) – “**First NSS Report**”;*

*Acoustic Assessment and Report: Proposed Preschool & Community School – 1 Rosemead Road, Hornsby, NSW (NG Child & Associates; February 10th, 2020) – “**Response to First NSS Report**”;*

*Acoustic Assessment Report: Proposed Community School 1 Rosemead Road Hornsby NSW (NG Child & Associates; Version 5; May 6th, 2020) – the “**Updated Acoustic Report**”;*

*Peer Review of Acoustic Assessment Report: Proposed Community School 1 Rosemead Road Hornsby NSW; Report No. nss23239 – Final; July 2020) – the “**Second NSS Report**”;* and

*Updated Acoustic Comment and Advice: Proposed Preschool & Community School – 1 Rosemead Road, Hornsby, NSW (NG Child & Associates; November 6th, 2020) – the “**Addendum Advice**”.*

The **Acoustic Report** presents the original acoustic assessment undertaken by NG Child & Associates in relation to the community school proposed for 1 Rosemead Road, Hornsby. This report was submitted with the original DA lodged with Hornsby Shire Council and is therefore superseded by the **Updated Acoustic Report** submitted with the current SSD application.

The **First NSS Report** presents a short peer review, in which the validity of aspects of the **Acoustic Report** is challenged, followed by an alternative noise assessment.

The **Response to the First NSS Report** addresses issues raised in that document. As this report related to comments made on the acoustic report submitted with the original DA lodged with Hornsby Shire Council, and not the **Updated Acoustic Report** submitted with the current SSD application, it has not previously been submitted to DPIE.

The **Updated Acoustic Report** presents a revised acoustic assessment of the proposed community school. This is the acoustic report submitted with the current SSD application, which should be the subject of assessment

The **Second NSS Report** provides commentary on the **Updated Acoustic Report**.

Many of the issues raised in the **Second NSS Report** are similar to those raised in the **First NSS Report**, which as explained above has not previously been submitted to DPIE, and for this reason a copy of the **Response to First NSS Report** has been provided for convenient reference as Appendix A to this document.

It has been assumed that those with an interest in this report are familiar with and/or have access to the other five documents referenced above.

Issues Raised in the Second NSS Report

The key issues raised in the **Second NSS Report**, and my responses, are set below:

Background Noise Levels

The **Second NSS Report** expresses concern regarding the background sound levels measured at the site.

This concern is similar to that expressed in the **First NSS Report**,

As indicated in the **Response to First NSS Report**, the background reference sound levels used in the assessment were fully detailed in the **Acoustic Report**, and fully and properly addressed the background sound levels at the site at the time of the assessment.

It is noted, as was also noted in the **Response to First NSS Report** (refer Appendix A) that the reference or design background sound levels reported and presented in the **Acoustic Report** were consistent with those measured by NSS and presented in the **First NSS Report**.

In my opinion, the background sound levels presented by NG Child & Associates and NSS in their respective reports present an equivalent and accurate definition of background sound at the site, and the background sound levels used by in both the **Acoustic Report** and the Updated Acoustic Report provide a sound and appropriate basis for the assessment of acoustic issues at the site.

Potential Sound Reduction

The **Second NSS Report** expresses concern regarding potential sound reduction at the site.

This issue was also raised in the **First NSS Report**, and has been extensively addressed in the **Response to First NSS Report** (refer Appendix A),

The mechanisms for sound reduction presented in both the **Acoustic Report** and the **Updated Acoustic Report** rely on a combination of controls, including the acoustic attenuation provided by the boundary fence; the varying and controllable distances between the noise sources (the groups of children) and the adjoining boundary, and the very important issue of supervision and control.

In recent years NG Child & Associates and Noel Child have been involved in the acoustic assessment of more than one hundred childcare and early education facilities.

In all cases similar assessment methodologies and noise control approaches to those used in the assessment of the 1 Rosemead Road facility have been adopted, and in all cases appropriate acoustic outcomes have been demonstrated by subsequent operational performance.

The sound reduction mechanisms used in the two NG Child & Associates reports have been deliberately conservative.

In my opinion, and as further detailed in Appendix A in response to a very similar concern expressed in the **First NSS Report**, the mechanisms, controls and potential remedies (in the unlikely event that remedy is required) provide a reasonable, appropriate and reliable basis for the assessment of potential acoustic impacts at adjoining residential boundaries.

Car Park Noise Assessment

The Second NSS Report expresses concerns regarding the assessment of car park noise.

This issue has been extensively addressed in both the Response to First NSS Report, and in the Addendum Advice regarding changes to the car park design and fencing.

In my opinion, the current car park design and vehicle loadings have been adequately and conservatively assessed.

Acoustic protection will be provided by distance; the acoustic boundary fence, and the operational and behavioural controls to be set out in the Noise Management Plan component of the overall Plan of Management for the Centre.

Further, in my opinion, the currently proposed controls will ensure appropriate and compliant noise impacts at the adjoining 1A Rosemead Road residential boundary.

It is noted that while not considered likely to be required, additional acoustic protection for the 1A Rosemead Road residential boundary can quickly and easily be provided by the inclusion of 400 -600 mm clear plastic extensions to the section of boundary fence in question.

Traffic on Local Roads

The noise impact of traffic on local roads has been assessed on the basis of the traffic numbers set out in the applicable Traffic Report.

The effects of road traffic noise can be an issue in relation to the overall noise impact of facilities such as that proposed for 1 Rosemead Road.

Road traffic noise can be assessed in various ways, using different approaches.

In my opinion, the approach adopted in the **Acoustic Report** and **Updated Acoustic Report** is both accurate and reasonable.

As indicated in the **Second NSS Report**, excessive traffic noise can obviously result in greater noise impact than controlled and reasonable traffic noise.

In my opinion, and subject to reasonable and responsible driver behaviour, no undue noise impacts will be caused by the additional road traffic projected to be generated by the proposed development.

As pointed out in both the **Acoustic** and **Updated Acoustic Reports**, and in the **Response to First NSS Report** (refer Appendix A), driver behaviour and cooperation is considered to be an important matter for inclusion in the Noise Management Plan proposed for preparation and inclusion in the overall Plan of Management for the proposed facility.

Summary

As indicated in the **Response to First Acoustic Report** (refer Appendix A) the various NG Child & Associates and NSS reports approach the assessment of the proposed preschool & community school in slightly different ways.

Both assessment approaches identify potential acoustic vulnerabilities due to the low background sound levels applicable, and the potential for undue or non-compliant impacts from outdoor play area noise, and motor vehicle noise.

However, as detailed above, the **Acoustic Report** and the **Updated Acoustic Report** include management and control strategies considered appropriate to ensure that undue and non-compliant noise impacts are avoided.

Please contact me at any time if you have any questions regarding the matters raised in this letter, or if you require any further or more detailed information

Yours Very Truly



Noel Child
BSc (Hons), PhD, MIEA, MRACI
Principal, NG Child & Associates

APPENDIX A

RESPONSE TO FIRST NSS REPORT

***Acoustic Assessment and Report: Proposed Preschool & Community School –
1 Rosemead Road, Hornsby, NSW (NG Child & Associates; February 10th, 2020)***

February 10th, 2020

Jill McLachlan
Education Director
Blue Gum Community School
1 Rosemead Road
Hornsby NSW 2077

By Email: jill@bluegum.act.edu.au

Dear Jill,

**Acoustic Assessment and Report
Proposed Preschool & Community School – 1 Rosemead Road, Hornsby, NSW**

I refer to our recent communications regarding the above matter, and in particular to the acoustic report prepared by NG Child & Associates, and an alternative and counter report prepared on behalf of your neighbour at 1A Rosemead Road by Noise and Sound Services.

The two reports are:

Acoustic Assessment Report: Proposed Preschool & Primary School 1 Rosemead Road Hornsby NSW (NG Child & Associates; Version 3; December 5th, 2019) – the “Acoustic Report”, and

Proposed Community Preschool and Primary School – Noise Impact Assessment (Noise and Sound Services; Report No. nss23149 – Final; January 2020) – the “NSS Report”.

The NSS Report presents a short peer review, in which the validity of the acoustic report is rejected, followed by an alternative noise assessment.

Both aspects are relevant to the acoustic assessment of your proposed preschool and community school development proposal.

The Peer Review

The key elements of the peer review, and my responses, are set out below:

- (a) **Inadequacy of Proposed Acoustic Fencing:** The NSS Report correctly points out that the acoustic effectiveness of boundary fencing is subject to reduction due to diffraction. However, this effect is in turn a function at least in large part of the distance of the noise source from the acoustic fence. The acoustic fence will be more effective in containing noises generated close to, and below the fence line, and less effective in relation to more distant noise sources.
- (b) **Understated Background Sound Level:** The NSS Report suggests that the background sound levels included in the acoustic report are incorrect, and low. The acoustic report found the background LA90 sound level to be 39 dBA, and the background LAeq sound level to be 47 dBA. These background sound levels were recorded between October 21st and 27th 2019, during a period not affected by major holiday periods.

As pointed out in greater detail in “key acoustic issues” below, the NSS Report presented background sound levels of 37 dBA (L_{AF90}) and 49 dBA (L_{Aeq}) recorded between January 6th and 10th 2020, during the major school holiday period. The variation between the two sets of background data, given the varying circumstances, is not considered to be significant, and certainly not a legitimate basis for the effective rejection of the background sound data presented in the Acoustic Report.

The key LA90 background measure was found by NSS to be 2 dBA lower during the school holiday period than the level identified in the Acoustic Report. The slightly lower LA90 background sound during the less noisy holiday period does not invalidate, but if anything in my opinion confirms the background sound level presented in the Acoustic Report.

- (c) **Inappropriate Reference Data re Noise Generated by Children at Play:** The Acoustic Report provides a range of reference data to demonstrate the wide range of possible noise levels generated by children at play. Among this reference data were measurements recorded by RSA Acoustics at a Sydney CBD childcare facility.

This data provides a legitimate indication of noise generated by children at play. It is noted that typical sound levels indicated by the RSA reference data, and adopted in the Acoustic Report, are 70 – 75 dBA. It is also noted that the NSS Report adopted noise emission assumptions for 67 dBA for one child measured at a distance of one metre, and 77 dBA for eleven children, measured at one metre (Table 2 – NSS Report).

The noise emission assumptions assumed in both reports are similar, and in my opinion on a reasonable basis has been presented to reject the 70 – 75 dBA range adopted in the Acoustic Report.

- (d) **Lack of Understanding of Basic Acoustical Terms:** The peer review component of the NSS Report suggests that the Acoustic Report reflects a failure to understand basic acoustical terms. This assertion is rejected and is not reflected in any substantive way by the material presented in the Acoustic Report, or by its findings. A revised version of the Acoustic Report will be provided to further clarify the text in any relevant areas.
- (e) **Overall:** No substantive basis for the rejection of the Acoustic Report has been presented. The NSS Report presents a finding that the proposed facility is inappropriate because it will have undue and non-compliant acoustic impacts on the neighbouring property at 1A Rosemead Road. While it is perfectly legitimate for a neighbour to oppose the development, the simple reality is that the acoustic performance and impacts of the proposed Preschool & Community School fall within ranges, and these ranges will in turn be influenced by a range of management and control options, as summarised in “key acoustic issues”, below.

Key Acoustic Issues

The key acoustic issues associated with the proposed development, and the relevant findings of the two reports, are set out below:

- (1) **Background Sound Levels:** The issue of the correctness or otherwise of background sound levels has been addressed in “The Peer Review” above, and the background sound levels of 39 dBA for the L90 measure (background without traffic noise) and 47 dBA for the Leq measure adopted in the Acoustic Report shown to be fair and reasonable indicators of the acoustic environment.

The core reality reflected in both the Acoustic Report, and the NSS Report, is that these background sound levels are low, and introduce a real potential for undue acoustic impact at the neighbouring residential boundary. The Acoustic Report includes the recommendation for a Noise Management Plan to ensure that acoustic compliance is achieved.

- (2) **Acoustic Impacts of External Noise on Indoor Activities:** The Acoustic Report finds that appropriate sound levels will be achieved within the indoor activity areas of the proposed centre. The NSS Report does not challenge this finding.
- (3) **The Critical Importance of Effective Noise Management & Control:** As mentioned above, both the Acoustic Report and the NSS Report identify the reality that background sound levels in the vicinity of the proposed preschool & community school are low. This in turn introduces the requirement for careful and affective management and control to ensure that undue and non-compliant acoustic impacts are not imposed on neighbouring residential properties.

The Acoustic Report include the fundamental recommendation that a suitable Noise Management Plan is developed and strictly implemented as part of the overall Management Plan for the proposed facility.

This recommendation is entirely consistent with the Association of Australian Acoustical Consultants (AAAC) Guideline for Acoustic Assessment. The NSS Report does not include any provision for such management and control.

- (4) **Acoustic Impact of Noise Generated in the Outdoor Play Area on 1A Rosemead Road:** One of the fundamental acoustic concerns expressed in the NSS Report is that noise generated by children in the proposed outdoor play area will result in undue and non-compliant impacts at the 1A Rosemead Road residential boundary.

To illustrate this concern, the NSS Report presents the example of a noise level of 77 dB at a distance of 20 metres from the residential boundary reducing to 51 dB at the boundary. It is noted that a distance of 25 metres would result in an increased reduction to 49 dB. No allowance is made for any noise reduction due to the acoustic fence at the boundary.

Notwithstanding, these projections based on worst case noise levels result in a reduction in noise at the boundary to levels consistent with or very close to the residential boundary noise impact of 49 dB allowed for periods of two hours each day (that is, background L90 + 10) allowed by the relevant AAAC guideline.

The Acoustic Report suggests worst case noise from outdoor activity in the range slightly lower 70 – 75 dB range. These slightly lower noise emission levels achieve the residential boundary noise goal required by the AAAC guidelines. Some level of acoustic attenuation from the proposed acoustic fence, which (notwithstanding the opinion expressed in the NSS Report) can reasonably be anticipated, supports the Acoustic Report finding that compliance can also be achieved during periods when the lower “L90 background + 5 dB” guideline applies.

However, what is apparent from both reports is that acoustic compliance at the residential boundary is vulnerable to “worst case” noise generated by children in the outdoor play area.

This is not uncommon in urban childcare and community level pre and primary school facilities, particularly in cases where low background noise levels apply. For this reason, consistent with the AAAC guideline, a strict Noise Management Plan is recommended in the Acoustic Report, and appropriate guidelines have been provided.

The primary purpose of the Noise Management Plan in relation to noise from the outdoor play area is to ensure that noise levels are minimised, and that exceedances at the residential boundary do not occur.

Remedies included in the Plan will include a strict complaints management protocol, including the need to reduce the number of children present in the outdoor play area if required acoustic performance is not achieved at the residential boundary

- (5) **Effectiveness of the Boundary Acoustic Fence:** The effectiveness of the proposed acoustic boundary fence is raised in the NSS Report, which asserts that an effective noise reduction far less than the nominal Rw rating of the fence will be provided. In terms of noise from the outdoor play area, the primary control measures, as detailed above, will be management and control, and distance.

Some contribution to overall noise attenuation at the residential boundary from the fence can also reasonably be expected, although at distance the reduced effectiveness of the fence as an acoustic barrier is a reality.

The primary intended role of the acoustic fence along the 1A Rosemead Road residential boundary is to reduce noise transmissions from traffic using the proposed car park. The parking spaces within the car park are immediately adjacent to the acoustic fence, and a reasonable degree of noise attenuation is anticipated.

However, the importance of providing effective acoustic shielding is acknowledged.

It has been proposed that vehicle operations within the car park will also be subject to the proposed Noise Management Plan, and that the cooperation and assistance of parents and others using the car park will be essential to ensure that appropriate acoustic performance is achieved.

As in the case of noise from the outdoor play area, it has been recommended that the Noise Management Plan will include strict complaints management and response procedures. In the case of the boundary fence, enhanced acoustic performance can be achieved by increasing the height of the fence (say from 1800 to 2100 or 2400mm) and/or fitting an appropriate 45° splayed transparent section to the fence top, angled inwards to the proposed car park. In my opinion, these changes are not required, however increased acoustic robustness could be introduced at the outset by these measures if required.

The NSS Report rejects the proposed acoustic boundary fencing but does not propose an alternative.

- (6) **Noise from Plant & Equipment:** Both reports express the view that, subject to appropriate validation, noise emissions from typically anticipated plant and equipment will not impose undue or non-compliant acoustic impacts at the property boundaries.
- (7) **On-Road Traffic Assessment:** The NSS Report indicates that increased on-road traffic flows resulting from the proposed development will result in an unacceptable increase in road traffic noise levels. This concern is based on the projected increase of 71 vehicles per hour during the morning peak period. The importance of minimising road traffic noise is acknowledged, and it is recommended that this concern may also be effectively addressed by the inclusion of a specific protocol in the Noise Management Plan for the facility, seeking the cooperation of parents and others accessing the centre by way of appropriate driving practices on approaching and departing the facility.
- (8) **Acoustic Report:** The NSS Report points to some typographical errors in the Acoustic Report, which will be addressed by the provision of a revised report.

Summary

The Acoustic Report and the NSS Report approach the assessment of the proposed preschool & community school in slightly different ways, as summarised above.

However, both documents identify potential acoustic vulnerabilities due to the low background sound levels applicable, and the potential for undue or non-compliant impacts from outdoor play area noise, and motor vehicle noise.

The NSS Report, quite legitimately, presents an assessment based on worst case impacts, and argues that on this basis the proposed preschool & community school should be rejected. From the perspective of a residential neighbour concerned about potential noise impacts, this is entirely understandable. However, as detailed above, the Acoustic Report includes management and control strategies considered appropriate to ensure that undue and non-compliant noise impacts are avoided.

Please contact me at any time if you have any questions regarding the matters raised in this letter, or if you require any further or more detailed information

Yours Very Truly



Noel Child
BSc (Hons), PhD, MIEA, MRACI
Principal, NG Child & Associates

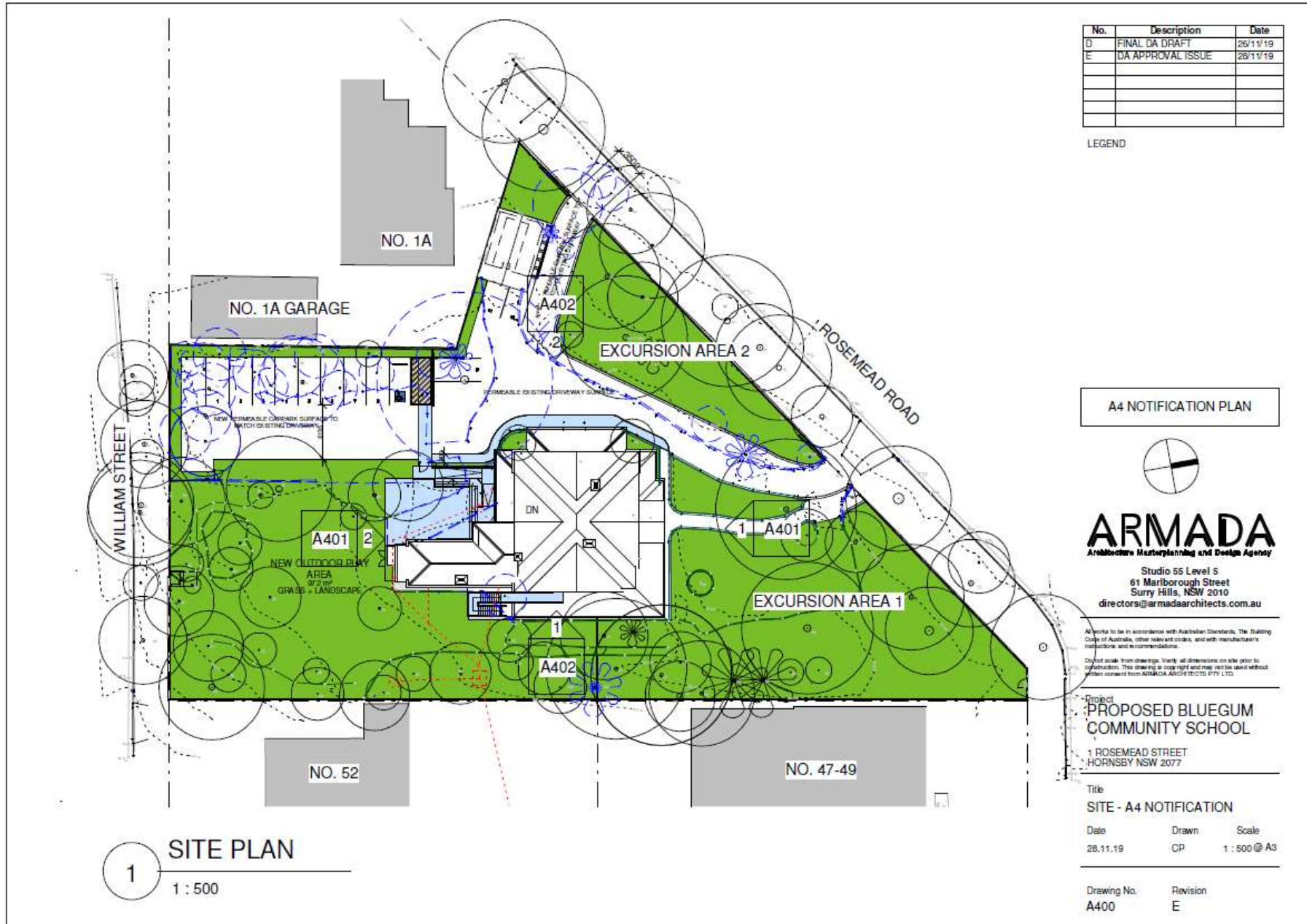


Figure 1 – Proposed Site Plan