

Site Audit & Traffic Management Plan

Southern Cross University, Lismore



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Revision Record

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1 Introduction

1.1 Background

Colliers has been engaged by Southern Cross University (SCU) to undertake a safety audit and assessment of the existing campus in Lismore. The purpose of the project is to proactively seek to improve the safety of pedestrian and vehicular movements and operations throughout the campus.

1.2 Scope

Colliers's review and assessment aim to identify potential safety issues and assess the risk within the site's pedestrian and vehicular movement network that could arise if not appropriately treated or managed. Specifically, the study focuses on areas of the campus where there are regular pedestrian and vehicular interaction.

The scope of the assessment includes the following:

- Review of background information of the site provided by SCU, including safety issues that have already been identified by SCU and other organisations on site.
- Undertake a site inspection to observe the operations of the car parking areas and general access arrangements.
- Identify the treatments implemented in response to the recommendations outlined in the Traffic Management Plan Report dated 13 September 2022.
- Utilise on-site observations and traffic engineering experience to identify potential safety issues and opportunities to improve safety.
- Identify the existing movement infrastructure and review the general suitability.
- Identify an overall strategy, through discussion with SCU, and other site stakeholders, that could feasibly be implemented to improve the safety of pedestrian and vehicular movements throughout the site.
- Review the current site movement networks and recommend connectivity improvements for when accessing the various buildings on site, circulating through the car parks and navigating the loading dock
- Summarise our findings with a report that shows our findings and recommendations. The report is to present an actionable strategy to improve safety within the site.

1.3 Site Inspection

A site inspection of the campus was conducted on Wednesday 13 May 2026.

1.4 Authorities and Key Stakeholders

The site is located within the area of the Lismore City Council.

Key stakeholders include:

- Southern Cross University
- Trinity Catholic College
- The Living School
- TAFE NSW
- Bus Operators
- Burrabi Place Child Care Centre

1.5 References

To assess the operational movement network arrangement of the existing site, the identified issues and recommended improvements have been reviewed and assessed against the following guidelines and planning documents:

- Australian Standard 2890.1:2004 Parking Facilities – Off Street Car Parking
- Australian Standard 2890.6:2022 Off-street parking for people with disabilities.
- Australian Standard 1428.1:2009 General requirements for access – New building work
- Austroads Guide to Road Design – Part 6 – Roadside Design, Safety and Barriers
- Austroads Guide to Road Design – Part 6A – Paths for Walking and Cycling
- Austroads Guide to Traffic Management Part 8: Local Area Traffic Management
- Austroads Guide to Road Safety Part 6: Road Safety Audit
- Disability Discrimination Act 1992
- National Construction Code (NCC) Part D4 Access for People with a disability.

The above standards and guidelines have been applied to areas of the site where safety issues have been identified, with the assessment findings informing the recommended treatments and modifications. Note: All images shown in this report are used for indicative guide purposes only and are not to be specifically referenced. Aerial backgrounds have been provided by either Nearmap or Google Maps with permissions.

1.6 Methodology

Colliers have adopted the following methodology and principles when reviewing, assessing and identifying opportunities to improve safety.

These are as follows:

- Liaise with SCU, and other key stakeholders to identify key needs of users.
- Attend site to observe pedestrian and vehicular movements to determine existing desire lines, access points and existing issues.
- Review the safety of the pedestrians, with respect to exposure to vehicle movements, driver awareness of pedestrians and measures input to reduce vehicular speeds.
- Review the safety of all users to the SCU Lismore campus with a view to improving safety with identifying these risks.
- Identify opportunities to improve safety within an area by reducing pedestrian exposure to vehicle movements, minimising pedestrian-vehicle conflicts, enhancing driver awareness, reducing vehicle speeds, and optimising parking arrangements.
- Provide recommendations on the prioritisation and timing of safety improvement measures based on the assessed risk levels.

2 Existing Transport Network Review

2.1 Access from External Network

There are four points of access on to the site from the wider public road network, as shown in Figure 2.1. The primary access points, that are identified through directional signage on the public road network are:

- From the north - University Road via Ballina Road and Kellas Street.
- From the east – Rifle Range Road, via Invercauld Road and Cynthia Wilson Drive
- From the south and west – Military Road, via Wyrallah Road and Dalley Street.

In addition to the primary access points identified above, a secondary access point was previously provided at the following location but is currently closed:

- From the west - Bright Street and College Road, via Ballina Road and Dibbs Street.

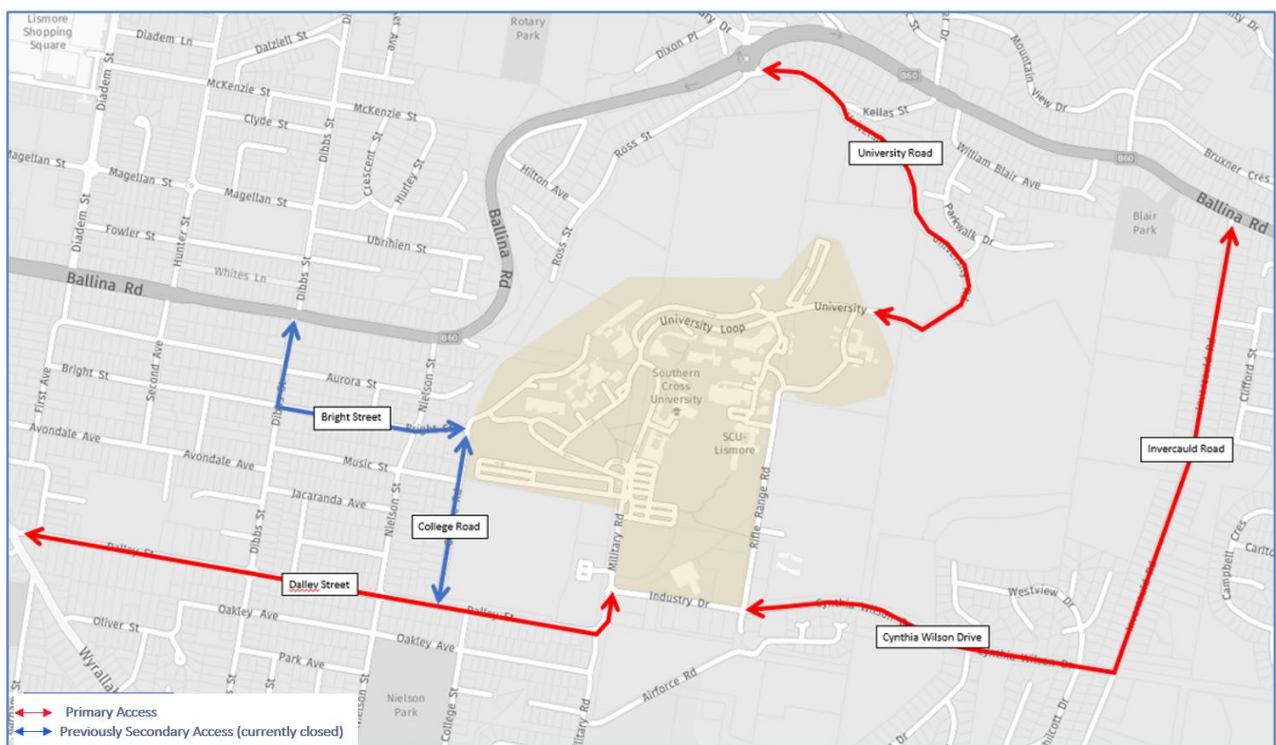


Figure 2.1: Site Access Locations

2.2 Access Road Environment

2.2.1 University Road

University Road accessed from Ballina Road (state highway) via a roundabout. It is subject to a 50 km/h speed limit outside the SCU campus site boundary and is marked with a 20 km/h speed limit within the campus. The road is a two lane (one in each direction), undivided local road. Carriageway widths vary between 7.3m and 8.0m. The topography of the road is such that there is an elevation drop of approximately 63m from Ballina Road to the site entry – this is equivalent to an average grade of 7.0% (1:14). The University new entry gateway signage is located 890m from Ballina Road, and immediately upon entry through the site gateway, the road grade increases to almost 16% (1:6.25).

Pedestrians are provided for via a dedicated route along the outbound side of the road. The pathway is formed as part of the road surface seal and is delineated from the traffic lanes via a surface mounted kerb as shown in Figure 2.2.



Figure 2.2: University Road (view westbound)

2.2.2 Rifle Range Road

Rifle Range Road accessed from Cynthia Wilson Drive (sub-arterial road) via a priority-controlled intersection. It is subject to a 50 km/h speed limit outside the SCU campus site boundary and is marked with a 20 km/h speed limit within the campus. The road is a two lane (one in each direction), undivided local (c class) road. Carriageway widths vary between 5.6m and 6.6m. The topography of the road is relatively flat with an average grade of less than 1% (1:100) up from Cynthia Wilson Drive to the north end of Rifle Range Road.

There is no formal footpath along Rifle Range Road between the Cynthia Wilson Drive intersection and the campus entry. At the campus entry, a footpath is provided along the western side of Rifle Range Road and extends northwards. A further footpath connects the student accommodation car park to the zebra crossing, which links to the footpath on the western side of Rifle Range Road.

Watts profile speed humps are provided at distances 88m, 325m and 460m from the intersection (the latter two are within the SCU site boundary).



Figure 2.3: Rifle Range Road (view northbound)

2.2.3 Military Road

Military Road provides the main access to the site. It is subject to a 50 km/h speed limit outside the SCU campus site boundary and is marked with a 20 km/h speed limit within the campus. The road is a two lane (one in each direction), undivided sub-arterial road with kerbside parking. Carriageway widths vary between 8.8m and 12.3m kerb to kerb – with through lanes varying between 8.8m and 9.5m. The topography of the road is relatively flat with an average grade of less than 1.5% (1:65) up from Dalley Street (sub-arterial road) to the north end of Military Road. A 20km/h road marking is provided at the site boundary to SCU Lismore campus. Pedestrians are then provided for via a dedicated footpath on the western side of the road within the verge.



Figure 2.4: Military Road (view southbound)

2.3 Public Transport Facilities

The SCU Lismore campus is serviced by a number of bus routes operated by Northern Rivers Buslines and Blanch's Bus Company. A review of Transport for NSW (TfNSW) bus routes and timetable information (observed 12 July 2026) identify five stops within the campus. These are presented in Figure 2.5 and Table 2.1.



Figure 2.5: Bus stop locations

Table 2.1 Bus Stop Summary

Stop ID	Stop Name	Service No.	Key Route Locations	Operating Times at SCU Stop	Frequency
248012	Rifle Range Road - NB	641X	Byron Bay to Lismore via Bangalow, Clunes & Bexhill	<u>Monday to Friday:</u> 5.00pm	Once a day
		682	Lismore to Goonellabah via Southern Cross University (Loop Service)	<u>Monday to Friday:</u> 9.12am – 6.12pm <u>Saturday:</u> 8.12am – 6.12pm <u>Sunday:</u> 10.07am – 6.07pm	1 hour
248013	Rifle Range Road - SB	682	Goonellabah to Lismore via Southern Cross University (Loop Service)	<u>Monday to Friday:</u> 7.24am – 6.09pm <u>Saturday:</u> 8:24am – 5.24pm <u>Sunday:</u> 8.47am – 4.49pm	1 hour
		683	Lismore Heights to Lismore City Centre via Southern Cross University (Loop Service)	<u>Monday to Friday:</u> 7.09am – 6.19pm <u>Saturday:</u> 8.24am – 5.24pm <u>Sunday:</u> 9.29am – 5.32pm	30 minutes
		640X	Lismore to Byron Bay via Ballina & Lennox Head	<u>Monday to Friday:</u> 5.00pm	Once a day
2480501	V Block	699	Goonellabah to Lismore (Flood Recovery Shuttle)	<u>Daily:</u> 9.15am – 5.15pm	1 hour
	Y Block	School	Trinity Catholic College	<u>Monday to Friday:</u> 8.20am – 9.10am 2.45pm – 3.30pm	6 Coaches 6 Coaches

2.4 Pedestrians

The site includes a network of pedestrian pathways through and around the site, leading to and from car parking areas and between buildings.

The topography of the site is such that there are a high number of pathways that require steps to achieve the change in height between buildings. As a result, not all pathways provide routes that comply with DDA standards. Figure 2.6 illustrates pedestrian pathways at the site including DDA compliant footpaths.

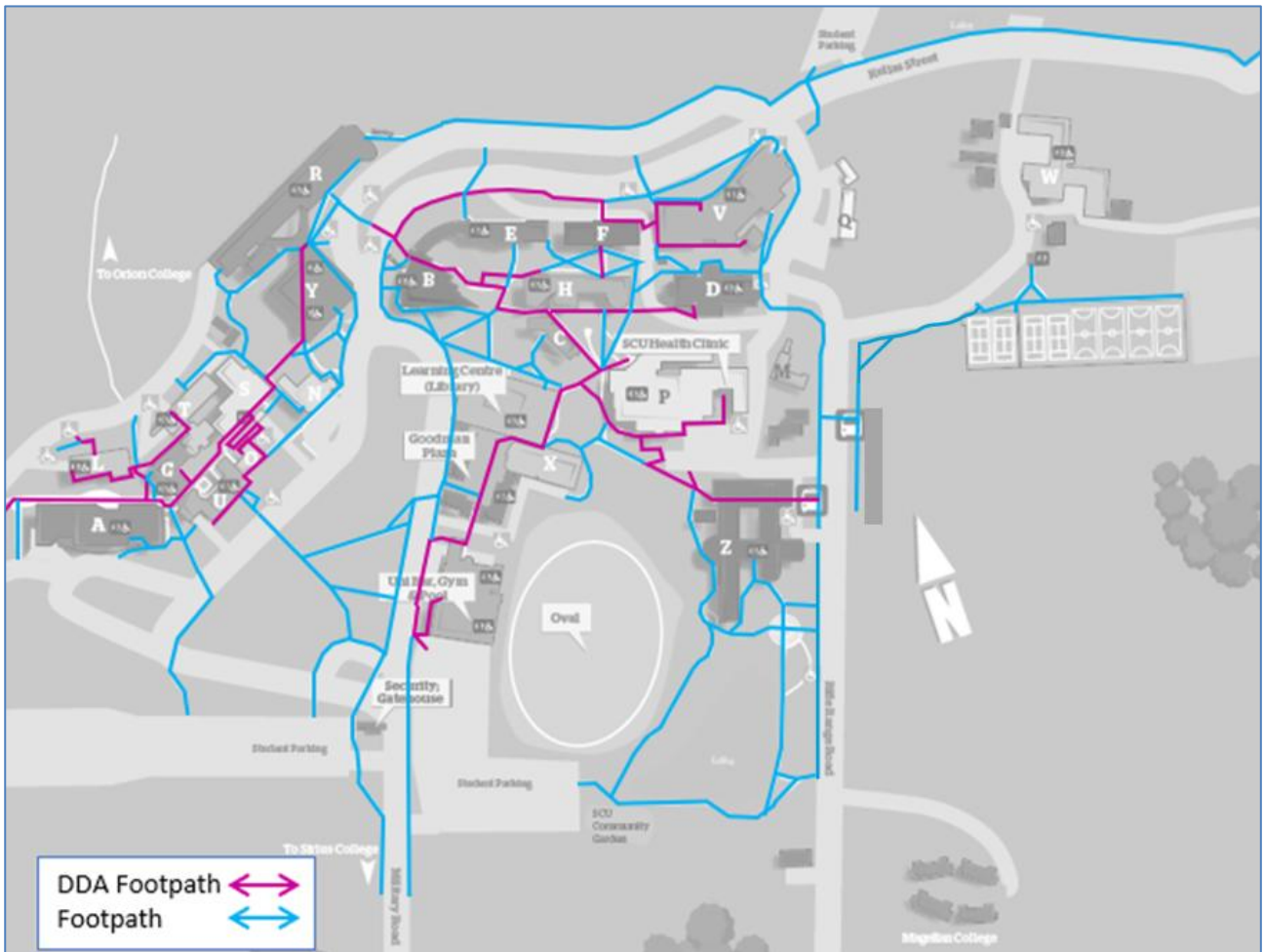
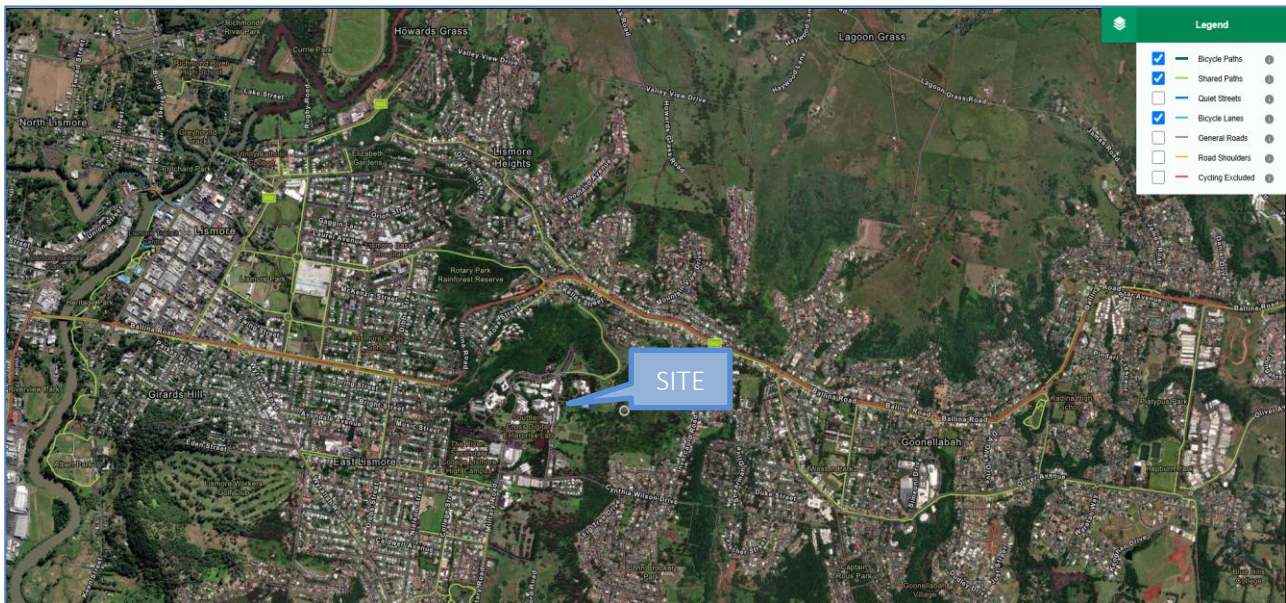


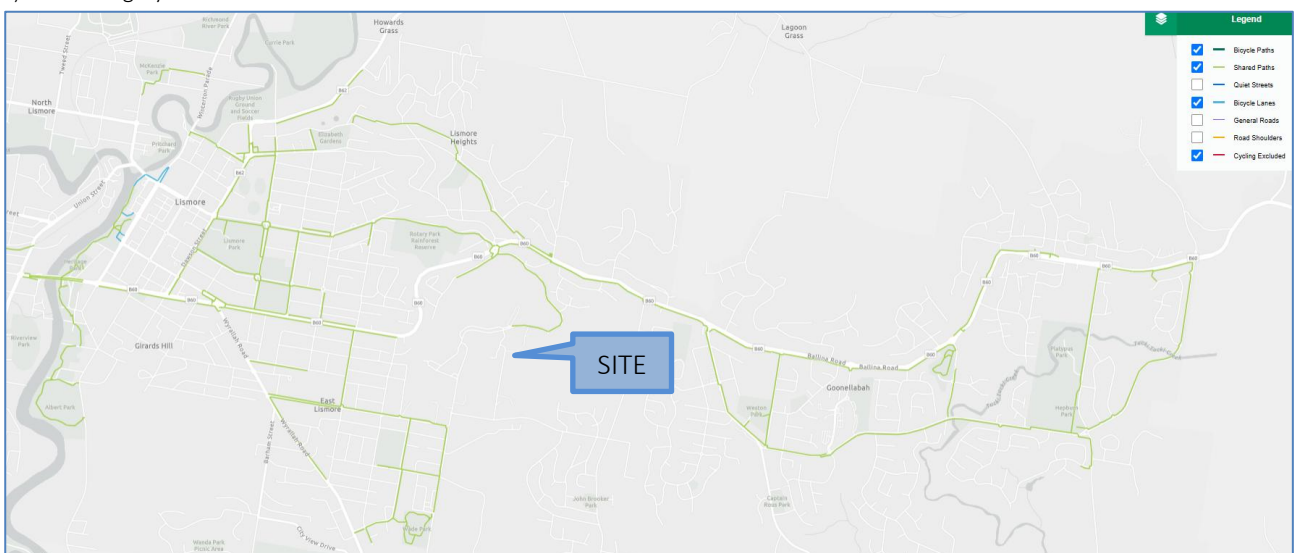
Figure 2.6: Pedestrian pathways

2.5 Cycle Facilities

There are no formal cycle routes (i.e., dedicated bicycle path or bicycle lane) leading to/from the University; however, TfNSW Cycleway Finder mapping identifies shared pathways along University Road to the north, connecting with Ballina Road and the wider network. Likewise, to the south west along Dalley Street connecting to Wyrallah Road. Figure 2.7 shows the routes surrounding the site.



a) Aerial Imagery



b) Map View

Figure 2.7: Cycle routes (Source: TfNSW Cycleway Finder)

Cycle parking racks are located at a number of locations throughout the campus. The cycle parking facilities are located outside the Gymnasium, Student Services and Blocks A and V.. These locations are shown in Figure 2.8. All racks are ground mounted and allow for front and rear wheel locking of cycles.



Figure 2.8: Cycle parking locations

2.6 Car Parking Arrangements

There are three public car parks located near the site entry points, comprising one car park accessed from University Road and two car parks accessed from Military Road.

In addition to the public car parks and other off street parking areas, on-street parking areas are located along University Loop and Rifle Range Road. Accessible car parking and loading zones are available in close proximity to the buildings. The locations of the off-street and on-street car parks are presented in Figure 2.9.



Figure 2.9: Car park locations

Parking Permits

All Southern Cross University staff and students must display a parking permit in their vehicle windscreen if they wish to park their cars on university grounds.

All permit rules, regulations and processes apply to all on site stakeholders.

Electric Vehicles

There are total of six EV charging stations across the site, with four chargers located within the Military Road car park available for general public use and two chargers located at W Block reserved for University operational vehicles only.

3 Site Assessment

3.1 Site Inspection

A site inspection of the car park and servicing areas was conducted on Wednesday 13 May 2026. The inspection was conducted over a full day. The weather conditions during the inspection were dry and clear. A series of photographs were taken as a part of the inspection to provide information on existing conditions relevant to the review.

A meeting between Colliers and the key stakeholders to discuss specifics of each stakeholder requirements was also held on Wednesday 13th May 2026 prior to the site inspection to understand third party user requirements and operations.

Figure 3.1 and Figure 3.2 illustrates the current map and proposed Master Plan Map of the site.



Figure 3.1: Current Map of the Site

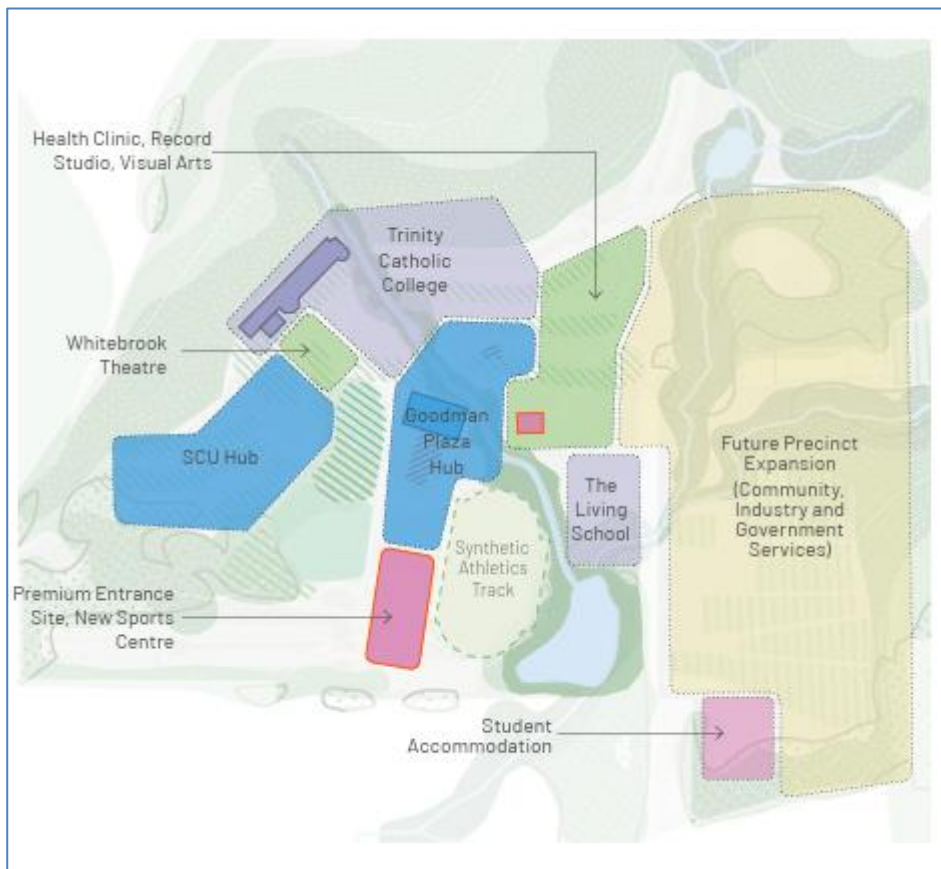


Figure 3.2: Master Plan Map of the Site

3.2 Effect of the Proposed Southern Cross Regional Athletics Facilities

The proposed Southern Cross Regional Athletics Facility involves the upgrade of an existing sporting facility within the established SCU campus. The campus is supported by an established internal road network, multiple access points, extensive parking, bus facilities and pedestrian infrastructure, which were originally planned to accommodate significantly higher student, staff and visitor numbers than currently occur. As the proposal represents an enhancement of an existing sporting use rather than the introduction of a fundamentally new land use, it is expected to continue supporting existing sporting, university, school and community activities. Accordingly, day-to-day traffic generation is expected to remain same and dispersed throughout the day, with no significant impact anticipated within the campus.

School carnivals and organised events may result in temporary increases in traffic and parking demand; however, these activities are consistent with the existing operational context of the campus and can be accommodated through the use of charter buses and the substantial spare parking capacity available across the campus. Occasional regional or state-level events can be managed *through event-specific traffic and parking management measures*, including designated parking areas, temporary bus zones, signage, traffic controllers and staged arrival and departure arrangements.

Importantly, the proposal does not require any alteration to transport or traffic arrangements outside the boundaries of the existing university campus. The surrounding public road network, campus access points, intersections, public transport infrastructure and on-street parking arrangements are expected to continue operating under existing conditions. Accordingly, the proposed facility can be accommodated within the existing campus transport and parking infrastructure and is not expected to result in significant adverse traffic or transport impacts.

Accordingly, from a traffic and transport perspective, the proposal satisfies the requirement under section 3.47(2)(a) of the State Environmental Planning Policy (Transport and Infrastructure) 2021 that development carried out without consent within an existing university must not require an alteration of transport or traffic arrangements outside the boundaries of the university. This conclusion supports assessment of the proposal under Part 5 of the Environmental Planning and Assessment Act 1979 through the Review of Environmental Factors process, subject to satisfaction of the other applicable statutory requirements.

4 Site-Wide Risk Assessment

Colliers has undertaken a comprehensive risk assessment of the internal road network and associated traffic management arrangements at the SCU Campus. The assessment considered existing site conditions, observed traffic and pedestrian movements, the road environment, existing traffic management measures and potential safety risks identified during the site inspection and review process.

The outcomes of the risk assessment, including the identified hazards and associated risk considerations, have been reviewed to identify appropriate mitigation measures and prioritise recommended treatments. The assessment also considers the potential funding requirements and implementation priorities associated with the recommended treatments to assist with future planning and delivery.

A summary of the risk assessment criteria, risk assessment findings, together with the recommended treatments, is provided in the following sections.

4.1.1 Risk Assessment Criteria

The road safety issues identified as part of this risk assessment have been assigned a ranking, as per the methodology contained within Austroads Guide to Road Safety Part 6: Road Safety Audit, in order to provide an idea of priority for action. The different ranks include:

- Negligible
- Low
- Medium
- High
- Extreme

These rankings were determined through a risk assessment, using a combination of crash likelihood and severity (i.e. consequence of resulting crash). The crash likelihood profile, severity profile and overall risk matrix adopted for the purposes of ranking the safety issues is summarised Table 4.1, Table 4.2 and Table 4.3 respectively. Once again, these are based primarily on the guidance in Austroads Guide to Road Safety Part 6.

Table 4.1: Likelihood Profiles (as per Austroads GRS Part 6)

Frequency	Description
Almost Certain	Occurrence once or more per quarter
Likely	Occurrence once per quarter to once per year
Possible	Occurrence once per year to once every three years
Unlikely	Occurrence once every three years to once every seven years
Rare	Occurrence less than once every seven years

Table 4.2: Crash Severity Profiles (as per Austroads GRS Part 6)

Severity	Description
Fatal	Likely death at scene or within 30 days of the crash
Serious	Admitted to hospital
Moderate	Major first aid and/or presents to hospital (not admitted)
Minor	Minor first aid
Insignificant	Likely trivial injury or property damage only

Table 4.3: Risk Matrix (Replication of Figure 10.2 from Austroads GRS Part 6)

			Severity				
			Insignificant	Minor	Moderate	Serious	Fatal
			Property Damage	Minor First Aid	Major first aid and/or presents to hospital (not admitted)	Admitted to Hospital	Death within 30 days of the crash
Likelihood (includes exposure)	Almost Certain	One per quarter	Medium	High	High	Extreme (FSI)	Extreme (FSI)
	Likely	Quarter to 1 year	Medium	Medium	High	Extreme (FSI)	Extreme (FSI)
	Possible	1 to 3 years	Low	Medium	High	High (FSI)	Extreme (FSI)
	Unlikely	3 to 7 years	Negligible	Low	Medium	High (FSI)	Extreme (FSI)
	Rare	7 years +	Negligible	Negligible	Low	Medium (FSI)	High (FSI)

FSI – Denotes where the level of risk also includes Fatal or Serious Injuries.

Austroads GRS Part 6 suggests the corresponding priorities for mitigation, based on the selected ranking, should be as follows:

- Negligible – no action required.
- Low – should be corrected.
- Medium – should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high.
- High – should be corrected or the risk significantly reduced, even if the treatment cost is high.
- Extreme – should be corrected regardless of cost.

No definitive guidance can be given as to the respective monetary values of the terms ‘low’, ‘moderate’ or ‘high’ regarding treatment costs, but it is expected that consideration against the total project cost (or total benefit) would be an important factor when categorising mitigation of each risk.

4.1.2 Priority Level of Risk Mitigation

The identified risks are assessed based on their relative priority, considering the potential severity of the consequence and the likelihood of occurrence. The priority level provides an indication of the urgency for addressing each risk and assists in determining the appropriate mitigation response. The assigned priority level for each identified risk represents the relative importance and urgency of addressing the issue, with

higher priority levels requiring more immediate mitigation. The priority levels adopted for this assessment are summarised below.

Table 4.4: Priority Level

Priority Level	Description	Recommended Action
Priority 1 – Very High	Risks requiring immediate attention due to the potential for significant impacts on safety and operations	Immediate mitigation measures should be implemented to reduce the risk. Timeline: within 1 year.
Priority 2 – High	Risks requiring urgent consideration, with the potential to result in serious impacts if not addressed.	Mitigation measures should be prioritised and implemented as soon as practicable. Timeline: 1-3 year.
Priority 3 – Moderate	Risks requiring management and improvement measures to reduce potential impacts.	Appropriate mitigation measures should be considered and monitored. Timeline: 3-5 year.
Priority 4 – Low	Risks with limited potential impacts that can generally be managed through standard procedures.	Monitor the risk and implement improvements where practical. Timeline: 5-10 year.
Priority 5 – Very Low	Risks with minimal potential impacts and unlikely to significantly affect safety or operations.	No immediate action required; continue to monitor through normal processes. Timeline: Once budget is available.

4.1.3 Risk Register

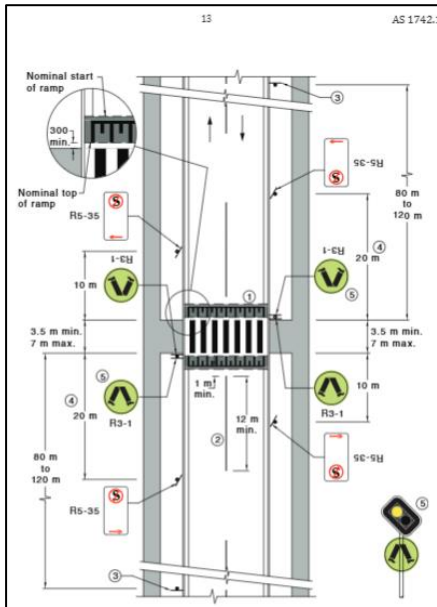
A summary of the key risk assessment findings and recommended treatments is provided in the Risk Register presented in Table 4.5. For ease of identification, the site has been apportioned into 14 key areas as identified in Figure 4.1 below.



Figure 4.1: Site Areas Map

Table 4.5: Risk Register

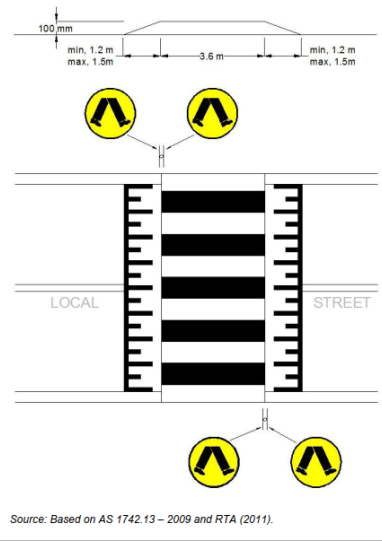
No.	Risk Item	Location on Site Area Plan	Risk Description	Risk Level	Risk Mitigation	Risk Level- Post - Mitigation	Timing of Implementation	Priority Level
1	Bus Parking Location Impeding Traffic Flow	University Loop	The current bus parking arrangement on Kellas Street accommodates only one bus; however, up to three buses are currently parked in this area. This reduces the effective carriageway width and restricts the free flow of traffic along this section of road. The presence of parked buses narrows the available space for passing vehicles and may force drivers into conflict with oncoming traffic or pedestrians due to reduced visibility and obstructed sightlines. Buses regularly park and block visibility to the zebra crossing immediately to the north, which would increase the risk of a child being struck.  	<u>Severity:</u> Serious <u>Likelihood:</u> Likely <u>Outcome:</u> Extreme (FSI)	Relocate bus parking to the proposed location (as shown below) within the Kellas Street carpark area to remove the conflict with through traffic. Car parking opposite to the proposed bus parking is to be staff parking only. The proposed location accommodates the swept path requirements for the bus. Provide appropriate bus parking signs and line markings at the new location. Assess impact on car parking supply and tree removal.  A functional layout of the bus parking area at this proposed location is provided in Appendix A. Refer to Appendix A for further details.	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	The implementation of the risk mitigation is considered as a priority due to potential risk.	1

2	Inadequate Crossing Type: Zebra Crossing at school crossing	Areas 6 & 9 (University Loop) and Area 3 (Rifle Range Road)	Pedestrian crossing is provided as zebra crossings in location of University Loop serving high volumes of school students. At Areas 6 and 9, the crossing is on a two-way road used by school students. The existing zebra crossing arrangement does not incorporate the required kerb ramps or Tactile Ground Surface Indicators (TGSi). Installation of compliant kerb ramps requires sufficient space for both the ramp transition (tie-in) to the roadway and the adjoining footpath width. The current crossing location lacks adequate space to accommodate these requirements. Accordingly, provision of additional footpath platform area (e.g. a concrete extension) will be necessary.  	<u>Severity:</u> Moderate <u>Likelihood:</u> Possible <u>Outcome:</u> High	Upgrade zebra crossings at Areas 6, 9 and Area 3 to wombat crossings in accordance with relevant Austroads Guides and AS 1742.10. Ensure adequate stormwater drainage is incorporated. Adequate stormwater drainage must be incorporated into the design. The wombat crossing platform may be constructed using either bituminous or concrete materials, subject to project requirements and site condition. Review and raise sign heights at Area 3 as per AS 1742.2.  Typical wombat crossing layout (Source: 1742.10)	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	This particular mitigation measure is proposed as a short-term solution. In the long term, all zebra crossings at the site should be upgraded to wombat crossings to improve overall pedestrian safety.	2
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At Area 3 on Rifle Range Road, a zebra crossing is located immediately in front of a bus stop, creating a safety risk for crossing pedestrians. Signage height at Area 3 may also be insufficient given bus movements.



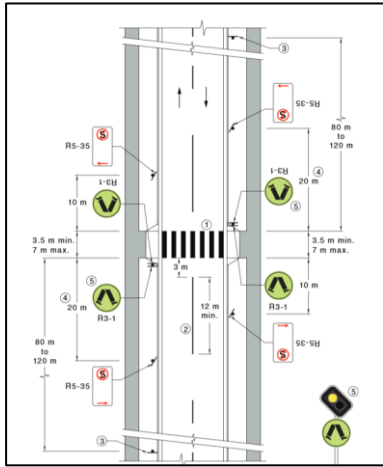
Figure 7.8: Indicative dimensions of a wombat crossing



Design Example:



3	Absence of Formal Pedestrian Crossing Facility	Area 2 (Childcare Centre, Rifle Range Road)	At Area 2 on Rifle Range Road, in front of the childcare centre, there is no formal crossing for students to access the sports area. Furthermore, the absence of a designated crossing creates safety concerns for parents and children, including those with prams, particularly where parked vehicles on the eastern side result in additional visual obstructions.   At the Living School car park in Area 2, no pedestrian crossing is provided to connect the pedestrian walkway between the bus stops and the Living School, which creates a safety concern for student movements.	<u>Severity:</u> Moderate <u>Likelihood:</u> Possible <u>Outcome:</u> High	Provide a wombat crossing on Rifle Range Road (Area 2), in front of the childcare centre and adjacent to the first parking bay. The crossing should ensure clear visibility in both directions and provide a safe, continuous connection between footpaths suitable for pedestrian use. The wombat crossing should be positioned clear of the parked vehicle turn-out manoeuvring area to avoid conflicts with pedestrian. Kerb ramps are to be provided at all new crossing locations in accordance with AS1428. A formal zebra crossing should be provided at the Living School car park to establish a safe pedestrian connection to the bus stop.	<u>Severity:</u> Moderate <u>Likelihood:</u> Rare <u>Outcome:</u> Low	This specific mitigation measure is proposed as a short-term solution. In the long term, all zebra crossings at the site should be upgraded to wombat crossings to improve overall pedestrian safety.	2
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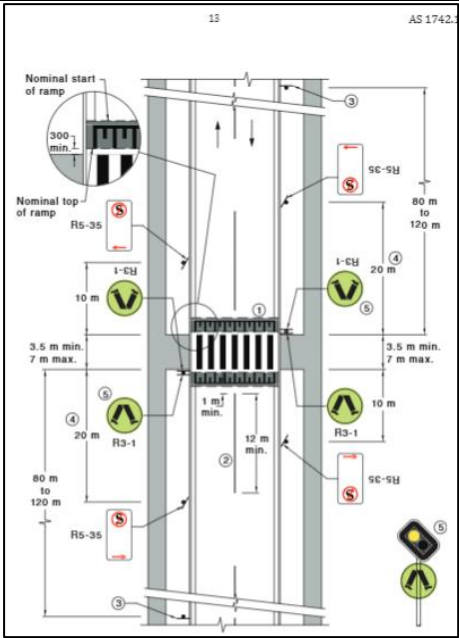
					 Typical zebra crossing layout (Source: AS 1742.10)			
4	Absence of Formal Pedestrian Crossing Facility	Area 14 University Road Intersection	At Area 14, a footpath network exists along University Road, but no formal pedestrian crossing facility or refuge pedestrian crossing facility is provided at the Rifle Range Road intersection that would aid access to and from the northern car park. 		Provide a formal zebra crossing (short to medium-term) at Area 14 to connect the existing footpath network.		This specific mitigation measure is proposed as a short-term solution. In the long term, all zebra crossings at the site should be upgraded to wombat crossings to improve overall pedestrian safety.	3

			At north of Area 14, the existing refuge pedestrian crossing will not function as a formal crossing for connectivity between the car parks and the university precinct to the south. Its current proximity to the intersection presents a potential safety risk. 		Provide a formal zebra crossing (short-term) or a wombat crossing (at long-term) to connect the car parks and the university precinct to the south.			
5	Missing Pedestrian Crossing Signage	Areas 6 & 9 (University Loop)	Pedestrian crossing signage is absent on one or both sides of the road at zebra and wombat crossing locations. The road operates as a two-way carriageway; however, signage is only provided in one direction, leaving approaching drivers from the opposing direction without adequate warning of the crossing ahead. 	<u>Severity:</u> Moderate <u>Likelihood:</u> Possible <u>Outcome:</u> High	Install 'Pedestrian Crossing' warning signs on both sides of the road and in both directions (for two-way road) of travel at the crossing locations (where required). Ensure sign placement complies with AS 1742 lateral and longitudinal placement requirements. Signage location for wombat crossing or zebra crossing is shown below.	<u>Severity:</u> Moderate <u>Likelihood:</u> Rare <u>Outcome:</u> Low	This mitigation measure is not limited to the location shown and applies to all existing zebra crossings and wombat crossings at the site	2

Two-way road section of University Loop:

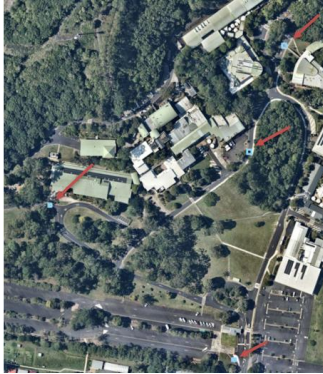
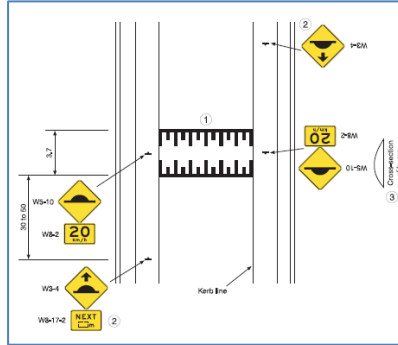


One-way road section University Loop:



Signage location of wombat crossing (Source: AS 1742.10)

6	Missing Give Way Hold Line Marking and Signage at Intersections	Areas 9 & 12	Give way line marking and associated signage are absent at intersection approaches in Areas 9 and 12. Without these controls, drivers have no clear indication of their priority status relative to other road users, creating ambiguity about right-of-way in a shared environment with pedestrians and cyclists. The intersection at Area 9 is used by school parents, so clear indication of the give-way to be provided to avoid any confusion or incident. Area12:  	<u>Severity:</u> Moderate <u>Likelihood:</u> Possible <u>Outcome:</u> High	Install 'Give Way' signs and/or line markings at all shown intersection approaches in Areas 9 and 12, in accordance with AS 1742.2 and AS 1742.3. Location of Give-way Hold line in Area12:  	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	This mitigation measure is not limited to the location shown and applies to all existing priority-controlled intersections at the site, where required.	2
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			Area 9: 		Location of Give-way Hold line in Area 9: 			
7	Missing Signage and Pavement Marking at Raised Platforms	Areas 12, 13; Between Areas 6 & 9	Raised traffic platforms at multiple locations lack appropriate advance warning signage and required pavement markings. Drivers approaching these platforms, particularly at night may not receive adequate warning of the vertical change in road level, creating a risk of vehicle collision with the platform edge. 	<u>Severity:</u> Minor <u>Likelihood:</u> Likely <u>Outcome:</u> Medium	Install advance warning signs in both directions at all raised platform locations in accordance with AS 1742.2. Provide retroreflective edge line markings and platform delineation.  Typical raised platform layout (Source: AS 1742.2)	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	This mitigation measure is not limited to the location shown and applies to all existing raised platform at the site.	3

			Area 13:  Area 12:   Between Area 6 & 9:		Design Example: 		
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8	Missing Directional Arrow Pavement Marking and 'No Entry' Signage on One-Way Road Exit	Area 12; Kellas Street Carpark Exit	Directional arrow pavement markings are absent on one-way road sections at Area 12. While 'No Entry' signage is present, the absence of directional arrow markings on the carriageway means drivers, particularly those unfamiliar with the site may inadvertently travel in the wrong direction. Area 12: 	<u>Severity:</u> Minor <u>Likelihood:</u> Possible <u>Outcome:</u> Medium	Install directional arrow pavement markings at one-way road sections in Area 12, in accordance with AS 1742.2.	<u>Severity:</u> Minor <u>Likelihood:</u> Rare <u>Outcome:</u> Negligible	This mitigation measure is not limited to the location shown and applies to all one-way exit point.	3
9	Missing Kerb Ramps at Pedestrian Crossings	Kellas Street Carpark	Kerb ramps are absent at zebra crossing locations at the Kellas Street carpark area. Absent of kerb ramp creates a trip and fall hazard. Without kerb ramps, pedestrians are unable to access the crossing safely.	<u>Severity:</u> Minor <u>Likelihood:</u> Likely <u>Outcome:</u>	Install compliant kerb ramps on both sides of all pedestrian crossings where absent, in accordance with AS 1428. Ensure ramp gradient does not exceed 1:8 (preferred 1:10) and ramp width is a minimum of 1.2 m (preferred 1.5 m). Provide tactile ground surface indicators (TGSIs)	<u>Severity:</u> Moderate <u>Likelihood:</u> Rare <u>Outcome:</u>	This mitigation measure is proposed as a short-term solution. In	3

			 At Kellas Street carpark: 	Medium at the top of kerb ramps (where required) in accordance with AS 1428.4.1. Ensure kerb ramp alignment is consistent with the pedestrian crossing path. <i>This mitigation measure is proposed for short term basis. In long term basis, all zebra crossings at the site are proposed to upgrade into wombat crossings.</i>	Low	long term, all zebra crossings at the site should be upgraded to wombat crossings to improve pedestrian safety.	
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10	Mis-alignment of Pedestrian Crossing and Kerb Ramp	Area 12	At Area 12, the alignment of the pedestrian crossing and the associated kerb ramps are not consistent, meaning the direct pedestrian path across the crossing does not align with the ramp entry/exit points. This creates a situation where pedestrians, particularly those using wheelchairs or prams are directed off the crossing path. Additionally, as this route is used by buses, the current pedestrian crossing alignment may present safety concerns for pedestrian movement.  	<u>Severity:</u> Minor <u>Likelihood:</u> Likely <u>Outcome:</u> Medium	Reconstruct the kerb ramps at Area 12 to achieve correct geometric alignment with the pedestrian crossing path, in accordance with AS 1428. Reposition the pedestrian crossing markings as necessary to align with the corrected kerb ramp position and maintain the appropriate offset from the intersection. Ensure TGS1 and its placement is consistent with the realigned crossing. 	<u>Severity:</u> Moderate <u>Likelihood:</u> Rare <u>Outcome:</u> Low	This mitigation measure is proposed as a short-term solution. In the long term, all zebra crossings at the site should be upgraded to wombat crossings to improve overall pedestrian safety.	3
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11	Reduced Pedestrian Crossing and misaligned kerb ramp	Area 12	Additionally, the zebra crossing at the access of the carpark entry at Area12 has reduced opening at the location of the median. Also, it is not correctly aligned to the kerb ramp and also the pavement marking is faded.   	<u>Severity:</u> Minor <u>Likelihood:</u> Likely <u>Outcome:</u> Medium	Reconstruct the kerb ramps at Area 12 to achieve correct geometric alignment with the pedestrian crossing path, in accordance with AS 1428. Median is to be removed at the location of the pedestrian crossing to achieve required full width crossing. Alternatively, widen the access to provided 1.2m wide island. Additionally, provide the clear directional pavement markings for guide the drivers.	<u>Severity:</u> Moderate <u>Likelihood:</u> Rare <u>Outcome:</u> Low	This mitigation measure is recommended for implementation in the near future.	3
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12	Missing Speed Limit Signs or pavement marking and Non-Standard Line Marking	Area 1 Access; Rifle Range Road (Area 2)	At the Area 1 access point, no speed limit signage or pavement speed marking (20 km/h) is provided at the entry. This may cause confusion for drivers regarding the applicable speed on this road. Additionally, the stop line marking does not conform to AS 1742.2.   On Rifle Range Road (Area 2), adjacent to a childcare centre and school, there is an absence of speed limit signs, speed limit pavement marking, and directional signage in both directions of travel.	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	Install speed limit signs (20 km/h) at Area 1 access and on Rifle Range Road in accordance with AS 1742. Also, provide 20 km/h pavement speed legend markings at appropriate intervals. Reconstruct the stop line marking at Area 1 access as shown below:  Install speed limit signs (20 km/h) at Area 1 access and on Rifle Range Road. Provide directional signage or pavement marking in both directions on Rifle Range Road along with speed limit signage.	<u>Severity:</u> Minor <u>Likelihood:</u> Rare <u>Outcome:</u> Negligible	This mitigation measure is not limited to the location shown and applies to all the access locations of the precinct. Speed limit signs (20 km/h) are required to be installed at all access points of the precinct. Additionally, where a one-way road connects to a two-way road, directional arrow markings are required.	3
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On Rifle Range Road (south of Area 2), there is an absence of speed limit pavement marking. Although a 20 km/h speed limit sign is currently installed, it is not supported by a traffic island, making it vulnerable to potential vehicle impact.



13	Sight Distance Obstruction at Pedestrian Crossing	Area 8	<i>Maintenance Issue:</i> Vegetation adjacent to the pedestrian crossing at Area 8 obstructs driver sightlines to pedestrians approaching or waiting to cross. While the posted speed limit is low, the sight obstruction reduces effective reaction time and may prevent drivers from identifying pedestrians in time to stop safely.  	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	Trim or remove vegetation within the required sight triangle at Area 8, ensuring clear sight distance is available. Implement a vegetation management plan for ongoing maintenance of sightlines at all pedestrian crossing locations. <i>Long term option would be to close off access to the rear car park, which would mean that vehicles would not cross the pedestrian desire line at this location. The then redundant parking area to the rear could be utilised for facilities for the athletics track development or extensions to the existing plaza.</i> Additionally, introduce no through road sign visible at the entry from Military Road.	<u>Severity:</u> Minor <u>Likelihood:</u> Rare <u>Outcome:</u> Negligible	This mitigation measure is to be implemented as part of ongoing site maintenance. Long term option to be considered.	4
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14	Bus Parking Location	Riffle Range Road	On Riffle Range Road, buses are parked facing the opposite direction of traffic, which may create safety risks during entry and exit from the parking space, as well as for other vehicles travelling along this section of road. 	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	Minimum two buses can be accommodated on the opposite side of the road where parking aligns with the direction of bus entry and exit movements. This arrangement would improve manoeuvrability, reduce conflicts with through traffic, and enhance overall safety for both bus operations and other road users. 	<u>Severity:</u> Minor <u>Likelihood:</u> Rare <u>Outcome:</u> Negligible		4
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15	Site Entry Signage and road marking	Riffle Range Road, University Road and Military Road	The campus has a speed limit of 20 km/h. The campus entries via Riffle Range Road, University Road and Military Road currently include either 20 km/h pavement markings or speed limit signage. However, to provide consistent and clear guidance to drivers, both 20 km/h speed limit signage and pavement markings are to be provided. Riffle Range Road (missing pavement marking speed limit):  University Road (missing speed limit signage):  Military Road (missing speed limit signage): 	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	20 km/h speed limit signage is to be provided at the site entries via University Road and Military Road, while 20 km/h pavement markings are to be provided at the site entry via Riffle Range Road. Additionally, both 50 km/h speed limit signage and pavement markings are to be provided at the site exits. Sign at the entry to the campus:  Sign at the exit from the campus: 	<u>Severity:</u> Minor <u>Likelihood:</u> Rare <u>Outcome:</u> Negligible	This mitigation applies to all entries to the site.	3
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16	Solar powered Digital Speed limit sign	University Road near Area 1	It was observed that whilst the speed limit of the campus is 20kph, the solar powered digital speed check sign on University Road is set incorrectly to advise drivers to obey a 40kph speed limit, immediately before the location where the 20kph speed limit starts. 	<u>Severity:</u> Minor <u>Likelihood:</u> Unlikely <u>Outcome:</u> Low	Reconfigure the solar powered digital speed limit sign to read 20kph to minimise confusion of correct speed.	<u>Severity:</u> Minor <u>Likelihood:</u> Rare <u>Outcome:</u> Negligible	This mitigation measure is recommended for implementation in the near future.	2
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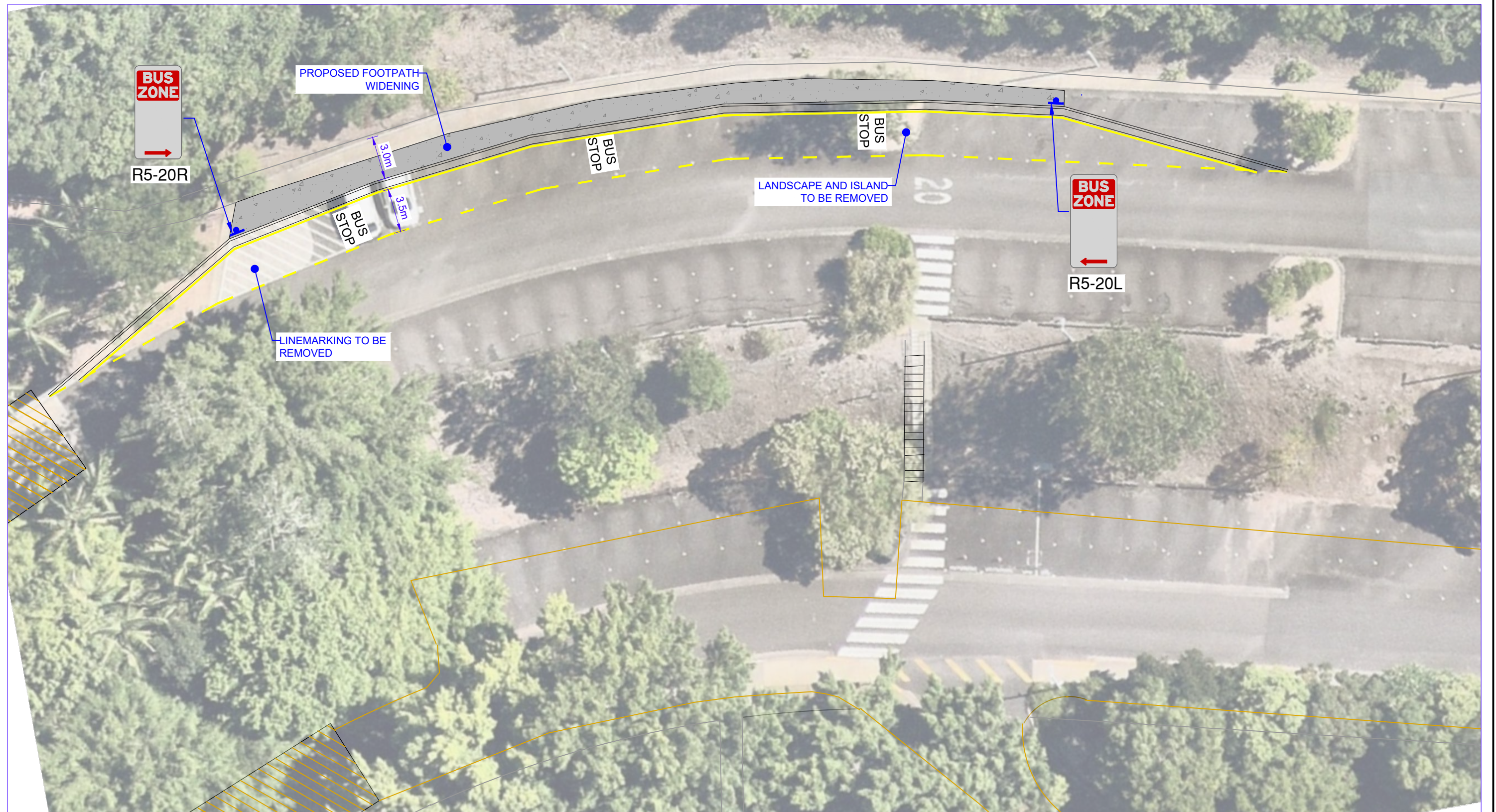
5 Conclusion

Colliers declares that we have reviewed the site and identified the safety and operational deficiencies outlined in the preceding sections.

It should be noted that while every effort has been made to identify potential safety hazards, no guarantee can be made that every deficiency has been identified. We recommend that points of concern be investigated, and necessary corrective actions are undertaken.

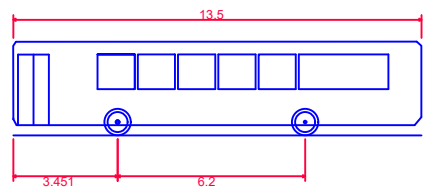
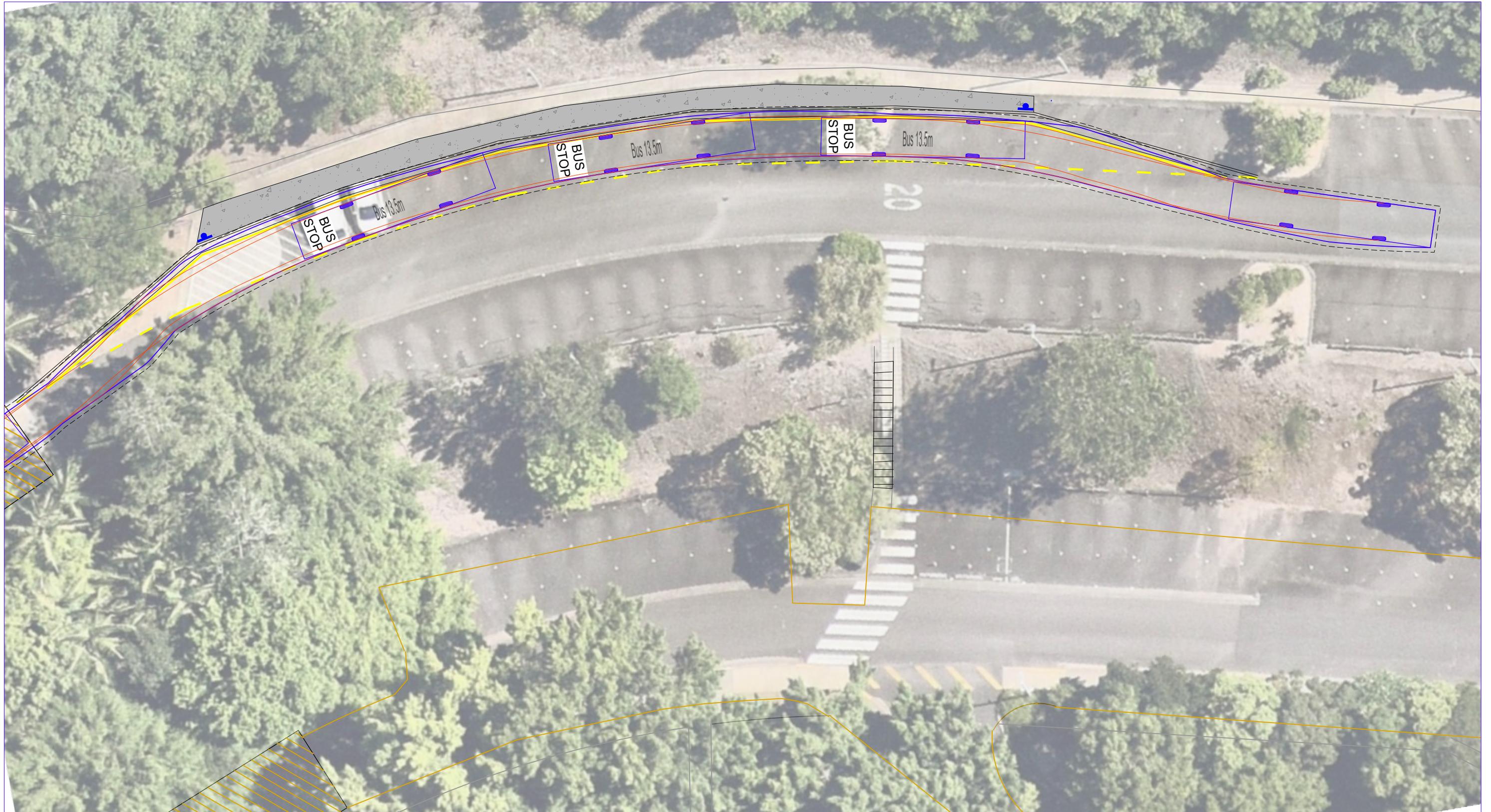
Colliers advises that a staged implementation approach could be adopted to minimise implementation costs, having regard to the recommended timing for implementation identified in this report.

Appendix A – Functional Layout of Bus Parking



**PRELIMINARY
ADVICE ONLY**
15 July 2026

				SCALE 0 2.5 5 7.5 10 12.5m SCALE 1:250 AT ORIGINAL SIZE			Colliers Colliers International Engineering & Design (TTMC) Pty Ltd ABN 65 010 868 621 LEVEL 8, 369 Ann Street, BRISBANE QLD 4000 P.O. BOX 12015, BRISBANE QLD 4003 T: (07) 3327 9500 F: (07) 3327 9501 E: ttmbri@ttmgroup.com.au W: www.ttmgroup.com.au			PROJECT MILITARY ROAD, EAST LISMORE 4280 NSW DRAWING TITLE CONCEPT LAYOUT AERIAL AND DIMENSIONS			PROJECT NUMBER 26GCT0020 ORIGINAL SIZE A3	
				NORTH			CLIENT SOUTHERN CROSS UNIVERISTY			DRAWING NUMBER 26GCT0020-01 REVISION A				
REV. DATE AMENDMENT DESCRIPTION DRAWN CHECKED APPROVED							DATE 15 Jul 2026 SHEET 1 OF 1							
A 15-07-26 ORIGINAL ISSUE CM RVJ RVJ														

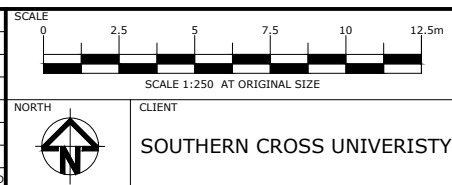


Bus 13.5m
Overall Length 13.500m
Overall Width 2.500m
Overall Body Height 3.102m
Min Body Ground Clearance 0.337m
Track Width 2.500m
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 12.410m

**PRELIMINARY
ADVICE ONLY**

15 July 2026

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	15-07-26	ORIGINAL ISSUE	CM	RVJ	RVJ



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E: ttmbri@ttmgroup.com.au W: www.ttmgroup.com.au

PROJECT **MILITARY ROAD, EAST LISMORE 4280 NSW**
DRAWING TITLE **SWEPT PATHS ANALYSIS**
13.5m BUS INGRESS / EGRESS AT 3 PROPOSED BUS STOP LOCATIONS

PROJECT NUMBER 26GCT0020	ORIGINAL SIZE A3
DRAWING NUMBER 26GCT0020-02	REVISION A
DATE 15 Jul 2026	SHEET 1 OF 1