NSW Department of Education and School Infrastructure NSW

Lindfield Learning Village Phase 2 and 3

Transport Response to Submissions

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Records of consultation

1 Introduction

This Transport Response to Submissions has been prepared by Arup on behalf of the NSW Department of Education and School Infrastructure NSW (the Applicant). It accompanies a Response to Submissions Report in support of State Significant Development Application (SSD 16_8114) for Lindfield Learning Village (the site).

1.1 Overview

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 (DPE, RFS, OEH, RMS, TfNSW) and Council.

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

Phase 2B of construction:

- Works to accommodate 1,050 students (including the approved 350).
- Repurposing of the Phase 1 area.
- An extended driveway from Eton Road extending to the southern portion of the site for emergency vehicles and drop off and pick up vehicles.
- An extended bus turnaround structure south of the upper car park to allow buses to enter and turnaround safely within the site.

Phase 2C of construction:

- 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 Transport Response to Submissions is to

- Responds to the agency and public submissions from a traffic and transport perspective
- Confirm that the Phase 2 and 3 school populations can be accommodated by the proposed travel modes
- Confirm that the proposed upgrade works are appropriate for the two phases of school expansion

1.2 Arup Traffic and Transport Reports

Arup submitted a report supporting the development SSD8114 titled "NSW Department of Education and Communities, Lindfield Learning Village, Traffic and Transport Assessment, Rev C, 13 June 2017". This report will be referred to as "the TTA".

Arup submitted a report supporting the Phase 1 school titled "Supplementary Traffic and Transport Assessment, Issue, 1 June 2018". This report will be referred to as "the TTA Supplementary".

Additionally, Arup submitted a response to submissions traffic and traffic and transport report in September 2019. This report will be referred to as "the RtS".

1.3 Response to Submissions

This Transport Response to Submissions has considered the issues raised by agencies during exhibition of SSD 8114 and subsequent Response to Submissions for Phase 2 and 3.

Agency comments received on the RtS are summarised in Table 1. The following sections of this report provide responses to the comments.

Table 1: List of comments and organisations

Section	Organisation	Document name
2.1	Transport for NSW Comments	Lindfield Learning Village Phases 2 and 3 (partial SSD 8114) – Response to Submissions
2.2	Ku-ring-gai Council Comments	Lindfield Learning Village Phase 2 and 3 Review of Traffic and Transport Assessment Response to Submissions (TTA-RtS)
2.3	Department of Planning Infrastructure & Environment	Lindfield Learning Village Phase 2 and 3 Response to Submissions (SSD 8114) 100 Eton Road, Lindfield - Response to Submissions (RtS)
2.4	Action for Public Transport	Lindfield Learning Village Outstanding matters on Phases 2 and 3 Submission on final RTS
2.5	Dunstan Grove Strata	Lindfield Learning Village - Stages 2 and 3 - Amended Scheme Submission on behalf of Strata Plan 90970
2.6	Public Submissions	Various

2 Agency comments

The submissions received from the public agencies have been included in this section, with summary responses provided. These tables also direct to more detailed responses in this document.

2.1 Transport for NSW Comments

Table 2: Transport for NSW

R#	Comment	Arup response
SSD 8114 TTA		
A	**Drop-off and pick-up (DOPU) arrangement**	
A1	Section 3.1.1 and Figure 2 both indicate that cars would be going along the southbound lane to the roundabout and make a U-turn to access the DOPU lane on the western side in the northbound direction. This presents a two-way traffic operation along this section of the internal road. Clarification is required as the proposed one-way loop would operate around the school site and passes through the proposed DOPU lane during the school DOPU periods, as indicated in Figures 21 and 23.	Section 3.1.1 describes the Phase 1 school operation, which is a two-way operation. The DOPU area operates as in Phase 1, with two passing lanes for either cars or buses or both. This has been explained in a diagram in the response to submissions
A2	Figure 2 shows crossing facilities are not proposed to be provided to allow safe pedestrian crossing, particularly for parents who walk with their children from the car parking spaces on the eastern side to the proposed pedestrian access on the opposite side of the internal road. It is also evident from Figure 2 that a footpath is not provided for pedestrians to access these car parking spaces on the eastern side.	Parents who walk their children after parking are proposed to park in the lower car park and use the path up the hill and pedestrian crossing to walk to the school. The accessible alternative is using the accessible spaces at the top of the school. This has been explained in the response to submissions.
A3	If car parking spaces on the eastern side are intended to function during the school DOPU periods, consideration should be given to the traffic management required to ensure those parking activities do not adversely impact the proposed one-way DOPU loop operation.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site. Signage has been installed at these spaces to clear them for use by buses.
A4	Figure 22 demonstrates swept path analysis for buses running on the kerbside lane while cars driving parallel on the outside lane under the one-way loop operation. The swept path analysis should extend throughout the entire loop to demonstrate the spatial adequacy to support the proposed one-way operation.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site. The swept path analysis for the revised vehicle access arrangements is presented in the appendix
A5	Adequate space for buses to safely pass on the outside lane along the section of loop road where bus DOPU bays and bus queuing bays are located must be provided. In addition, it is strongly recommended to provide road width that is capable of accommodating two buses	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site. The bus parking area includes width for two-way operations and the bus bay.

R#	Comment	Arup response
	driving in parallel along the one-way loop where school buses will operate.	
A6	A "Keep Clear" zone is proposed in Figure 25 to manage the potential conflicting movements of cars traveling on the outside lane crossing the path of school buses coming out from the bus bays on the kerbside lane. Further elaboration should be provided on how this lane changing could be practically managed, noting that bus and car movements are going in the same direction and would continue simultaneously throughout the DOPU periods, i.e. which user has priority when changing lanes at the proposed "Keep Clear" zone. Additional swept path analysis is needed to demonstrate the space required for manoeuvring of buses in particular the extent of "Keep Clear" zone near the back of car queue.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site. This conflict no longer occurs.
A7	Prior to the issue of a Construction Certificate, a comprehensive Traffic Management Plan (TMP) should be prepared to provide the details of how the one-way DOPU loop would operate in conjunction with proposed DOPU locations (i.e. school bus stop, car DOPU area, car parking, etc.) and address the aforesaid comments. The TMP must also take into consideration of any measures suggested by the Road Safety Audit that is requested in the comment below.	Noted. To be addressed by Condition of Consent.
B	**Road Safety Audit**	
B1	A Stage 2 (Concept Plan) Road Safety Audit must be undertaken by an independent TfNSW accredited road safety auditor for the current proposal. This should include reviewing the design of the proposed loop road, DOPU locations, and car park and associated pedestrian facilities, in accordance with Austroads Guide to Road Safety Part 6 - Managing Road Safety Audits and Austroads Guide to Road Safety Part 6A - Implementing Road Safety Audits. The current design should then be reviewed and changed in consideration of the outcomes of the Road Safety Audit.	AMWC have provided road safety audit on concept design. The issues noted have been incorporated into the design.
C	**Projected mode share of buses for Phases 2 and 3**	
C1	As indicated in Section 4.4, the increase of bus travel is expected to come from additional public and school bus services. Any new or additional bus services would be provided by the local bus operator (Transdev). Allocation of additional services is based upon formal reviews of services across the wider area. Information about school enrolments is important in understanding the need for any	The school has been in discussions with Transdev and Transport for NSW regarding future bus transport needs. School enrolment waiting list was provided to Transport for NSW for bus transport planning purposes.

R#	Comment	Arup response
	service adjustments. The applicant should ensure that ongoing discussions occur with Transdev so that increase in demand can be appropriately considered in future service provision.	
C2	Given that the projected mode share of buses for Phases 2 and 3 would be highly reliant upon bus service uplift, the applicant is encouraged to continue to share information regarding changed enrolments with the local bus operator every year.	Noted. Transdev and TfNSW have been consulted several times over the project and this process will continue.
D	**Green Travel Plan**	
D1	With the projected increase in student and staff population for Phases 2 and 3, the following items in the Green Travel Plan (GTP) framework should be further reviewed/amended: • Transport Access Guide to staff, students and parent/carers about the range of travel modes, access arrangements and supporting facilities that service the site; • identify which party is responsible for the delivery of each action in the GTP and advise when each action will be delivered; • identify the specific actions and parties responsible for delivering the topics discussed in Section 5 – Transport Strategies; and • identify a communication strategy for the delivery of the communicative elements of the GTP.	Support from Schools Infrastructure and the LLV staff would be needed to increase the level of detail in the Green Travel Plan.
D2	Prior to the issue of an Occupation Certificate, the applicant shall prepare a comprehensive Travel Plan (or amend and expand the existing GTP) taking into account the GTP initiatives outlined in the framework GTP to assist with increasing the use of sustainable modes of travel.	Noted. To be addressed by Condition of Consent.
E	**Construction traffic impact**	
E1	The Indicative Construction Management Plan indicates that vehicular access to and from the site would be from Dunstan Grove. As the existing Phase 1 will continue in operation while the construction occurs, truck movements should not be carried out during school DOPU times (unless otherwise approved) and no truck queuing should be permitted on public streets that would affect the general traffic and public transport operation. Construction site access should also give consideration to the operation of car park and DOPU areas where pedestrian and road safety would be a concern.	Trucks are proposed to complete all turning movements within the site, offering an alternate route during school DOPU times.

2.2 Ku-ring-gai Council Comments

Table 3: Ku-ring-gai Council

R#	Comment	Arup response
SSD 8114 TTA		
M	**Traffic and Transport**	
M1	It is our view that the trip generation rate of 0.19 trips per dwelling during the peak hour for the dwellings at the former Screen Australia site is not an appropriate traffic generation rate given the site is a high car-dependent site. That trip generation rate would be more applicable where the multi-storey housing/residential flat buildings are located in close proximity to frequent and regular public transport, and close to amenities such as shops and services. Unless the above trip generation rate is replicated in similarly located dwellings (such as those surrounding Shout Ridge and Hamilton Corner), then a traffic generation rate of at least 0.5-0.65 peak hour vehicle trips per dwelling should apply (which is equivalent to a rate for medium density residential flat building from the RTA Guide to Traffic Generating Developments).	Upon review, a revised report for the 101 Eton Road submission by Traffix uses 0.4 trips per dwelling. This is discussed in section 4.
N	**Footpath upgrades on the local road network**	
N1	While upgrades have been undertaken to provide a walking route from Lindfield Learning Village to Lindfield Public School, there is no footpath in Abingdon Road. Provision of footpath on one side of Abingdon Road (from Eton Road to Shirley Road) would provide much needed pedestrian safety and walking connectivity for a key part of the neighbouring catchment.	SINSW are working with Council to resolve pedestrian access routes to the School. Funding of these will be agreed between SINSW and Council.
O	**Car parking for school activity**	
O1	While a car mode share for staff of 85% during Phase 2 is considered attainable, a car mode share of 42% in Phase 3 while desirable, is considered to be a little too ambitious or unrealistic given the existing 93% car mode share by staff (implied in section 3.2.4 of the TTA-RtS). Not achieving the required 42% mode share target will result in staff parking in surrounding streets, which is something that Council would like to avoid.	Noted. The green travel plan developed will aim to encourage staff to take alternative methods for the journey to work. This plan has been developed in more detail with Schools Infrastructure.
O2	Provision of 2 or 3 safe, separated cycle routes to the Lindfield Learning Village for Phase 3 would give staff a serious alternative to driving and help to achieve the 42% mode share target. As well, it	Separated cycle routes are not recommended in the Ku-ring-gai Bike Plan for implementation near to the site. Staff would be able to ride along the roads as

R#	Comment	Arup response
	would also provide a safe travel option for school children	they are relatively quiet. This is discussed in more detail in Section 6.2.2.
Q	**Phase 2 School travel**	
Q1	Expansion to Phase 2 and 3 relies on the provision of additional bus services. Indeed, additional bus services are critical to achieving the mode share targets for students and staff. While Transdev have recommended that additional route services be introduced during peak periods, and school bus planning is recommended to achieve the future bus mode share targets, there is no evidence from Transport for NSW that additional route services will be introduced, or that new school services are being planned. This needs to be confirmed by Transport for NSW.	Transdev and TfNSW have been consulted several times over the project and this process will continue.
R	**Phase 3 School travel**	
R1	Council's previous submissions to the Lindfield Learning Village stages highlighted the need to develop a safe and separated cycle network to encourage cycling to school. There is the potential to increase relatively modest cycle component of the student walk/cycle mode share from 10% anticipated in the TTA by collaborating with Council to deliver 2 or 3 separated cycle routes to the Lindfield Learning Village. The catchment is reasonably extensive and expansion of safe, separated cycling facilities in this catchment area would provide the catalyst for students to cycle to school.	Separated cycle routes are not recommended in the Ku-ring-gai Bike Plan for implementation near to the site. For school students separated cycle routes are not recommended at this stage and therefore provision of footpaths on Eton Road, from Phase 1 and Abingdon Road would provide cycling infrastructure for student. Staff would be able to ride along the roads as they are relatively quiet.
T	**Private car facility**	
T1	As part of the proposal, it is intended to utilise the anti-clockwise bus loop road around the school campus for private vehicles to access the existing drop-off and pick-up area on the eastern edge of the campus. It is understood that the reason for this is because with the student numbers envisaged in Phase 2 and 3, the existing access to the drop-off and pick-up area from Eton Road would form lengthy queues further north into Eton Road, although this has not been demonstrated in the TTA-RtS.	Comment no longer relevant. The proposed development no longer involves the loop road for car and bus access.
T2	There is approximately 400m queueing capacity from the head of the existing drop-off and pick-up area, around the loop road to the southern end of Dunstan Grove. This would accommodate approximately 65 stationary vehicles, or approximately half of the total vehicles anticipated at the 2.50pm pick-up timeslot under Phase 3. Invariably, parents and carers will arrive	Queuing analysis has been undertaken to assess the random arrivals of parents over the time window. Early arrivals will be discouraged through the school briefing documents and travel plan shared with parents.

R#	Comment	Arup response
	early for the pickup sessions and there is the potential for queues to form/extend into Dunstan Grove and it is unclear if this tendency to arrive early and queue can be managed by the school. Indeed, if all 134 vehicles arrived and queued prior to the 2.50pm pick-up timeslot under Phase 3, the queue would extend through Dunstan Grove and back to Eton Road. The school would have to demonstrate that the drop-off and pick-up queues can be managed so as not to cause congestion and queuing in Dunstan Grove.	
U	**Loop Road**	
U1	The proposal to utilise the anti-clockwise bus loop road around the (now) K-12 school campus for private vehicles will increase traffic flows in Dunstan Grove by approximately 241 vehicle trips in the school AM peak and by approximately 179 vehicle trips in the school PM peak. This is a substantial change in traffic flow characteristics and understandably has raised the concerns of residents in Crimson Hill, who have suggested confining school traffic to Eton Road and the current set-down and pick-up area.	Comment no longer relevant. The proposed development no longer involves the loop road for car and bus access.
U2	Confining school traffic to Eton Road and the current set-down and pick-up area has merit and should be investigated. If this is found not to be feasible, then the flowing comments respond to the details of the proposed bus loop road: - The sight distance at the curve in Dunstan Grove. At this location Dunstan Grove is in a rock cutting, with near-vertical rock walls. At the highlighted part of Dunstan Grove, the rock wall is effectively at the back of the kerb, which limits sight distance around the curve.	Comment no longer relevant. The proposed development no longer involves the loop road for car and bus access.
U3	Further traffic management is required to reduce vehicle speeds in Dunstan Grove to improve stopping sight distance. Installation of speed management devices at the northern tangent point of the curve would assist in controlling vehicle speeds in a southerly direction. To complement this, it would also be opportune to install a speed management device on the corresponding tangent point (southern), to limit the speeds of vehicles travelling northerly approaching the marked pedestrian crossing (circled in orange), where a similar sight distance issue exists.	Comment no longer relevant. The proposed development no longer involves the loop road for car and bus access.

R#	Comment	Arup response
U4	During construction, the driveway opposite Dunstan Grove is designated as the primary access point. Residents of Crimson Hill experienced a number of issues during construction of Phase 1 with construction vehicles stopping in Dunstan Grove and blocking local access and traffic. Stop/slow arrangements were necessary at the time, as the width of Dunstan Grove was inadequate for 2 way traffic flow, confirming the need to undertake localised kerb adjustments to address swept path conflicts early in the process to maintain access to residents.	Noted. The construction traffic management plan outline describes the issues noted in the previous phase and outlines strategies to manage construction traffic on Dunstan Grove.

2.3 Department of Planning Infrastructure & Environment

Table 4: Department of Planning & Environment

R#	Comment	Arup response
SSD 8114 TTA		
A	**Community issues**	
A1	Significant concerns have been raised by the community in regard to the proposed loop road and the subsequent traffic impacts.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A2	The RtS must respond to the key community issues identified (but not limited to) below: - vehicle and pedestrian safety - impacts from buses travelling close to residential properties (noise, safety and other amenity related impacts) - exacerbating construction related traffic and parking impacts - traffic generation impacts - construction fatigue - impacts to the heritage characteristics of the site	Noted
B	**Traffic, Parking and Transport**	
B1	Strong concerns are raised about the conflict between pedestrians, cyclists, cars and buses from the proposed design and reliance on the loop road. These conflicts have the potential to result in safety issues around the school. In order to minimise these potential conflicts and associated public safety risk issues that arise, on-site solutions for pick-up, drop-off and bus	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.

R#	Comment	Arup response
	pick up should be explored as part of the RtS.	
B2	The original assessment and determination of Phase 1 identified that there would be no changes to the existing 184 car parking spaces on site. The Phase 2 and 3 RtS identifies that currently 166 car parking spaces are marked on site. Clarification is required to confirm the total number of car parking spaces, and if reduced from 184, the justification for doing so.	For the Phase 1 school there were 184 car parking space which included 18 spaces for a child care facility. A child care facility is no longer proposed, and the 18 child care spaces have been removed from the main entrance roadway. There are now 166 available parking spaces on site.
C	**Roads and Safety**	
C1	The RtS must provide an updated assessment on the current pedestrian footpath network servicing the site and identify areas that are required to be updated to service the requirements for Phase 2 and 3 of the development.	The primary and secondary school catchment areas are being finalised and analysis of these will inform the key walking routes into the school. Further discussion with Council will be required to assess forward works programs for implementation of new footpaths along the local street system. Some analysis has been completed in Section 5.3 and these potential routes will be discussed with Council.
C2	The RtS must include an assessment of the impact and ability of buses turning on the roundabout without encroaching upon the pedestrian footpath.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
C3	The RtS should be supported by a road safety audit report, prepared by an appropriately qualified traffic or transport engineer and shall include (but not limited to) the operation of the following areas: - loop road - kiss and drop facilities - footpath sightlines - adequacy of the surrounding network to enable buses and other vehicles to pass simultaneously	A high-level concept design has been prepared for review by an independent Road Safety Auditor. The design will respond to the auditor's comments to achieve compliance with the road safety design practices.
C4	The RtS should also consider the likelihood of obtaining Council approval to impose no parking zones on surrounding streets should it be required to accommodate buses and other vehicles passing and implications should it not be received.	Noted, the route to and from the school along Eton Road from the intersection of Grosvenor and Austral will need to be reviewed in collaboration with council as traffic increases. Parking restrictions are already in place along Eton Road south of the route bus area.

2.4 Action for Public Transport

Table 5: Action for Public Transport

R#	Comment	Arup response
SSD 8114 TTA		
A1	Refer to earlier submission that remains valid.	Please see section 2.5 of the RtS where the comments from the Action for Public Transport have been responded to.
A2	The Green Travel Plan does not provide a credible discussion of how the cars are to be managed during peak drop off/pick up times.	A school travel plan is being developed to describe school travel including responsibility and governance of the plan.
A3	Expansion of transport services such as bus route 565 is necessary but alone will not suffice to get 2100 students to or from school. Many more routes will be needed. If a large proportion of the students each start time arrive by bus, for example 10 bus loads averaging 40 students per bus, the local roads will cope much better than otherwise.	School bus routes have been proposed through close coordination with TfNSW. These buses will directly access and drop off at the school.
A4	A detailed plan should be prepared, based on the geographic distribution of students, for a small fleet of buses ferrying students between school and suitable points for transfer to/from private cars. For example, Roseville station and Killara station could be considered.	School buses for students only, will be provided through close coordination with TfNSW.
A5	Students should be encouraged to use those buses as their primary mode of transport to/from school. The buses should have exclusive access to the campus roads. Restrictions such as NO STOPPING at school times should be enforced nearby. The only exceptions should be the youngest students and those with special needs. Parking permits for staff would have to be limited; staff should be encouraged to use the same buses.	Noted the school travel plan will provide these plans for dealing with travel to school for staff and students to achieve the mode share targets of the school.

2.5 Dunstan Grove Strata

R#	Comment	Arup response
SSD 8114 TTA		
A	**Additional Material to be provided and re-exhibited**	
A1	Analysis of alternatives to the proposed Loop Road arrangement to demonstrate why the significant impacts of the proposed option cannot be avoided.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A2	Swept path diagrams for Dunstan Grove to demonstrate the ability of school buses to	The proposed development no longer involves the loop road, with revised car

R#	Comment	Arup response
	travel via this road without crossing the existing centre-line and blocking on-coming traffic. Due to the narrowness and curvature of this road, cars already cross over the centre-line causing safety issues that would be significantly exacerbated by the proposed use of buses and additional car traffic.	and bus access accommodated within the eastern portion of the site.
A3	Queuing analysis to the proposed Loop Road to demonstrate that all queuing will occur within the school site, and will not impede access to the residential basement entrance from Dunstan Grove.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A4	Resolution of inconsistencies between the documents submitted that variously describe the proposed Loop road as a 'bus loop', and confirmation that each report submitted has assessed the impacts of both buses and private vehicles using this driveway for pick-up/drop-off.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
B	**Construction**	
B2	Construction site access should be at the eastern point of connection to the Loop Road. Inappropriate to have site access in Dunstan Drive for two year period.	The construction access from the west side of the site along Dunstan Grove was chosen to allow the construction activities to overlap with current school activities. The east side of the site was considered however school operations would be greatly impacted by construction works along the eastern side of the site with the required management of construction traffic to maintain a safe and usable site for the school would have increased the timeline of construction impact and therefore increased the length of disruption for all residents using Eton Road.
D	**Loop Road**	
D1	SINSW has not undertaken any genuine anlaysis of alternatives to the Loop Road, which will result in significant safety, noise and environmental, heritage and amenity impacts. Three alternative proposals have been put forward by Dunstan Grove OC for consideration.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
D2	The assessment of expected traffic numbers (cars and buses) appears to have been very conservatively estimated in order to under-represent the actual volume of vehicles that will travel down Dunstan Grove to access the Loop Road.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
D3	Swept path diagrams for Dunstan Grove to demonstrate the ability of school buses to travel via this road without crossing the existing centre-line and blocking on-coming traffic.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.

R#	Comment	Arup response
D4	Queuing analysis to the proposed Loop Road to demonstrate that all queuing will occur within the school site, and will not impede access to the residential basement entrance from Dunstan Grove.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site. Queuing analysis is provided in the response documents.
D5	Resolution of inconsistencies between the documents submitted that variously describe the proposed Loop Road as a 'bus loop', and confirmation that each report submitted has assessed the impacts of both buses and private vehicles using this driveway for pick-up/drop-off.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
D6	However the Traffic Report (Table 22) identifies that the peak dropoff / pickup periods are 8.50am and 2.50pm. There is no reason therefore that the Loop Road needs to operate (if at all) outside the standard recognised school zone hours of 8.00-9.30am and 2.30-4.00pm. Staying with these hours will also lead to less confusion by parents and other people using the road.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
D7	Road safety as Dunstan Grove is a very narrow road with poor sightlines. Bus swept path diagrams provided indicate that buses will be forced to cross the centre line on 5 occasions.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
D8	The Proposal indicates that the Loop Road will be controlled by gates at the school boundary, with a VMS at the school entry directing traffic depending on the time of day. Buses (and parents) arriving early, however, will queue at the Loop Road gates, and will obstruct the roadway and driveway entry to Dunstan Grove. There is no ability for buses to turnaround at the Loop Road Gates, or else they will be queuing on Eton Road and causing even greater safety issues	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
D9	Pedestrian safety along Dunstan Grove as residents and school children must cross Dunstan Drive at an unmarked crossing on a blind corner. Minimial physical works as suggested by Dunstan Grove OC to improve pedestrerian safety should be required.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
E	**Traffic Impacts**	
E1	Eton Road footpaths are of insufficient width, with obstacles and no run-off provision. No marked pedestrian crossings between LLV and Lindfield Public School.	Eton Road footpaths are at minimum width, with no capacity for increase given the topography of the front yards. Marked crossings have been investigated along the route with the warrants reviewed as per TfNSW guidelines.

2.6 Public Submissions

R#	Comment	Arup response
SSD 8114 TTA		
Key issues		
A1	Traffic congestion as a result of 322 cars and 14 buses using loop road each weekday morning 7.30am to 9.30am and 165 cars and 14 buses using this road every afternoon 2.30pm to 5.00pm.	The assessment of traffic numbers was based on proven industry methodology and was calibrated with other schools in the area. Also considered was the bus use for the current school, which through an interview survey of children and parents, shows potential for more students to take the bus once dedicated school buses are provided.
A2	Vehicle safety as Dunstan Grove is a very narrow and curved road and was only built for limited access.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A3	Pedestrian safety along Dunstan Grove as residents and school children must cross Dunstan Drive at an unmarked crossing on a blind corner.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A4	The existing roads and parking within the school should be modified to accommodate the proposal.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A5	No alternatives considered. Alternative access roads put forward by the Dunstan Grove Strata Committee and residents (Liam Filson) should be considered.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A6	No swept path details have been provided to demonstrate how 12.5 and 14.5m buses will be accommodated on the loop road.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A7	The hours of the loop road have no reason to be extended beyond normal school hours. The gate to the loop road will cause cars to queue and block access to Dunstan Grove.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A8	Loop Road should be rejected and all drop off/pick up from eastern side of school.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A9	The queue of cars during drop off/ pick up will extend beyond the site. A couter-clockwise loop road would block the entrance road to Tubbs View. Traffic would have to cross paths at Eton Road and Dunstan Grove which is likely to create a queue of traffic across the Tubbs View entrance road.	Queuing analysis behind this is provided in the response documents. Tubbs View is unlikely to be blocked.
A11	Traffic Report fails to consider parents who will drop children at Dunstan Grove roundabout and community centre instead of using loop road.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.

R#	Comment	Arup response
A12	If Dunstan Grove is blocked for an emergency there is no alternate access available.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
A13	When the loop road is closed during the day how will buses for school excursions etc access the site for pick up/drop off.	The proposed development no longer involves the loop road, with revised car and bus access accommodated within the eastern portion of the site.
B	**Traffic Concerns**	
B1	Increased traffic congestion, particularly along Eton Road and Grosvenor Road, Abingdon Road, intersections of Lady Game Drive/Fullers Road, Lady Game Drive/Ryde Road, Pacific Highway/Grosvenor Road.	Noted, this was discussed in the RtS report with measures taken where possible to provide mitigations.
B2	Traffic assessment should consider intersection of Shirley Road / Pacific Highway	This route was not considered a likely route to the school site. This is based on an assessment of likely traffic routes into the school and based on similar school projects.
B3	Pedestrian safety in the absence of footpaths and crossings. Pedestrian crossings should be installed to Dunstan Grove, Eton Road and Abingdon Road. Paved footpath along the entire length of Abingdon Road from Shirley Road to Eton Road.	Footpath upgrades will be investigated with Council.
B4	Widen existing and build new footpaths in Eton Road	Footpath upgrades will be investigated with Council.
B6	An additional road from Lady Game Drive or Mowbray Road should be constructed.	This road construction is outside the scope of this development.
B7	Traffic Report has failed to assess the traffic generation along Abingdon Road and Shirley Road to access Pacific Highway.	This route was not considered a likely route to the school site. This is based on an assessment of likely traffic routes into the school based on similar school projects.
B8	Green Travel Plan is wishful thinking as primary school children will not catch bus or ride to school. There are no safe cycle paths/routes.	The Green Travel Plan is a document meant to provide options for travel to staff and students. It was developed based on surveys of nearby schools and surveyed traffic patterns.
B9	The existing and potential bus users identified in the Traffic Report is not realistic as primary school children will not use the bus.	Surveys of the current school children shows that some parents will take the bus with younger children
B10	The assumption of having 14 buses, each carrying 75 students is unrealistic and unsafe.	This number is used in the industry for calculating the numbers of students per bus.
B11	Accessibility to Simon's Trail will be restricted during construction	Noted. This access will be maintained if safe to do so, in the Construction Traffic Management Plan.

R#	Comment	Arup response
B12	Impacts on public bus network including the number and sites of new bus stops and proposed timetable.	Buses are being coordinated with TfNSW and SINSW
C1	Insufficient on-site car parking for staff provided and impact to local parking on streets. The existing car parks should be modified to accommodate the required car parking.	Additional parking is not possible given the nature of the site. With incentives it is possible to reduce staff car dependence, which is documented in the green travel plan
C2	Parking should consider students over 17 who drive to school	This will not be permitted by the school.
F2	Construction access should be from the eastern side of the school from Eton Road.	The construction access from the west side of the site along Dunstan Grove was chosen to allow the construction activities to overlap with current school activities. The east side of the site was considered however school operations would be greatly impacted by construction works along the eastern side of the site with the required management of construction traffic to maintain a safe and usable site for the school would have increased the timeline of construction impact and therefore increased the length of disruption for all residents using Eton Road

3 Phase 1 School

Transport for NSW commented that the explanation of the Phase 1 school required clarification. This section re-presents this information using updated graphics and explanatory text.

3.1 Drop-off and pick-up access – private vehicles

Vehicle access to the school and circulation arrangements during Phase 1 is shown in Figure 1. Cars are able approach the school via a two-lane access road from Eton Road, connecting with the east of the school where the two car parking areas as well as the school Drop-off and pick-up area are located.

The access road is two-way in operation and the road continues to the south where a turning head has been installed allowing vehicles to access the lower car park (to an area designated for parents) or make a U-turn back towards the DOPU area.

The DOPU area allows for 10 vehicles to queue at the drop-off / pick-up bay at any one time. This operates with the spaces on the western side converted into parallel car parking bays during the school morning and afternoon peak. These bays then function as parking spaces for visitors, outside of the school peak hours.

Parking is proposed to be made available for parents in the lower eastern car parking bays, indicated in Figure 1. Parents will be able to walk with their children up the hill via the pedestrian path and across the pedestrian crossing to reach the school entrance.

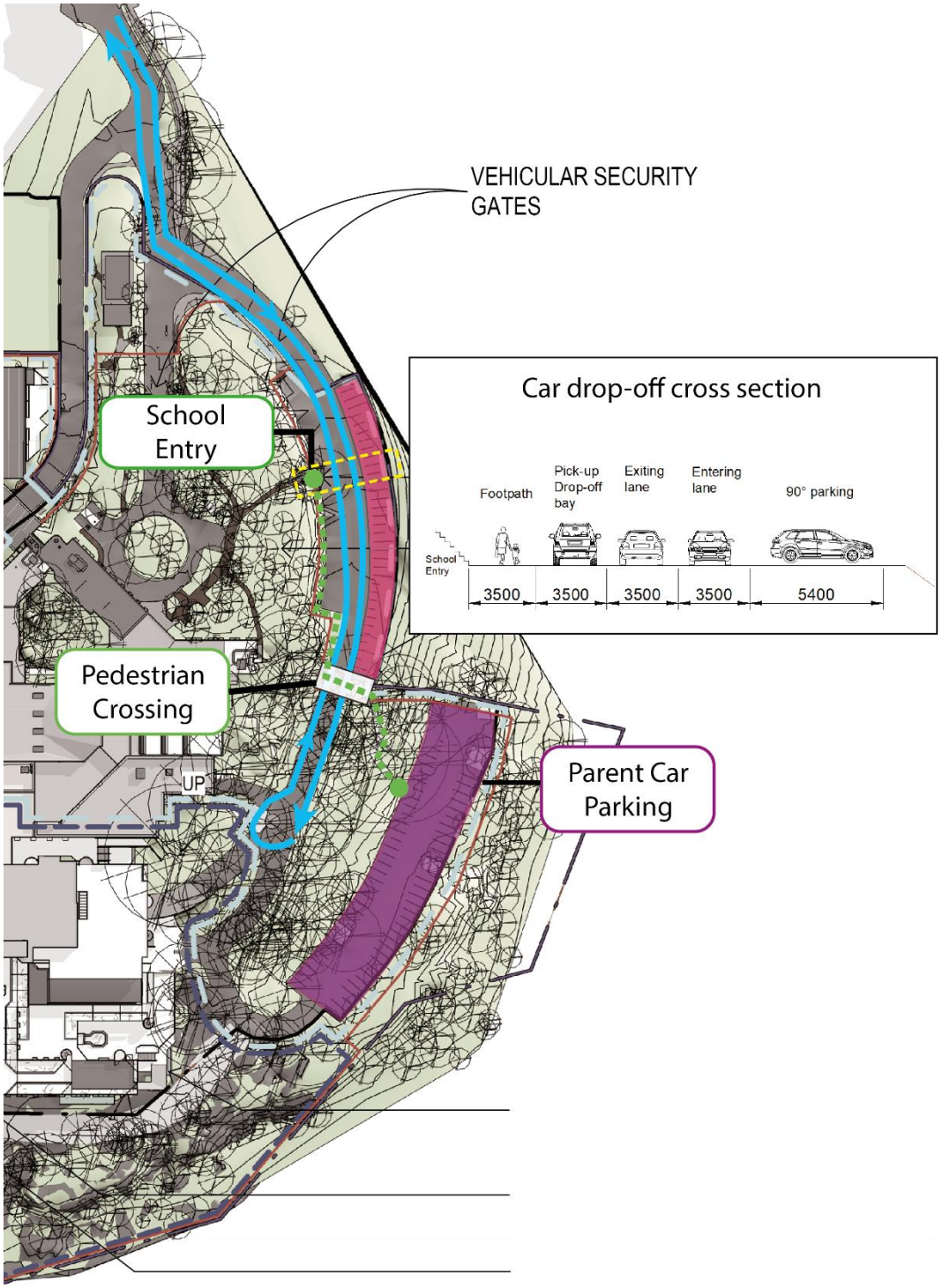


Figure 1: Drop-off / pick-up arrangement and pedestrian route from car parking

3.2 Footpath upgrades at the school

Pedestrian infrastructure upgrades have been carried out for Phase 1 within the vicinity of the school boundary as shown in Figure 2. Crossings have also been provided at two points in the upper car park (Figure 3) which completes the path to the school for parents and students from the lower car park shown in Figure 4.

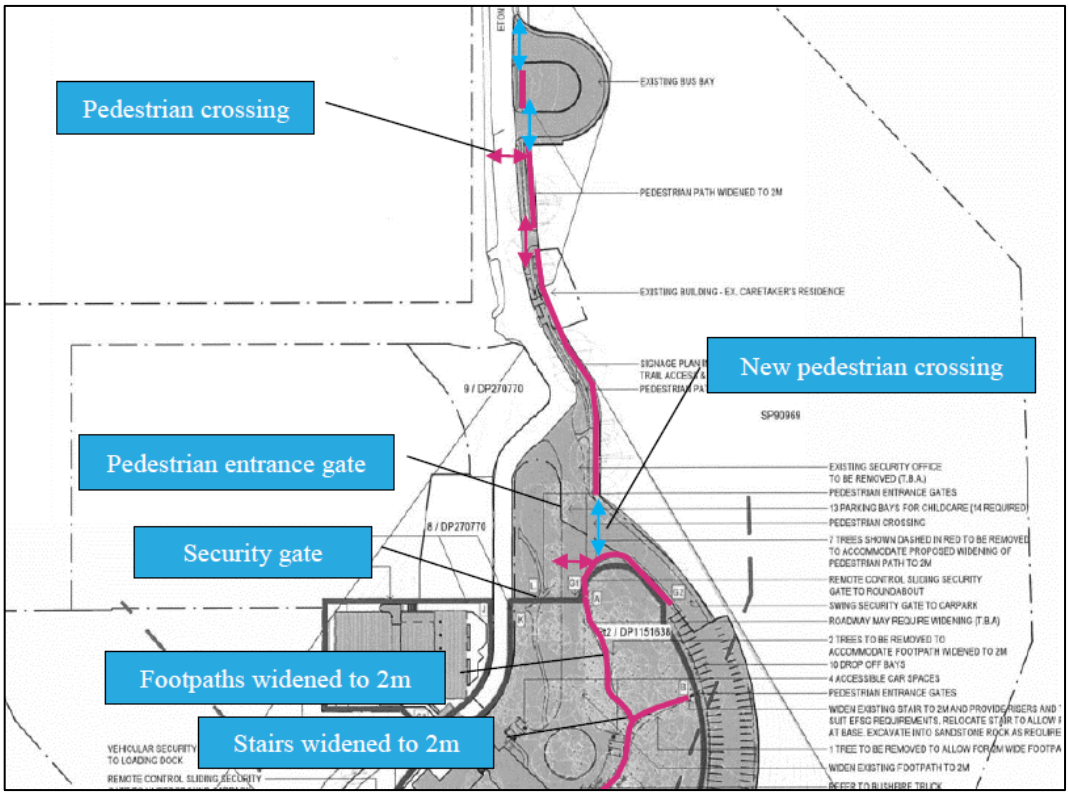


Figure 2: Pedestrian upgrades for Phase 1

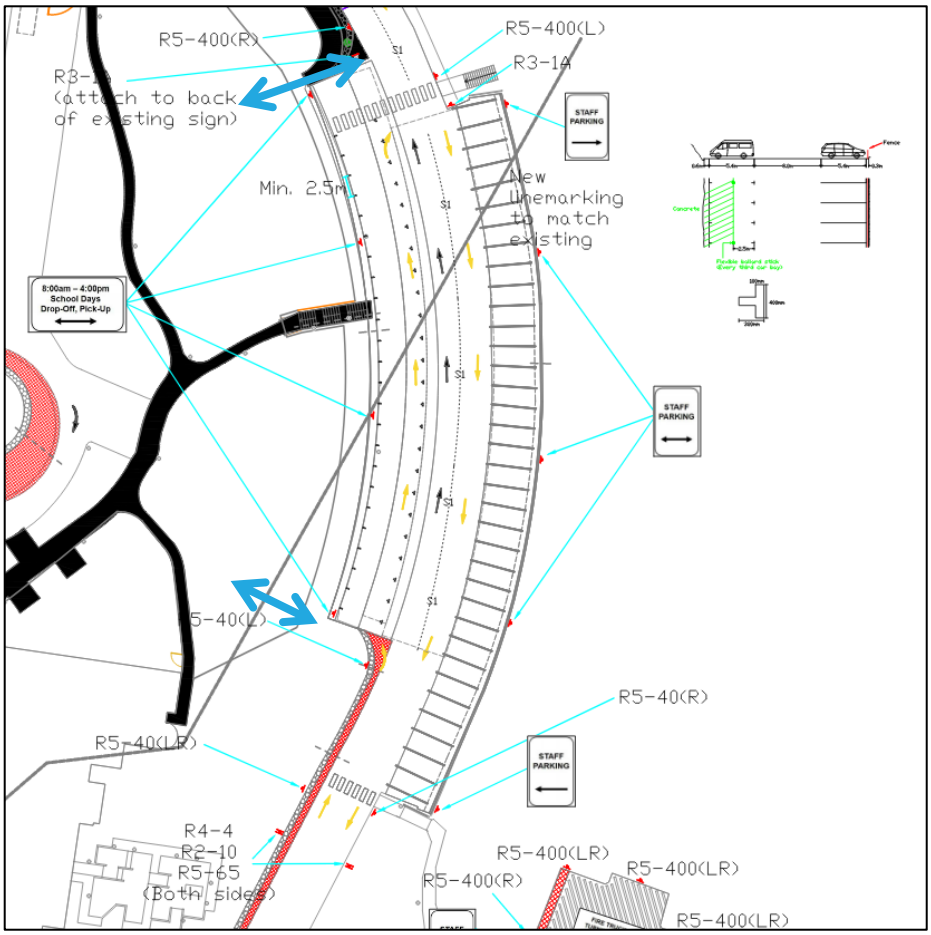


Figure 3: Signage and line marking plan for the Phase 1 school

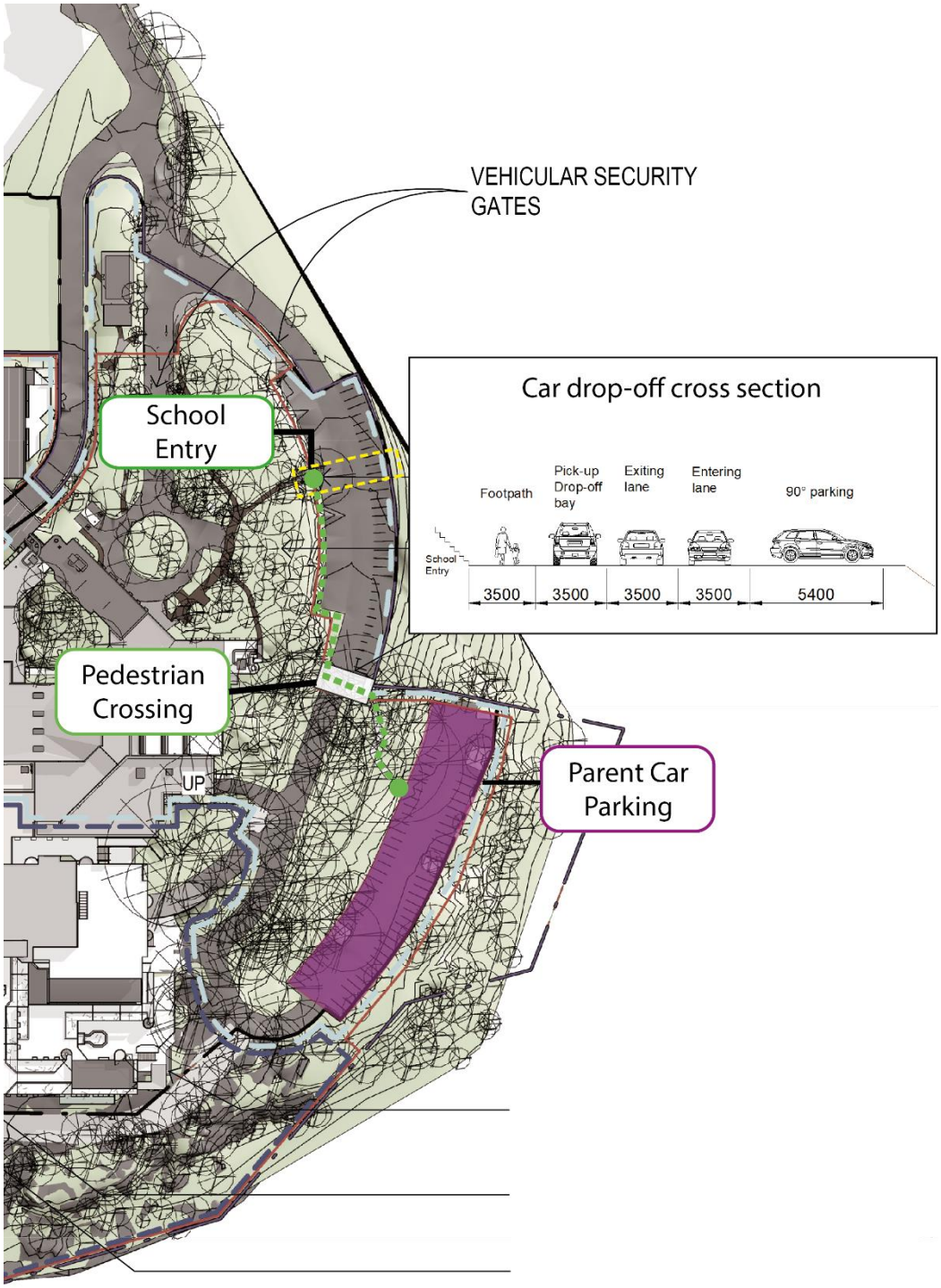


Figure 4: Walking path for parents to walk their children to school

4 Trip generation of the former Screen Australia site

Comments on the trip generation assessment of the former screen Australia site completed in the RtS required clarification. This section updates the assessment based on these comments.

The former Screen Australia site traffic report by Traffix has been updated in November 2019 based on a change of land use. The address for this development is 1 Roxy Place Lindfield and has the application ID of DA0499/19. This report documents trips which considers the base assumption of traffic when Screen Australia was in residence. The following points have been extracted from the report:

- Development proposal included:
  - 8 four-bedroom houses
  - 54 apartments with the following mix:
    - 24 three-bedroom apartments
    - 30 four-bedroom apartments
  - 136 basement parking spaces
- Screen Australia site traffic generation (estimated based on 4,800m² GFA at commercial office rate of 1.6 veh/hr in the AM and 1.2 veh/hr in the PM per 100m² GFA):
  - 77 veh/hr in the AM peak period (62 in, 15 out)
  - 58 veh/hr in the PM peak period (12 in, 46 out)
- Future site traffic generation (estimated based on a rate of 0.4 trips / dwelling):
  - 24 veh/hr in the AM peak period (5 in, 19 out)
  - 24 veh/hr in the PM peak period (19 in, 5 out)

When applying this trip generation to the peak hour traffic, the additional traffic results in only 24 vehicles and is deemed negligible and arbitrary in the assessment. The modelling completed in the TTA report considers highly conservative volume assumption of the Screen Australia site, which more than compensates for the 24 vehicles.

5 Design changes

In the responses from authorities, Transport for NSW and Ku-ring-gai Council called for the review of the proposed loop road arrangement. This was completed and as a result, an alternative access option is now presented.

To summarise the submissions related to this, Council suggested that alternatives be considered to the loop road which consisted of access the school from the east side of the school. TfNSW recommended that a road safety audit be completed on the loop road option.

The design team therefore undertook a road safety audit of the loop road and prepared a review document to explain the consideration of other alternatives for access.

The design team then reviewed the loop road design which included increasing the detail of the design to respond to the safety comments from TfNSW and consideration of the comments received from the road safety auditor. As the design detail increased, it became clear that the loop road option required the extensive widening of Dunstan Grove to provide sufficient width for safe movements for buses, small trucks, cars and pedestrians. This increased substantially the cost and expense of the loop road design and therefore an alternative design was selected to move forward.

5.1 Alternative access design – extended driveway

The alternative access design consists of expanding the existing car turnaround into a bus turnaround (30m diameter) to enable buses to use the upper car park as bus zone as shown in Figure 5.

The turnaround is shown in Figure 8 and has been designed for a 14.5m coach bus to complete the turnaround. The new bus turnaround would be constructed to cantilever over the topography, to not impact the lower car park.

Car traffic would drive around the turnaround area to the DOPU loop. With this layout, the cars would have a relatively intuitive entry into the site and would interact with the turnaround as if it was a roundabout which gives priority to vehicles in the turnaround. The private cars would then continue down to the DOPU area at the south of the school as shown in Figure 7. This area has space for 10 cars to operate independently with two lanes of traffic provided for passing manoeuvres.

This arrangement is aimed to help ensure that the area operates efficiently with reasonable queues. A stopping lane is included to allow for smoother DOPU operations. In the design, cars are able pull in and out independently without impairing oncoming traffic (approaching the DOPU area). The independent operation also increases the clearing time for each space; cars will not operate in single file and need for all cars ahead to clear out instead can freely pull in to any available space and exit without restriction. This operation greatly accommodates expected demand and works to lessen queuing length.

Figure 5: Overall layout of the expanded roundabout for buses and new car pick-up road

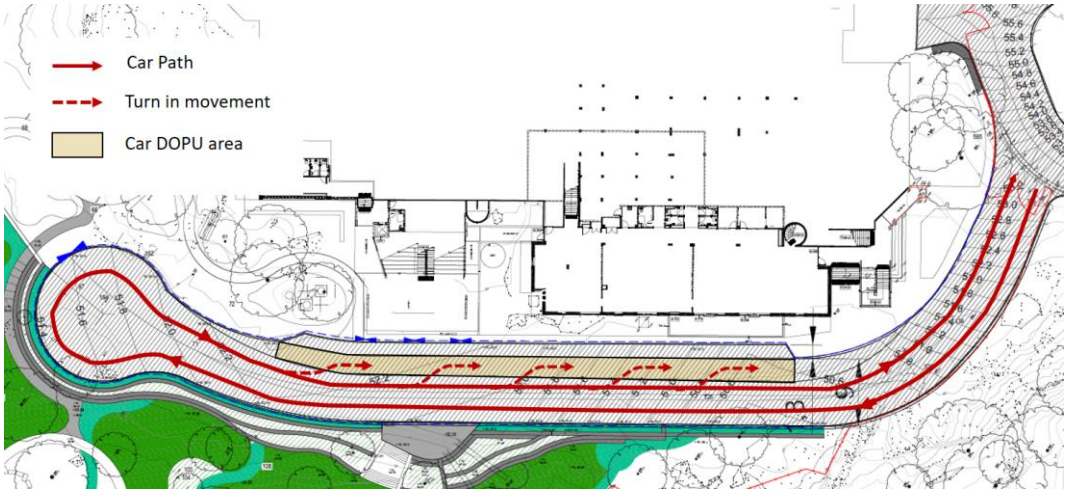


Figure 6: Car DOPU area design

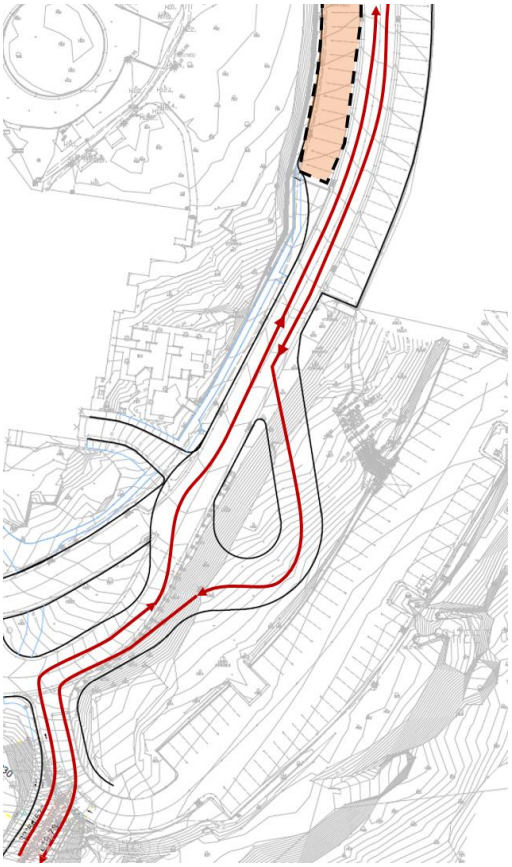


Figure 7: Car operations at round about (Phase 2 & 3)

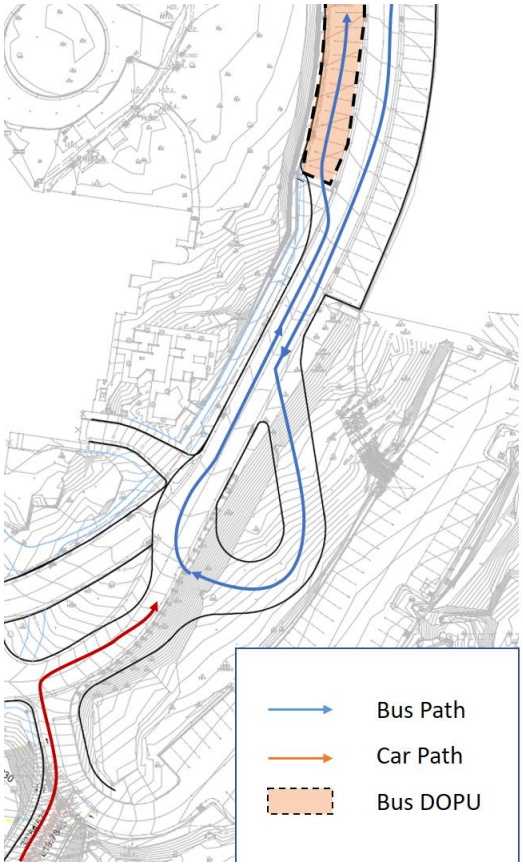


Figure 8: Bus operations at round about (Phase 2 & 3)

5.2 Driveway upgrade

The main entry driveway from Eton Road will also be realigned to have priority rather than Dunstan Grove. This recognises that the main flow of traffic is for entry and exit to the school. The works needed are removal of the kerb extension to straighten Eton Road. All other works involve line marking. The road may be wide enough to install a pedestrian refuge island to assist Dunstan Grove residents to cross the road and this will be investigated at detailed design stage.

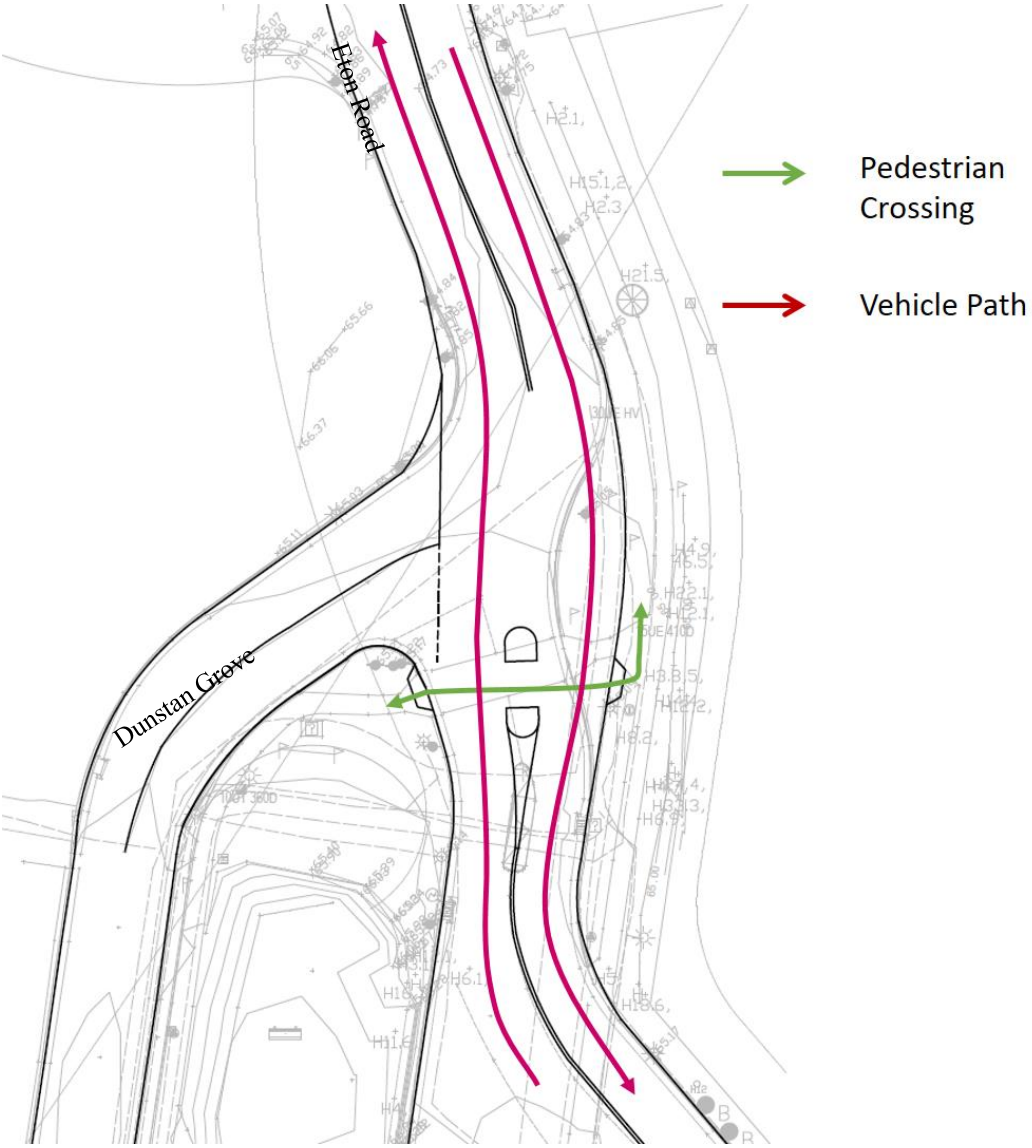


Figure 9: Proposed realignment of main driveway

6 Travel to the school

This section outlines the response to submissions received regarding travel to school including comments on the green travel plan and pedestrian, cycling and bus arrangements. This section includes the analysis and consultation undertaken with TfNSW, Transdev and Ku-ring-gai Council.

6.1 School travel plan

A Green Travel Plan was prepared by Arup on behalf of SINSW. It accompanied the RtS to support the State Significant Development Application (SSD 16_8114). This travel plan consisted of a package of measures to be put in place to try and encourage more sustainable travel whilst commuting and also during the course of activities, including business and delivery travel or other visitors to the site.

Acknowledging the comments from TfNSW and Council, SI propose that the a more substantial set of items be actioned and submitted prior to occupational certification:

- Develop School Travel Plan, consolidating the proposed items from the documentation already prepared by Arup, into a single practical document for action by SINSW and school principal.
- This plan is part of the wider school travel plan initiative from SINSW where the Department of Education is looking to more proactively manage travel to school and work with Council and TfNSW to create an achievable and actionable plan.
- Review school policies, including potential programs, infrastructure already available, peak spreading through staggered starts, school buses, footpath upgrades and bicycle routes
- Start communicating School Travel Plan, including travel plan components to the school community through school channels and local paper
- Collaborate with Council and TfNSW to develop a governance framework to implement the School Transport Plan

The significant reduction to private car travel will require travel strategies that promote alternative modes of travel that is convenient and attractive for school staff to use. The School Travel Plan will be key in managing the necessary shift away from private car travel and a pro-active plan for the sustainable growth and operation of the school. The School Travel Plan focuses on identifying and planning for such alternative travel modes such as public transport, active transport and carpooling for commuting.

This travel plan will consider measures that can be put in place to encourage more sustainable travel that is also suitable and well-integrated for staff to use and therefore transition away from car travel.

6.2 Pedestrian and cycling

The primary and secondary school catchment areas are being finalised and analysis of these will inform the key walking routes into the school. However preliminary catchment areas have been used to inform the design and planning for the school travel plan.

Further discussion with Council were held to discuss the forward works programs for implementation of new footpaths and to assess the current conditions of the local street system. The following analysis has been completed to support these discussions with Council.

6.2.1 Footpath upgrades on the local road network

Further upgrades to the wider local road network have also been undertaken by Ku-ring-gai Council to improve walkability to the school. A continuous footpath route from Lindfield Learning Village to Lindfield Public School and the Pacific Highway has been installed as a good spine route.

Footpaths should be provided in good condition, crossing opportunities to be safe for unaccompanied students to navigate. A 2km walking catchment isochrone is shown in Figure 10. Shown in black are key sections of road where multiple catchment paths converge. This includes;

- Grosvenor Road;
- Austral Avenue;
- Abingdon Road;
- Eton Road; and
- Bent Street.

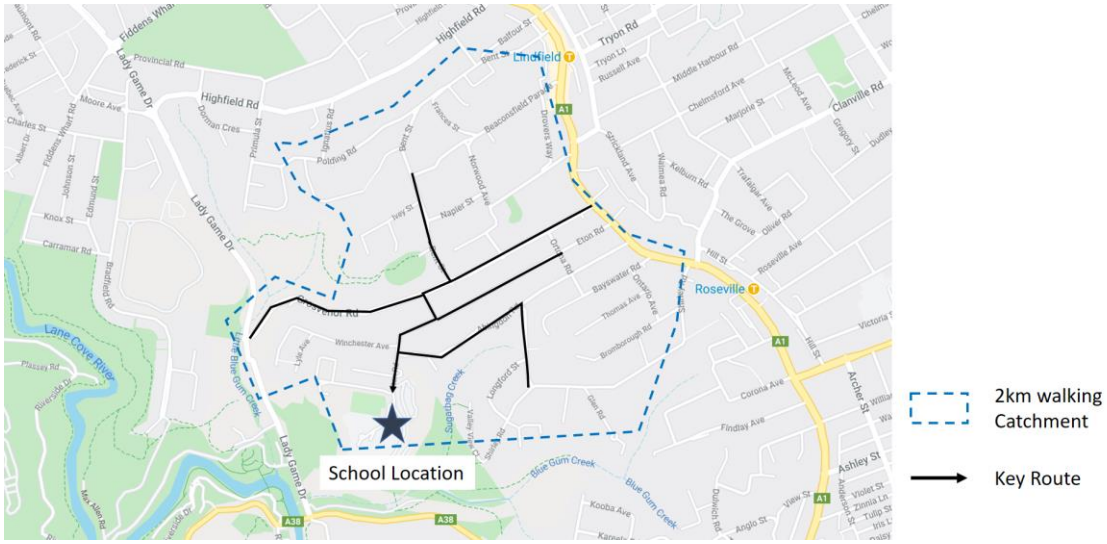


Figure 10: Walking routes

A review of shortest path analysis between the school and potential enrolments within 5km was conducted. This analysis considered the road network in terms of the shortest path and does not consider gradients. The analysis is shown in Figure 11 highlighted the following major routes to Lindfield Learning Village

- Eton Road, Austral Avenue and Grosvenor Road from Lady Game Drive to Pacific Hwy;
- Abingdon Road to Shirley Road
- Bent Street from Grosvenor Road to Beaconsfield Parade.

The route footpath along Eton Road has already been provided in the Phase 1 works.

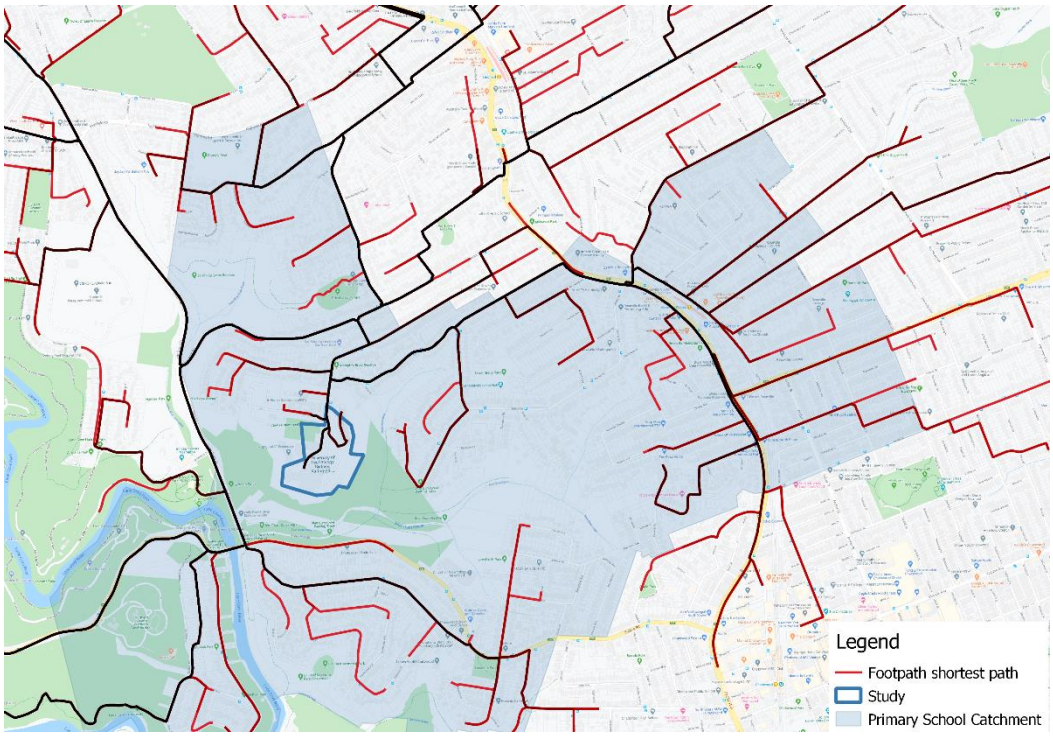


Figure 11: School catchment shortest path analysis (darker lines relate to clustered routes)

6.2.2 Cycling routes

Ku-ring-gai Council's 2012 Bike Plan proposes several on-road cycle routes as part of their potential future cycling network. From this document, the Lindfield 6 and Roseville 3 proposed sections are the two most relevant routes which connect with the school as indicated in Figure 12.

It's noted that these routes are proposed as on road mixed traffic, which is defined by Austroads, in the Cycling Aspects of Austroads Guides 2017, as low speed and volume, shared environments. Austroads states minimum widths of 1.2m and desirable width of 1.5m for bike lanes in 60km/h urban conditions.

During consultation with Council, it was agreed that cycling in mixed traffic was not appropriate for school students, therefore it is proposed students to rely on the footpath for cycling in the intermediate term. Much of the Lindfield 6 route along Grosvenor Road is newly established.

A potential footpath along Abingdon Road would link up most of the Roseville 3 route with footpaths for students to cycle to school. The shortest path routes along

Westbourne Road which is very steep and has stairs on the footpath. This route is therefore less likely to be used.

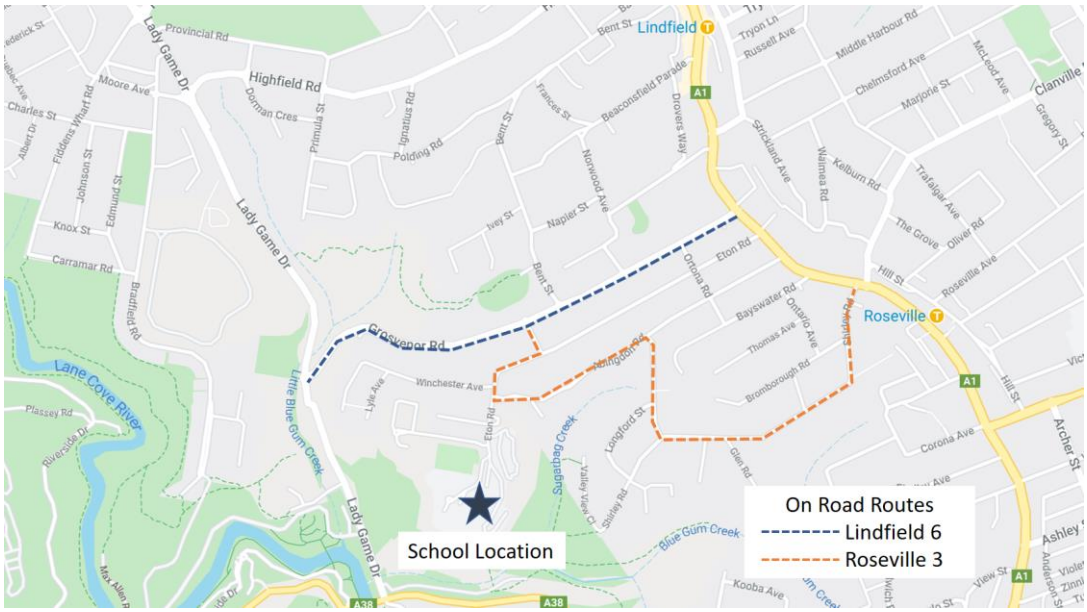


Figure 12: Selected proposed bike routes from Ku-ring-gai Council's 2012 Bike Plan

6.2.3 Recommendations

A meeting between the project team and Ku-ring-gai Council was held in April to share analysis and to further discuss the potential upgrades to the walking and cycling network in light of the future increase of school enrolments.

Council expressed upgrades to the walking paths to the South of the school via the national park was desirable, however would this need to be provided by the national park.

Abingdon Road as South-East connection was discussed and the importance for a footpath to provide safer walking conditions to the school was acknowledged by Council. A staged approach was discussed and proposed for Abingdon Road, where a footpath is first established and built to be 1.5m wide.

It was also raised that any path provided would have to work with the constraints of the area's topography and parking. one potential solution discussed was a temporary widening into the road space using removable materials to provide the continuous width of 1.5m. an example of this is shown in Figure 13. Implementation of this footpath will need to be discussed and agreed with Council and TfNSW.

Figure 13: Sketch of a temporary widening of the footpath around a roadside obstacle (not to scale)

It was proposed for students (where possible) will ride upon the footpath; this arrangement provide sufficient capacity upon the earlier stages of the school and enable a safe cycling route in the South-East direction to be established in the intermediate term.

As school enrolments grow, cycling patronage is proposed to be monitored and further upgrades to these routes will be held with TfNSW, SINSW and Council if cycling demand substantially increases and requires widening.

6.3 Bus arrangements

This section reviews the school bus arrangements, considering normal route bus services and school specific services. Bus catchment analysis is discussed in this section and shows that there is potential for several school bus routes to the South, East and West of the school.

6.3.1 Normal route services

The current 565 bus route provides school bus services that run from Eton Road bus bay to Lindfield station for students. Route 565 services to Eton Road bus bay will still operate during Phases 2 & 3 but TfNSW have requested that students are not able to board the 565 between Chatswood and Eton Road. Students will be permitted to board on the other legs.

Following the expansion of school and increase in admissions in Phases 2 & 3, a new shuttle service has been proposed through close coordination for TfNSW to provide increased capacity and service the growth in students. This shuttle service could be a new Route 566 shuttling between Lindfield Station and the Eton Road bus bay or directly to the school's bus stop area.

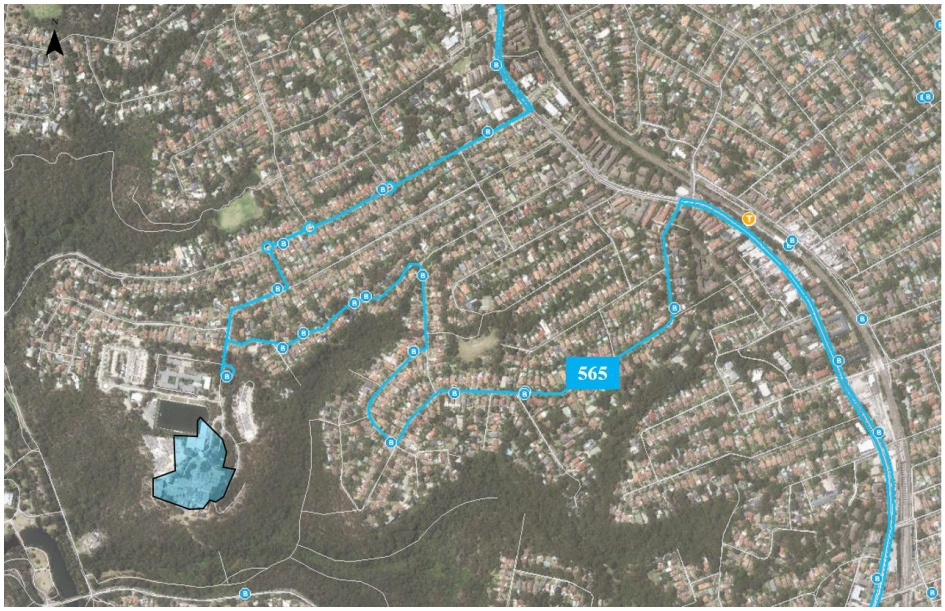


Figure 14: Current bus route 565

6.3.2 School bus demand

Outlined in the previous RtS (September 2019), the school mode share and trip generation were based on a travel survey undertaken between 27 February and 5 March 2019 by the school with 201 respondents representing the total 298 students. This supports the proposed bus mode share of the future school.

This survey recorded the preference for more students to take the bus if services were made available. This has been taken into account and reflected by the higher bus mode target which has been adopted. For Phases 2 & 3 of the school development, bus services are planned to be increased in order to achieve the bus mode targets as shown in Table 6 . This assignment considers the lower likelihood of younger children taking the bus.

Table 6: Future bus mode target

Year	Bus mode
K-2	30%
3-6	60%
7-9	80%
10-12	90%

6.3.3 School bus routes

It is evident that an additional bus service will be required to fulfil the objectives of reaching the mode share target for buses and provide public transport connectivity for students who live beyond a reasonable walking distance from the school. Figure 15 show three potential bus routes which have been developed from findings of the bus catchment analysis.

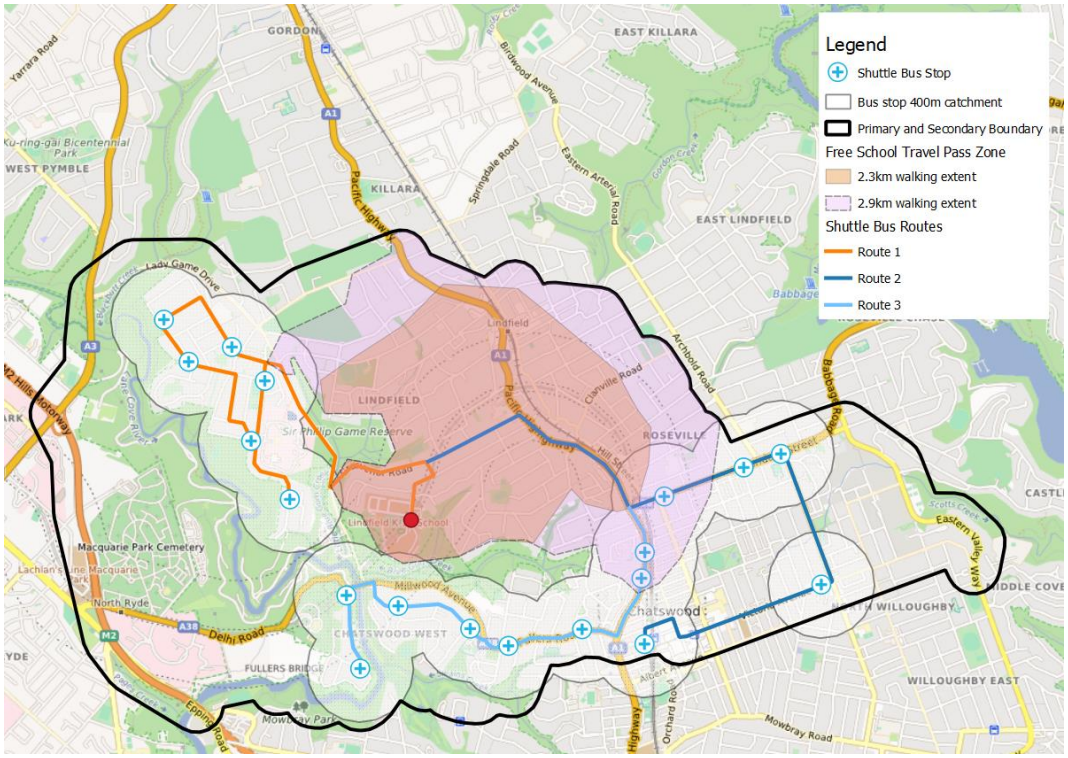


Figure 15: Proposed school shuttle routes

Bus route planning would be confirmed by Transdev and Transport for New South Wales once enrolments are confirmed for the expanded school.

6.4 Car parking for school activity

No new car parking will be provided on the site due to the topography of the site and the sensitivity of utilising bushland space or impacting on it with additional structures. There are currently 166 marked car parking bays on the site as shown in Figure 16.

In the upper car park there are 27 parking bays on the western side which are converted to a bus drop-off and pick-up facility during school hours. This means that there are 139 car parking bays available for school staff use and parent pick-up and drop-off parking. Two (2) of the car bays are for accessible parking adjacent to the front door.

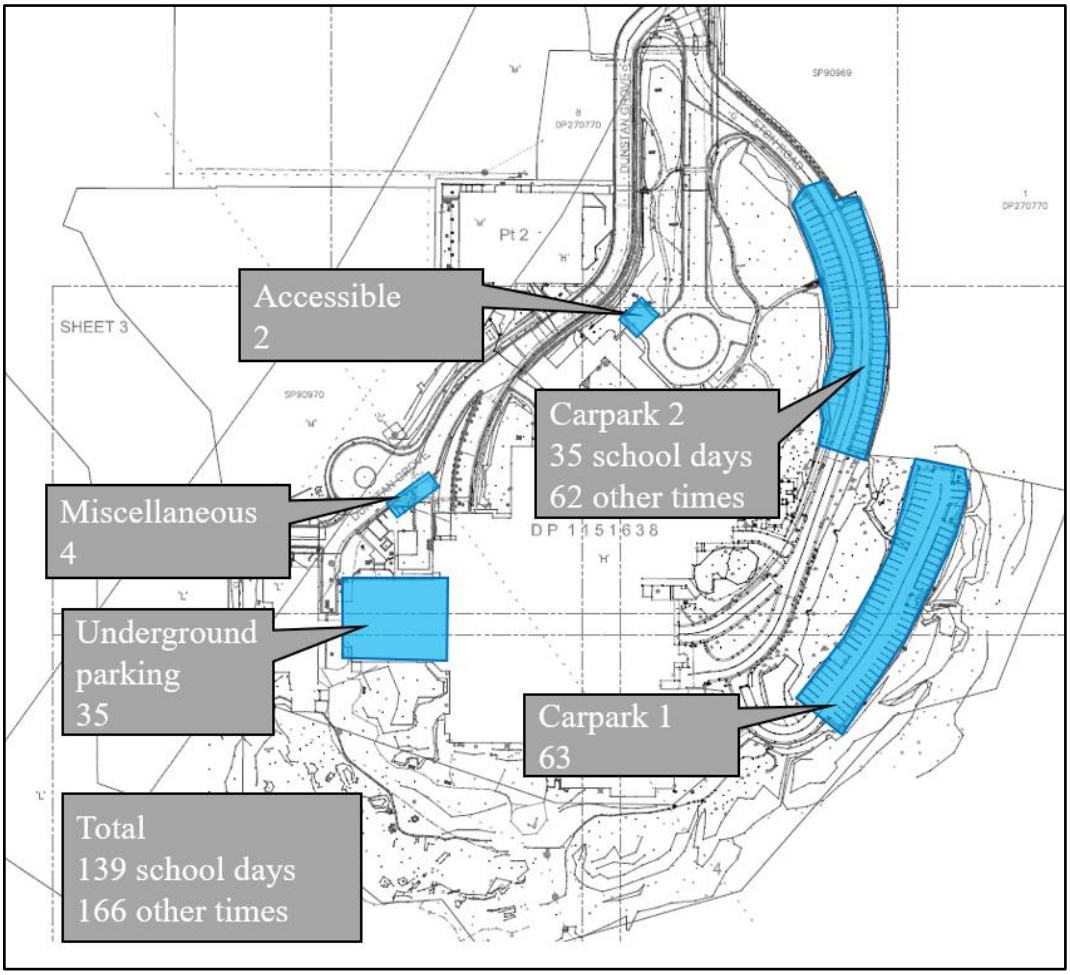


Figure 16: On-site car parking inventory

In Phase 2 there will be an allocation of parking spaces provided for parents to park and walk their children to school. There will also be 127 staff parking spaces available. For 164 staff and assuming 90% in attendance on a typical day, this equates to a car mode of 85%. This is easily achieved with some staff travelling by public transport and others either car-pooling or being dropped off.

For Phase 3 there will also be an allocation of parking spaces for parents to park and walk their children to school there will be 117 staff parking spaces available. For 312 staff and assuming 90% in attendance on a typical day, this equates to a car mode of 42%.

6.5 Private vehicle drop-off and pick-up

The analysis completed for Phase 2 remains as in the RtS. The analysis for queuing was completed on the Phase 3 school demand.

6.5.1 Phase 3 school travel demand

The 2019 Traffic and Transport Report analysed trip generation and mode share of future school enrolments. It outlined the expected demand for the drop-off pick-up areas over the morning and afternoon peaks which has been summarised in Table 7.

Table 7: Timing of drop-off and pick-up

Drop-off					**Pick-up**				
Start	OOSH (70%)	bus pass	car passenger	cars	Finish	OOSH (100%)	bus pass	car passenger	cars
7.00am	140	0	140	88					
8.50am	0	551	314	196	2.50pm	0	551	214	134
8.50am	0	531	50	31	3.10pm	0	531	50	31
9.10am	0	216	0	0	3.30pm	0	216	0	0
					6.00pm	240		240	150
Total	**140**	**1,298**	**503**	**314**		**0**	**1,298**	**503**	**314**

The resultant peak traffic generation is:

- Morning peak entry – 227 student drop-off + 95 staff + 14 buses
- Morning peak exit – 227 student drop-off cars departing + 14 buses
- Afternoon peak entry – 165 student pick-up cars entering + 14 buses
- Afternoon peak exit – 165 student cars + 60 staff + 14 buses
- Evening peak entry – Nil
- Evening peak exit – 60 staff cars departing

6.5.2 Queuing analysis

The queuing theory used takes into consideration the arrival demand and the clearing rate to calculate the 95th percentile queue lengths. Assumptions used ion this analysis were as follows:

- Each DOPU space has an average clearance rate of 0.5 cars per minute (parents take 2 minutes to drop off/pick up their children)
- Arrival profile is random based on the Poisson distribution.

The expected queue length developed in the morning peak is summarised in Table 8. As can be seen, the queues are 10 cars long or 65m assuming 6.5m per car and the expected queue length developed in the afternoon peak is four cars or 26m. This also shown in the following diagram in Figure 17. The queues developed are not likely reach or interfere with the bus turn around area and impede bus operations.

Table 8: DOPU area queuing results

Peak period	**Queue for two minutes for DOPU (cars - distance)**
Morning	10 cars - 65m
Afternoon	4 cars - 26m

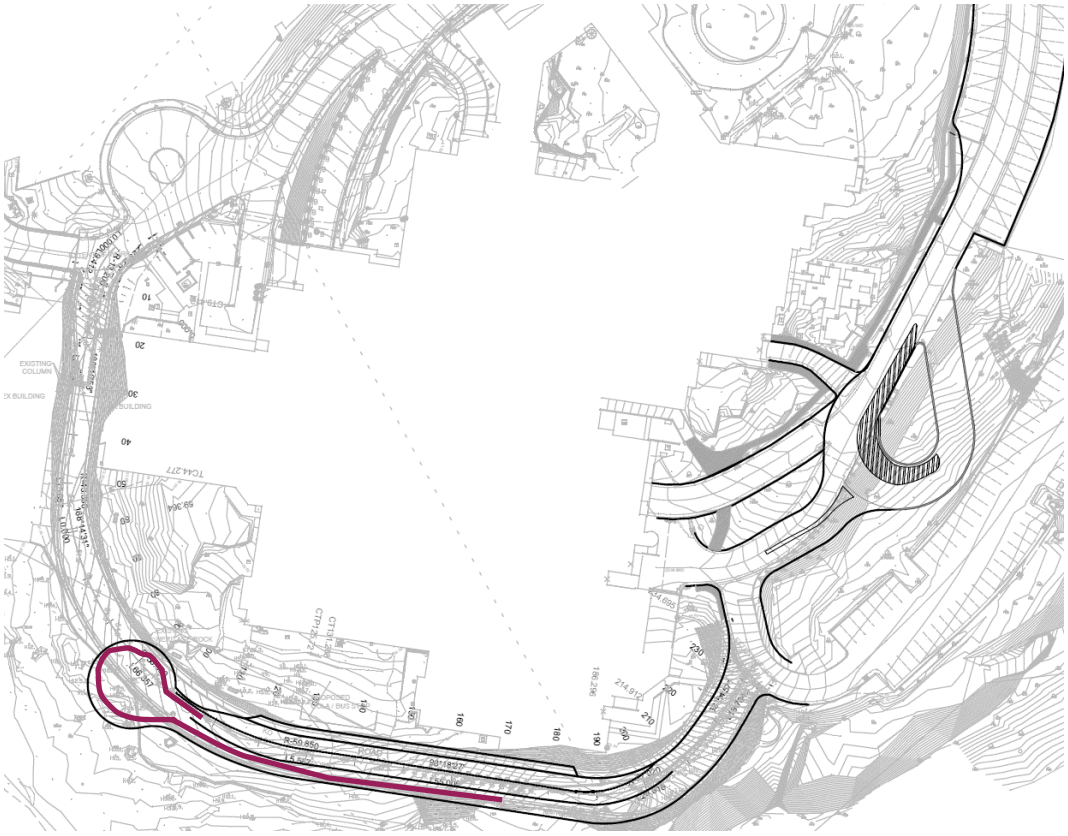


Figure 17: DOPU area queuing extent

7 Outline construction pedestrian and traffic management plan (CPTMP)

This outline CPTMP describes the lessons learned by the Stage 1 construction works and the contractor would be required to follow this outline when the CPTMP is completed prior to construction. Disruption to all road users during the construction period would be kept to a minimum.

7.1 Lessons learned on the Stage 1 construction

The Stage 1 construction occurred during the summer of 2018-2019 and the following plan shown in Figure 18 was implemented. This plan showed multiple access points and directed all deliveries to arrive to Gate 2 via Dunstan Grove. This location did not provide construction vehicles with the ability to enter the site, turn around and exist in a forward direction. This led to delays and queues of trucks which were communicated by residents in the submissions received.

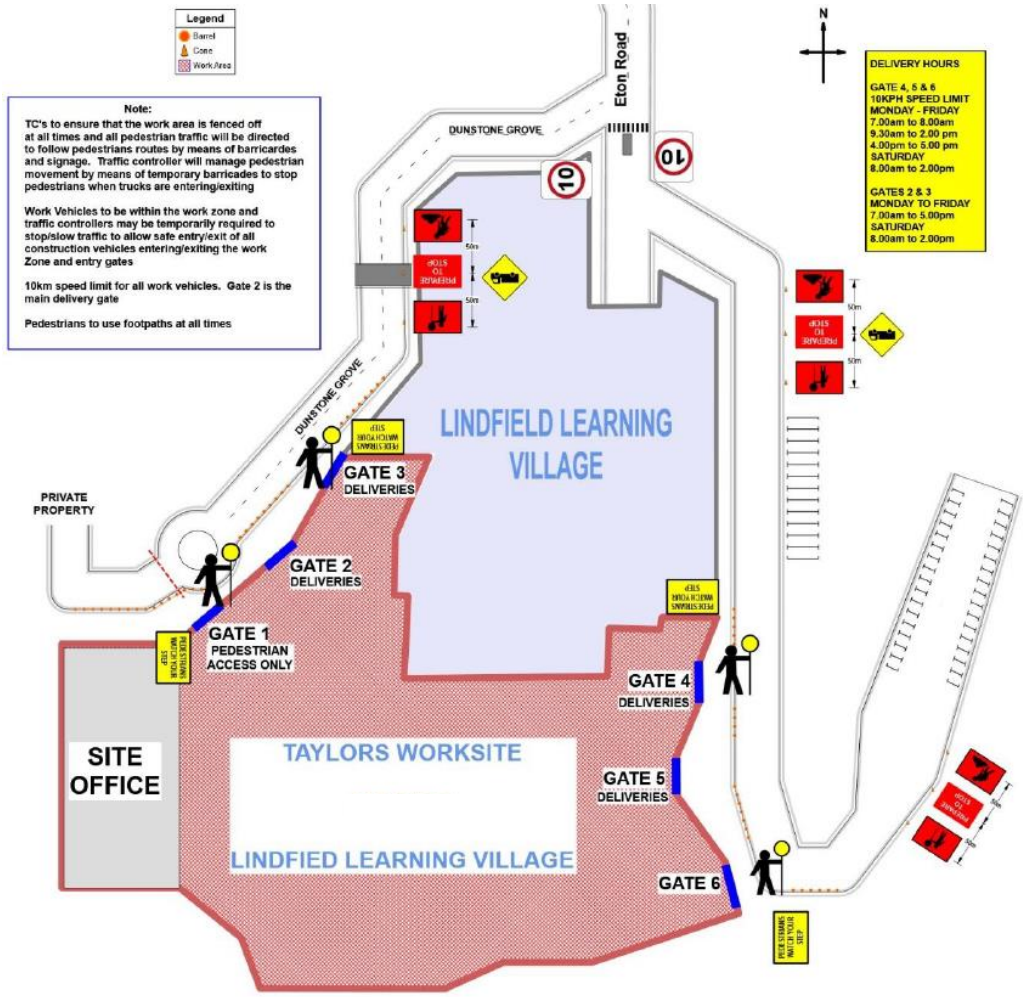


Figure 18: Stage 1 construction site plan

Given that the scope of works for Phase 2 construction include creating an access at the end of Dunstan Grove for construction vehicles access and Rural Fire Service access, construction vehicles will be able to entry the site to perform deliveries. The following outlines the access requirements for the construction

pedestrian traffic management plan. This would be completed by the contractor prior to a construction certificate.

7.2 Phase 2 construction activity

The key building works proposed involve demolition of internal fixtures and rebuilding of internal fixtures to the new room layouts. No major external building works are proposed. There are also civil works proposed on the internal road system and associated footpaths.

The level of construction traffic will be low with up to 2 trucks per hour expected at busy times for removal of demolished materials and delivery of new building materials. Construction workers will arrive at the start of the shift and park in available parking areas within the site.

- The Contractor's compound will be set up within the existing building.
- The upper car park will be available for site drop off, loading and deliveries.
- The lower car park will be available for Contractors onsite parking

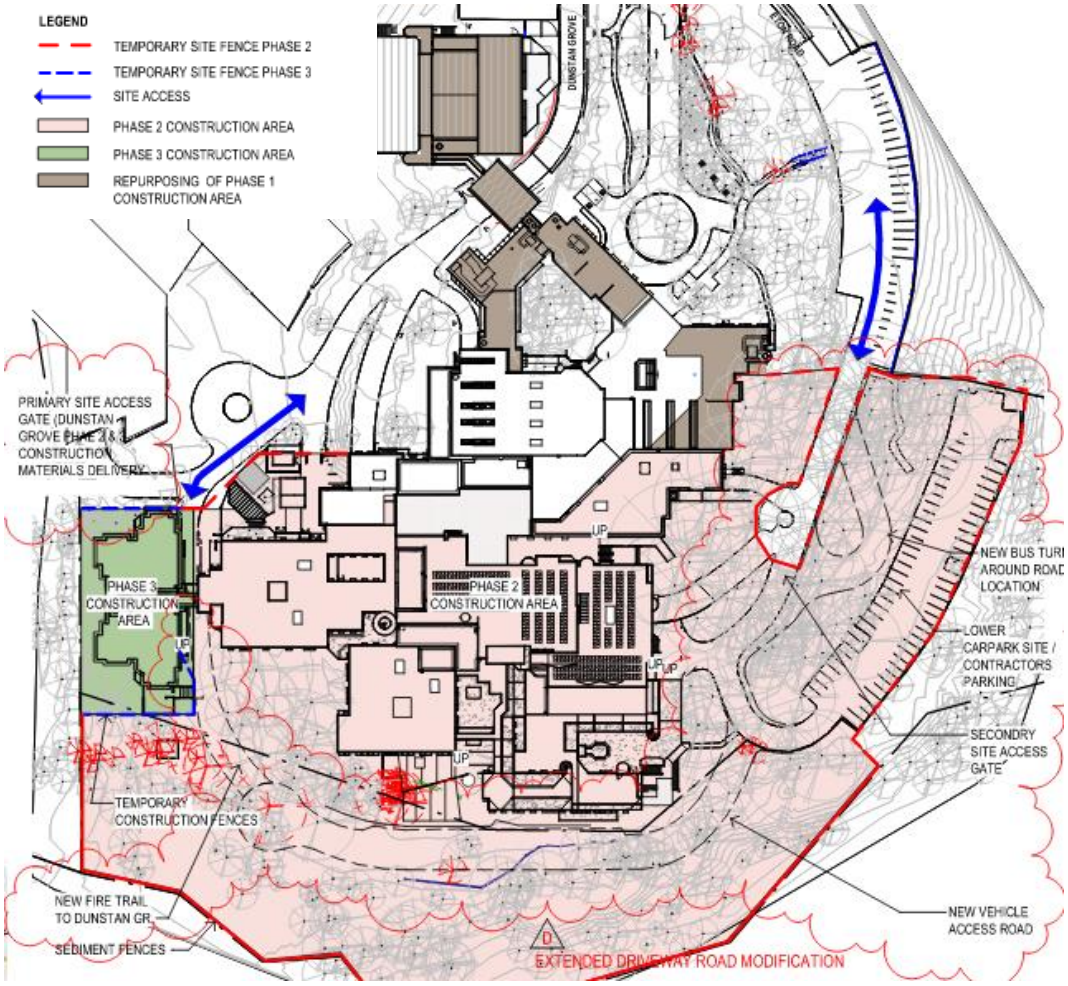


Figure 19: Phase 2 construction activity plan

7.2.1 Driveways

Construction vehicle access will be from both the west, via Dunstan Grove and to the east via the extended driveway. Vehicles will enter and exit the site in a forward direction, with construction deliveries to occur from Dunstan Grove and construction worker parking to occur from the east. This is shown in Figure 20.

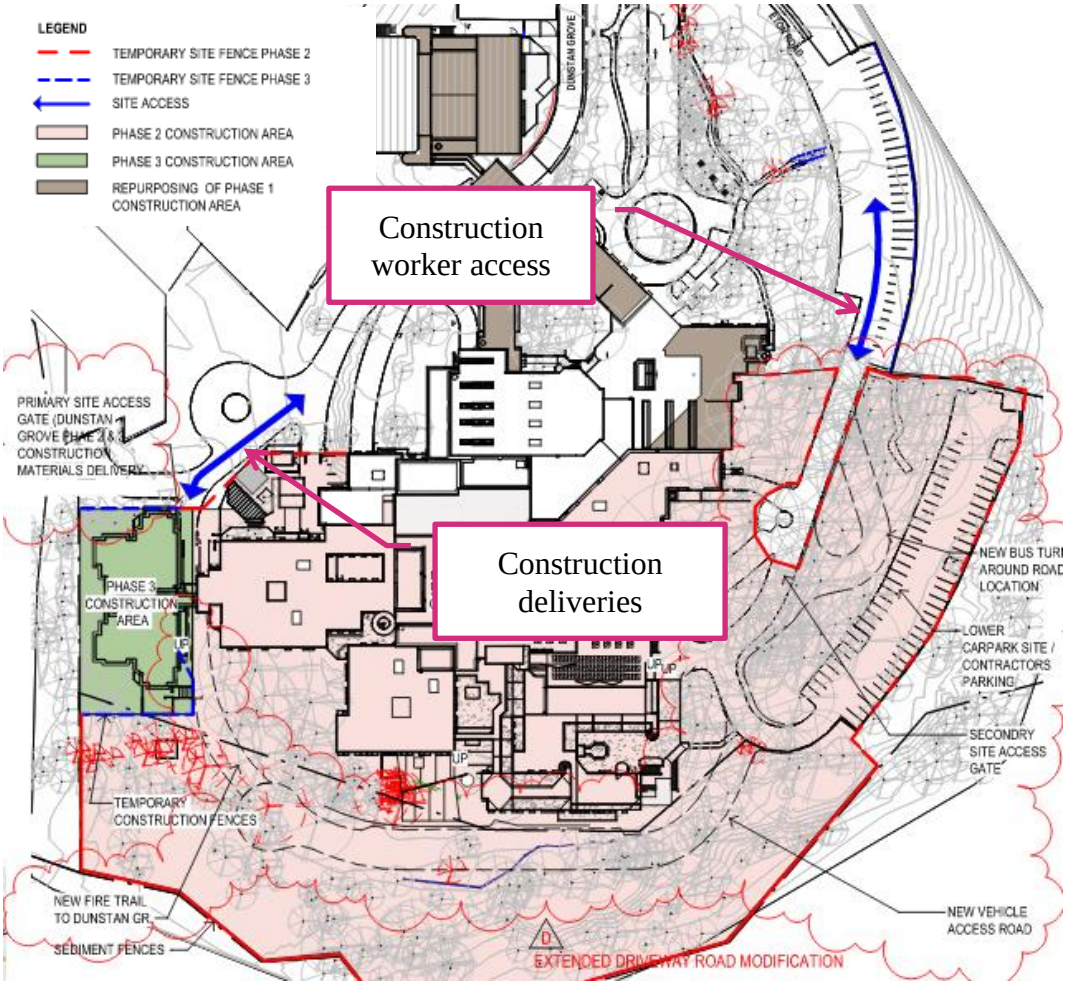


Figure 20: Driveway usage assignment

7.2.2 Construction phasing

The phasing of the project is proposed to be broken down into three phases. Phase 2A commences work on the main building and the extended driveway, shown in pink in Figure 20. Following the end of phase 2A, the bus turnaround and DOPU area is handed over to minimise impact to the operating school. This is shown in the green area in Figure 21. Work continues on the main buildings until the end of Phase 2B where these buildings are handed over to the school as shown in purple in Figure 21. Finally Phase 2C is the last area to be constructed.

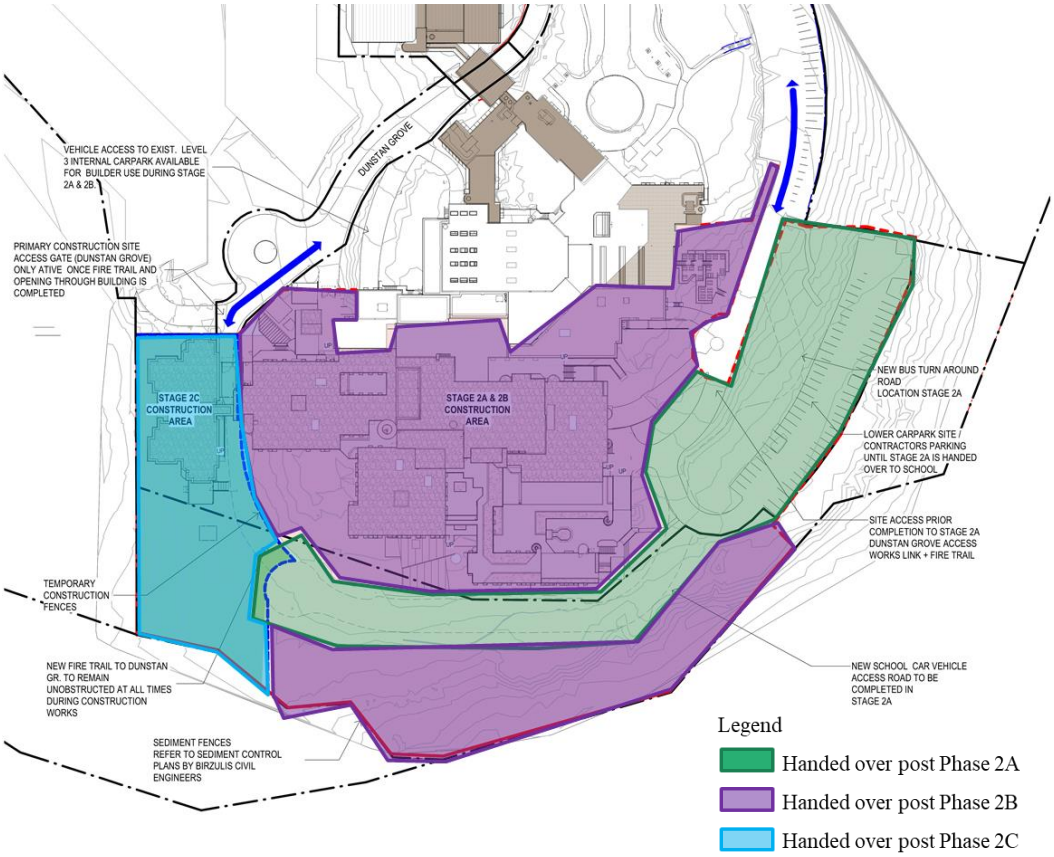


Figure 21: Construction handover phasing

7.3 Construction access

Vehicular Access to and from the site shall be from Eton Road. The site access gate will be set up at Eton Road southern end where the junction forks to the lower car park. Access to Dunstan Grove and Shout Ridge Road shall be unaffected.

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, illustrated in Figure 22.

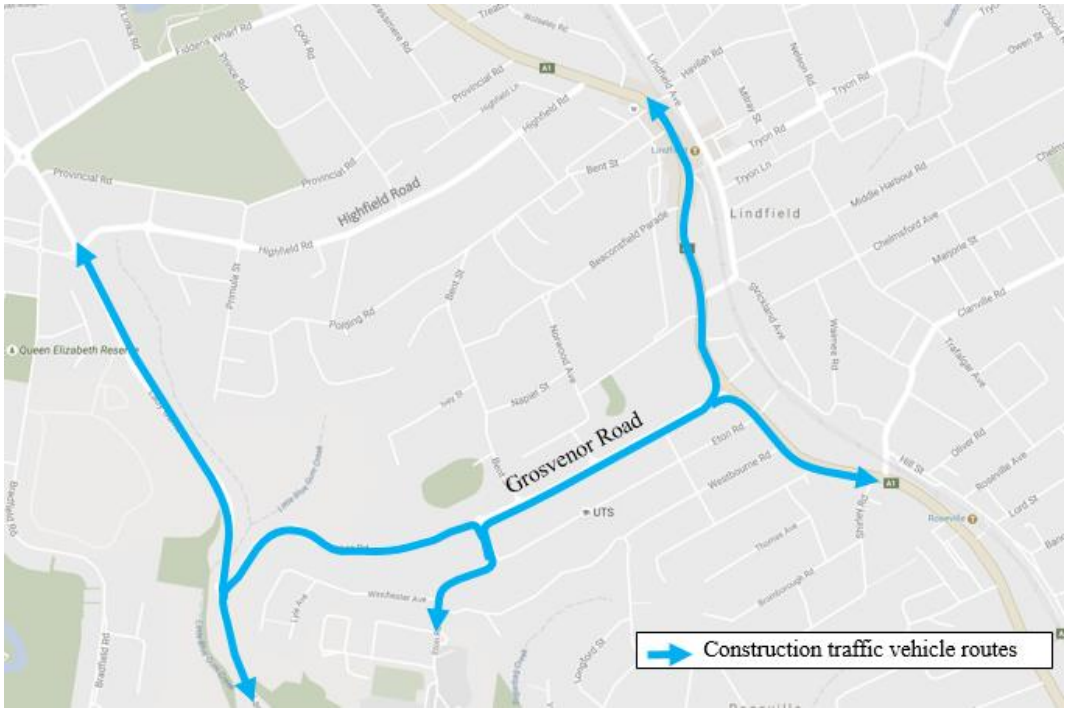


Figure 22: Construction traffic vehicle routes

7.4 Traffic Management

Key traffic management principles include:

- 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.
- Traffic Control: Disruption to all road users during the construction period would be kept to a minimum.
- Pedestrian safety: the unmarked crossing of Dunstan Grove is to be operated by traffic controllers to manage the safety of pedestrians crossing the road at this point (Figure 23).

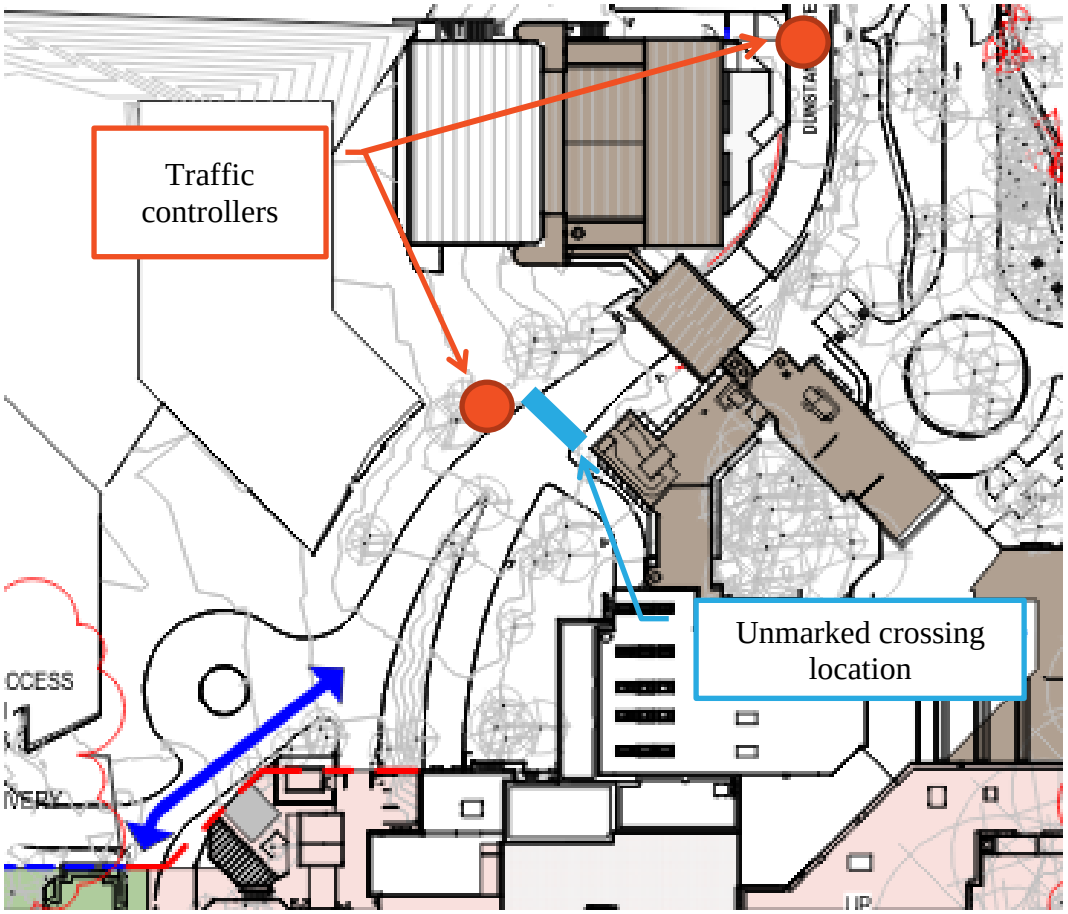


Figure 23: Indicative location of traffic controllers for the unmarked crossing

7.5 Proposed Working Hours

Depending on the construction stage, the workforce which includes both construction and design personnel, will vary. Construction would be undertaken during standard working hours which are assumed to be as follows:

- Monday to Friday: between 7:00am-5:00pm, excluding school times 8:00am – 9:30am and 2:00pm – 4:00pm on school days
- Saturday: between 8:00am – 1:00pm.
- Sunday and public holidays: no work.
- It is required that traffic controllers will be in place before work starts to manage early arrivals.

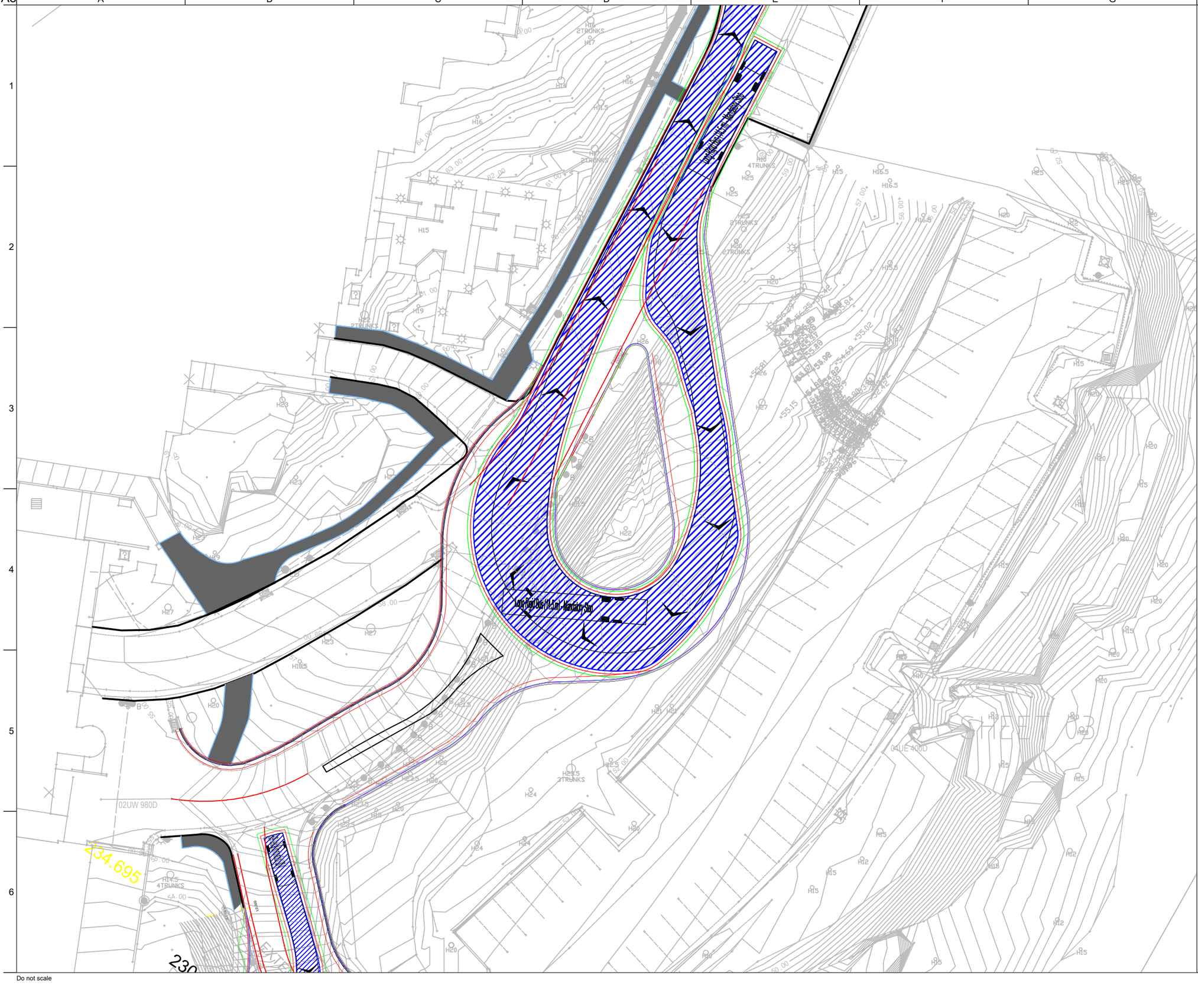
In some cases, it may be necessary to undertake night works to minimise disruption to traffic. Further assessments of these requirements would be undertaken once the detailed design stage is undertaken and the requirements are known. All night works would be undertaken in accordance with the Roads and Maritime Services Environmental Noise Management Manual (RTA 2001): Practice Note vii – Road works outside normal working hours, as well as the Office of Environment and Heritage Interim Construction Noise Guideline (DECC 2009).

Prior notice would be given to the community if any works are planned to be undertaken outside normal construction hours.

Appendix A

Turning paths

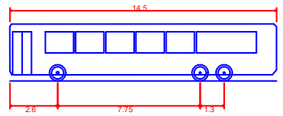
A3



Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



Long Rigid Bus (14.5 m)

Overall Length	14.500m
Overall Width	2.500m
Overall Body Height	3.102m
Min Body Ground Clearance	0.337m
Track Width	2.500m
Lock to Lock Time	6.00 sec
Curb to Curb Turning Radius	15.000m

Footpaths

Issue	Date	By	Chkd	Appd
B	28/04/20	JG	MAC	MAC
	Updated Civil			
A	26/03/20	JG	MAC	MAC
	For Information			

ARUP

Arup, Level 10, 201 Kent St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

Client
Department of Education

Job Title
Lindfield Learning Village

Drawing Title
Leveled Bus turn around swept paths

Scale at A3

Discipline
Transport

Drawing Status
Draft

Job No	Drawing No	Issue
251272	**SKT02**	**B**

Do not scale

A3

Legend

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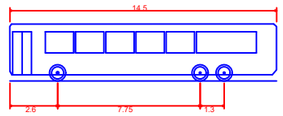
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



Long Rigid Bus (14.5 m)

Overall Length	14.500m
Overall Width	2.500m
Overall Body Height	3.102m
Min Body Ground Clearance	0.337m
Track Width	2.500m
Lock to Lock Time	6.00 sec
Curb to Curb Turning Radius	15.000m

Footpaths

Issue	Date	By	Chkd	Appd
B	28/04/20	JG	MAC	MAC
	Updated Civil			
A	19/03/20	JG	MAC	MAC
	For Information			

ARUP

Arup, Level 10, 201 Kent St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

Client
Department of Education

Job Title
Lindfield Learning Village

Drawing Title
Leveled Bus turn around and drop off

Scale at A3

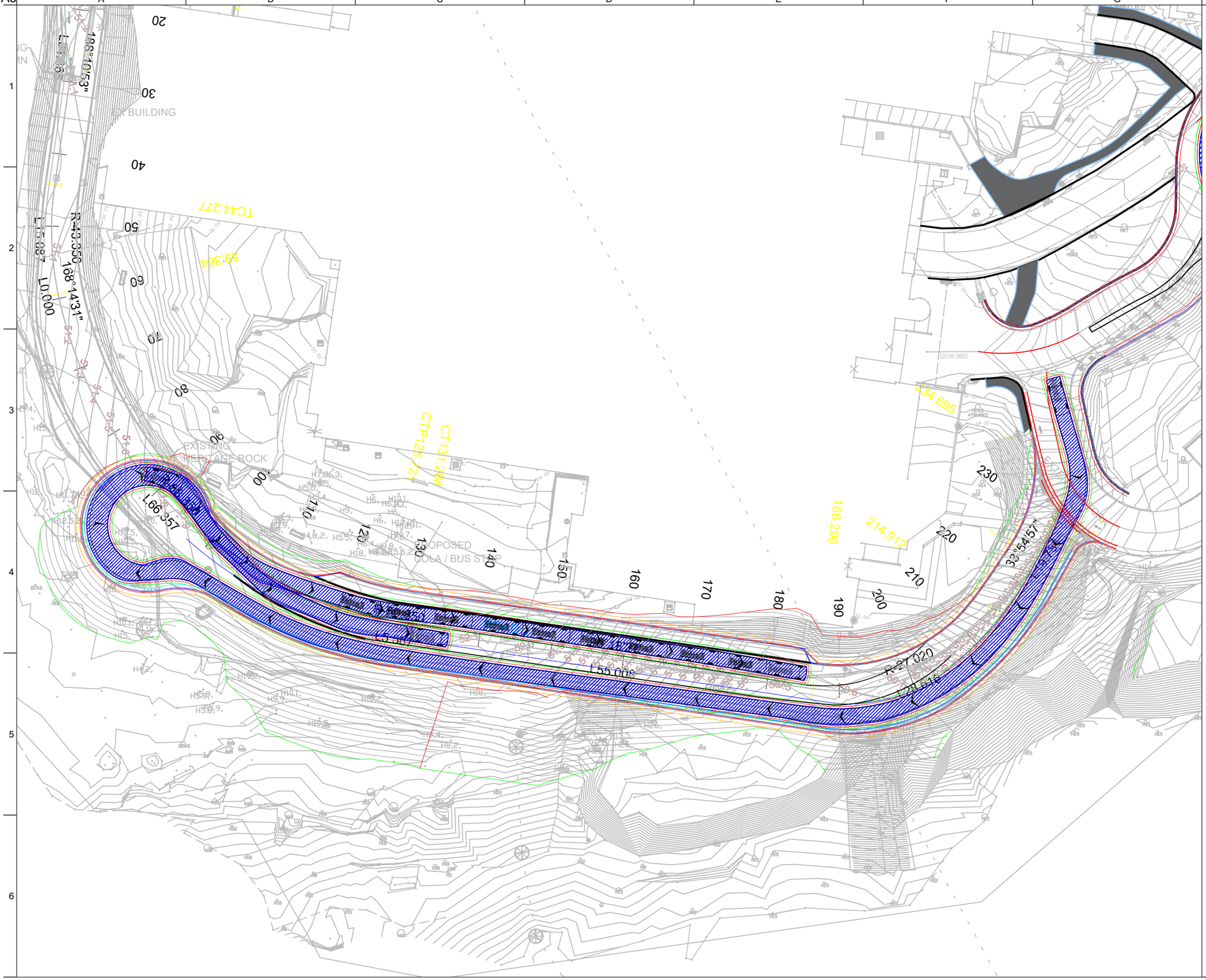
Discipline
Transport

Drawing Status
Draft

Job No	Drawing No	Issue
251272	**SKT03**	**B**

Do not scale

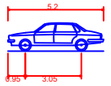
A3



Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



B99 Car	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.527m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.250m

Footpaths

Issue	Date	By	Chkd	Appd
B	28/04/20	MAC	AMH	AMH
	Updated Civil			
A	26/03/20	JG	MAC	MAC
	For Information			

ARUP

Arup, Level 10, 201 Kent St
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Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

Client
Department of Education

Job Title
Lindfield Learning Village

Drawing Title
Car turn around and drop off operation

Scale at A3

Discipline
Transport

Drawing Status
Draft

Job No	Drawing No	Issue
251272	**SKT04**	**B**

Do not scale

Appendix B

Records of consultation

Minutes

ARUP

Project title	Lindfield Learning Village	Job number	251272
Meeting name and number	Design update with TfNSW	File reference	
Location	Microsoft Teams	Time and date	9:30am 24 March 2020
Purpose of meeting	To discuss the design change for buses and cars and the travel to school		
Present	Jim Lewis, SINSW Mark Ozinga, TfNSW John Broady, TfNSW Billy Yung, TfNSW Steven Scott, Transdev Emma Viljoen, Savills Pablo Alvarez, DesignInc	Rebecca Lehman, SINSW Jonathan McMullan, TfNSW	
Apologies	Joanna Lau, TfNSW Pahee Rathan, TfNSW		
Circulation	Those present Alaine Roff, Urbis Malgy Coman, TfNSW	 Rebecca Willot, SI NSW Sandeep Amin, DesignInc	

		Action
1.	**Introduction**	Note
	EV introduced the meeting and the project	
2.	**Updated design**	Arup/SINSW
	MC presented the update to the design and described the design features. MC stated that bus demand for the school will be 15 buses spread over the staggered finish times of the school. **Action**: Arup to document the staggered start and finish times and bus travel demand to demonstrate the need to coordinate start/finish times with neighbouring schools for the purpose of bus planning.	

Prepared by: Michael Cavallaro

Date of circulation: 3 April 2020

Date of next meeting:

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	24 March 2020

		Action
2.1	**Bus turnaround**	Arup
	JB commented on the bus turnaround that storage on the turnaround would not be necessary, with it more important to provide buses priority when completing the turnaround manoeuvres. JB suggested that a roundabout would be a more preferable arrangement to ensure bus priority. MC suggested that priority controls to favour the buses would be installed. **Action**: Arup to share their review of the turnaround in light of the comments *Post meeting note: sketch provided with these minutes that now uses a roundabout.*	
2.1.1	**Driveways on bus turnaround**	Note
	MO requested more information about the driveways on the west side of the bus turnaround and what interaction they would have with bus turning manoeuvres. *Post meeting note: sketch provided annotating the use of these driveways and the proposed controls.*	
2.2	**Bus stops**	Arup
	JB and SS commented that the alignment of the bus stops, on a curve, may present issues for buses not having sufficient sight distance to pull out. JB asked if the bus stops can be straightened, MC stated this is not possible within the constraints of the site. JB commented that it is more preferable to have three independent operation bus stops, as opposed to four nose-to-tail bus stops. **Action**: Arup to prepare a geometry-based assessment of the sight distance between buses and cars.	
3.	**Future enrolments**	Arup
	MC presented the expressions of interest received for attending LLV in 2021 of which resulted in about 1,800 students. These have been mapped to show where students may be coming from once enrolments begin to increase. **Action**: Arup to prepare a map of the potential bus routes discussed and prepare a table of potential travel demand by direction/corridor to estimate travel demand.	

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	24 March 2020

		Action
3.1	**Bus planning**	Note
	TfNSW suggested that an outline of where students are travelling can be inferred from this data and they would then expect to see a plan for bus routes. JM and SS mentioned that school finish times could be coordinated with nearby schools to allow for the same buses to be used. SS stated that they have no free buses between 3-4pm.	
3.2	**Phasing of the school**	Note
	JL discussed the phasing of the school and how it is proposed to increase in student numbers. TfNSW suggested that SINSW share the enrolment numbers as soon as practicable as the lead time for additional buses funding could be 6-18 months. TfNSW requested that staff numbers changing over these phases be included in the Response to Submissions.	
4.	**565 Route**	Arup
	TfNSW observed bus travel demand for the Route 565 may be too high to allow student travel between Chatswood and Eton Road. This service is deemed a priority for Macquarie Park bound passengers. **Action**: Arup to develop a travel demand table to conform the scale of this potential issue and outline potential policy responses such as requesting that students are not able to board the 565 between Chatswood and Eton Road but potentially permitted to board on the other legs.	
4.1	**Shuttle service**	Note
	MC suggested that the design team were considering requesting a shuttle service between Chatswood Station and LLV. TfNSW and Transdev suggested that a shuttle between LLV and Lindfield Station would be more feasible as it would move more students. This shuttle could be a new route called 566.	
4.2	**Eton Road bus bay**	Note
	When discussing the use of the Eton Road bus bay, TfNSW reiterated their preference for no school buses to use this area but would consider additional route buses using this stop.	

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	24 March 2020

		Action
5.	**School catchment**	Arup
	MC mentioned that the school catchment is a work in progress. *Post meeting note: work is proceeding with SINSW on preparing this catchment which will enable the enrolment analysis.* **Action**: Analysis of potential catchment to be completed to outline potential bus routes to school that can be used to plan bus routes to school.	
6.	**Expectations of the Response to Submissions**	Note
	RL asked what would be expected in the Response to Submissions, MO noted that this project is fairly complex however outlining the strategy for dealing with the travel demand such as demonstrating bus travel demand and outlining a safe bus area design would support the approval pathway and conditions of consent.	
6.1	**Bus demand analysis**	Arup/SINSW
	RL suggested that bus demand analysis could be completed to review the impacts of students not being about to travel on 565 from Chatswood, the impact of the potential 566 bus route, and students ineligible / eligible for the SSTS / discounted school travel pass. **Action**: Arup to complete the route map, potential servicing strategy and travel demand table. Discuss and develop further with Transdev and present in the Response to Submissions.	

Minutes

ARUP

Project title	Lindfield Learning Village	Job number	251272
Meeting name and number	Lindfield Learning Village - Meeting with Council	File reference	
Location	Microsoft Teams	Time and date	2:00pm 9 April 2020
Purpose of meeting	To discuss footpath and cycling requirements for the area		
Present	Joseph Piccoli (JP), Ku-ring-gai Council Jim Turner (JT), Ku-ring-gai Council Emma Viljoen (EV), Savills Pablo Alvarez (PV), Design Inc Rebecca Lehman (RL), SINSW Jim Lewis (JL), SINSW Michael Cavallaro (MC), Arup James Turner (JRT), Arup Jack Gelabert (JG), Arup		
Apologies			
Circulation	Those present Rebecca Willott, SINSW		

Item		Action
1.	**Introduction** MC introduce the purpose of the meeting to update Council on the progress and project direction since last December. And to further consult with Council following their comments on footpath capacity and cycling in their submission.	Note
2.	**New Driveway entry** JT questioned whether behind the kerb build out (present existing) there may be Telstra services. MC noted the straightened kerb was restoring back to the original arrangement where the services were originally located, therefore should not be of impact to services.	Note

Prepared by: Michael Cavallaro

Date of circulation: 29 April 2020

Date of next meeting:

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	9 April 2020

Item		Action
3.	**Bus Drop-off area** JT asked whether Route 565 will run down to the new bus turning area to provide staff and students more direct access. MC stated that the project team had met with TfNSW and discussed this point. It was mentioned that the route could potentially come down to the school during school hours, whilst operate to Eton Road bus bay in other hours as normal, or an additional shuttle route to Lindfield Station would enter the site.	Note
4. **4.1**	**Parking** **Staff Parking** MC detailed that parking will be limited for staff with the school travel plan to be developed that aims to achieve low staff car mode share. The Travel plan will provide actionable measures to reduce car parking usage by staff.	Note
4.2	**DOPU areas for parking** JP asked whether the bus and car DOPU areas could revert into parking opportunities whilst not in operation. MC acknowledged these areas can be used as short-term parking when not in operation and that this parking arrangement would need to be managed by staff and signage.	Note
5. **5.1**	**Footpaths and connectivity** **Tracks in parks** JP noted that the 2km walking catchment would benefit from further connectivity to the south of the school. MC advised walking tracks through the national park like Symons Track existed but is not consider as a safe walking route to school on basis of the creek impacting access and track safety. JT raised a technical option could be to raise parts of track with a boardwalk. MC noted walking track improvements would have to be done by National Parks.	Note
5.2	**Key walking routes** MC went over the key walking routes that the shortest path analysis indicated. JP said black highlighted routs look reasonable.	Note

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	9 April 2020

Item		Action
5.3	**Eton Road footpath width** EV and JT noted that the stage 1 footpath works are 1.2m wide along Eton Road with the intention being to provide another 1.2m wide footpath on the opposite side of Eton Road to provide capacity for evacuation. As evacuation is not the proposed bushfire management plan, it was discussed to defer the second footpath works. JP noted that maybe there are some points that have conflicts, with limited visibility due to driveway grades.	Note
5.4	**Abingdon Road footpath** There is currently no footpath Abingdon Road to Shirley Road. JP acknowledged that Abingdon Road was a key route and that a number of submissions from the public have been received in the past stating that there is difficulty walking along Abingdon to sports field & school. It was agreed that the south side of Abingdon Road was determined to be the most likely side for a footpath. Council raised that the narrow cross section and steep nature of Abingdon Road makes it difficulty extend out footpaths. JP proposed at difficult areas, the kerb could be built out where possible. JT noted in areas where not possible, removal of parking if localised may be considered and accepted for the purpose creating safe walking route. RL suggestion small kerb buildouts, like a suspended boardwalk over the verge or road be constructed in these narrow sections to provide more space for the footpath. This could be easier to construct than a concrete buildout and removed if required	Note
5.5	**Walking site visit** RL pointed the project team hasn't done a site visit to understand the limitations of the area, including walking tracks and Abingdon Road. JP agreed adding a site visit could also aid in understanding how a footpath would be accommodated on Abingdon Road. Notes on challenging sections could be shared between Council and the project team to collaborate on solutions. **Action**: Arup to organise individual site visits and a format to share notes.	Arup May 2020

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	9 April 2020

Item		Action
6.	**Cycling**	Note
6.1	**Cycling Routes** MC presented the two routes (Lindfield 6 and Roseville 3) established in the 2012 Council bike plan. JP acknowledged that the proposed routes gives three directional approaches, noting that a possible addition via Bent Street could provide more connectivity.	
6.2	**Cycling facilities and environment** JP noted that the current environment along Abingdon Road is very unlikely to encourage cycling to school. JP noted that the bike plan in 2012 was completed prior to the newer bicycle planning guidelines and were done on a high level based on attractors and destinations. MC noted the plan stated for mixed-traffic routes, however it was agreed that mixed traffic routes were not suitable for school children. JP generally stated cycling facilities segregated from the road would be desirable and more attractive and required for a behaviour change towards cycling. JP stated that Grosvenor Road received a two-way off street mixed use path as it is a heavily trafficked road and the on-street cycle paths was not desirable.	Note

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	9 April 2020

Item		Action
6.3	**Abingdon Road width** Council noted that Abingdon Road already with constraints for provision of a footpath, would need beyond need to think how to provide for safe cycling on these paths. MC asked Council whether a two-way shared path would be considered appropriate by council for this road. JT noted a 2.5m share path would be difficult to provide continuously. JT also noted both walking and cycling path width are likely to affected at pinch points and the path may have to narrow at these points. JP mentioned at these locations, localised parking removal could be provided to allow the safe passage of cyclists. Regarding school travel on a cycle route, JT noted that for the majority of time, the path will operate in one direction and JP noted initial cycling demand from the school would not be substantial, and that these factors mean a lesser width could be considered. RL stated with children under 16 permitted to ride on the footpath, that providing cycling accessibility for students in this manner may sufficient for the initial demand expected. RL also noted monitoring of cycling demand after the school opens can be done to see if demand increases and upgrades are needed. JT informed Council's standard for 1.2m min for footpath and that MC could provide guidance on an appropriate width needed for the mixing of pedestrians and cyclist to allow passing. Council agreed with the approach for providing a suitable footpath first and then monitor the cycling take up. **Action**: Arup to propose a path width for Abingdon Road that considers student cyclist use.	Arup Response to Submissions

Minutes

Project title	Job number	Date of Meeting
Lindfield Learning Village	251272	9 April 2020

Item		Action
7.	**Funding and provision for footpath and cycling facilities** MC asked Council on funding options. JP mentioned that TfNSW, as part of their active travel funding, are sponsoring projects which are ready to be built. If detailed design was completed ready for the following financial year, there the footpath/cycling facilities may be able to receive funding from this programme. JP and JT summarised that Council only has a small amount of funding for footpaths and cycling programs and generally seek assistance from TfNSW for such projects. The installation of the Abingdon Road footpath is on Council's programme but has a low priority and is unlikely to be funded in time for the school's opening. RL and JL say they have a memorandum of understanding (MOU) with TfNSW and will further liaise with TfNSW to seek funding. **Action**: SINSW to review funding options and liaise with TfNSW and Council	SINSW
8.	**Access during construction and emergency** JL stated access for emergency vehicles (rural fire service) will still be provided through Dunstan Grove, connecting as a 'loop' back up to the south of the school's car DOPU area and access road. Council also asked for confirmation that the RtS responds to community concerns during construction. MC confirmed that an outline construction pedestrian traffic management plan is included in the updated RtS.	Note
9.	**Lindfield Station** JP noted that there may be a capacity constraint at Lindfield Station bus stop in terms of waiting area for students. JP mentioned that this was previously discussed with Arup. JP noted that the consideration of a shuttle route to Lindfield Station would need to consider wet weather protection for school children waiting and include consultation with TfNSW.	Note