

11 November 2020



Maria Orellana Romero
c/o Pacific Brook Christian School Ltd
30 Sowerby Street
Muswellbrook
NSW, 2333

Dear Maria

1. Pacific Brook Christian School, Muswellbrook – Letter for SEARs Application

ptc. has been engaged by Pacific Brook Christian School to provide traffic and parking advise in relation to the proposed school development at Lot 100 DP1261496, Maitland Street, Muswellbrook NSW. This letter has been prepared to accompany a SEARS application.

2. The Project

Currently, the existing site is a nursery which consists of clad buildings, metal sheds and a greenhouse shed. It is proposed to demolish most of the existing structures under a separate DA in order to make place for the construction of a new school. It is proposed that the school is constructed in several stages; however, an overarching SSD Application will be lodged to get an approval for the proposed maximum capacity of the facility. Further, it is proposed to increase the current student population from 48 to up to 650 students and to relocate the existing campus from 30 Sowerby St, Muswellbrook to the new location.

The architectural drawings are shown in Attachment 1.

The following features are envisaged for both the masterplan and Stage 0 for the proposed PBCS:

Table 1 – Proposed Amenities for the Masterplan and Stage 0

	Masterplan	Stage 0
Students	Approximately 650 students, K-12	90 students, K-9
Staff	Approximately 72 staff	12 staff
Facilities	<ul style="list-style-type: none">Junior school: 10x GLAs and 2x SpecialistMiddle school: 9x GLAs and 2x SpecialistSenior school: 8x GLAs, 1x Specialist, 1x drama, 3x TAS, 1x Art, 2x Food TechHope school: 4x GLAs, 1x Specialist, 3x staff/adminMulti-Purpose Building and Admin Building	6x General Learning Areas and 1x Science / Art /Technology Learning Area
Car Parking	73 + 1 accessible	12 + 1 accessible
Pick-up and drop-off	Approximately 14 spaces (85m) + additional queuing length through the car park (100m)	Approximately 14 spaces (85m)

3. High Level Parking Analysis

3.1 Pick-up and Drop-off

The development is proposing to provide an approximately 14 space long pick-up and drop-off area along the internal road, with additional queuing space provided within the car parking aisle. Poisson distribution has been used to assess the required number of pick-up and drop-off spaces and the potential of queuing. The following factors have been considered based on previous experience:

- Pick-up and drop-off activity occurs within a 30 minute time period per bell time;
- Generally, more students are driven to school in the morning than from school in the afternoon;
- The morning drop-off activity generates less congestion and the drop-off itself occurs faster;
- The afternoon pick-up often generates queuing due to the following reasons:
 - Parents arrive early and block pick-up spaces;
 - It takes time for students to find the correct car;
- Dwell times in the morning have been found to vary between 15-30 seconds per car and in the afternoon 45-210 seconds per car. The large discrepancy in the afternoon is related to the grade of pick-up management.

Poisson distribution is used to determine the likelihood of queuing depending on the number of cars, time period, dwell times and number of spaces available. With 14 pick-up and drop-off spaces and the factors described above, the following number of vehicles could theoretically be serviced without generating a queue:

- 1,000 (15 sec dwell time) – 500 (30 seconds dwell time) vehicles in the morning drop-off;
- 350 (45 seconds dwell time) – 75 (210 seconds dwell time) vehicles in the afternoon pick-up.

Usually, car occupancy ranges between 1.2 and 1.8 students per car. Applying these rates to the number of potential vehicles, the following number of students could theoretically be dropped-off in the morning and picked-up in the afternoon:

- 1,200 up to 1,800 (15 sec dwell time) – 600 up to 900 (30 seconds dwell time) students in the morning;
- 420 up to 630 (45 seconds dwell time) – 90 up to 135 (210 seconds dwell time) students in the afternoon.

The above numbers take into account a single bell time and no before and after school activities. Considering that a pick-up and drop-off activity occurs within a 30 minute time period, bell times staggered at 15 to 30 minutes intervals can reduce the traffic activity by half (2 bell times) or two-thirds (3 bell times).

High level calculation of the pick-up and drop-off demand for different scenarios and for both the masterplan and Stage 0 are presented in Table 2. The scenarios comprise the following variables:

- One, two and three bell times;
- Reduced car usage in favour of public and active transport;
- Student attendance of before and after school activities;
- A 210s long dwell time.

Table 2 – High Level Traffic Analysis

	Masterplan	Stage 0
Total number of students	650	90
Scenario 1a: 1 bell time 100% of students use private transport No before and after school activities		
Number of cars (assumed car occupancy of 1.2 students per car)	542	75
Modelled queue length using Poisson distribution	480m (80 cars) (not proposed)	84m (14 cars) (feasible)
Scenario 1b: 1 bell time 70% of students use private transport, 30% walk, cycle or use public transport 10% of students attend before and after school activities		
Number of students driven	410	57
Number of cars (assumed car occupancy of 1.2 students per car)	342	48
Modelled queue length using Poisson distribution	330m (55 cars) (not proposed)	60m (10 cars) (feasible)
Scenario 2a: 2 bell time 100% of students use private transport No before and after school activities		
Number of students driven per bell time	325	45
Number of cars (assumed car occupancy of 1.2 students per car)	271	38
Modelled queue length using Poisson distribution	270m (45 cars) (not proposed)	54m (9 cars) (feasible)
Scenario 2b: 2 bell times 70% of students use private transport, 30% walk, cycle or use public transport 10% of students attend before and after school activities		
Number of students driven per bell time	205	29
Number of cars (assumed car occupancy of 1.2 students per car)	171	25
Modelled queue length using Poisson distribution	180m (30 cars) (feasible)	36m (6 cars) (feasible)
Scenario 3a: 3 bell times 100% of students use private transport No before and after school activities		
Number of students driven per bell time	217	Not viable for school operation
Number of cars (assumed car occupancy of 1.2 students per car)	181	
Modelled queue length using Poisson distribution	180m (30 cars) (feasible)	
Scenario 3b: 3 bell times 70% of students use private transport, 30% walk, cycle or use public transport 10% of students attend before and after school activities		
Number of students driven per bell time	137	Not viable for school operation
Number of cars (assumed car occupancy of 1.2 students per car)	114	
Modelled queue length using Poisson distribution	120m (20 cars) (feasible)	

The above table shows that the proposed Stage 0 layout can accommodate the worst-case scenario pick-up and drop-off demand (100% of students are driven), while for the masterplan some operational measures such as staggered start and/or finish times and before and after school activities will be required. Measures that are being investigated by the project are described in Section 4.

3.2 Car Parking

Section 16.6 of the DCP stipulates the following minimum car parking rates for educational establishments:

- 1 car space per employee;
- 1 car space per 10 primary school students;
- 1 car space per 12 secondary school students.

The Department of Education’s (DoE’s) parking policy¹ states the following:

“A school is not obliged to provide parking on site to anyone at any time.”

Operational strategies can be implemented to manage the onsite parking, such as allocating some bays for carpooling and establishing onsite parking priority for staff utilising sustainable travel initiatives.

The car parking requirements and provisions for both the masterplan and Stage 0 and based on the DCP are summarised in Table 3:

Table 3 – Car Parking Requirement and Proposed Provision

User Group	Level	No.	Minimum Car Parking Provision Rate	Min. car parking requirement	Car parking provided
Masterplan					
Staff	-	72	1 space per 2 employees	36	74 (including 1 accessible space)
Student	Primary School	350	1 space per 12 students	29.2	
	Secondary School	300	1 space per 10 students	30	
Total				96² (95.2)	74
Stage 0					
Staff	-	12	1 space per 2 employees	6	13 (including 1 accessible space)
Student	Primary School	63	1 space per 12 students	5.3	
	Secondary School	18	1 space per 10 students	1.8	
Total				14³ (13.1)	13

The development is proposing to provide 74 and 13 instead of 96 and 14 parking spaces for the masterplan and Stage 0 respectively, which will result in a shortfall of 22 and 1 parking spaces based on the local DCP. However, as described in Section 3.1, the school is proposing to provide 14 dedicated pick-up and drop-off spaces for students, which shall offset the shortfall.

¹ <https://education.nsw.gov.au/teaching-and-learning/curriculum/learning-across-the-curriculum/road-safety-education/safety-around-schools/parking-on-school-grounds>

² According to the DCP, the total number of parking spaces is rounded to the next highest whole number

³ According to the DCP, the total number of parking spaces is rounded to the next highest whole number

4. High Level Traffic Analysis

A detailed analysis of traffic impacts of the proposed development will be undertaken at a later stage. However, based on the high-level pick-up and drop-off calculations presented in Section 3.1, it is assumed that with staggered bell times, some use of public and active transport and utilisation of before and after school care, the development will generate between 230 and 246 trips on the masterplan level and between 50 and 96 trips after commencement of Stage 0 during school peak hours. Considering that Maitland Street is a state road in a rural town and that the in and outbound movements will occur in a left-in & left-out arrangement, it is not considered that the traffic generated by the school will result in a considerable impact on the surrounding road network. In any case, a school zone will need to be applied for and approved by TfNSW as part of this project.

It is acknowledged that queuing generated by the pick-up and drop-off activity onto Maitland Street is unacceptable and that preventative measures need to be employed. Therefore, the school is actively looking for and is prepared to implement measures to reduce car usage and manage school related traffic within the school boundaries. The following strategies are being considered:

- Introduction of staggered bell times, which already is common practice at other Pacific Group schools. It is envisaged that the staggering would occur based on the year groups, see the examples below:
 - One bell time: K-12
 - Two bell times: K-6 7-12
 - Three bell times: K-6 7-9 10-12
- Implementation of before and after school activities / care for students who wish to enrol in additional activities or need to be cared for before or after the school;
- Pick-up and drop-off management to reduce the dwell times and therefor the possibility of queuing;
- The school will investigate the following in regard to bus transportation:
 - Provision of a bus stop along Maitland Street outside the school boundary to provide an opportunity for students to use public transport;
 - Possibility to amend the existing school bus network to service the new school location in discussion with the current bus operators;
 - The option for TfNSW to provide an additional public bus stop in the vicinity of the school and to potentially amend the public bus routes;
 - Possibility to provide a private PBCS bus.
- Provision of a footpath connection from school buildings to the Maitland Street / Thompson Street intersection, which is currently in the process of being signalised;
- Provision of cycle facilities;
- Implementation of a Green Travel Plan, which will include programs to promote active and public transport.

5. Summary

The proposed development involves the construction of a school facility on a former nursery along Maitland Street in Muswellbrook. Although the proposed parking provision lies below the parking requirement stipulated by the local DCP, the development proposes to provide 14 pick-up and drop-off spaces, which shall offset the shortfall. Considering the potential of queuing onto the main road generated by the pick-up and drop-off activity, the school is willing to implement measures to prevent a negative impact on the surrounding road network.

In light of the above, the proposed development of a school is not expected to result in any significant impact to the surrounding road network. Therefore, the development is supported by **ptc.** in the context of traffic and parking considerations.

We trust that this letter assists in the assessment of the application. For any further enquiries, please contact our office on (02) 8920 0800.

Yours faithfully,



Kasia Balsam

Traffic Engineer

Document Control: Prepared by *KB* on *11 November 2020*. Reviewed by *SW* on *11 November 2020*.

Attachment 1 Architectural Drawings

- LEGEND**
- BOUNDARY
 - EXISTING FENCE
 - SEWER LINE
 - EXISTING COUNCIL EASEMENT
 - ALLOWANCE FOR STORMWATER EASEMENT
 - NEW PEDESTRIAN FOOTPATH
 - PROTECTIVE FENCE REQUIRED - GOLF COURSE ADJACENT TO SITE
 - ↑ EXISTING VEHICLE ENTRY/EXIT
 - OUTDOOR LEARNING / PLAY AREAS
 - ADMIN / LIBRARY
 - SENIOR SCHOOL
 - MIDDLE SCHOOL ZONE
 - JUNIOR SCHOOL ZONE
 - NEW HOPE SCHOOL
 - SPORTS ZONE
 - MAINTENANCE
 - LIFT
 - GARDEN
 - LAWN
 - WC TOILET BLOCK
 - ST STORE
 - SW SHARED WITHDRAWAL

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Project
PACIFIC BROOK CHRISTIAN SCHOOL
 at
 Lot 100 DP1261496, 72-74 Maitland Street, Muswellbrook NSW
 for
 Pacific Brook Christian School Ltd

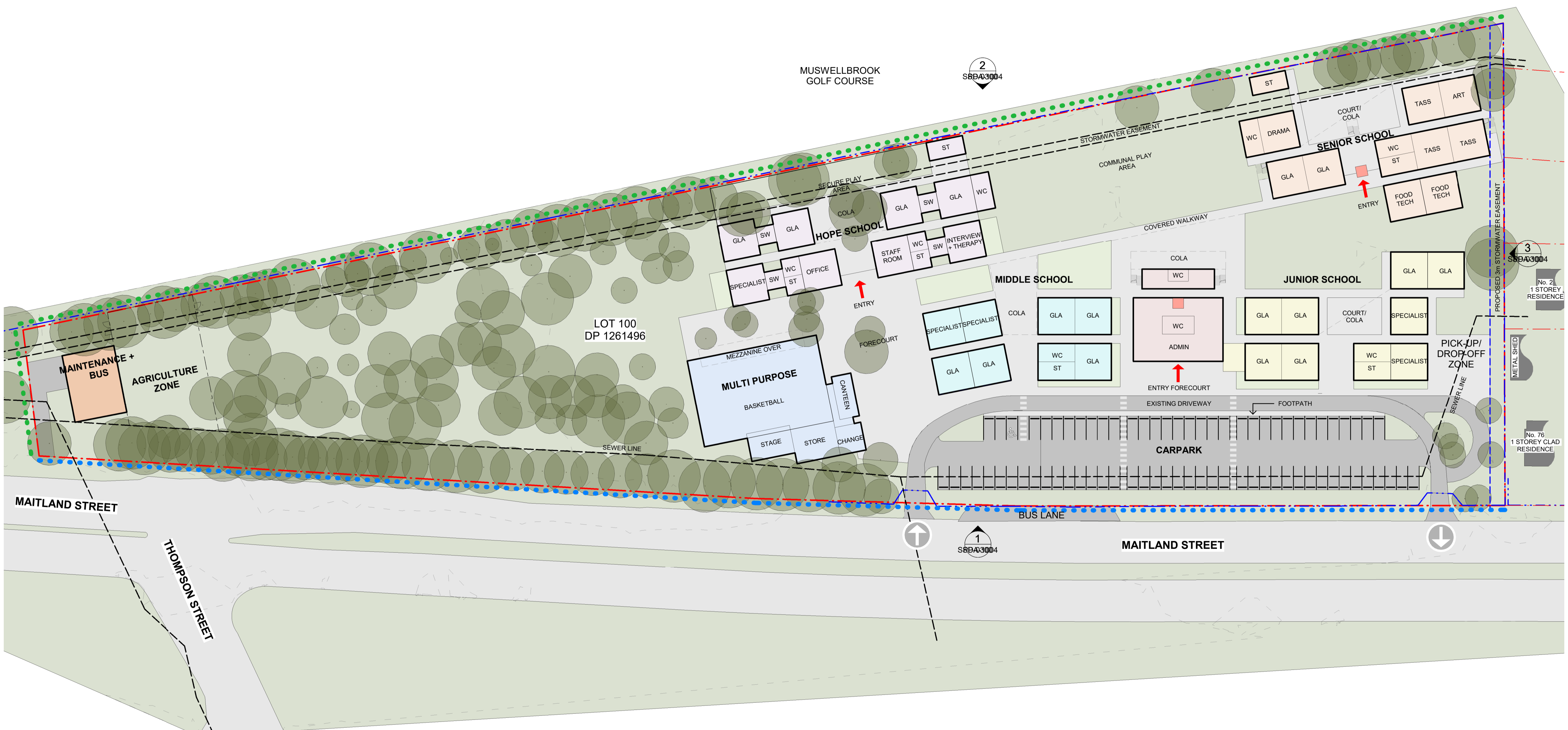
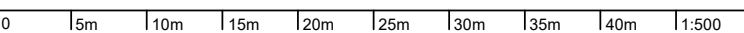
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Ground Floor Concept Masterplan

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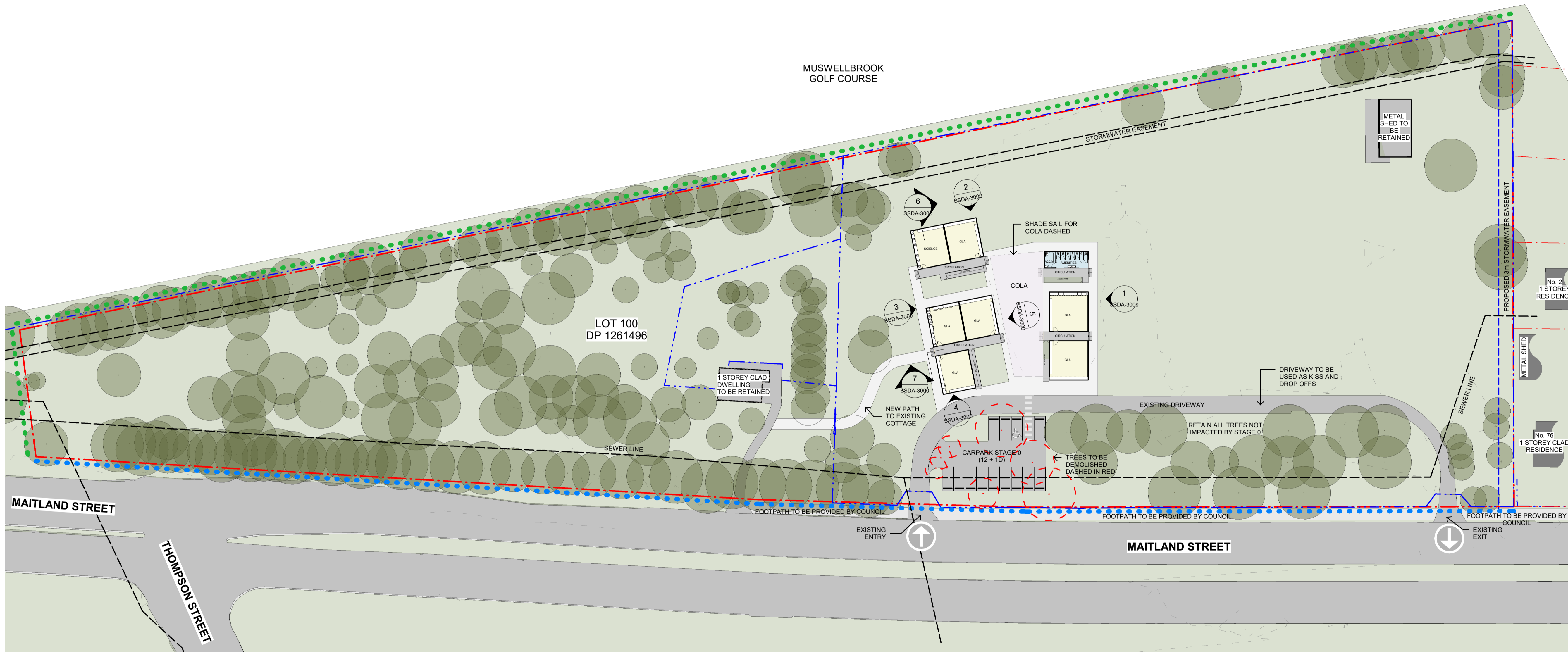
Drawing Reference
 19055-NBRS-DR-A-SSDA-1000

Revision
 1



1 Ground Floor Concept Masterplan
 1 : 500

- LEGEND**
- BOUNDARY
 - EXISTING FENCE
 - SEWER LINE
 - EXISTING COUNCIL EASEMENT
 - ALLOWANCE FOR STORMWATER EASEMENT
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Project
PACIFIC BROOK CHRISTIAN SCHOOL
 at
 Lot 100 DP1261496, 72-74 Maitland Street, Muswellbrook NSW
 for
 Pacific Brook Christian School Ltd

Drawing Title
 Stage 0 Site Plan

PRELIMINARY

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Drawing Reference Revision
 19055-NBRs-DR-A-SSDA-2000 1

1 STAGE 0 - SITE PLAN
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