CHILDCARE CENTRE

1157-1165 BURWOOD HIGHWAY, UPPER FERNTREE GULLY

ROAD SAFETY AUDIT

SALT³

APPROVED CHILDCARE CENTRE 1157-1165 BURWOOD HIGHWAY, UPPER FERNTREE GULLY
Client: TAG - Ferntree Gully Pty Ltd
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1 INTRODUCTION

SALT has been engaged by TAG Ferntree Gully Pty Ltd to undertake a Road Safety Audit (RSA) relating to the approved childcare centre to be located at 1157–1165 Burwood Highway in Ferntree Gully.

This assessment has been carried out in accordance with the AustRoads Guide to Road Safety Part 6: Road Safety Audit (2022) guidelines.

Report findings are provided in Section 6.

2 ROAD SAFETY AUDIT PROCESS

A Road Safety Audit (RSA) is a formal, systematic assessment of a project's crash potential and safety performance. The RSA considers all road users and suggests measures to eliminate or reduce any road safety deficiencies.

The RSA is carried out by a suitably qualified, experienced and independent audit team.

An audit is not intended to check compliance with standards or guidelines – however, this can be done if it is relevant from a safety context. An audit will not identify design elements that are not safety issues.

3 SCOPE OF THE AUDIT

The scope of the audit relates to the car park and access arrangements from Burwood Highway. Specifically, the audit is to satisfy Condition 31 of Planning Permit which states:

Prior to the endorsement of plans pursuant to condition 1, a pedestrian and vehicle safety audit prepared by a suitable traffic and road safety consultant to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. The audit must focus on movements and conflicts between pedestrians and vehicles accessing the car park, with recommendations on pedestrian control/protection and treatment to improve the safety of the car parking area and avoid potential conflicts.

The audit will therefore focus on pedestrian safety on access to and within the car park. This RSA does not focus on the left-turn lane, which is to be the subject of a separate Road Safety Audit as per Condition 41.

The development includes the construction of a new left-turn lane on Burwood Highway, site access driveway with a ramp up to the on-site car park. A separate pedestrian access pathway is proposed from Burwood Highway, as well as a line marked pathway within the car park. The works also includes a new pedestrian footpath along the frontage on Burwood Highway.

An extract of the development plans and scope area is provided in Figure 1. A copy of the plans is provided in APPENDIX 1.

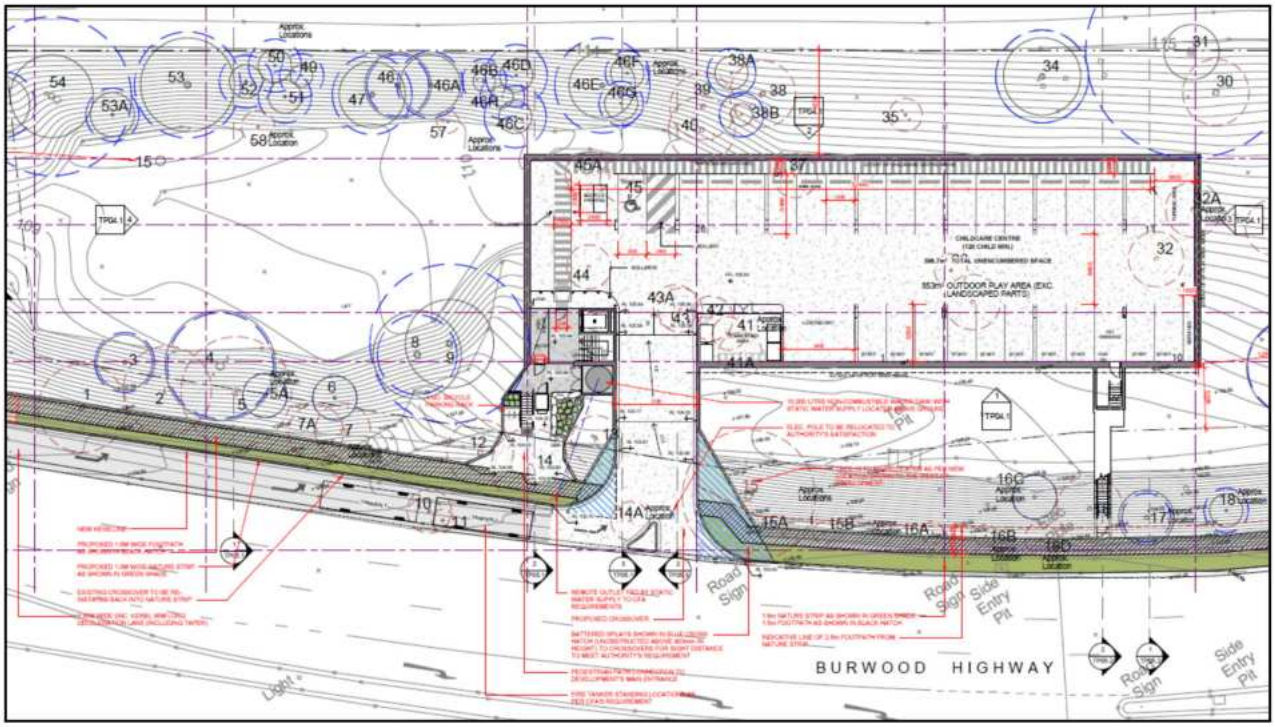


Figure 1 Development plans (extract)

4 AUDIT CONSIDERATIONS

4.1 EXISTING CONDITIONS

Burwood Highway is an Arterial Road under the care and management of the Department of Transport and Planning (DTP). In the vicinity of the site, it extends in a generally northwest-southeast alignment.

It provides three traffic lanes in each direction, separated by a centre median. At the site frontage, an additional right-turn lane is provided to Acacia Road, along with a break in the centre median.

There is an existing bus stop on the northern side of Burwood Highway at the site frontage, serviced by bus rotes 693 and 732.

A posted speed limit of 80km/hr applies.

4.2 THE AUDIT TEAM

This audit has been undertaken by a team of qualified and experienced road safety professionals, with accreditation to undertake Road Safety Audits in Victoria. No member of the audit team has previously been involved in the project, and hence full independence is maintained.

The team for this audit comprises of the following auditors:

[redacted]

[redacted] has over 18 years consulting experience in traffic engineering and transport planning. This includes traffic impact assessments for a range of small to large-scale land use development projects and subdivisions, parking and traffic studies for local government, LATM schemes, intersection design and capacity analysis, road safety audits, car park design, bicycle facility design, traffic and parking surveys, black spot scoping and preparation of traffic management plans for major construction projects.

He is experienced in the preparation and presentation of expert evidence at VCAT and is an accredited Senior Road Safety Auditor.

[redacted] has a strong level of technical expertise and prides himself on providing high-quality, value-adding, innovative yet practical advice on traffic and transport matters.

[redacted] Traffic Engineer

[redacted] has completed a Bachelor of Civil Engineering (Honours) at Monash University and has been working with SALT since 2020[redacted] has developed experience in a wide range of areas including traffic impact assessments, LATM schemes, traffic modelling, precinct studies and strategies, and investigation and design of various traffic engineering treatments. [redacted]s a VicRoads accredited Road Safety Auditor.

4.3 PREVIOUS AUDITS

No previous audits have been carried out to our knowledge.

4.4 CRASH HISTORY

A review of the DTP 'CrashStats database has been undertaken for the roads in the vicinity of the audit area.

CrashStats reports accidents that have been attended by the police and resulted in a level of injury classified as either 'Fatal', 'Serious' or 'Other'.

In the last 5 years of available data there has been one crash recorded in the vicinity of the site. This involved a collision with a vehicle undertaking a U-turn at Burwood Highway and Acacia Road. This was an 'other injury' crash that took place on 28 July 2022 during the day.

Therefore, there is no significant trend of crashes in the vicinity of the site.

5 ROAD SAFETY AUDIT

5.1 SAFE SYSTEMS APPROACH

The Safe System approach to road safety focuses on creating a forgiving road system that acknowledges that people make mistakes and have limited ability to withstand crash forces without being killed or seriously injured.

AustRoads details that all parts of the road and transport system - roads and roadsides, speeds, vehicles, and road use, all need to be improved and strengthened - so that if one part fails, other parts will still protect people involved in a crash.

The *AustRoads Guide to Road Safety Part 6: Road Safety Audit (2022)* indicates that there are four (4) key principles that form the basis of the Safe System Philosophy International Transport Forum (ITF) 2016):

- *People make mistakes that can lead to road crashes.*
- *The human body has a limited physical ability to tolerate crash forces before harm occurs.*
- *A shared responsibility exists amongst those who plan, design, build, manage and use roads and vehicles and provide post-crash care to prevent crashes resulting in serious injury or death.*
- *All parts of the system must be strengthened to multiply their effects; and if one part fails, road users are still protected.*

The latest edition of AGRS6 (2022) states that "These Safe System principles must be given due consideration in all activities within the road safety management of a road network, including RSA."

5.2 AUDIT PROCESS & FORMAT

This audit has been conducted in accordance with the procedure set out in the *AustRoads Guide to Road Safety Part 6: Road Safety Audit (2022)* with due consideration to safe system principles.

The audit covers physical features of the project which may affect road user safety and it has sought to identify potential safety hazards with a particular focus on the reduction in fatal and serious injuries. These potential hazards have been identified in Section 6.

In the preparation of this audit report, the risk assessment matrix provided in the latest edition of AGRS6 (2022) has been adopted.

The two risk parameters and their categories to be considered are likelihood and severity, which are reproduced from the AustRoads guidelines at **Table 1** and **Table 2**.

Table 1 Likelihood

Rating	Description
Almost certain	Occurrence once 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 2 Severity

Rating	Description
Insignificant	Property damage
Minor	Minor first aid
Moderate	Major first aid and/or presents to hospital (not admitted)
Serious	Admitted to hospital
Fatal	At scene or within 30 days of the crash

Based on the preceding, AGRD6 presents the below risk matrix to show how likelihood and severity are considered to give a 'priority' for risk mitigation.

Table 3 AustRoads RSA Risk Matrix

Likelihood (includes exposure)			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
	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)

*see Severity Guidance Sheet

Safe System crash outcome threshold

The corresponding priorities for mitigation are categorised as:

- Negligible – no action required
- Low – should be corrected or the risk reduced if the treatment cost is low
- 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 – must be corrected regardless of cost.

In addition to these findings, the audit provides recommendations on suitable treatment option(s) that are designed to mitigate the specific risk identified by the audit.

In according with AGRS6, the audit team has aimed to do the following when identifying and communicating mitigation measures:

- *Be clear and constructive about what is required i.e. how the safety risk or hazard might be resolved, but without it appearing to be a formal instruction;*
- *Be realistic, considering the severity of the issue and the cost of mitigation measures – as well as being effective first and foremost, the mitigation measures proposed must be appropriate and realistic. Providing too many options can be overwhelming;*
- *Be aware that there are typically high and low-cost and short and longer-term mitigation measures. The optimum is to identify low-cost mitigation measures that give a good rate of return in terms of safety (generically) and an impact with regard to the principles of Safe System treatments; and*
- *Understanding that a balance is required–whereby the client team understands the mitigation proposed, but the audit team must on no account redesign the project or scheme or detail the mitigation measures, as this would jeopardise the independence of the audit, and in effect, invalidate the audit.*

5.3 RESPONDING TO THE AUDIT

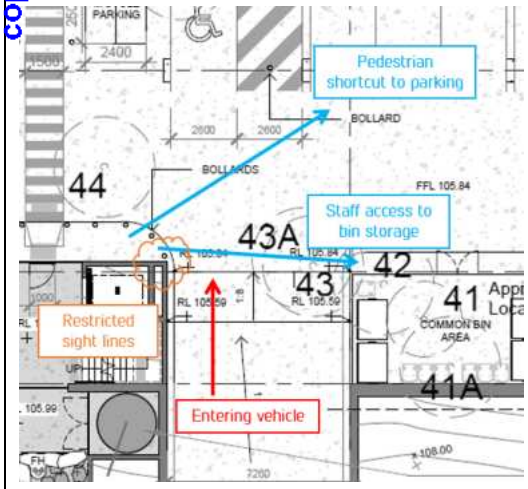
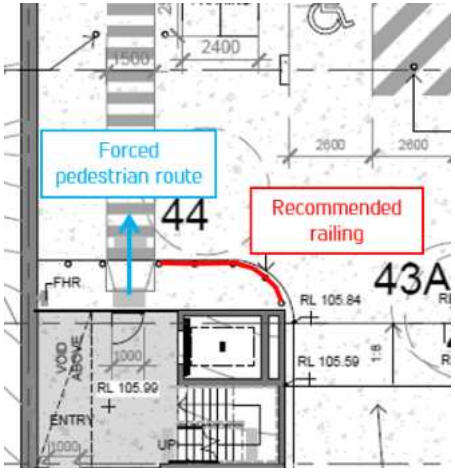
The audit findings and recommendations must be responded to by the project managers with a written response to each audit finding or recommendation. The response document must be signed by a representative of the project team.

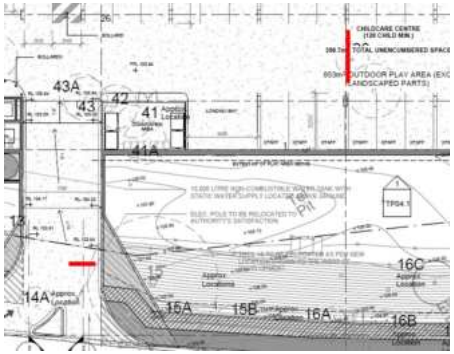
Each finding or recommendation in the road safety audit report can be responded to by either:

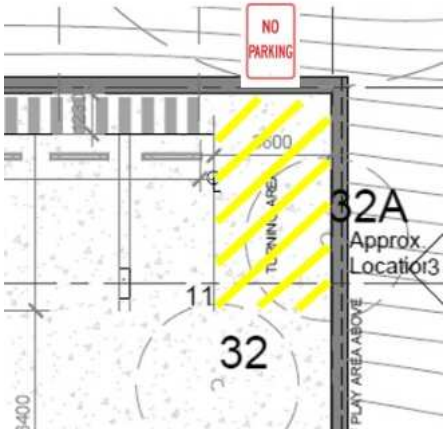
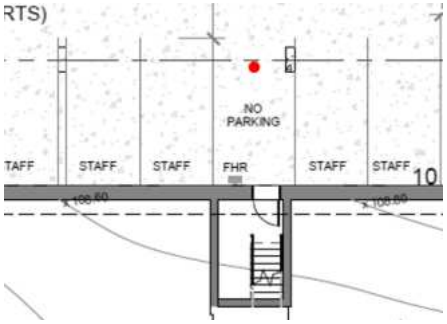
- *Accept a recommendation completely and adopt the audit team recommendation which will typically include an infrastructure-based mitigation measure.*
- *Accept a finding completely but adopt an alternative measure that is equally effective.*
- *Accept a finding and/or recommendation in part or in principle but, due to other constraints, implementing changes which go only part of the way to resolving the safety problem, and hence lead to the client team consciously agreeing to recognise and accept the residual risk.*
- *Accept a finding in part or in principle but, due to other constraints, deferring the recommended action/s, or staging them over an extended period, with an understanding and acceptance of the associated risks.*
- *Accept a finding in part or in principle but deciding to take no action and formally document the rationale.*
- *Reject a finding and therefore deciding to take no action/s and not formally document the rationale.*

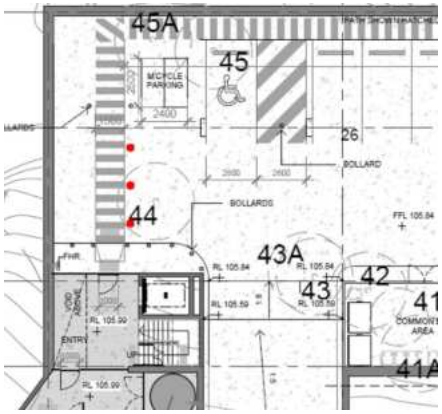
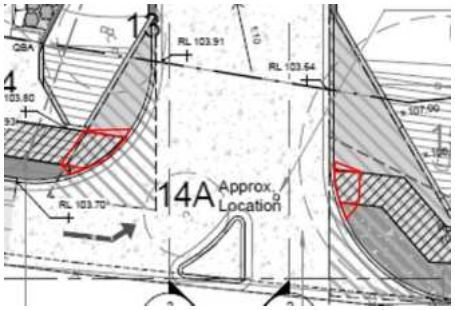
The Project Manager's response to each finding and recommendation, including details of alternative solutions, should be documented in a formal risk register or other appropriate control documentation. If a finding is accepted, but recommendation is rejected, this should be reflected in the response.

6 FINDINGS AND RECOMMENDATIONS

Audit Findings	Recommendation/s	Rating	Project Manager	
			Accept? Yes/No	Reasons/Comments
1. Pedestrian and vehicle conflict at the top of the ramp At the top of the ramp on entry to the car park, there is a point of potential conflict between entering vehicles and pedestrians not using the designated line marked path. This may include pedestrians taking a shortcut to parking spaces, or staff walking toward the bin storage. There is restricted sight distance given the positioning of the building and lift and upward grades. There is a risk of pedestrians stepping out into the accessway and not being observed by entering drivers.  	It is noted that the plans currently show bollards, as well as a kerb ramp and line marked pedestrian path which will help to encourage pedestrian use of the designated path away from vehicles. However, this could be further improved by providing a pedestrian guard rail / fence instead of bollards to physically force pedestrian use of the designated path and stop pedestrians stepping out to oncoming entering traffic.  	Likelihood: *Likely* Severity: *Moderate* Level of Risk: *High* SEVERITY / LIKELIHOOD I / Mi / M / S / F AC L **X** P U R		

Audit Findings	Recommendation/s	Rating	Project Manager	
			Accept? Yes/No	Reasons/Comments
2. Ramp gradients Similar to the above comment, there is restricted sight lines between entering vehicles and pedestrians present on the path beside the lift, especially as it is situated at the top of the ramp. It is noted that the ramp grades shown on the plans are compliant with the Planning Scheme requirements	Explore opportunities to flatten the grade toward the top of the ramp to improve sight lines. This may involve starting the 1:10 grade at the bottom of the ramp more toward Burwood Highway if possible.	Likelihood: *Unlikely* Severity: *Moderate* Level of Risk: *Medium* LIKELIHOOD / SEVERITY (I, Mi, M, S, F): AC, L, P, U (X), R		
3. Vehicle speeds The car park aisle is relatively long at approximately 45m which may allow vehicles to pick up speed. This poses a safety risk to pedestrians present in the car park. Similarly, there is a downward grade on exit from the car park to Burwood Highway. This poses a risk of vehicles picking up speed on approach to the Burwood Highway footpath where pedestrians may be present.	It is recommended to incorporate some speed humps including approximately half-way along the car park aisle, and on the exit lane of the driveway toward Burwood Highway, to help ensure vehicles travel slowly. Leave a minimum 1.0 gap to the side of the speed hump on the aisle for pedestrians.  	Likelihood: *Possible* Severity: *Moderate* Level of Risk: *High* LIKELIHOOD / SEVERITY (I, Mi, M, S, F): AC, L, P (X), U, R		

Audit Findings	Recommendation/s	Rating	Project Manager	
			Accept? Yes/No	Reasons/Comments
4. Turning bay delineation The turning bay at the end of the car park is not shown to be provided with any signage or line marking. This poses a risk of a vehicle parking in the turning bay, such that if another car was to arrive and the car park was fully occupied, they would need to reverse the length of the car park to exit the site. Vehicles reversing such a length poses a risk to pedestrians present in the car park who may not be observed.	The turning bay should be provided with line marking on the pavement within the space and a 'No Parking' sign or similar. 	Likelihood: *Unlikely* Severity: *Moderate* Level of Risk: *Medium* SEVERITY / LIKELIHOOD I Mi M S F AC L P U X R		
5. 'No Parking' space Similar to the above, the 'No Parking' space at what is presumably the childcare fire escape is not shown to be provided with any physical treatments to prevent parking. Therefore, a vehicle may park in this space which would restrict the ease and efficiency of pedestrian egress, especially with large groups of small children. This increases risk in the event of a fire.	It is recommended to provide a bollard or linemarking within this space to physically prevent vehicles parking in it. 	Likelihood: *Rare* Severity: *Fatal* Level of Risk: *High* SEVERITY / LIKELIHOOD I Mi M S F AC L P U R X		

Audit Findings	Recommendation/s	Rating	Project Manager	
			Accept? Yes/No	Reasons/Comments
6. Parking near building entrance Near the building entrance, there is a fair amount of empty space which parents may opportunistically park in. This poses a risk of vehicles traveling over or blocking the designated pedestrian path, which would then result in pedestrians walking around the vehicle and potentially into the path of vehicles entering the car park.	It is recommended to provide bollards on the eastern side of the pedestrian path to prevent vehicle access. 	Likelihood: *Unlikely* Severity: *Moderate* Level of Risk: *Medium* SEVERITY / LIKELIHOOD I Mi M S F AC L P U X R		
7. Burwood Highway entrance It is unclear from the plans whether the access at Burwood Highway will be constructed at-grade with the road. As per the Victoria Road Rules, drivers must give way to pedestrians when entering a private driveway. Drivers using the left-turn deceleration lane will have excellent sight lines to any pedestrians present on the footpath beside them.	Clarify if the access will be constructed at-grade with the road. Kerb ramps should be shown at connection to the footpaths. 	Note only.		

7 CONCLUSION

This Road Safety Audit has been conducted in accordance with the audit process specified within Austroads Guide to Road Safety Part 6: Road Safety Audits (2022).

The identified safety concerns have been noted in this report and the findings and recommendations are put forward for consideration by the project manager. Where recommended actions are not taken, this should be reported in writing providing reasons for that decision.

SIGNED:

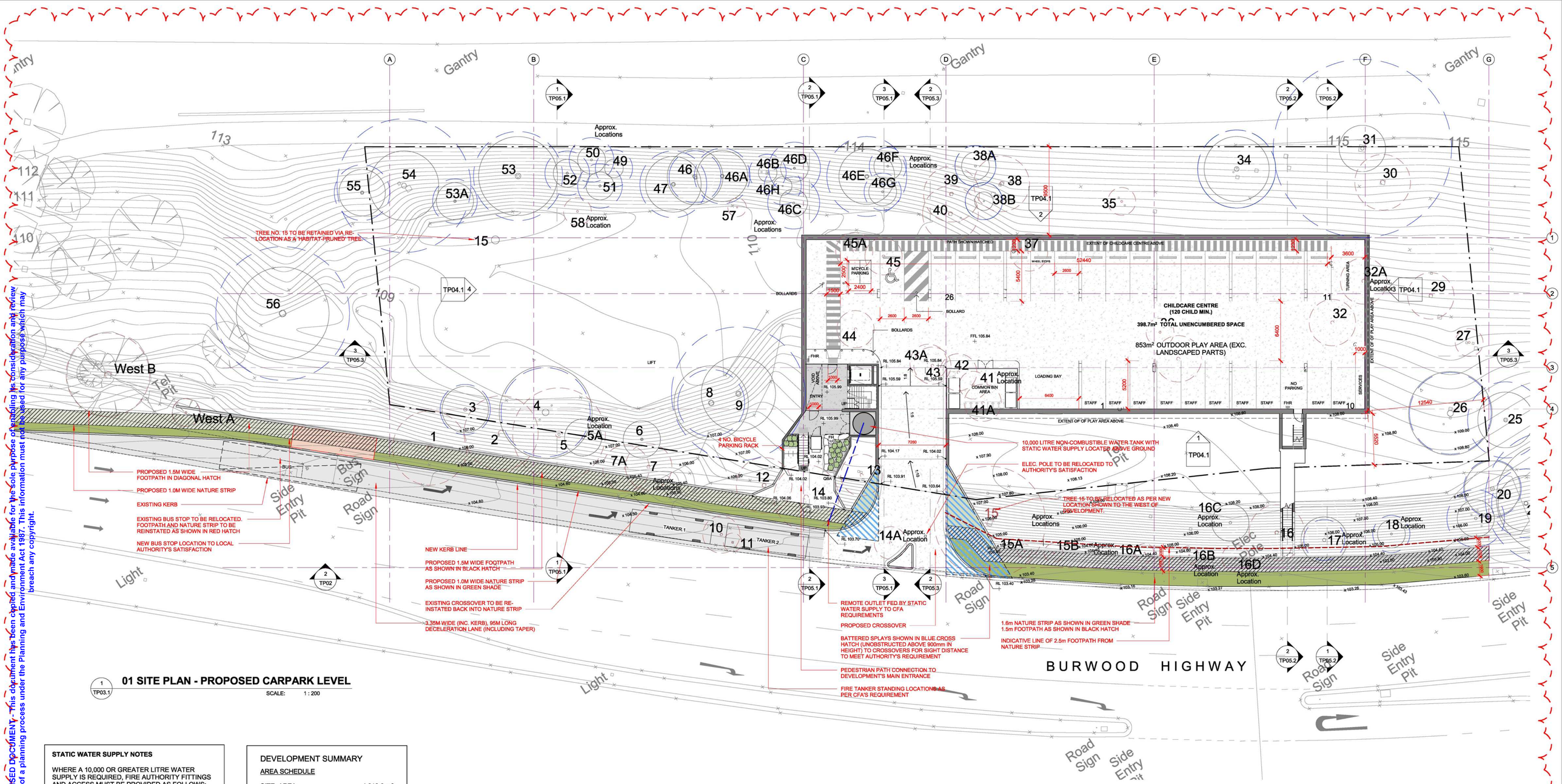
5 August 2024

SENIOR ROAD SAFETY AUDITOR

5 August 2024

ROAD SAFETY AUDITOR

APPENDIX 1 DEVELOPMENT PLANS



01 SITE PLAN - PROPOSED CARPARK LEVEL

SCALE: 1 : 200

STATIC WATER SUPPLY NOTES

WHERE A 10,000 OR GREATER LITRE WATER SUPPLY IS REQUIRED, FIRE AUTHORITY FITTINGS AND ACCESS MUST BE PROVIDED AS FOLLOWS:

- BE READILY IDENTIFIABLE FROM THE BUILDING OR APPROPRIATE IDENTIFICATION SIGNAGE TO THE SATISFACTION OF THE RELEVANT FIRE AUTHORITY.

- BE LOCATED WITHIN 60 METRES OF THE OUTER EDGE OF THE APPROVED BUILDING.

- THE OUTLET/S OF THE WATER TANK MUST BE WITHIN 4 METRES OF THE ACCESSWAY AND UNOBSTRUCTED.

- INCORPORATE A SEPARATE BALL OR GATE VALVE (BRITISH STANDARD PIPE (BSP 65 MILLIMETRE) AND COUPLING (64 MILLIMETRE CFA 3 THREAD PER INCH MALE FITTING).

- ANY PIPEWORK AND FITTINGS MUST BE A MINIMUM OF 65 MILLIMETRES (EXCLUDING THE CFA COUPLING)'.

DEVELOPMENT SUMMARY

AREA SCHEDULE

SITE AREA	4,013.8 m²
CHILDCARE CENTRE	(120 CHILDREN)
UNENCUMBERED AREA	398.7m²
(TOTAL OUTDOOR PLAY AREA)	853m²
SITE COVERAGE	742m² (18.5%)
PERMEABILITY	2,287m² (57%)
CARSPACES	27
BIKE PARKING:	4

LEGEND @A1

- EXISTING TREE TO BE RETAINED
- TREE PROTECTION ZONE (TPZ) (SHOWN FOR TREES PROPOSED TO BE RETAINED)
- TREE TO BE REMOVED / RELOCATED
- OUTDOOR PLAY AREA / ARTIFICIAL TURF
- PROPOSED NATURE STRIP
- NEW DECELERATION LANE
- PROPOSED FOOTPATH

FOR DISCUSSION

GENERAL NOTES

REV	DATE	DESCRIPTION	BY
7	17.06.2024	Amended plans - preliminary issue	

PROJECT NO: UP2404FD
DRAWN
DATE: 18.07.2024
SCALE: As indicated @A1

PROPOSED CHILDCARE CENTRE

1157 - 1165 BURWOOD HIGHWAY, UPPER FERNTREE GULLY

CLIENT: TAG

DRAWING TITLE
PROPOSED SITE PLAN - CARPARK LEVEL

DRAWING NO: TP03.1
REVISION: 7

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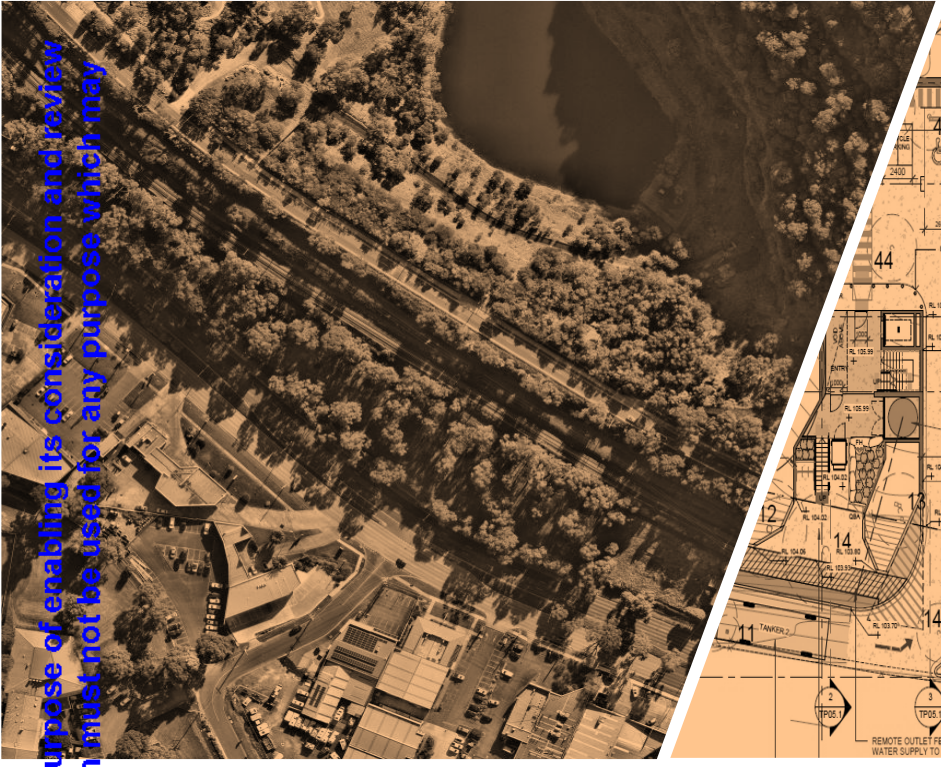

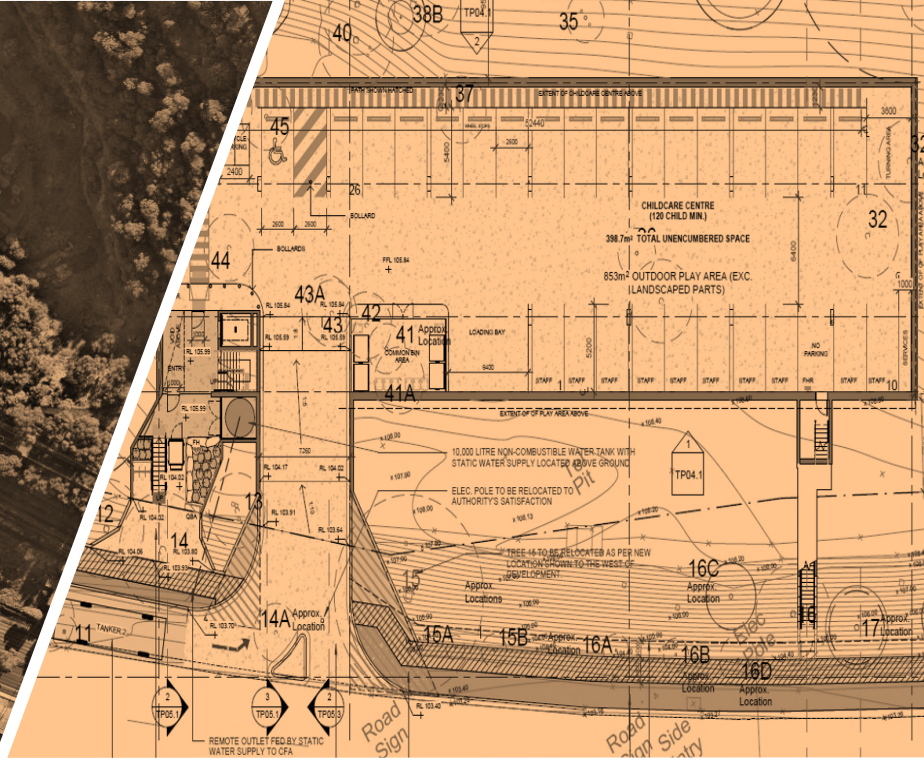

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