



St. Peters Anglican College, Community Hub, Sports & Recreation Centre Project

Southern Regional Planning Panel
Request for Information

Report prepared by Colliers International Project Leaders
23 November 2023

1.0 EXECUTIVE SUMMARY

Application No. DA0078/23

Panel Reference: PPSSTH-169

Description: Alterations and additions to existing educational establishment

Address: 61 Train Street, Broulee NSW 2537; Lot 1 DP 1037342

A Southern Regional Panel Hearing was conducted on Wednesday 25th October 2023 in relation to DA0078/23. The attendees to this meeting included members from the Eurobodalla Shire Council (Council), members from the Southern Regional Planning Panel (Panel), members of the public and representatives from the Developer.

A deferral notice was subsequently issued by the Panel on the 9th November 2023 requesting items to be addressed. The content of this report responds to the following elements raised by the Panel;

- 2.1 NSW RFS General 'Terms of Approval'
- 2.2 Traffic design referral to TfNSW
- 2.3 Carpark design response
- 2.4 Biodiversity response to Koala Habitat Protection
- 2.5 Acoustic design review
- 2.6 Architectural response to glare impact of P10
- 2.7 Landscape architect response to P10
- 2.8 Landscape architect details
- 2.9 Response to updated conditions to DA Consent

This report has been prepared to address the matters raised by the Panel through the 'Deferral Notice' issued on 9th November 2023.

The contents of this report aim to assist the assessments team in approving the Development Application # DA0078/23 located at 61 Train Street, Broulee, NSW.

2.0 Applicant Response

2.1 NSW RFS General 'Terms of Approval'

Southern Regional Planning Panel Matter Raised

Revised NSW Rural Fire Service, 'General Terms of Approval' confirming APZ requirements for building P10 are wholly located within the site (in particular, clarification that the requirements for the 38m APZ to the east of the building P10 should be amended to require the APZ to the eastern boundary of the site).

An amended 'Bushfire Assessment Letter' has been provided at **Appendix A** to clarify the APZ surrounding the Sports and Recreation Centre (P10) - The letter clarifies the implementation of the APZ to the east of the Sports and Recreation Centre (P10) can be less than 38m because the assessment of the classified vegetation to the east is managed land, and this is not classified as a hazard. Therefore, it can be only 17m as depicted below.

See **Appendix A** for a copy of the updated 'Bushfire Assessment Letter'.

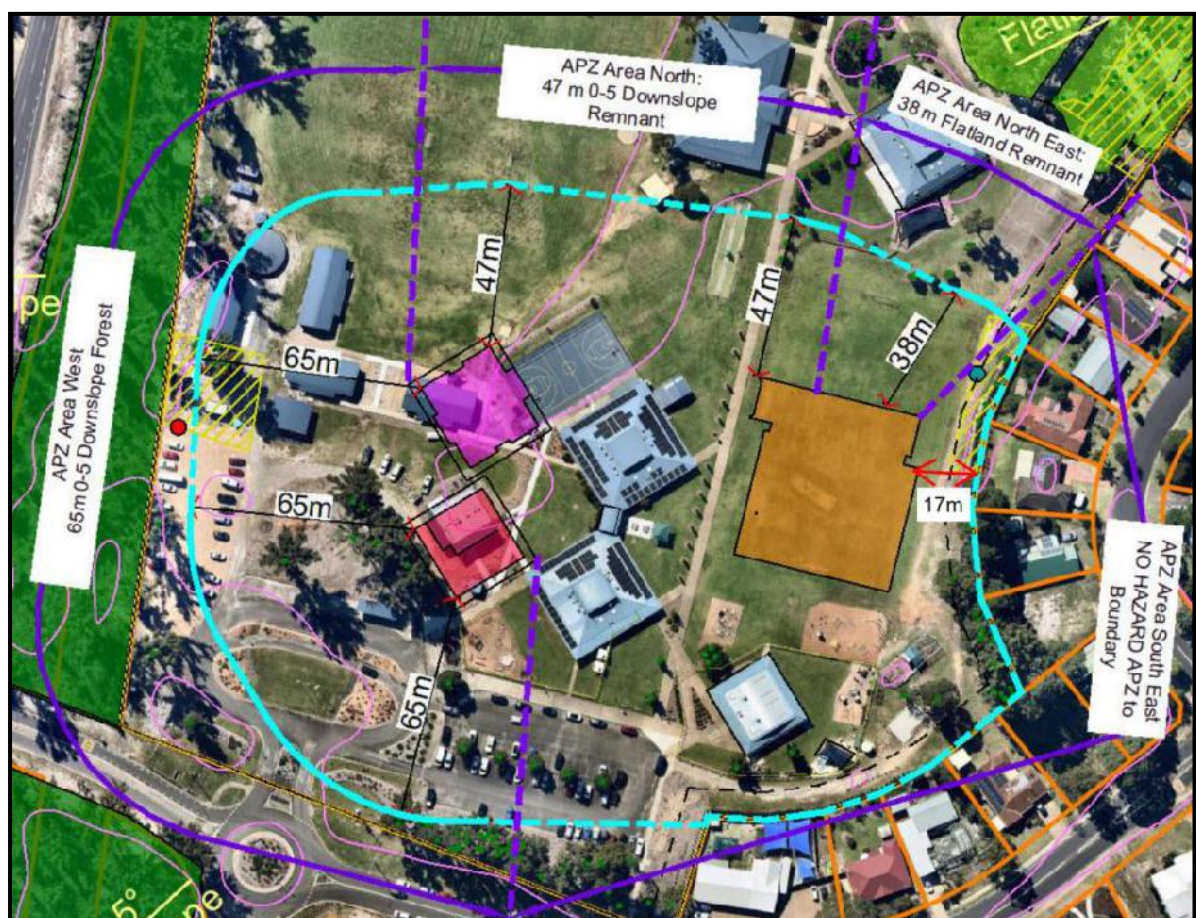


Figure 01: APZ for P10 Sports and Recreation Centre

2.2 Traffic design referral to TfNSW

Southern Regional Planning Panel Matter Raised

Confirmation that the updated traffic arrangements provided by the applicant were referred to TfNSW and that any comments provided by TfNSW have been addressed.

Refer to Transport for New South Wales (TfNSW) letter dated 31 July 2023 provided at **Appendix B** stating 'no objections' to the proposal.

2.3 Carpark design response

Southern Regional Planning Panel Matter Raised

Consideration of the safety and manoeuvrability aspects for vehicles entering the staff car park (P4) from the east, using the roundabout, and clarification of traffic control arrangements for this intersection.

Stantec Traffic Engineers have provided a letter at **Appendix C** in response to the above matter. Key points in relation to safety and manoeuvrability of the updated design are as follows.

- The revised car park and bus loop design works hard to separate out bus and car movements as much as possible and creates a clear designation of travel path through P4 including through maintaining one-way circulation to minimise conflict of circulating vehicles.
- It is proposed to retain the existing vehicle access point in its current form with primary access via Train Street for the eastern on-site car park (P4), as well as the public drop off and pick up zone.
- An additional egress from P4 (left turn out) at the eastern edge of the car park has been provided to reduce the quantum of vehicles using the Train Street roundabout. The proposed location will result in no loss of on-street parking.
- Swept path analysis contained in the traffic report indicates the site access and car park layout has been designed to accommodate relevant design vehicles, including B99th percentile vehicles (cars, vans utes), minivan and fire appliance.

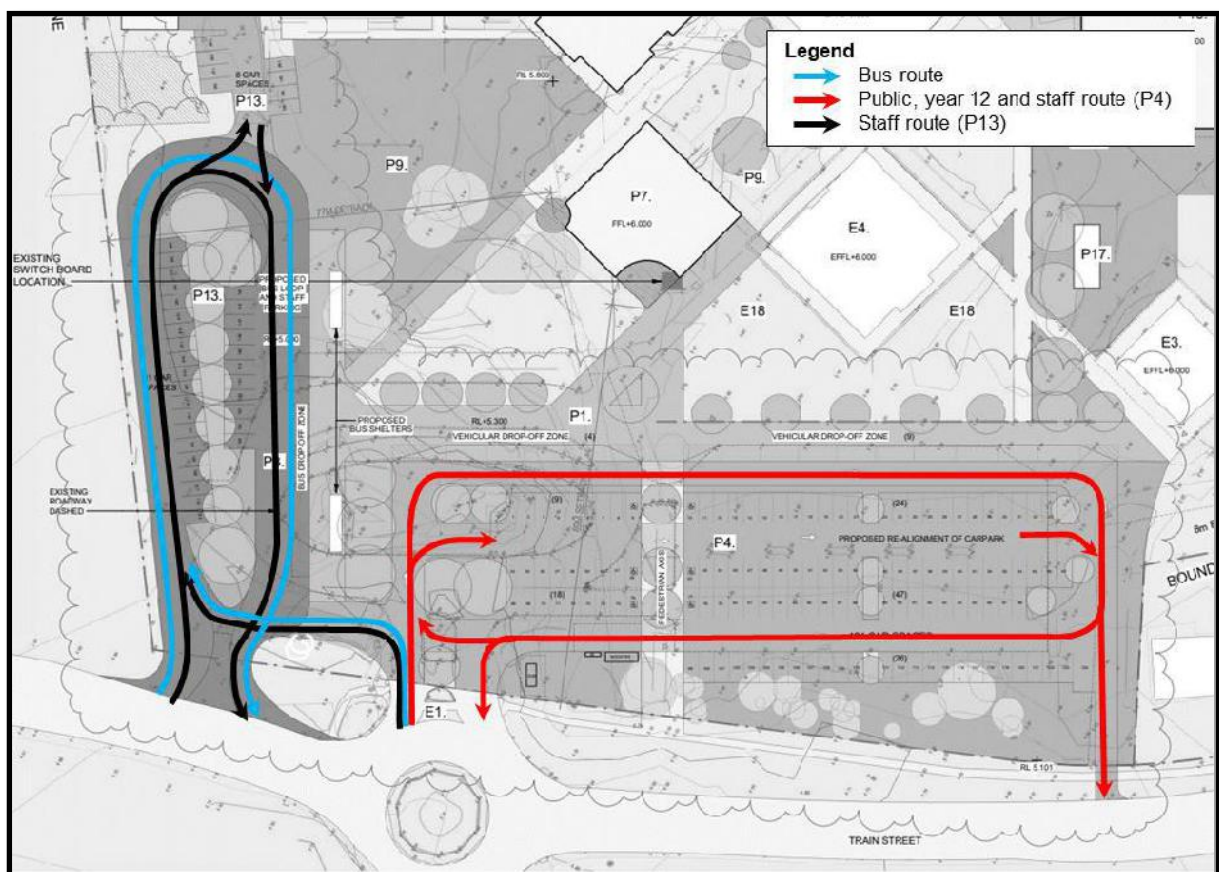


Figure 02: Revised Front of Campus Carpark and Bus Loop Design

2.4 Biodiversity response to Koala Habitat Protection

Southern Regional Planning Panel Matter Raised

A statement confirming that the precondition to the grant of consent established by Chapter 4: Koala Habitat Protection 2021, Clause 4.9(2) of SEPP Biodiversity and Conservation (2021) has been satisfied with regard to the likely impact the development on koalas and/or koala habitat.

Section 5.2.2 of the BDAR addresses the Koala Habitat Protection SEPP 2021, which has now been consolidated under the Biodiversity Conservation SEPP (Chapter 4).

As per the BDAR 'The Subject Land contains known feed trees, however, does not have recent (within the past 18 years) within 2.5km of the Subject Land. A Koala Habitat Assessment Report (KAR) is therefore not required.'

See below excerpt from the BDAR Report submitted as part of Council RFI 003;

Species	Habitat Constraints	BAM question input	Final candidate species determination	Evidence for removal
<i>Phascolarctos cinereus</i> Koala (Breeding)	1. Areas identified by survey as important habitat.	1. Yes	No	No evidence of Koalas were recorded during survey (e.g. claw marks and scats). Feed trees were identified across the Subject Land, however, there are no records of the species within a 2.5 km radius. The Subject Land does not meet the definition of <i>core Koala habitat</i> under the Koala Habitat Protection SEPP. The species is removed from further assessment.

Figure 03: Page 31 of the BDAR Report (Revision 3 – Final) dated 19 September 2023

5.5.2 KOALA HABITAT PROTECTION SEPP

The Koala Habitat Protection SEPP 2021 aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for *Phascolarctos cinereus* (Koala) to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline.

An assessment of whether the Subject Land meets the definition of Core Koala Habitat under the Koala Habitat Protection SEPP (2021) was undertaken. The Subject Land contains known feed trees, however, does not have recent (within the past 18 years) within 2.5km of the Subject Land. A KAR is therefore not required.

Figure 04: Page 46 of the BDAR Report (Revision 3 – Final) dated 19 September 2023

2.5 Acoustic design review

Southern Regional Planning Panel Matter Raised

Details of the location of mechanical plant for P10 and justification for the proposed acoustic wall.

- Options and alternative mitigation measures available to negate the need for the acoustic wall; and***
- Any amendments required to the acoustic report and other relevant plans in response to any changes or updated provisions relating to the need for the acoustic wall and ongoing monitoring of noise from mechanical plant.***

The applicant has worked with the design team to re-orientate the mechanical plant room on the Sports and Recreation Centre (P10). The mechanical plantroom now opens up to the North (previously towards the

East) and based on acoustic engineering advice, this will significantly reduce noise to the east of the development.

Furthermore, additional changes have also been implemented in order to reduce noise pollution further and also the need for the need for the acoustic fence altogether.

The design changes are as follows;

- The air conditioning methodology to the gymnasium was reviewed and changes were made reduce the cooling load, including removal of any air conditioning to the playing courts.
 - o The playing courts will now rely on natural ventilation and electric extraction fans located at the roof level.
- The mechanical plant subsequently has reduced in both capacity and physical size from a commercial system to the domestic style system made up of the following:
 - o The two program classrooms will be serviced by the domestic style wall hung split systems. These systems will feed into domestic style outdoor units which will be located in the mechanical plant area. The output of these outdoor units are on average around 30dBA +/- 5dBA similar to a standard residential dwelling (i.e. next door to the houses to the east).

The plant/ equipment will remain in an enclosed space as per the previous design with the same noise control measures to be applied. An acoustic consultant will carry out acoustic modelling based on the revised output; however, the above changes should substantially reduce any mechanical noise concerns from the project.

Due to these changes and noise reduction measures, the need for the acoustic fence has also been mitigated, and therefore, can be removed improving the visual amenity and outlook from the houses.

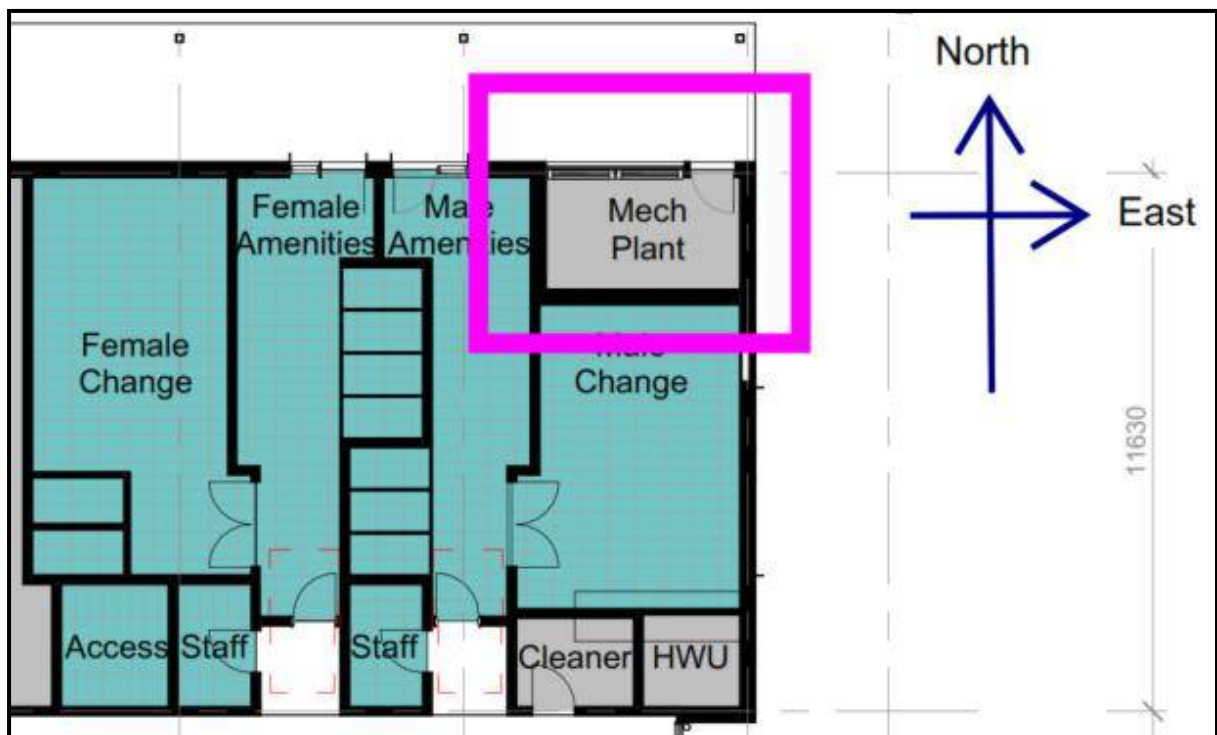


Figure 05: Acoustic Consultant mark-up showing re-orientation of mechanical plant to P10

2.6 Architectural response to glare impact of P10

Southern Regional Planning Panel Matter Raised

Consideration of the potential glint and glare impacts from proposed building P10 on residential receptors particularly to the east.

The luminance of the specified 'Regular' Danpalon façade product exposed to sun remains consistent with comfortable human activity visually. However, in the interest of addressing the glare sensitivity concerns of the eastern neighbours, the applicant will propose a lower glare alternative called 'Softlite' within the Danpalon range. The 'Softlite' product is a 'matt' alternative to the standard Danpalon version further reducing glare from the façade. All other properties of the Danpalon facade remain the same. See **Appendix D** with a copy of the glare data comparison between 'Regular' and 'Softlite' Danpalon.

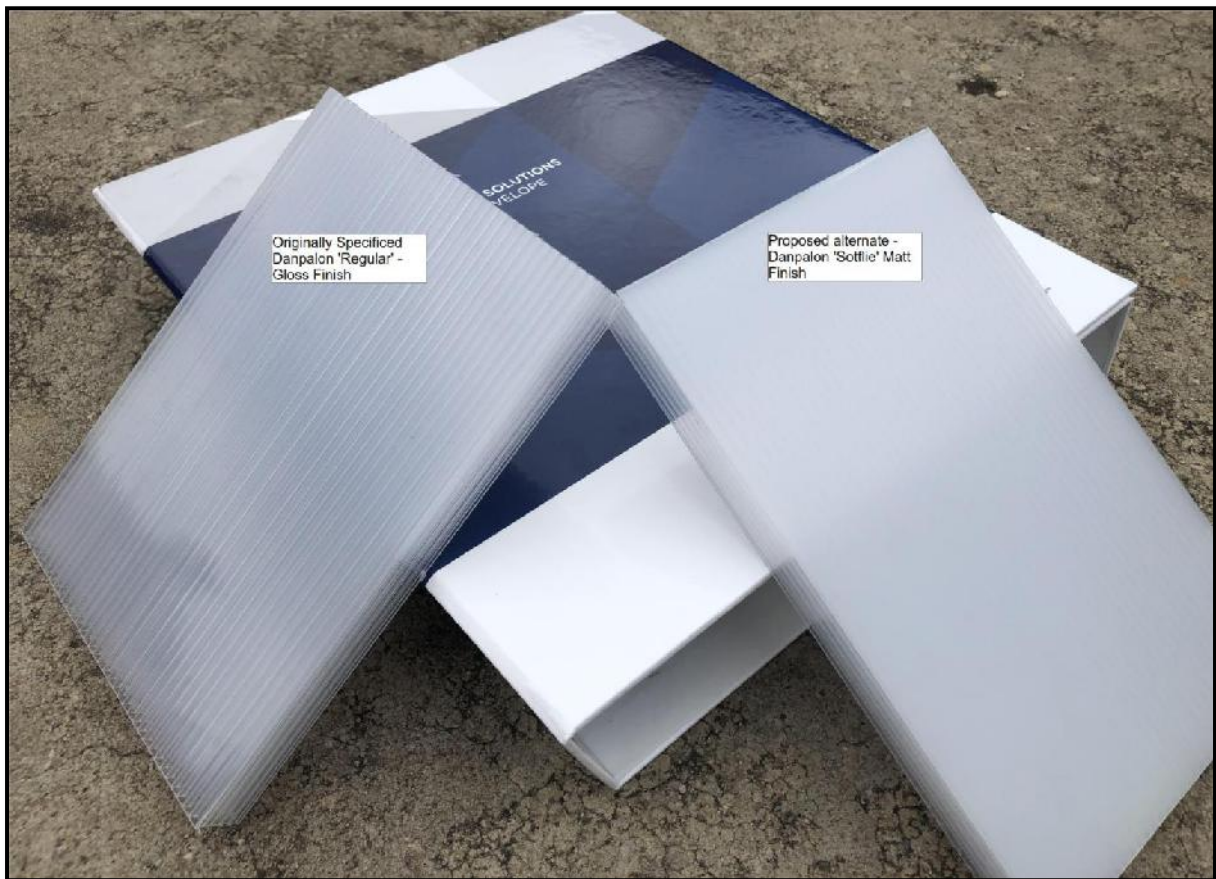


Figure 06: Danpalon Sample Comparison between Gloss and Matt finish

2.7 Landscaping architect response to P10

Southern Regional Planning Panel Matter Raised

Consideration of opportunities for additional landscaping to provide a more sympathetic outlook for resident located to the east of the building P10 taking into consideration the need to establish the APZ.

Due to the changes in the mechanical plant orientation and reduction of noise and reverberation, the Acoustic fence is now able to be removed in full. An updated landscape plan is provided to reflect the removal of acoustic fence and also provide the eastern residents more visual interest through soft landscaping and planting. See **Appendix E** for a copy of the updated landscape plans.

2.8 Landscaping architect details

Southern Regional Planning Panel Matter Raised

Further detail relating to proposed landscaping treatments including location, species type, maturity, and maintenance.

The requested landscaping details have been provided as part of an updated landscape set of drawings. See **Appendix E** for a copy of the updated landscape plans.

2.9 Response to updated draft conditions

Southern Regional Planning Panel Matter Raised

a. Various administrative amendments throughout the document to ensure clarity of the intent, timing and operation of the recommended conditions

b. Clarification of the intent and content of the required Plan of Management for the facility with a focus on the out of school use of P10

c. The provision of a dilapidation report to provide a reference point for any public asset rectification works; and

d. The inclusion of any updated reportions (i.e. acoustic report) and approved landscape plans in the appropriate schedule.

a. and b. The applicant is committed to developing a 'Plan of Management' to address the hours and frequency of use for the Sports and Recreation Centre. A contents page is provided as an appendix to this report outlining the type of information to be incorporated in the plan. Please see **Appendix F** for a copy of the proposed 'Plan of Management' contents page which will be finalised in due course.

c. The applicant will willing comply with this condition and provide a dilapidation report as requested.

d. The applicant will willing comply with this condition and provide the required documentation to reflect the design evolution of this project.

Appendix A

Bushfire Assessment Letter

23 November 2023

St Peters School Broulee
c/-Michael Taurasi
Colliers
Level 8 68 Northbourne Ave
Canberra, ACT 2600

Dear Michael,

Re: Bushfire Hazard Addendum Letter for Asset Protection Zone Confirmation at St Peter's Anglican College, Broulee.

This letter is an addendum to the Bushfire Hazard Assessment prepared by Harris Environmental Consulting (dated 29/7/22 referenced 5310BF) to support the proposed alterations and additions to St Peter's Anglican College, located at 61 Train Street, Broulee, NSW 2536 (the subject site).

On 9 November 2023, the NSW Southern Regional Planning Panel (SRPP) determined to defer the determination of the proposed development until several matters have been addressed.

Concerning the report prepared by Harris Environmental Consulting and the associated general terms of approval (GTAs) issued by the NSW RFS (dated 31/8/22 referenced DA20220627008799) the following matters were raised:

1. Revised NSW Rural Fire Service, 'General Terms of Approval' confirming APZ requirements for building P10 are wholly located within the site (in particular, clarification that the requirements for the 38m APZ to the east of building P10 should be amended to require the APZ to the eastern boundary of the site).
7. Consideration of opportunities for additional landscaping to provide a more sympathetic outlook for residents located to the east of building P10 taking into consideration the need to establish the APZ.

Comment 1 Response:

All Asset Protection Zones (APZ) comply with the NSW GTAs in that they are provided for the distance *in the direction of the hazard only*.

As shown in Table 1, the assessment of the classified vegetation formations detailed in the Bushfire Hazard Assessment includes managed land to the east of the proposed development. The identified bushfire hazard is located in the north, northeast, south and west, as detailed in Table 1. The bushfire hazard on the north and east is within the subject site; therefore, the APZs are also provided within the subject site in the direction of the bushfire hazard.

Table 2 from the Bushfire Hazard Assessment summarises Table 1 into the remaining vegetated directions and the associated APZs. An APZ is not required for the direction for which the land is managed, only for that in the direction of the hazard. A visual depiction of this APZ is illustrated in Figures 1 and 2, where the APZ directions are segmented in purple. The APZs are consistent with the GTAs provided by the NSW RFS. It should be noted this APZ is not located in land mapped Biodiverse.

Table 1 Vegetation Classification and Effective Slope

	Vegetation Formation	Effective Slope
North	Remnant	0-5° Downslope
North East & Southeast of P6	Remnant	Flat
East	Managed land	Flat
South	Forest	Flat
West	Managed land Forest	0-5° Downslope

Table 2 Minimum APZ and BAL ratings

	North	East	South	West
Classified vegetation	Remnant	Remnant	Managed Land Forest	Managed Land Forest
Effective slope	0-5° Downslope	Flatland	Flat	0-5° Downslope
Min APZ for (10kW/m2) per Table A1.12.1 of PBP 2019 and Method 2	≥47m BAL 12.5	≥38 metres BAL 12.5	≥65 metres** BAL 12.5	≥65 metres** BAL 12.5
Min APZ for BAL 19 per Table A1.12.5 of PBP for P6	≥21 metres BAL 19	≥16 metres BAL 19	≥40 metres BAL 19	≥40 metres BAL19

** per the result of the Method 2 assessment.

Comment 7 Response:

All landscaping within the required APZ must comply with the principles outlined in Appendix 4 of Planning for Bushfire Protection 2019 (PBP). Additional landscaping features can be incorporated along the eastern property boundary, subject to compliance with the following APZ standards and landscaping principles:

Trees

- Tree canopy cover should be less than 15% at maturity.
- Trees at maturity should not touch or overhang buildings.
- Lower limbs should be removed up to 2 metres above the ground.
- Tree canopies should be separated by 2 to 5 metres.
- Preference should be given to smooth-barked and evergreen trees.

Shrubs

- Large discontinuities or gaps in vegetation should be provided to slow down or break the progress of fire towards buildings.
- Shrubs should not be located under trees.
- Shrubs should not form more than 10% of ground cover.
- Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.

Grass

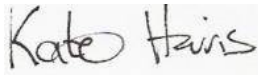
- Grass should be kept mown (as a guide, grass should be kept to no more than 100mm in height).
- Leaves and vegetation debris should be removed.

Landscaping

- A minimum 1 metre wide area, suitable for pedestrian traffic, should be provided around the immediate curtilage of buildings.
- Planting is limited near buildings.
- Planting does not provide a continuous canopy to buildings (i.e. Trees or shrubs are isolated or located in small clusters).
- Avoid planting deciduous species that may increase fuel at surface and ground level (i.e. Leaf litter).
- Locate combustible materials such as woodchips, mulch and flammable fuel stores away from buildings.
- Locate combustible structures such as garden sheds, pergolas and materials such as timber garden furniture away from buildings.
- Low-flammability vegetation species are used.

Should you wish to discuss this response, please contact Harris Environmental Consulting.

Kind Regards



Katherine Harris

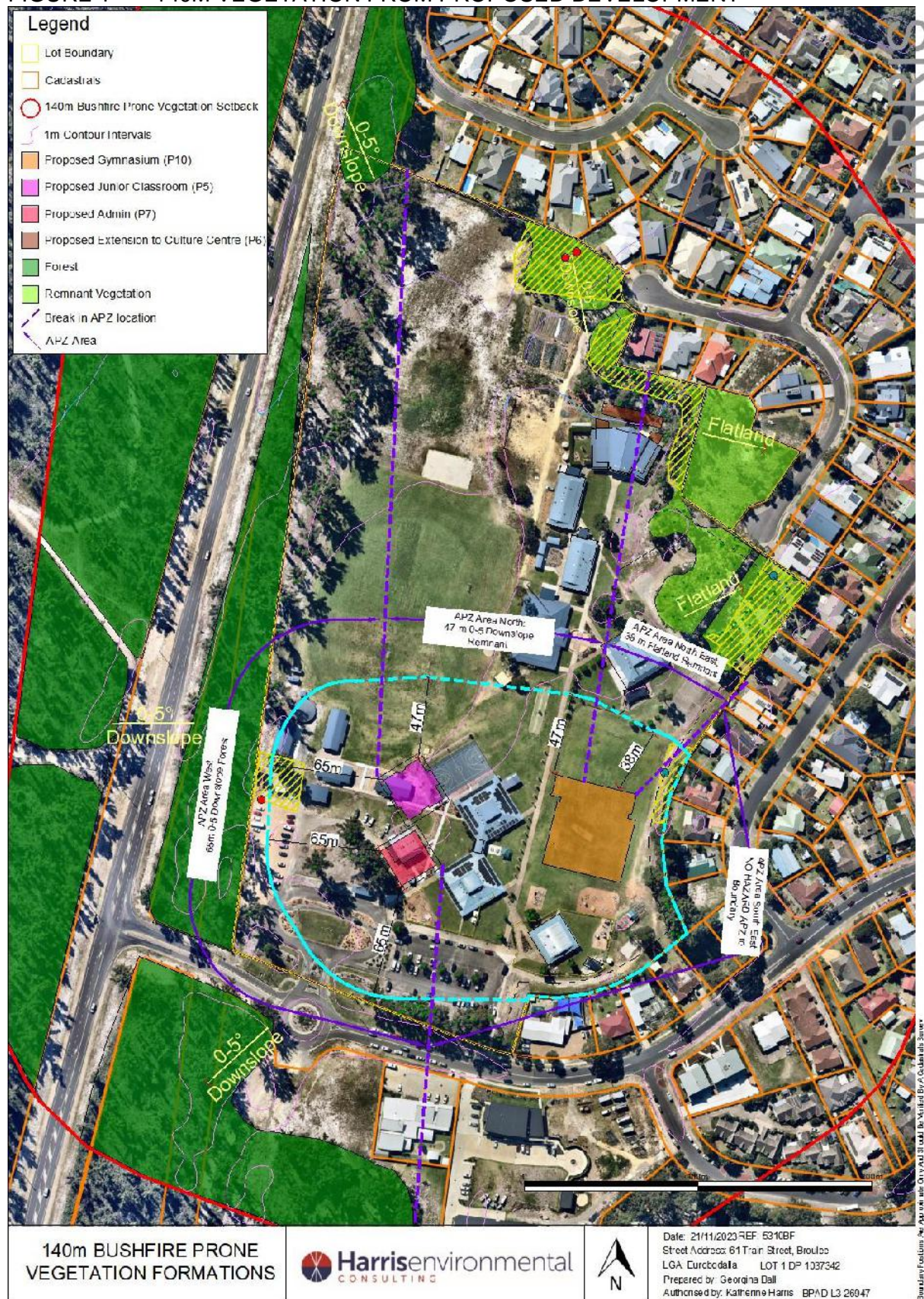
BPAD L3 26947

ASSESSOR & QUALIFICATIONS

MASTERS BUSH FIRE PROTECTION, WSU
GRAD DIP BUSH FIRE PROTECTION, UWS
GRAD DIP ENVIRO MANG HERTS, UK,
GRAD DIP NAT RES UNE,
BSC APP SC, AGRICULTURE HAC



FIGURE 1 140M VEGETATION FROM PROPOSED DEVELOPMENT



Legend

- Lot Boundary
- Cadastrals
- 140m Bushfire Prone Vegetation Setback
- 1m Contour Intervals
- Proposed Gymnasium (P10)
- Proposed Junior Classroom (P5)
- Proposed Admin (P7)
- Proposed Extension to Culture Centre (P6)
- Break in APZ location
- APZ Area
- Forest
- Remnant Vegetation
- 10Kw/m² APZ

Labels on Map:

- APZ Area North East: 38m Flatland Remnant
- APZ Area North: 47m 0-5 Downslope Remnant
- APZ Area West: 65m 0-5 Downslope Forest
- APZ Area South East NO HAZARD APZ to Boundary
- 0-5° Downslope
- 38m
- 47m
- 65m
- 65m
- 65m

REFERENCES

Australia, G. (2019). *ELVIS - Elevation - Foundation Spatial Data*. Elevation.fsdf.org.au. Available at: <http://elevation.fsdf.org.au/>

Harris Environmental Consulting (2020) *Bush Fire Emergency Management And Operations Plan 81 East West Link Croom (4081) V3*

Keith, D. (2004). "Ocean Shores to Desert Dunes" Department of Environment and Conservation, Sydney

NSW Department of Environment, Climate Change and Water (2010) Southeast NSW Native Vegetation Classification and Mapping - SCIVI VIS_ID 2230 20030101. Bioregional Assessment Source Dataset.

<http://data.bioregionalassessments.gov.au/dataset/0f1aeb33-1b49-4839-88fa-8b635cf9d3ab>.

NSW Department of Planning and Environment. Planning Portal. Accessed at: <https://www.planningportal.nsw.gov.au/>

NSW Rural Fire Service (2019). *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers*. November 2019

Standards Australia (2018). *AS3959, Construction of buildings in bushfire-prone areas*.

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P, Cox S (2010). *Native Vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands*. *Cunninghamia* 11:359-406.

Appendix B

Transport for New South Wales Referral Letter (TfNSW)

31 July 2023

TfNSW reference: STH22/00293/05

Your reference: DA0078/23 (CNR-44274)

Eurobodalla Shire Council

BY EMAIL: council@esc.nsw.gov.au

CC: catherine.watkins@esc.nsw.gov.au

Attention: Catherine Watkins

DA0078/23 (CNR-44274) – ALTERATIONS AND ADDITIONS TO EXISTING EDUCATIONAL ESTABLISHMENT (ST PETERS ANGLICAN COLLEGE) TO BE UNDERTAKEN IN TWO STAGES - LOT: 1 DP: 1037342 (NO.61) TRAIN STREET, BROULEE

Dear Catherine,

Transport for NSW (TfNSW) is responding to the above development application (DA) that was re-referred on 24 July 2023 and the subsequent meeting with Council staff on 27 July 2023.

TfNSW has reviewed the information provided and has **no objections** to the proposed development, as amended.

To assist Council in their assessment some additional comments are provided in **Attachment 1**.

If you have any questions, please contact Andrew Lissenden, Development Services Case Officer, on 0418 962 703.

Yours faithfully



Andrew Lissenden

Development Case Officer, Development Services (South Region)

OFFICIAL

DA0078/23 (CNR-44274) – ALTERATIONS AND ADDITIONS TO EXISTING EDUCATIONAL ESTABLISHMENT (ST PETERS ANGLICAN COLLEGE) TO BE UNDERTAKEN IN TWO STAGES - LOT: 1 DP: 1037342 (NO.61) TRAIN STREET, BROULEE

Context

TfNSW notes:

- The key state classified road is the Princes Highway to which the site has no direct access. It is important for Council to note that George Bass Drive to which the subject land has access via the local road network, is an unclassified regional classified road that is managed by Eurobodalla Shire Council. TfNSW does not believe this DA will have an adverse impact on the state road network in terms of safety and efficiency.
- Council has requested advice under Section 3.58 of *State Environmental Planning Policy (Transport and Infrastructure) 2021*.
- The DA will increase the number of students in line with the school masterplan from 664 students in 2022 to 871 students in 2032 with the works proposed as part of this DA, as amended, now being split into two stages as detailed in Section 2.2 of the Report prepared by Colliers International Project Leaders with reference Eurobodalla Shire Council Request for Information (RFI – 003) dated 18 July 2023 and the Cox Architecture Drawing No. DA-11-02, Revision 5, dated 03/02/2023.
- TfNSW encourages Council to consult with the relevant bus operators regarding the proposed increase in student enrolments and changes to the bus pick-up and drop-off zone prior to the determination of the DA.
- To assist with Council's assessment it could consider requesting the applicant to:
 - Update the plans so they contain dimensions for the access points, car spaces (i.e. to ensure compliance with AS2890.1:2004 in terms of car spaces and aisle widths, etc), vehicular drop-off/pick-up zones (i.e. to ensure the specified number of B99 vehicles can fit within each zone as detailed in the amended application), bus drop-off zones (i.e. to ensure three 12.5m buses with a minimum of 1.5m in between can fit), etc.
 - Provide additional road shoulder on the northern side of Train Street to the west of the bus access to ensure a bus, if required to queue, does not obstruct the eastbound through lane in Train Street.
 - Physically restrict right turn movements into the proposed eastern access point to the P4 visitor car park to ensure it is used as an exit only.

Appendix C

Traffic Consultant Response to Safety and Manoeuvrability of Design

Project:	St Peters Anglican College, Broulee – Community Hub and Sports Recreation Centre Project	Office:	Sydney, St Leonards
Project No:	300303369	Status:	Final
Client:	Anglican Diocesan Services/ CBRE	Prepared by:	Ingrid Bissaker
Date:	15 November 2023	Approved by:	Chris Coath
Subject:	Response to Southern Regional Planning Panel Record – Car Park 4 Traffic Control Arrangements		

1. Background

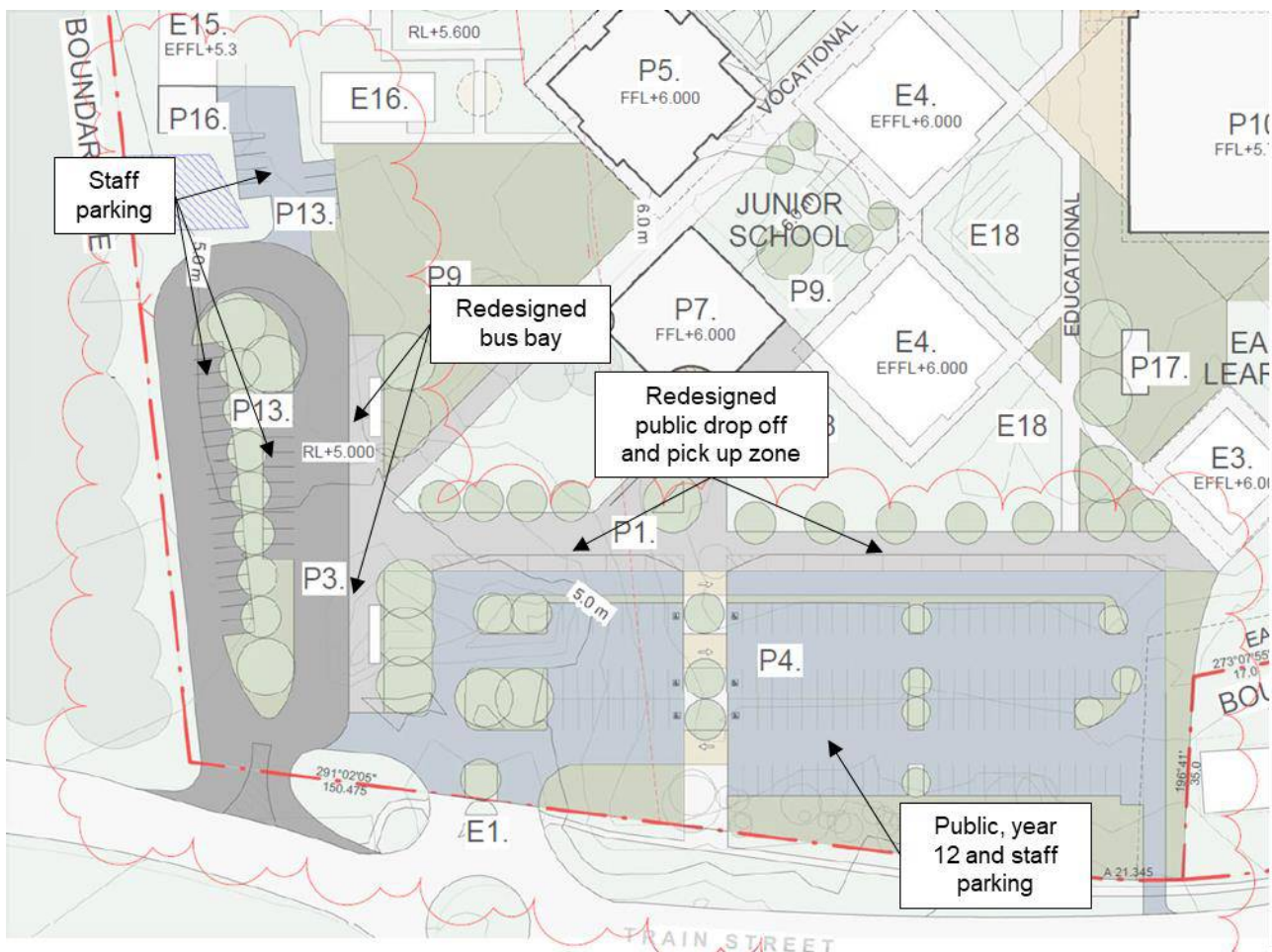
This Technical Note has been prepared in response to Southern Regional Planning Panel Record of Deferral¹ seeking further information in relation to the proposed redevelopment of St Peter's Anglican College at 61 Train Street, Broulee, to accommodate a new Community Hub and Sports and Recreation Centre (Gymnasium).

The issue raised by the Panel has been reproduced below.

3. Consideration of the safety and manoeuvrability aspects for vehicles entering the staff car park (P4) from the east, using the roundabout, and clarification of traffic control arrangements for this intersection.

For reference, the proposed site layout is shown in Figure 1.1.

Figure 1.1 – Revised site layout



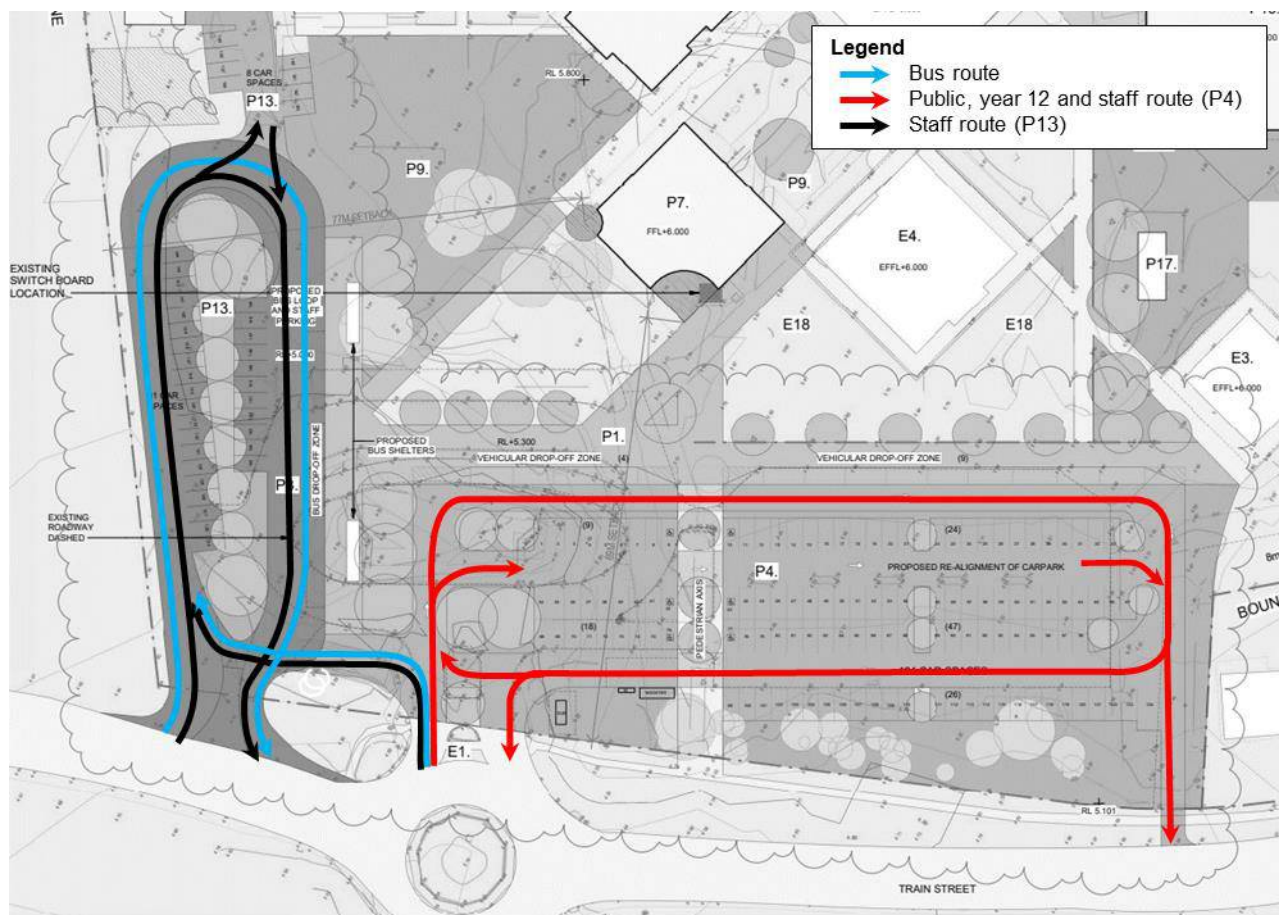
Source: Cox Architecture, drawing no. DA-11-01, rev. 7, dated 29 June 2023

2. Vehicle Access

2.1 Vehicle Access Paths Overview

The proposed vehicle access paths are shown in Figure 2.1.

Figure 2.1 – Vehicle access paths



Source: Cox Architecture, drawing no. DA-11-21, rev. 9, dated 29 June 2023

As shown, it is proposed to retain the existing vehicle access point in its current form with primary access via Train Street for the eastern on-site car park (P4), as well as the public drop off and pick up zone. An additional egress from P4 (left turn out) at the eastern edge of the car park has been provided to reduce the quantum of vehicles using the Train Street roundabout. The proposed location will result in no loss of on-street parking.

P4 operates with one-way clockwise circulation. All vehicles must enter via the Train Street roundabout. Vehicles can then either travel to the northern aisle that contains an expansive pick up / drop off parking area along the northern kerb, or else enter the centre aisle that contains standard parking spaces. All vehicles must travel east, and can either egress directly to Train Street via the new egress if they are traveling east, or travel west along the southern parking aisle back to the roundabout to egress site. In the unlikely event that a vehicle needs to re-circulate through P4, a cut-through is provided from the southern aisle. This avoids the need for vehicles to re-circulate back into the site via the Train Street roundabout. This is also consistent with the existing site layout that allows vehicles to circulate in a one-way clockwise direction through the parking area, and re-circulate back to the parking area internal to the site without the need to egress back onto Train Street.

Swept path analysis contained in Appendix A indicates the site access and car park layout has been designed to accommodate relevant design vehicles, including B99th percentile vehicles (cars, vans utes), minivan and fire appliance.

A new access point is proposed west of the Train Street roundabout, providing access to a re-designed bus drop off loop. This loop also contains 38 staff parking spaces (P13). The access permits left in, left out movements only. An on-site cut through is provided to permit buses and staff vehicles arriving from the east to enter the site via the Train Street site access roundabout and turn left onto the bus loop. On exit vehicles seeking to travel to the west along Train Street will be

required to exit bus loop access to Train Street and undertake a U-Turn at the Train Street site access roundabout in order to travel west.

The vehicular access requires staff to traverse the bus route to access the P13 car parking spaces. Staff are regular users of the site and would arrive / depart outside of times when buses would operate on the site and hence would present minimal conflict with bus movements.

Swept path analysis contained in Appendix A indicates the new site access and bus loop has been designed to accommodate movements up to a 14.5-metre-long rigid bus.

2.2 Separation of Vehicle Movements Throughout Site

The design has been revised throughout early to mid-2023 to better separate out bus and car movements as much as possible. The revised design has successfully reduced their interaction, with the only exception comprising buses arriving from the east that enter site via the roundabout and transfer to the bus loop via the cut-through from P4. The only resultant conflict from this movement is associated with vehicles using the cut through in P4 to recirculate the car park. Notwithstanding and as noted below, this cut through will be subject to traffic control arrangements including threshold treatment and give way linemarking/ signage to reinforce that priority is given to vehicles entering site from the roundabout, including buses accessing the bus loop cut through, rather than to vehicles using the P4 cut through to recirculate the car park. This potential conflict point is therefore expected to be appropriately managed through such traffic control arrangements.

Staff vehicles will be permitted to traverse the bus loop and therefore interact with buses. Staff are regular users of the site and hence will be familiar with how the bus loop operates and any requirements to ensure continued safety for all users. Staff typically travel outside of peak pick up and drop off times and hence are unlikely to be accessing parking at a time when buses are active in the loop. Some staff will access the bus loop via the Train Street roundabout and cut through from P4. Given staff typically travel outside of peak pick up and drop off times, there will be negligible staff completing this movement when both buses and parents/ carers are arriving/ departing site.

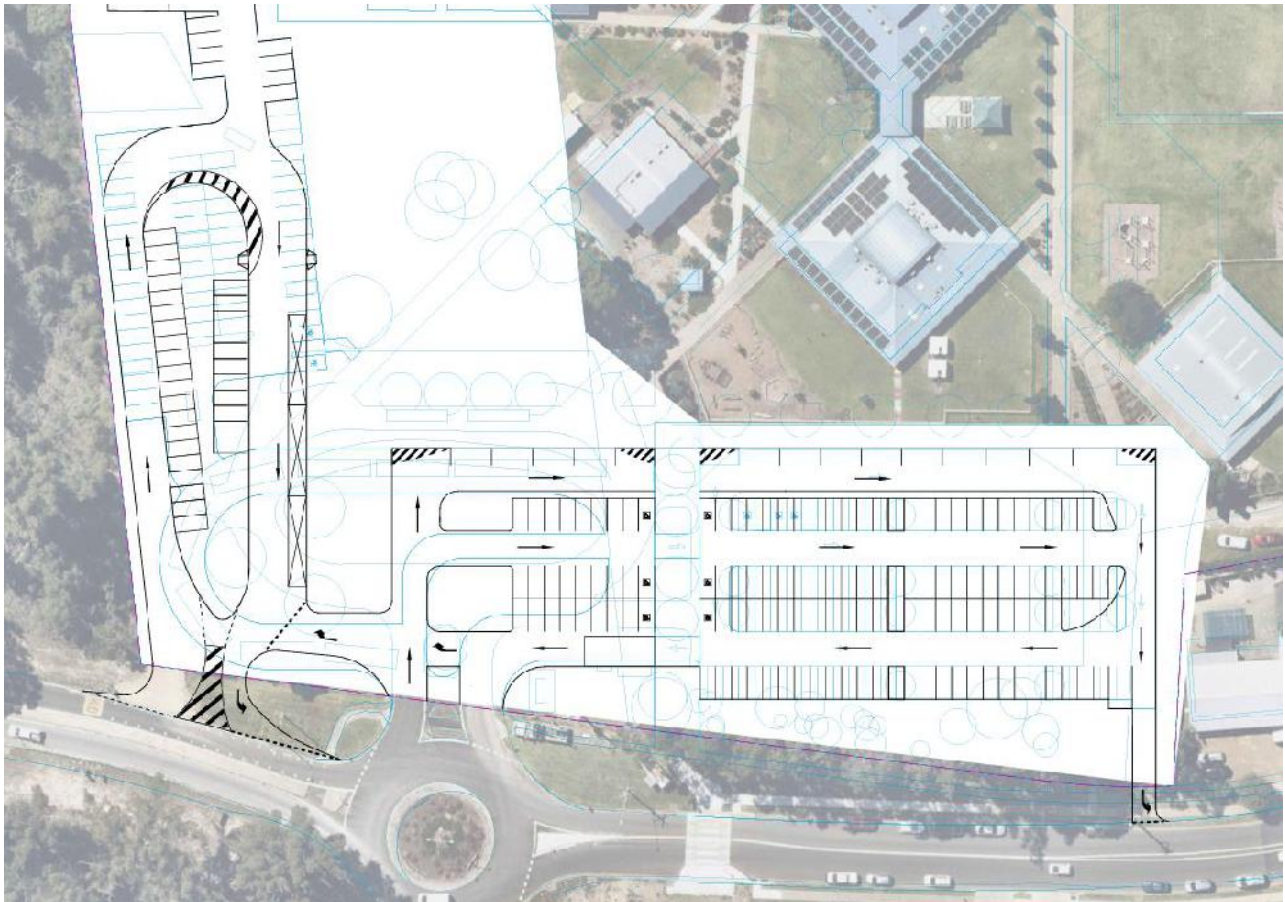
The design has also been revised to create a clear designation of travel paths through P4 including through maintaining one-way circulation to minimise conflict of circulating vehicles. A single cut-through is provided in P4 to allow vehicles to recirculate the car park if required however given the efficient layout and functioning of the car park, this is expected to generate negligible use.

As such, the bus loop and P4, including the two cut throughs, are expected to operate well and are considered appropriate for the required safety and functioning of the site.

2.3 Traffic Control Arrangements

Further to the above, a detailed signage and line marking plan will be prepared following Development Approval as part of further detailed design prior to Construction Certification. Notwithstanding, further details on proposed line marking is contained in Appendix A and reproduced below. This is reproduced over the previous design (shown in light blue) to clearly demonstrate the changes incorporated as part of the re-design process conducted in mid-2023.

Figure 2.2 – Site layout with indicative line marking



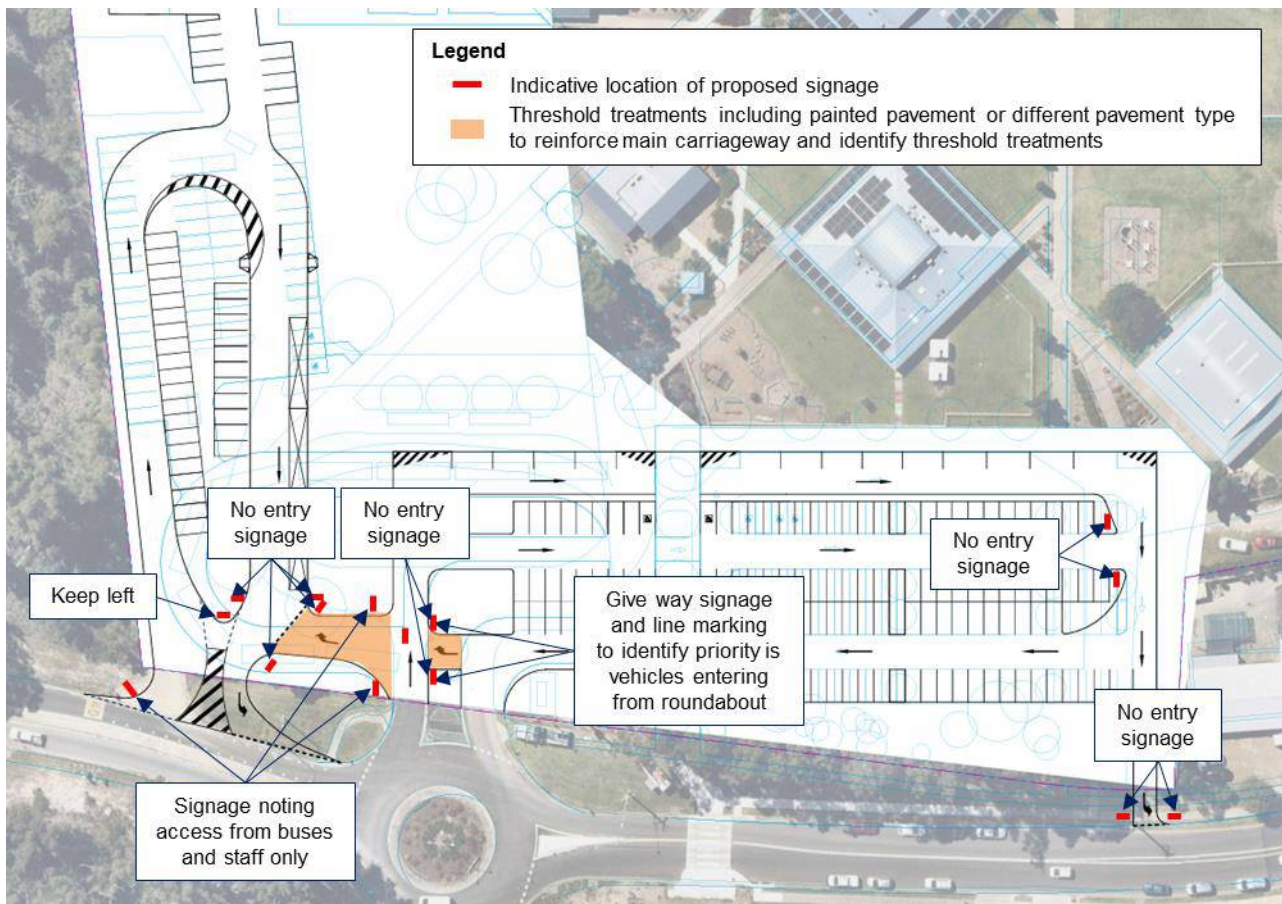
Source: 300303369-01-P3, prepared by Stantec on 21 June 2023

As shown, the line marking is proposed to reinforce the one-way circulation of P4, as well as reinforce main carriageway through use of give way line marking, ensuring there's limited conflict points.

Additional signage, line marking and traffic control measures to be incorporated on the final plan are detailed on Figure 2.3 and include:

- Provision of threshold treatments including pavement painting or different pavement types at the cut through from P4 through to the bus loop, as well as at the cut through from P4 southern aisle to allow vehicles to recirculate, to help identify the main carriageway and reinforce the primary direction of flow through the car park
- Provision of give way linemarking and signage at the cut through in P4 to reinforce the primary direction of flow being vehicles entering site from the Train Street roundabout
- Provision of “no entry” signage throughout the car park to reinforce the one-way flow
- Provision of signage at the bus / staff parking loop to prevent general vehicles (parents/ carers and year 12 students) from entering.

Figure 2.3 – Site layout with indicative additional traffic control arrangements



Source: 300303369-01-P3, prepared by Stantec on 21 June 2023

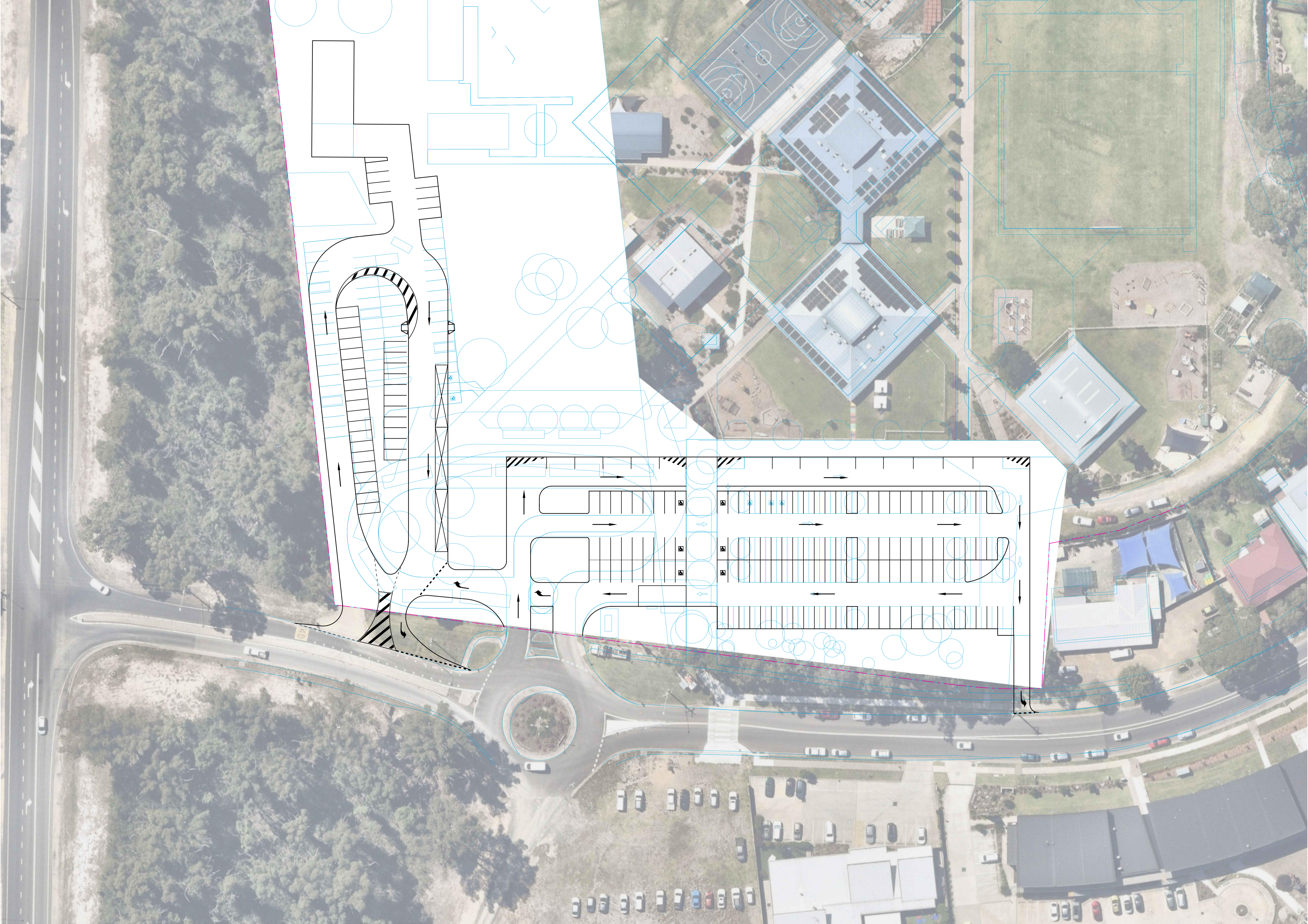
3. Conclusions

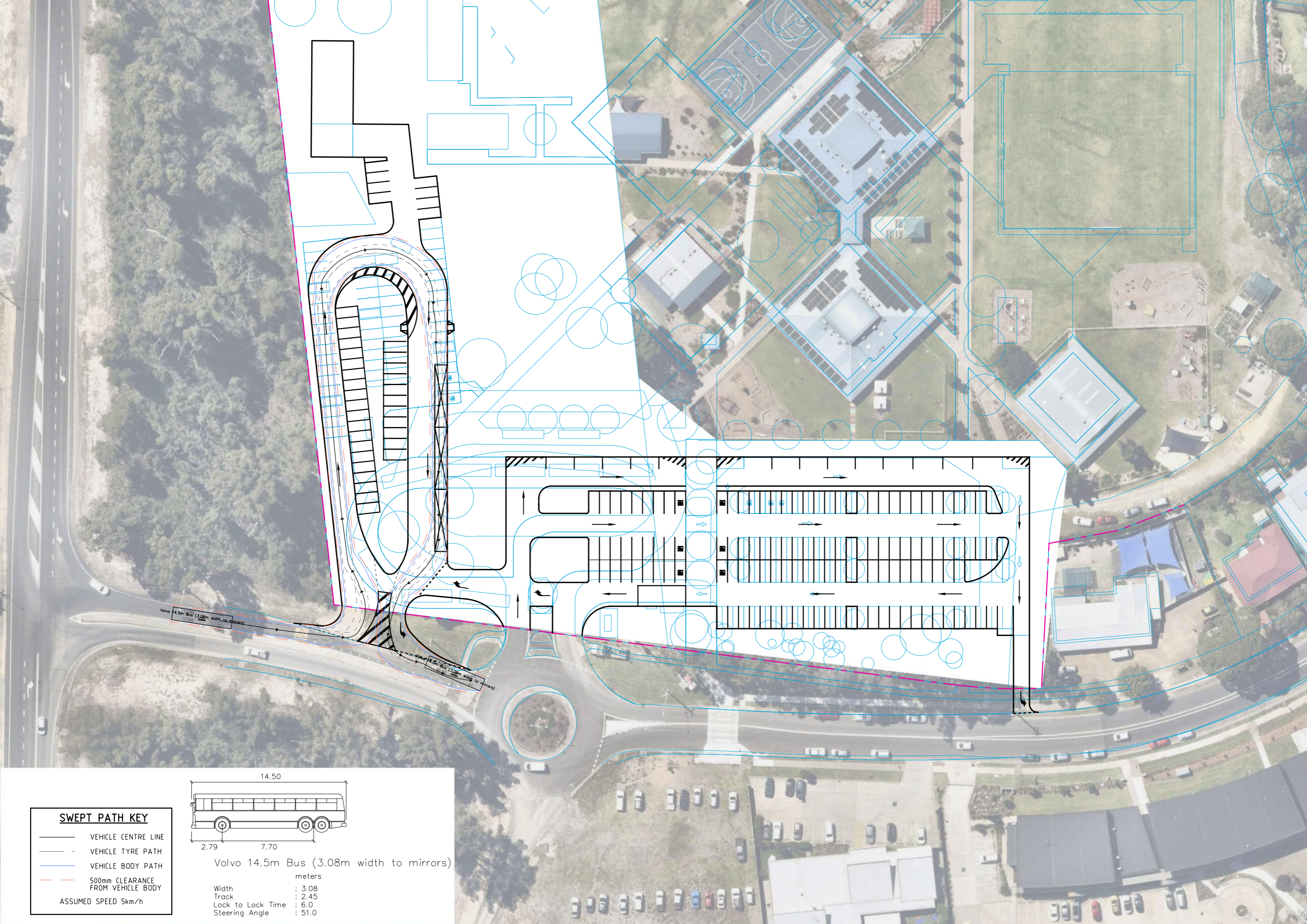
The car park and bus loop design works hard to separate out bus and car movements as much as possible, and creates a clear designation of travel path through P4 including through maintaining one-way circulation to minimise conflict of circulating vehicles.

A detailed signage and line marking plan will be prepared following Development Approval as part of further detailed design prior to Construction Certification. This will further detail key traffic control arrangements including one-way nature of flow, give way line marking, no entry signage, and threshold treatments. Each of these measures are proposed to help identify the main carriageway and reinforce the primary direction of flow for vehicles entering from the Train Street roundabout, and ultimately minimise conflict points throughout the car park to improve safety for all users.

Having regard to the above, the bus loop and P4, are expected to operate well and are considered appropriate for the required safety and functioning of the site.

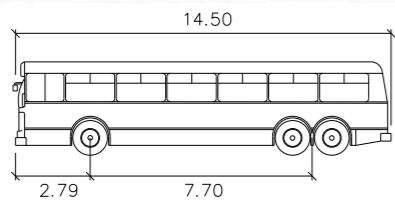
Appendix A. Swept Path Assessment





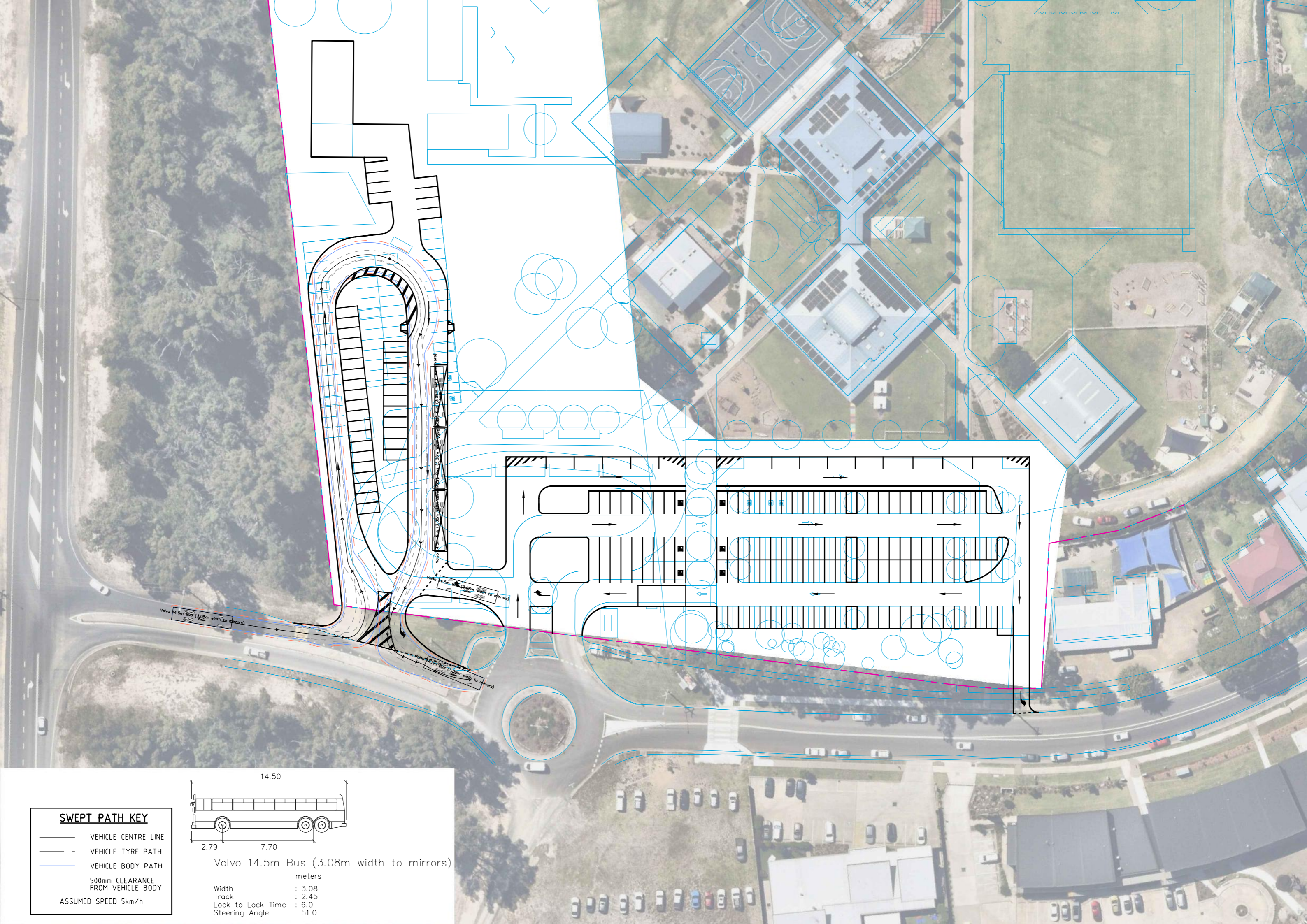
SWEPT PATH KEY

- VEHICLE CENTRE LINE
 - - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h



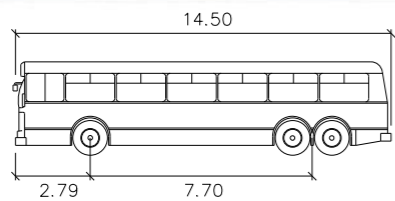
Volvo 14.5m Bus (3.08m width to mirrors)

	Volvo 14.5m Bus (3.08m width to mirrors)	Volvo 14.5m Bus (3.08m width to mirrors)
Width	: 3.08	
Track	: 2.45	
Lock to Lock Time	: 6.0	
Steering Angle	: 51.0	



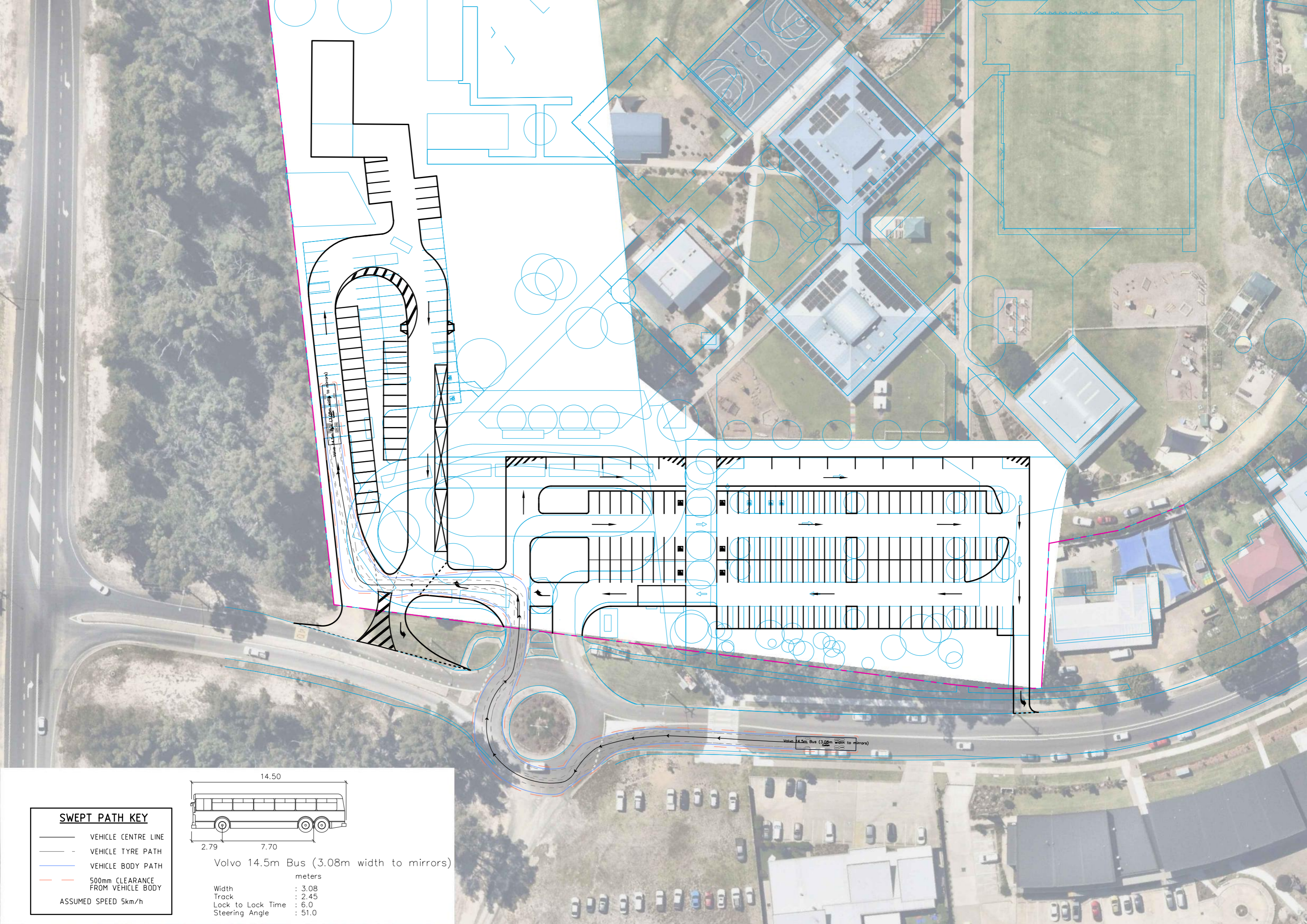
SWEPT PATH KEY

- VEHICLE CENTRE LINE
 - - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h



Volvo 14.5m Bus (3.08m width to mirrors)

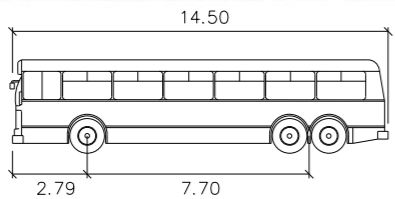
	Volvo 14.5m Bus (3.08m width to mirrors)	Volvo 14.5m Bus (3.08m width to mirrors)
Width	: 3.08	
Track	: 2.45	
Lock to Lock Time	: 6.0	
Steering Angle	: 51.0	



SWEPT PATH KEY

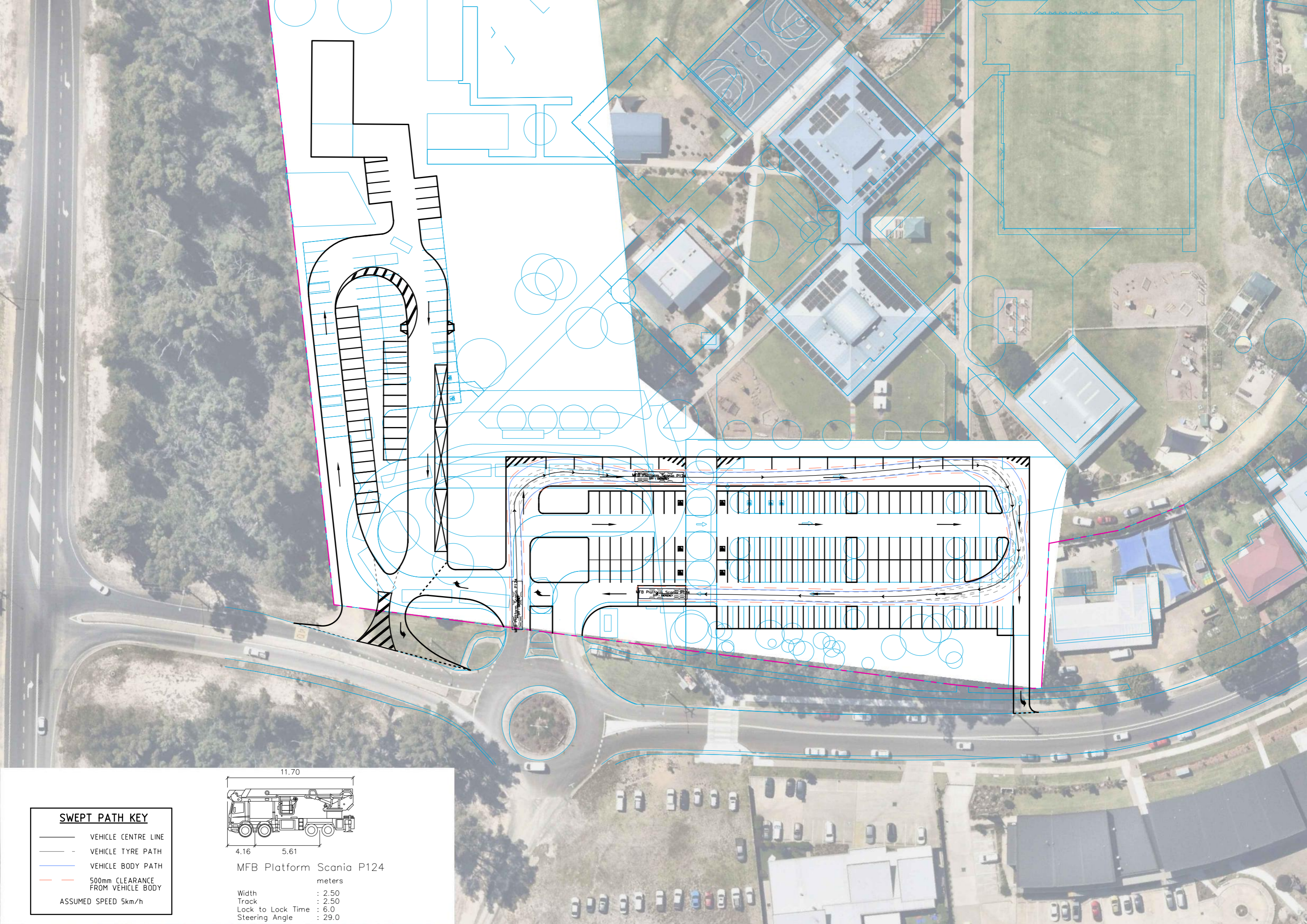
- VEHICLE CENTRE LINE
- - VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 500mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



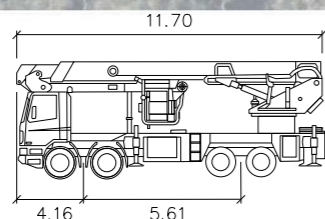
Volvo 14.5m Bus (3.08m width to mirrors)

	Volvo 14.5m Bus (3.08m width to mirrors)	units
Width	: 3.08	meters
Track	: 2.45	meters
Lock to Lock Time	: 6.0	seconds
Steering Angle	: 51.0	degrees



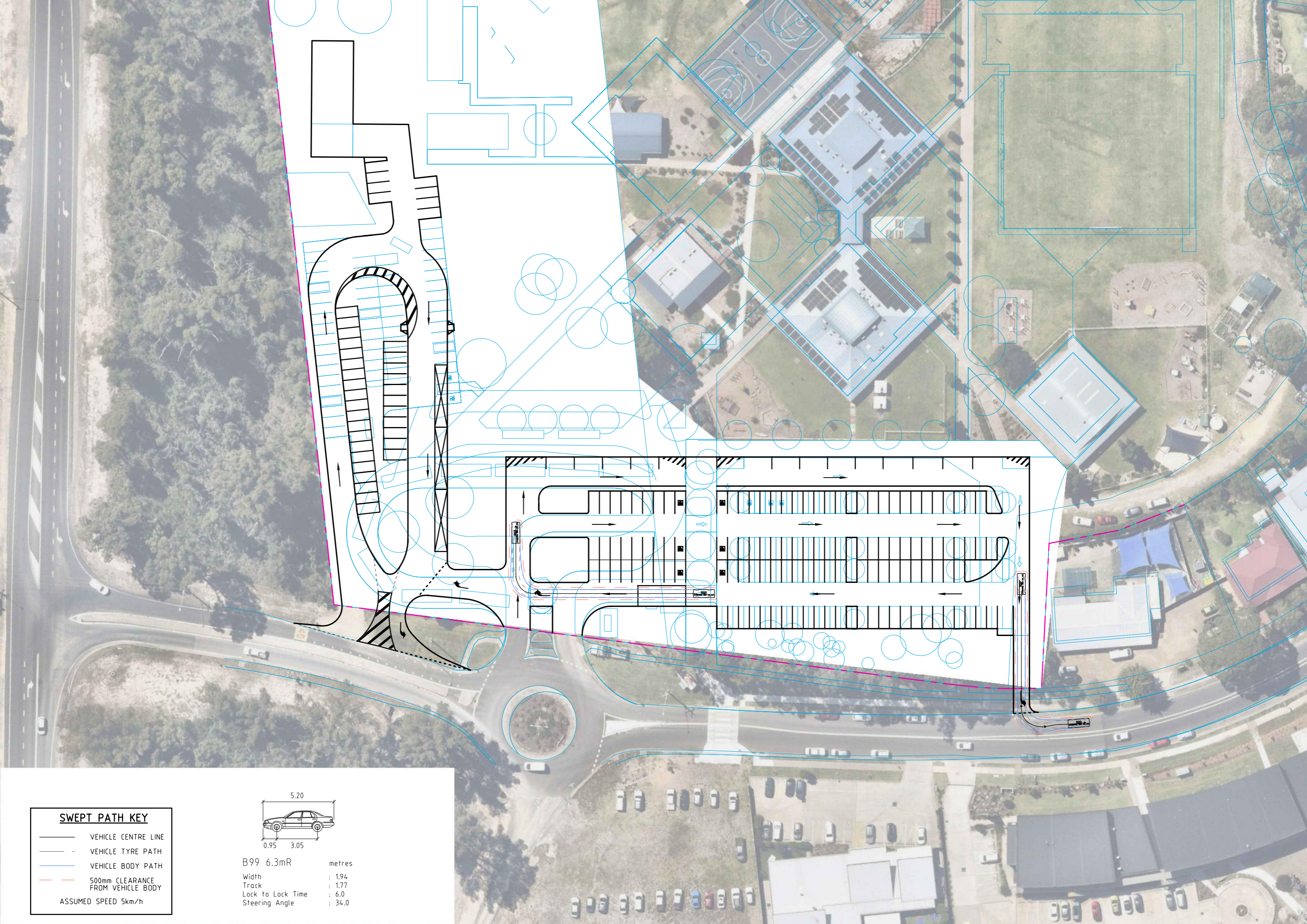
SWEPT PATH KEY

- VEHICLE CENTRE LINE
 - - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h



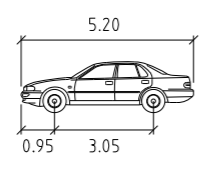
MFB Platform Scania P124

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 29.0



SWEPT PATH KEY

- VEHICLE CENTRE LINE
 - - VEHICLE TYRE PATH
 - VEHICLE BODY PATH
 - 500mm CLEARANCE FROM VEHICLE BODY
- ASSUMED SPEED 5km/h



B99 6.3mR	metres
Width	: 1.94
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

Appendix D

Danpalon Glare Data and Comparison between 'Regular' and 'Softlite'



Figure 07: Example of the 'Regular' Danpalon originally specified gloss finish



Figure 08: Example of the proposed alternate Danpalon 'Softlite' Matt finish



Figure 09: Example of the proposed alternate Danpalon 'Softlite' Matt finish

This report has been compiled for the expressed purpose of the communication of the results and analysis of reflectance measurements and does not constitute legal advice or promotional material.

Report on the reflectance of glazing material

for

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Camperdown, NSW 2050

by

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SAMPLES PROVIDED

Several pieces of polycarbonate glazing material coated with green and blue backing tape. Two of them were labelled with “REGULAR” and “SOFTLITE”. The “REGULAR” surface appears glossy and the “SOFTLITE” surface appeared more optically rough and scattering. Pictures of the material (still with backing tape) shown below in Figure 1.

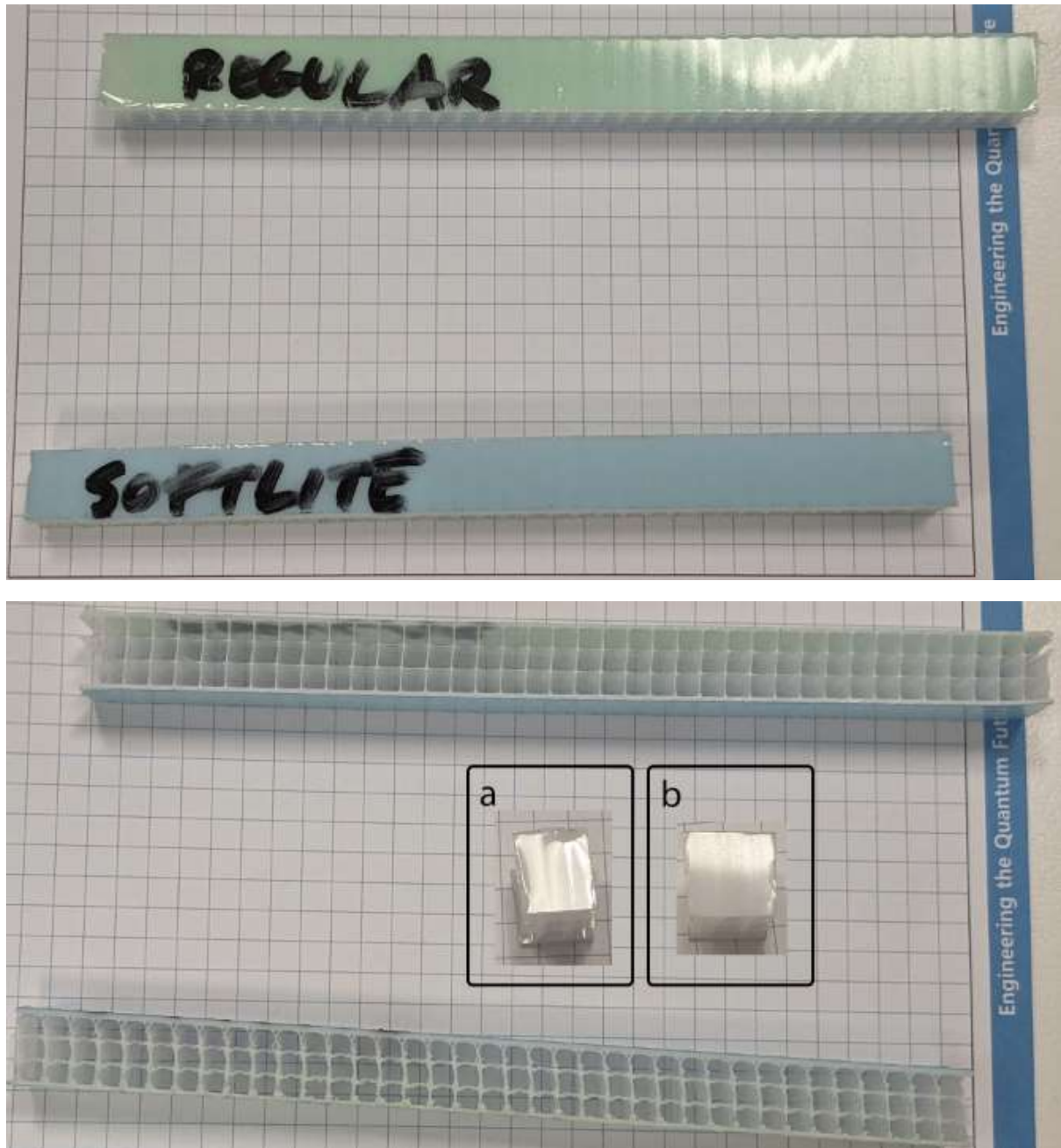


Figure 1: Pieces of the supplied material measuring approximately 150x10x12mm in size. Have two sides covered in green and blue tape. *Insets:* a) The material under the green tape has a glossy finish. b) The material under the blue tape has a matt finish.

TESTING METHODOLOGY AND SAMPLE PREPARATION

We can determine the amount of light scattered off a material in a particular direction from a calibrated light source to measure the reflectance. The samples were prepared by cutting the provided material into rectangular pieces so that they could be placed in the testing apparatus.

Two techniques and devices used to measure reflectance. A FilmTek 2000 reflectometer was used for measurements at near normal incidence i.e., $\sim 0^\circ$, at right angles to the surface. A laser reflectometer was used to measure reflectance for the range of angles: 20° , 40° , and 60° , all angles are measured relative to a perpendicular to the surface.

The SCI FilmTek 2000M uses a fibre-optic spectrophotometer to measure the optical properties of materials such as the thickness, refractive index and light absorption of materials. It operates by shining light onto a sample and collecting it at near normal incidence using a fibre optic cable. The light is separated into different wavelength components and measured with a linear CCD array. Each sample was measured in 2 points at normal incidence. This measurement will yield both the specular and diffuse reflectance of the material within a range of angles limited by the numerical aperture of the fibre-optic spectrophotometer.

Laser reflectometry was performed using a helium-neon (HeNe) laser, imaging system and a photodetector calibrated against the total HeNe laser signal. Measurements were repeated for 20° , 40° , and 60° angle of incidence. Directional reflectance was estimated in a cone of 18 degrees' half angle around the peak of reflection from the surface.

The material consists of several scattering layers so the total reflectivity (i.e. specular and diffuse components summed over all angles) will be higher than the directional component reported here.

TESTING RESULTS

SAMPLE	SOURCE MATERIAL
1	SOFTLITE position 1
2	SOFTLITE position 2
3	REGULAR position 1
4	REGULAR position 2
5	SOFTLITE position 3
6	SOFTLITE position 4
7	REGULAR position 3
8	REGULAR position 4

FilmTek 2000M:

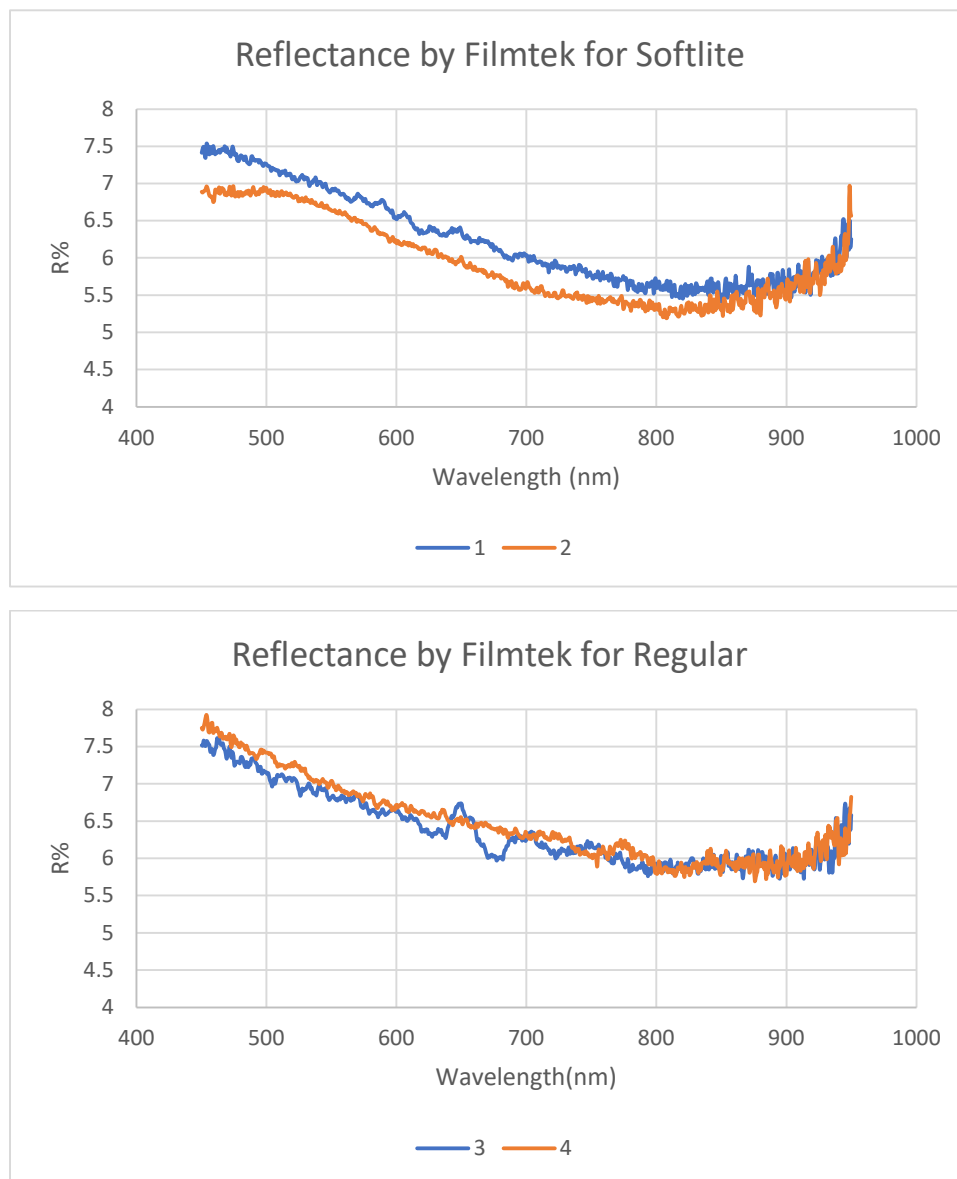


Figure 2: Reflectance data obtained from FilmTek 2000M. The reflectance of each sample is coded by colour. The key shows the sample number.

Laser reflectometry:

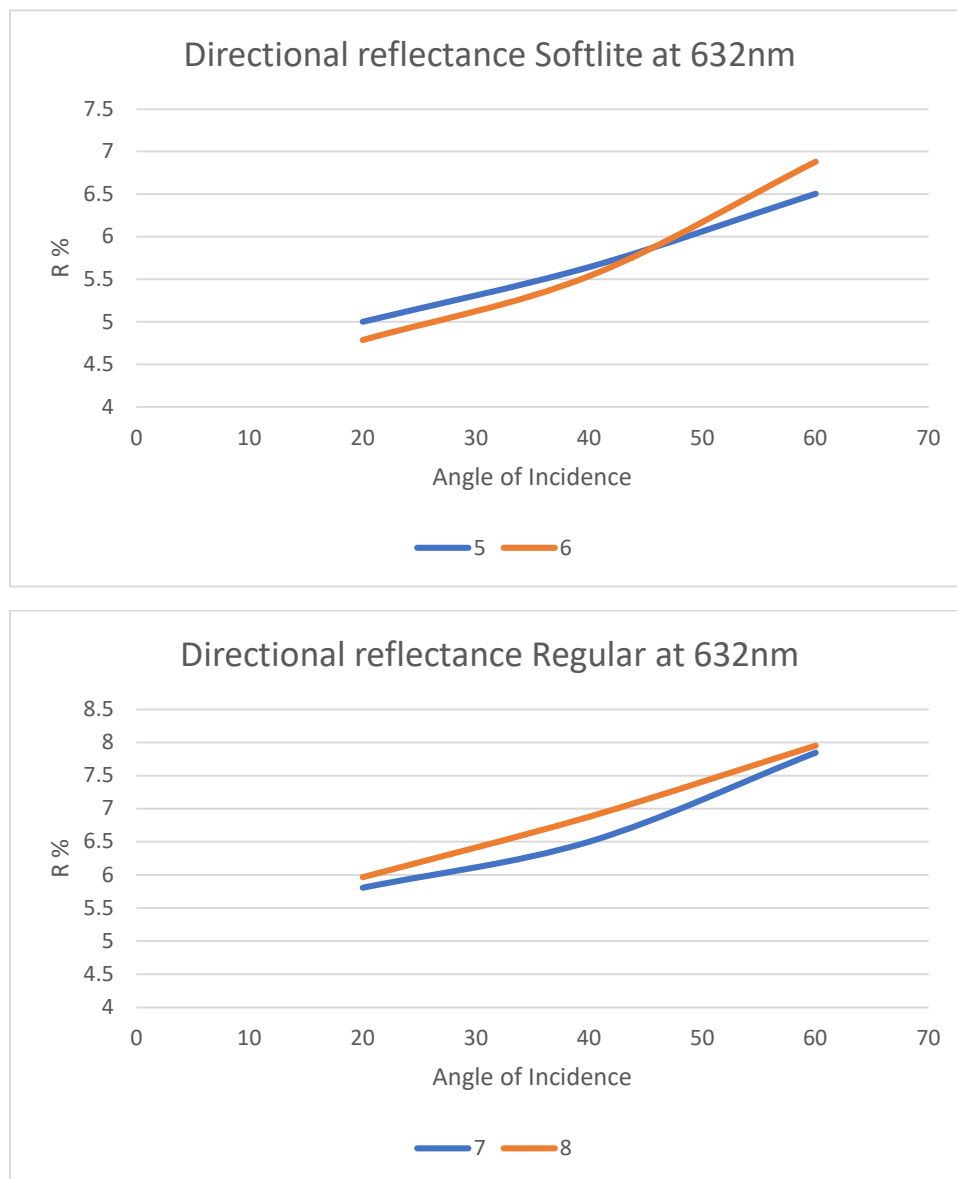


Figure 3: Reflectance data obtained from laser reflectometry. The reflectance of each sample is coded by colour. The key shows the sample number.

ANALYSIS

The total reflection of the material is the combination of these data using the visible part (400-700nm) of the ASTM G173-03 solar spectrum standard. The total reflectance is found with:

$$R_{\text{tot}} = \frac{\sum R(\lambda_n)S(\lambda_n)}{\sum S(\lambda_n)},$$

where λ_n is the wavelength of light, $R(\lambda_n)$ is the reflectivity as a function of wavelength, and $S(\lambda_n)$ is the AM1.5 direct solar spectrum (shown in appendix). A linear fit of the FilmTek reflectance between $\lambda_a = 450$ and $\lambda_b = 700\text{nm}$ was used to find $R(\lambda_n)$:

$$R(\lambda_n) = m\lambda_n + c,$$

where m and c are the gradient and offset determined from points λ_a and λ_b .

The weighted total reflectivity (sum of specular and diffusive) at normal incidence using the FilmTek 2000M apparatus yielded the following:

MATERIAL	MAX CALCULATED NORMAL INCIDENCE (0°) REFLECTIVITY
SOFTLIGHT	6.8%
REGULAR	7.1%

The laser reflectometry measurements use a linearised spectral response over 450-700nm determined from the FilmTek 2000M measurements. Weighted by the ASTM G173-03 solar spectrum standard in the visible range we obtain:

MATERIAL	ANGLE OF INCIDENCE (DEGREES)	MAX CALCULATED DIRECTIONAL REFLECTIVITY
SOFTLIGHT	20	5.4%
	40	6.1%
	60	7.4%
REGULAR	20	6.5%
	40	7.5%
	60	8.7%

Note: Directional reflectance includes the specular reflection component in an estimated 18 degrees' solid half angle around the peak of reflection from the surface.

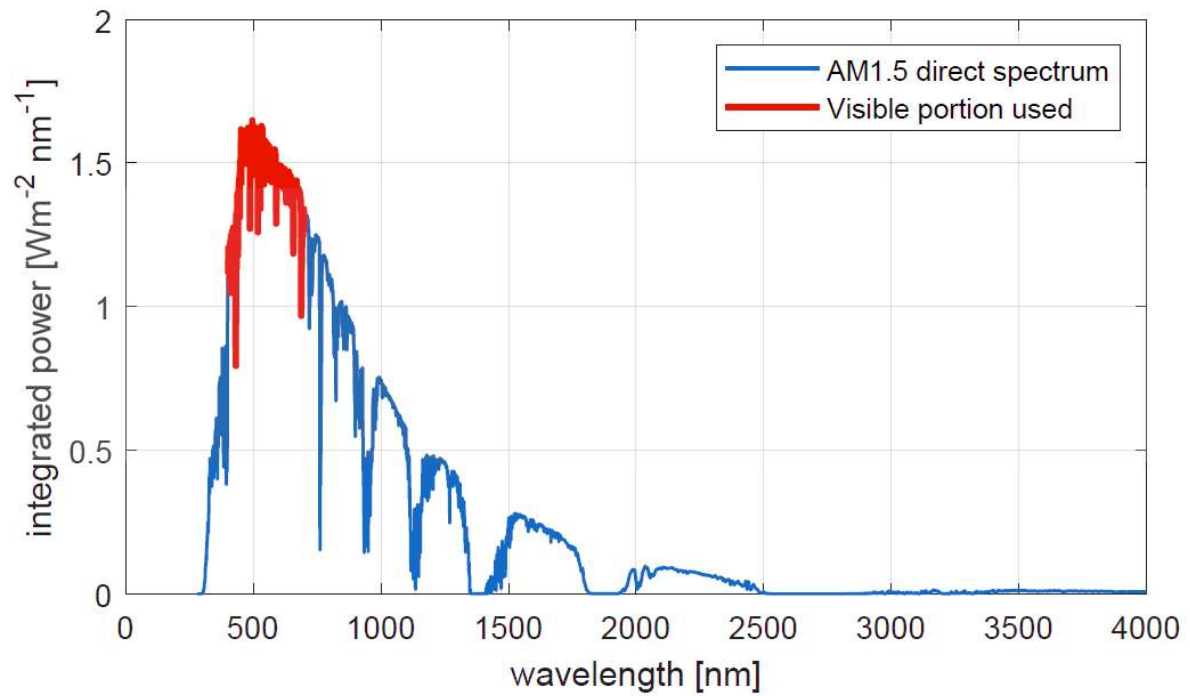
All samples measured were <10% reflective for the angles tested.

Report compiled by:

X 
Dr Alexander Stilgoe

Appendix

AM1.5 solar spectrum used for calculations:



Appendix E

Landscape Drawings Updated

PLANT SCHEDULE

TREES			
SYM	NAME	SIZE	QTY
BI	Banksia integrifolia	75L	15
AFAB	Acer x freemanii 'Autumn Blaze'	75L	9
AROG	Acer rubrum 'October Glory'	75L	1
PPE	Parrotia persica	75L	4
EBO	Eucalyptus botryoides	75L	6
CGU	Corymbia gummifera	75L	4
BSE	Banksia serrata	75L	6
ACO	Angophora costata	75L	6
MOU	Melaleuca quinquenervia	75L	2
SJA	Sophora Japonica	75L	8

SHRUBS			
SYM	NAME	SIZE	QTY
Agn	Abelia grandiflora 'Nana'	200mm	44
Ct	Choisya ternata	200mm	8
Cwa	Callistemon citrinus 'White Anzac'	200mm	54
Gsh	Grevillea shiressii	200mm	12
Wwg	Westringia 'wynyabbie gem'	200mm	50
Cal	Correa alba var. alba	200mm	45
Lpe	Leptospermum petersonii	200mm	74
Cgl	Correa glabra	200mm	100
Sre	Syzygium australe 'Resilience'	200mm	6

ACCENT PLANTING			
SYM	NAME	SIZE	QTY
All	Anigozanthos flavidus 'Landscape Lime'	200mm	206
Cpe	Crinum pedunculatum	200mm	12
Lta	Lomandra longifolia 'Tanika'	200mm	70
Sno	Scirpus nodosus	200mm	60
Llo	Lomandra longifolia	140mm	48

GROUND COVERS			
SYM	NAME	SIZE	QTY
Hse	Hibbertia scandens	140mm	90
Gla	Grevillea lanigera 'Mt Tamboritha'	140mm	144
Cde	Correa decumbens	140mm	90
Cgla	Carpobrotus glaucescens	140mm	260



REV.	DESCRIPTION	DRAWN	APPROVED	DATE
A	FOR REVIEW	JS	NH	19JUL22
B	FOR APPROVAL	DF	NH	27JUL22
C	FOR APPROVAL	DF	NH	16AUG22
D	STAGE 1 FOR TENDER	HJ	NH	27SEP22
F	STAGE 1 FOR TENDER	JS	NH	06OCT22
G	FOR APPROVAL	DF	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

REV.	DESCRIPTION	DRAWN	APPROVED	DATE
A	FOR REVIEW	JS	NH	19JUL22
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F	STAGE 1 FOR TENDER	JS	NH	06OCT22
G	FOR APPROVAL	DF	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Landscape Architect 16 ROBE STREET DEAKIN ACT 2600 p +61 2 6273 4661 e hhl@hhl.com.au w www.hhl.com.au	Harris Hobbs Landscapes acknowledges the Ngurnnawal people, the traditional custodians of the land on which we live, work, rest and play.
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16 ROBE STREET DEAKIN ACT 2600 p +61 2 6273 4661 e hhl@hhl.com.au w www.hhl.com.au	Harris Hobbs Landscapes acknowledges the Ngurnnawal people, the traditional custodians of the land on which we live, work, rest and play.	SCALE @ A1 1:500	DATE -	PROJECT ST PETERS ANGLICAN COLLEGE BROULEE
0 5 10 20 30 40 50m	STATUS FOR APPROVAL	N	CLIENT ANGLICAN DIOCESAN SERVICES	DRAWING TITLE LANDSCAPE DETAIL PLAN SHEET 1
			JOB 22105	REV G DWG 302



Sturt Bench @ Mos Urban

TREES



Banksia integrifolia



Acer x freemanii
'Autumn Blaze'



Acer rubrum 'October Glory'



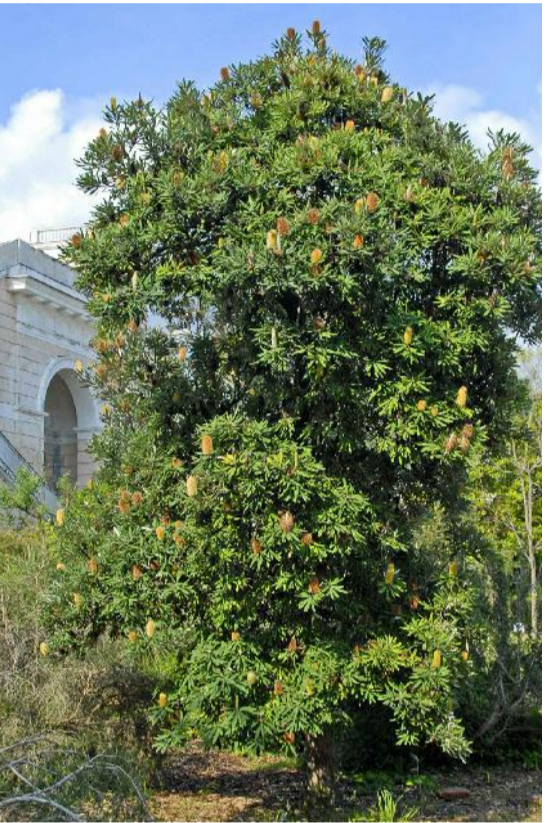
Parrotia persica



Eucalyptus botryoides



Corymbia gummifera



Banskia serrata



Angophora costata



Melaleuca quinquenervia



Sophora Japonica

SHRUBS



Abelia grandiflora 'Nana'



Choisya ternata



Callistemon citrinus
'White Anzac'



Grevillea shiressii



Grevillea banksii

ACCENT



Anigozanthos flavidus
'Landscape Lime'



Crinum pedunculatum



Lomandra longifolia 'Tanika'



Scirpus nodosus



Doryanthes excelsa

GROUND COVERS



Hibbertia scandens



Grevillea lanigera
'Mt Tamboritha'



Correa decumbens



Carpobrotus glaucescens

Appendix F

Example Table of Contents from a Plan of Management

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4.4 Reporting Accidents and Incidents	
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