

**TRAFFIC AND PARKING IMPACTS REPORT
FOR A DEVELOPMENT APPLICATION
FOR A PROPOSED BOARDING HOUSE
AT NO. 51 JAMISON ROAD, KINGSWOOD NSW 2747**

Property address	51 Jamison Road, Kingswood NSW 2747
Client	Liquid Design
Prepared by	O. Sannikov, MEngSc (Traffic Engineering), MIEAust, PEng, FAITPM
Date	28/03/2019
Job No.	17106
Report No.	17106 Rep 03

Item	Report
Site location	<ul style="list-style-type: none"> • Refer to Figure 1.
Existing land use	<ul style="list-style-type: none"> • One (1) single storey residential dwelling
Proposed development	<ul style="list-style-type: none"> • Boarding house (under ARHSEPP 2009) <ul style="list-style-type: none"> ◦ 16 units in total including <ul style="list-style-type: none"> ▪ 1 manager room ▪ 15 boarding room units <ul style="list-style-type: none"> • including 2 accessible units ◦ Basement car park <ul style="list-style-type: none"> ▪ A total of 8 car parking spaces including <ul style="list-style-type: none"> • 7 standard car spaces and • 1 car space for people with disabilities ▪ 4 bicycle parking spaces ▪ 4 motorcycle parking spaces



Figure 1. Site location.

Item	Report
Street characteristics	<p>Existing traffic and parking situation</p>
	<ul style="list-style-type: none"> • Refer to Figure 2. • The key roads around the proposed development are described below. <ul style="list-style-type: none"> ○ Jamison Road <ul style="list-style-type: none"> ▪ Local collector road ▪ 2 travel lanes and 2 parking lanes <ul style="list-style-type: none"> • Unrestricted parking ○ Somerset Street <ul style="list-style-type: none"> ▪ Local collector road ▪ 2 travel lanes and 2 parking lanes <ul style="list-style-type: none"> • Metered parking ○ Stafford Street <ul style="list-style-type: none"> ▪ Local collector road ▪ 2 travel lanes and 2 parking lanes <ul style="list-style-type: none"> • Metered parking ○ Stapley Street <ul style="list-style-type: none"> ▪ Local road ▪ 2 travel lanes and 2 parking lanes <ul style="list-style-type: none"> • Unrestricted parking • Other streets in the surrounding area are local/local collector roads. Street conditions are typical for a low density residential area. <ul style="list-style-type: none"> ○ General speed limit is 50 km/h on local streets around the site.



Figure 2. Street characteristics.

Item	Report
	Public Transport
Bus	<ul style="list-style-type: none"> • The site has good public transport provision. Refer to Figure 3. • The closest bus stop is located on Jamison Road (approximately 50 metres from site location). • There is also another bus stop 400 metres away on Derby Street. <ul style="list-style-type: none"> ◦ There are 4 bus routes within walking distance. ◦ Bus route 770 <ul style="list-style-type: none"> ▪ Penrith to Mount Druitt via St Marys <ul style="list-style-type: none"> • 6 services operate during the morning peak • 5 services operate during the afternoon peak ▪ Mount Druitt to Penrith via St Marys <ul style="list-style-type: none"> • 5 service operates during the morning peak • 5 services operate during the afternoon peak ◦ Bus route 774 <ul style="list-style-type: none"> ▪ Penrith to Mount Druitt via Nepean Hospital <ul style="list-style-type: none"> • 6 services operate during the morning peak • 5 services operate during the afternoon peak ▪ Mount Druitt to Penrith via Nepean Hospital <ul style="list-style-type: none"> • 6 service operates during the morning peak • 6 services operate during the afternoon peak ◦ Bus route 775 <ul style="list-style-type: none"> ▪ Penrith to Mount Druitt via Erskine Park <ul style="list-style-type: none"> • 6 services operate during the morning peak • 7 services operate during the afternoon peak ▪ Mount Druitt to Penrith via Erskine Park <ul style="list-style-type: none"> • 5 services operate during the morning peak • 7 services operate during the afternoon peak ◦ Bus route 776 <ul style="list-style-type: none"> ▪ Penrith to Mount Druitt via St Clair <ul style="list-style-type: none"> • 6 services operate during the morning peak • 6 services operate during the afternoon peak ▪ Mount Druitt to Penrith via St Clair <ul style="list-style-type: none"> • 7 services operate during the morning peak • 5 services operate during the afternoon peak • The morning peak was considered to be between 6:30 a.m. and 9:30 a.m. and the afternoon peak was considered to be between 3:30 p.m. and 6:30 p.m.

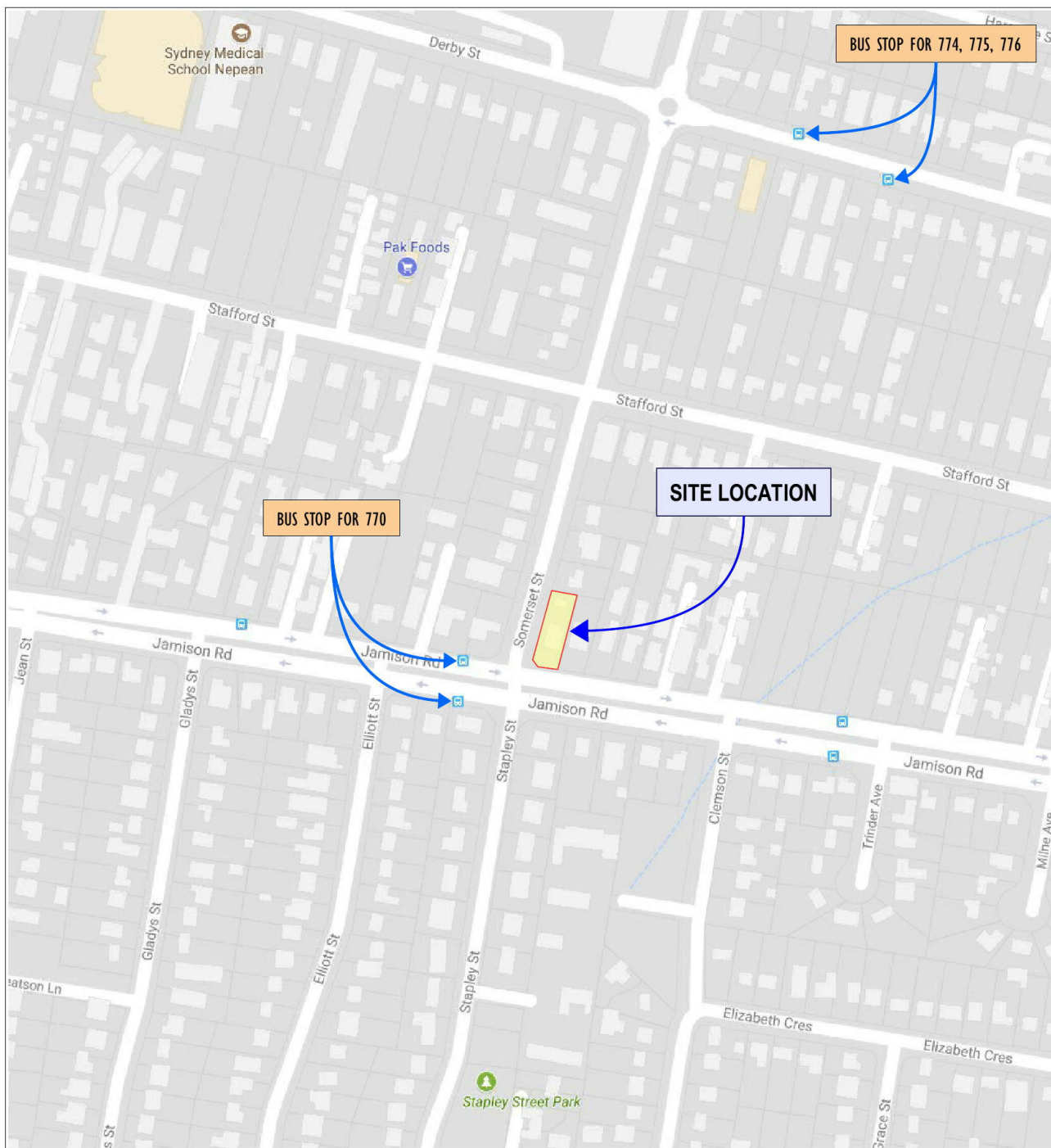


Figure 3. Public transport.

Item	Report
Surveys and survey results	
Parking survey	<ul style="list-style-type: none"> • An on-street parking accumulation survey was conducted on Wednesday 25th of October 2017 from 3:30 p.m. to 7:00 p.m. and Thursday 26th of October 2017 from 6:30 a.m. to 10:00 a.m. <ul style="list-style-type: none"> ◦ Refer to Figure 4 for survey locations. ◦ The study area represents a walking distance of up to 250 metres (convenient) from the site location.
Survey results	<ul style="list-style-type: none"> • Refer to Table 1 for survey results <ul style="list-style-type: none"> ◦ Area 1a-1b (Jamison Road on the same side of the site location) <ul style="list-style-type: none"> ▪ The morning peak occurred at 10:00 a.m. ▪ The afternoon peak occurred at 3:30 p.m. ▪ The survey results indicated that there were at least 23 spaces vacant throughout the day (to a maximum of 36) on Jamison Road on same side as the site location. ◦ Areas 1a-6 (all areas within 250 metre walking distance) <ul style="list-style-type: none"> ▪ The morning peak occurred at 10:00 a.m. ▪ The afternoon peak occurred at 3:30 p.m. ▪ The survey results indicated that there were at least 61 spaces vacant throughout the day (to a maximum of 115) within a 250 metre walking distance from site location. ◦ The morning and afternoon peak parking demand generally occurred at the same time throughout all areas.

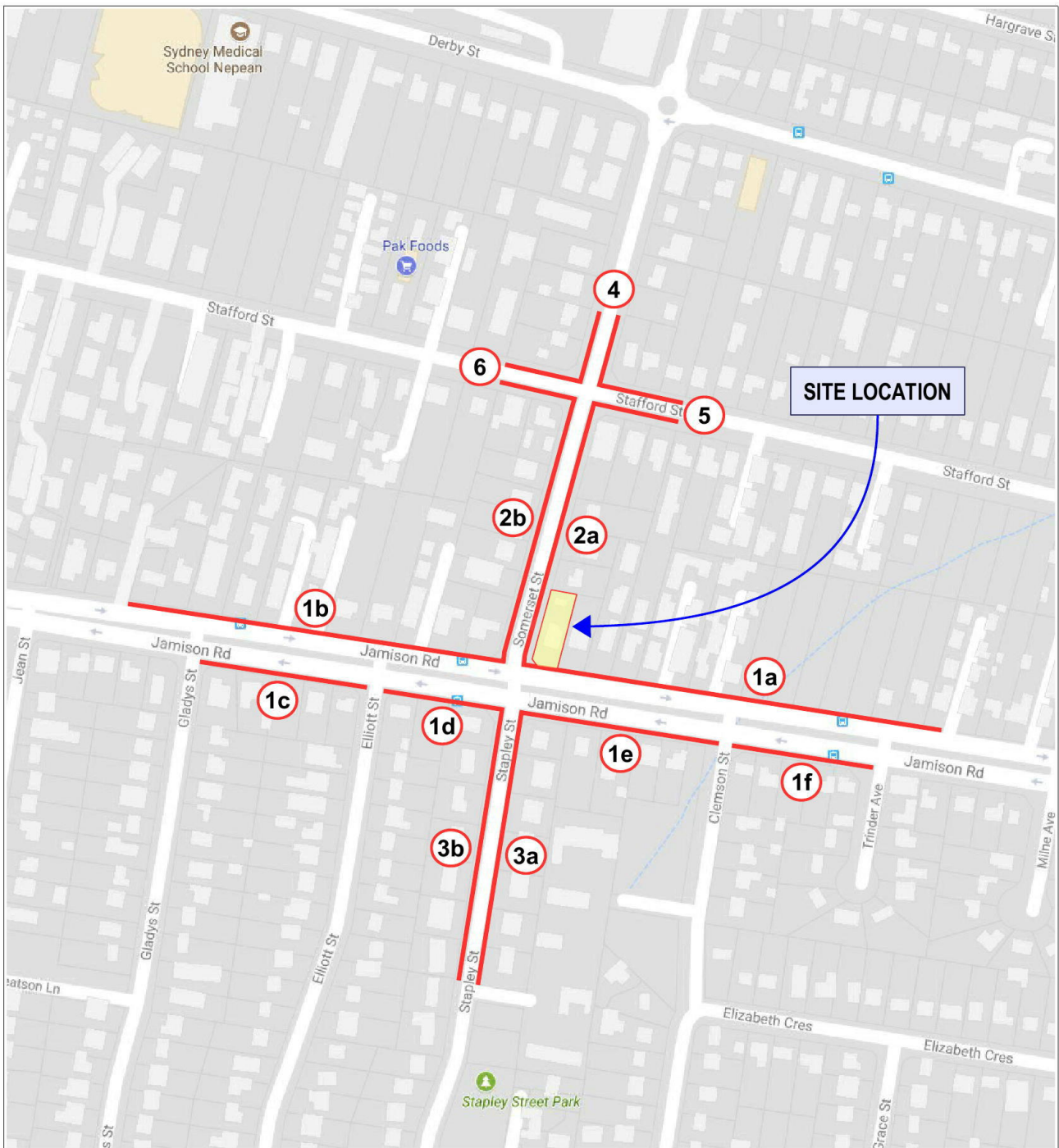


Figure 4. Parking survey locations.

Table 1. Parking survey results.

	Number of parked cars													Total	
	Parking Location														
Time	1a	1b	1c	1d	1e	1f	2a	2b	3a	3b	4	5	6	1a-1b	1a-6
6:30	8	4	1	0	2	0	0	3	0	1	10	4	2	12	35
7:00	9	4	1	0	2	0	6	7	0	1	11	5	5	13	51
7:30	8	4	1	0	2	0	7	11	0	1	11	5	5	12	55
8:00	6	4	1	0	2	0	15	13	0	1	11	5	5	10	63
8:30	10	7	1	0	3	0	15	14	0	2	11	5	5	17	73
9:00	11	7	1	0	2	0	15	14	0	4	11	5	5	18	75
9:30	13	8	1	1	2	0	15	14	1	4	11	5	5	21	80
10:00	13	9	1	1	2	0	15	14	2	6	11	5	5	22	84
No of spaces	27	19	7	3	10	5	15	14	13	11	11	5	5	46	145

	Number of vacant parking spaces													Total	
	Parking Location														
Time	1a	1b	1c	1d	1e	1f	2a	2b	3a	3b	4	5	6	1a-1b	1a-6
6:30	19	15	6	3	8	5	15	11	13	10	1	1	3	34	110
7:00	18	15	6	3	8	5	9	7	13	10	0	0	0	33	94
7:30	19	15	6	3	8	5	8	3	13	10	0	0	0	34	90
8:00	21	15	6	3	8	5	0	1	13	10	0	0	0	36	82
8:30	17	12	6	3	7	5	0	0	13	9	0	0	0	29	72
9:00	16	12	6	3	8	5	0	0	13	7	0	0	0	28	70
9:30	14	11	6	2	8	5	0	0	12	7	0	0	0	25	65
10:00	14	10	6	2	8	5	0	0	11	5	0	0	0	24	61

	Number of parked cars													Total	
	Parking Location														
Time	1a	1b	1c	1d	1e	1f	2a	2b	3a	3b	4	5	6	1a-1b	1a-6
15:30	12	11	2	2	7	0	8	12	3	2	7	2	0	23	68
16:00	11	10	2	2	6	0	7	11	3	2	8	3	0	21	65
16:30	11	8	3	2	6	0	5	7	3	2	8	2	0	19	57
17:00	8	7	2	2	4	0	5	6	3	2	6	2	0	15	47
17:30	9	7	2	2	2	0	4	5	2	1	7	2	0	16	43
18:00	5	6	2	1	2	0	2	6	2	1	6	3	0	11	36
18:30	6	5	2	1	2	0	1	5	2	2	3	1	0	11	30
19:00	8	5	3	1	2	0	1	4	2	2	5	1	0	13	34
No of spaces	27	19	7	3	10	5	15	14	13	11	11	5	5	46	145

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	Parking Location														
Time	1a	1b	1c	1d	1e	1f	2a	2b	3a	3b	4	5	6	1a-1b	1a-6
15:30	15	8	5	1	3	5	7	2	10	9	4	3	5	23	77
16:00	16	9	5	1	4	5	8	3	10	9	3	2	5	25	80
16:30	16	11	4	1	4	5	10	7	10	9	3	3	5	27	88
17:00	19	12	5	1	6	5	10	8	10	9	5	3	5	31	98
17:30	18	12	5	1	8	5	11	9	11	10	4	3	5	30	102
18:00	22	13	5	2	8	5	13	8	11	10	5	2	5	35	109
18:30	21	14	5	2	8	5	14	9	11	9	8	4	5	35	115
19:00	19	14	4	2	8	5	14	10	11	9	6	4	5	33	111

Item	Report
Planning control document 1	<ul style="list-style-type: none"> • State Environmental Planning Policy (Affordable Rental Housing) 2009 (ARHSEPP 2009) <ul style="list-style-type: none"> ◦ Division 3 – Boarding houses

Requirement	Compliance
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26 Land to which Division applies

This Division applies to land within any of the following land use zones or within a land use zone that is equivalent to any of those zones:

- (a) Zone R1 General Residential,
- (b) Zone R2 Low Density Residential,
- (c) Zone R3 Medium Density Residential,**
- (d) Zone R4 High Density Residential,
- (e) Zone B1 Neighbourhood Centre,
- (f) Zone B2 Local Centre,
- (g) Zone B4 Mixed Use.

29 Standards that cannot be used to refuse consent

(2) A consent authority must not refuse consent to development to which this Division applies on any of the following grounds:

- (e) parking if:
 - (i) in the case of development carried out by or on behalf of a social housing provider in an accessible area—at least 0.2 parking spaces are provided for each boarding room, and
 - (ii) in the case of development carried out by or on behalf of a social housing provider not in an accessible area—at least 0.4 parking spaces are provided for each boarding room, and
 - (iia) in the case of development not carried out by or on behalf of a social housing provider—at least 0.5 parking spaces are provided for each boarding room**

Car parking required	Car parking proposed
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<p>The proponent is not a social housing provider and there are a total of 16 boarding rooms.</p> <ul style="list-style-type: none"> • 0.5 spaces per boarding room <ul style="list-style-type: none"> ◦ $0.5 \times 16 = 8$ spaces • parking requirement for employees is maximum limit, no parking is required 	<p>8 car parking spaces are proposed.</p> <p>Complies</p> <p>It is also noted that there are substantial parking opportunities on street. Surveys conducted by TEF Consulting indicate that there were at least 23 spaces vacant throughout the day (to a maximum of 36) on Jamison Road alone (same side as the site location).</p> <p>There were at least 61 spaces vacant throughout the day (to a maximum of 115) within a 250 metre walking distance from site location.</p> <ul style="list-style-type: none"> • Refer to previous section 'Surveys and survey results' for results and further discussion.
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(4) A consent authority may consent to development to which this Division applies whether or not the development complies with the standards set out in subclause (1) or (2).

30 Standards for boarding houses

(1) A consent authority must not consent to development to which this Division applies unless it is satisfied of each of the following:

- (h) at least one parking space will be provided for a bicycle, and one will be provided for a motorcycle, for every 5 boarding rooms.

Bicycle/motorcycle parking required	Bicycle/motorcycle parking proposed
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<ul style="list-style-type: none"> • 1 space per 5 boarding rooms <ul style="list-style-type: none"> ◦ $1 \times 16/5 = 3.2$, say 3 spaces each for bicycles and motorcycles 	<p>4 motorcycle spaces are proposed.</p> <p>4 bicycle spaces are proposed.</p> <p>Complies and exceeds</p>
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Planning control document 2	<ul style="list-style-type: none"> • Penrith City Council <ul style="list-style-type: none"> ◦ Penrith Development Control Plan 2014 <ul style="list-style-type: none"> ▪ Part C10 – Transport, Access and Parking ▪ Part D2 – Residential Development 																																						
	<table border="1"> <thead> <tr> <th data-bbox="379 398 911 443">Requirement</th> <th data-bbox="911 398 1428 443">Compliance</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="379 443 1428 488">10.1 Transport and Land Use</td> </tr> <tr> <td data-bbox="379 488 911 656">1) A Transport Management and Accessibility Plan (TMAP) is to be prepared for all significant developments (see Appendix F3 – Submission Requirements for further details). The TMAP is to address the objectives and controls in this section.</td> <td data-bbox="911 488 1428 656">Not applicable</td> </tr> <tr> <td data-bbox="379 656 911 831">2) New development that will have potential significant public transport patronage (especially residential, commercial and employment generating uses) is to be located close to existing or proposed transport nodes or networks.</td> <td data-bbox="911 656 1428 831">Complies</td> </tr> <tr> <td data-bbox="379 831 911 949">4) Public transport use is to be enhanced by providing good pedestrian connections from places of residence or employment to transport networks or nodes.</td> <td data-bbox="911 831 1428 949">Complies</td> </tr> <tr> <td colspan="2" data-bbox="379 949 1428 994">10.2 Traffic Management and Safety</td> </tr> <tr> <td colspan="2" data-bbox="379 994 1428 1039">1) Traffic Studies</td> </tr> <tr> <td colspan="2" data-bbox="379 1039 1428 1158">Traffic studies may be required for some developments. Check with Council about whether a traffic report is required to support your proposal.</td> </tr> <tr> <td colspan="2" data-bbox="379 1158 1428 1247">d) Any Traffic Report or Traffic Impact Statement is required to address the following issues:</td> </tr> <tr> <td data-bbox="379 1247 911 1314">i. The objectives of this section relating to transport and land use;</td> <td data-bbox="911 1247 1428 1314">Complies</td> </tr> <tr> <td data-bbox="379 1314 911 1382">ii. The objectives of this section relating to traffic management and safety;</td> <td data-bbox="911 1314 1428 1382">Complies</td> </tr> <tr> <td data-bbox="379 1382 911 1471">iii. The objectives and controls of this section relating to traffic generating developments; and</td> <td data-bbox="911 1382 1428 1471">Complies</td> </tr> <tr> <td data-bbox="379 1471 911 1538">iv. The issues set out in Appendix F3 – Submission Requirements of this DCP.</td> <td data-bbox="911 1471 1428 1538">Complies</td> </tr> <tr> <td colspan="2" data-bbox="379 1538 1428 1583">2) Road Safety</td> </tr> <tr> <td colspan="2" data-bbox="379 1583 1428 1650">a) Each development should demonstrate how it will:</td> </tr> <tr> <td data-bbox="379 1650 911 1796">i. Provide safe entry and exit for vehicles and pedestrians which reflect the proposed land use, and the operating speed and character of the road;</td> <td data-bbox="911 1650 1428 1796">Complies</td> </tr> <tr> <td data-bbox="379 1796 911 1915">ii. Minimise the potential for vehicular/pedestrian conflicts, providing protection for pedestrians where necessary;</td> <td data-bbox="911 1796 1428 1915">Complies</td> </tr> <tr> <td data-bbox="379 1915 911 2004">iii. Not restrict traffic flow or create a hazard to traffic on roads in the vicinity of the development;</td> <td data-bbox="911 1915 1428 2004">Complies</td> </tr> <tr> <td data-bbox="379 2004 911 2072">iv. Provide suitable off-street parking facilities to accommodate vehicles</td> <td data-bbox="911 2004 1428 2072">Complies</td> </tr> </tbody> </table>	Requirement	Compliance	10.1 Transport and Land Use		1) A Transport Management and Accessibility Plan (TMAP) is to be prepared for all significant developments (see Appendix F3 – Submission Requirements for further details). The TMAP is to address the objectives and controls in this section.	Not applicable	2) New development that will have potential significant public transport patronage (especially residential, commercial and employment generating uses) is to be located close to existing or proposed transport nodes or networks.	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Item	Report
	<p>Requirement</p> <p>generated by the development; and</p> <p>Compliance</p>
	<p>v. Identify the need, where apparent, for any additional on-street traffic facilities or road works which may be required to maintain the safe and efficient movement of vehicles and pedestrians.</p> <p>Not applicable</p>
	<p>b) Where feasible, vehicle access for developments should be from service roads/lanes.</p> <p>Not applicable</p>
	<p>c) The design of direct vehicular access to developments should consider the traffic impacts on the surrounding road network. This may require the provision of deceleration, acceleration, right turn lanes and road widening, as necessary.</p> <p>Complies</p>
	<p>d) Provision must be made for all vehicles to enter and leave properties in a forward direction other than for single dwellings.</p> <p>Complies</p>
	<p>e) The layout and design of parking areas must minimise vehicle to pedestrian impacts, especially where heavy vehicle access to loading docks is proposed.</p> <p>Complies</p>
<p>10.5 Parking, Access and Driveways</p>	
<p>10.5.1. Parking</p>	
<p>1) Provision of Parking Spaces</p>	
	<p>a) Parking provided on site is to meet AS 2890 and where appropriate, AS 1428.</p> <p>Complies with the AS/NZS 2890 series</p>
	<p>b) For any proposed development, Council will require the provision of on-site car parking to a standard appropriate to the intensity of the proposed development as set out in Table C10.2 below.</p> <p>Refer to the previous section 'Planning control document 1'</p> <p>State Environmental Planning Policy (Affordable Rental Housing) 2009 (ARHSEPP 2009) overrides DCP requirements for car parking rates and calculations.</p>
	<p>g) Where relevant, development shall provide on-site loading facilities to accommodate the anticipated heavy vehicle demand for the site.</p> <p>No loading facilities are proposed.</p> <p>A residential boarding house is not expected to generate any heavy vehicle demand for the purpose of loading/unloading.</p>
	<p>k) Car parking and associated internal manoeuvring areas provided over and beyond the requirements of this DCP shall be calculated as part of the development's gross floor area.</p> <p>Noted</p>
	<p>n) For all residential development at least one car parking space for each dwelling shall be covered the second space may be "stacked" or "tandem" or located on a driveway.</p> <p>Complies</p>
<p>3) Additional Controls for Residential Developments</p>	
	<p>a) On-site parking for residential developments, including the residential component in a mixed use development, is to be accommodated wholly in a basement parking area unless the applicant can demonstrate to Council's satisfaction that the site's unique conditions prevent the parking from being located in a basement structure.</p> <p>Complies</p>
<p>5) Design of Parking and Manoeuvring Areas</p>	

Item	Report
	Requirement Compliance
	a) Car space dimensions must comply with the relevant Australian Standards. Complies
	b) The movement of pedestrians throughout the car park should be clearly delineated and be visible for all users of the car park to minimise conflict with vehicles. The car parking and manoeuvring layout should be in accordance with the provisions of AS 2890.1 – 2004. Complies with AS/NZS 2890.1:2004
	c) Provision of parking spaces for disabled persons should be in accordance with the Access to Premises Standards, the Building Code of Australia and AS2890. Complies with AS/NZS 2890.6:2009
	d) Council will require all car parking areas to be constructed of hard standing, all weather material, with parking bays and circulation aisles clearly delineated. Capable of compliance at the construction stage
	e) Vehicle access is to be integrated into the building design as to be visually recessive. Complies
	h) Large car parking areas (more than 5 vehicles) should be visually separated from access roads and from the buildings they serve by planting and other landscaping and should not be visually prominent from public roads, either through separation or screening. Complies
	i) All vehicles must be able to enter and leave the site in a forward direction without the need to make more than a three point turn. Complies
	j) Council may require the provision of internal directional signs to assist site visitors in locating parking areas. Noted
	k) For residential development, other than a single residence, the minimum space width shall provide for full door opening in accordance with Table B1 of AS2890.1 – 2004. Complies with AS/NZS 2890.1:2004
	l) The design of the car park should ensure that passive surveillance is possible and, where appropriate, incorporate active measures such as cameras and security patrols. Car parks should be designed to minimise dark areas through the provision of appropriate lighting. Complies
	m) Access to security parking shall be designed to ensure the access mechanism is accessible to the vehicle driver on the entry side of the driveway. Complies
	n) Provision should be made for all vehicles to enter and exit a secure (i.e. boom-gated) area in a forward direction. Complies
	q) Vehicular ramps less than 20m long within developments and parking stations must have a maximum grade of 1 in 5 (20%). Ramp widths must be in accordance with AS2890. Complies with the AS/NZS 2890 series
	r) Access ways to underground parking should be sited to minimise noise impacts on adjacent habitable rooms, particularly bedrooms. Complies
	y) All potential entrapment points should be avoided, e.g. under stairs, blind corners and wide columns. Adequate lighting and mirrors should be used when certain design features are unavoidable. Complies

Item	Report		
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	<p>10.5.2. Access and Driveways</p>		
	<p>1) General Requirements</p>		
	<table border="1"> <tbody> <tr> <td data-bbox="384 528 906 665">a) The road access to the site should provide for safe entry to and exit from the site. All vehicles must enter/exit the site in a forward direction. (This does not apply to single dwellings).</td> <td data-bbox="906 528 1439 665">Complies</td> </tr> </tbody> </table>	a) The road access to the site should provide for safe entry to and exit from the site. All vehicles must enter/exit the site in a forward direction. (This does not apply to single dwellings).	Complies
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Item	Report
	<p>Requirement Compliance</p>
	Western Motorway.
	<p>6) Responding to Topography</p>
	<p>a) Natural contours should be followed when designing and constructing driveways. Driveways should be located to retain as much of the property's vegetation as practicable.</p>
	Complies
	<p>10.7 Bicycle Facilities</p>
	<p>2. Provision of Bicycle Parking Spaces</p>
	<p>a) For commercial developments providing employment for 20 people or more, bicycle parking is to be in secure and accessible locations, and provided with weather protection, in accordance with AS2890.3:1993 Bicycle Parking Facilities.</p>
	Not applicable
	<p>b) The following associated facilities are to be provided:</p>
	<p>i. Change and shower facilities for cyclists are to be conveniently located close to the bicycle storage areas; and</p>
	The proposed development is a residential boarding house, as such private bathrooms are provided on site for each individual unit.
	<p>ii. Where the building is to be strata-titled, the bicycle storage facilities and shower/change facilities are to be made available to all occupants of the building.</p>
	Not applicable
	<p>c) Applicants should comply with the suggested bicycle parking provision rates for different land use types in the document 'Planning Guidelines for Walking and Cycling' (NSW Government 2004).</p>
	Refer to the previous section ' Planning control document 1 '
	Complies with State Environmental Planning Policy (Affordable Rental Housing) 2009 (ARHSEPP 2009) for bicycle parking rates.
	<p>3. Design of bicycle spaces</p>
	<p>a) Bicycle parking spaces must:</p>
	<p>i. Be provided in accordance with AS2890.3:1993 Bicycle Parking Facilities;</p>
	Complies with AS 2890.3 – 2015
	<p>ii. Be located to provide convenient access from surrounding bicycle routes and main building entrances;</p>
	Complies
	<p>iii. Not interfere with reasonable access to doorways, loading areas, access covers, furniture, services and infrastructure;</p>
	Complies
	<p>iv. Not cause a hazard; and</p>
	Complies
	<p>v. Be adequately lit during periods of use.</p>
	Complies
	<p>4. Bicycle Rails, Storage and Signage</p>
	<p>a) A bicycle rail must:</p>
	<p>i. Be securely fixed to a wall or to the floor or ground;</p>
	Complies
	<p>ii. Be in a highly visible location for bicycle security (when not in a compound);</p>
	Complies
	<p>iii. Be in a highly visible location for bicycle security (when not in a compound);</p>
	Complies
	<p>iv. Be of a shape that allows a cyclist to</p>
	Complies

Item	Report						
	<table border="1"> <thead> <tr> <th data-bbox="375 224 909 268">Requirement</th> <th data-bbox="909 224 1436 268">Compliance</th> </tr> </thead> <tbody> <tr> <td data-bbox="375 268 909 336">easily lock the bicycle frame and wheels; and</td> <td data-bbox="909 268 1436 336"></td> </tr> <tr> <td data-bbox="375 336 909 403">v. Be located to allow easy access to park, lock and remove the bicycle.</td> <td data-bbox="909 336 1436 403">Complies</td> </tr> </tbody> </table>	Requirement	Compliance	easily lock the bicycle frame and wheels; and		v. Be located to allow easy access to park, lock and remove the bicycle.	Complies
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	b) A bicycle compound or a bicycle locker must:						
	i. Be located to provide convenient access to other bicycle facilities including showers and change rooms;						
	ii. Be fully enclosed;						
	iii. Be able to be locked; and						
	iv. If outside, provide weather protection for the bicycle.						
D2 Residential Development							
2.5.12 Building Design							
	3) Basements for car parks should rise no higher than 1.5m above ground provide a minimum 2.2m vertical clearance for vehicles.						
2.5.20 Accessibility and Adaptability							
	6) Car parking and garages allocated to adaptable dwellings must comply with the requirements of the relevant Australian Standard regarding parking for people with a disability.						

Item	Report
Traffic generation	Traffic impacts
	<ul style="list-style-type: none"> • Base traffic generation rates <ul style="list-style-type: none"> ◦ From RMS (2002) Guide to Traffic Generating Developments <ul style="list-style-type: none"> ▪ Updated statistics from TDT 2013 / 04a
	<ul style="list-style-type: none"> • Existing traffic generation <ul style="list-style-type: none"> ◦ One dwelling house <ul style="list-style-type: none"> • Peak hour vehicle trips = 0.99 per dwelling <ul style="list-style-type: none"> • $0.99 \times 1 = 1$ trip during the peak hour
	<ul style="list-style-type: none"> • Traffic generated by proposed development <ul style="list-style-type: none"> ◦ 16 units (medium density residential – Sydney average) <ul style="list-style-type: none"> ▪ Weekday peak hour vehicle trips = 0.4 to 0.5 per unit <ul style="list-style-type: none"> • $16 \times (0.4 \text{ to } 0.5) = 6.4 \text{ to } 8$, say 6 to 8 trips during the respective peak hour • Additional traffic generation <ul style="list-style-type: none"> • $(6 \text{ to } 8) - 1 = 5 \text{ to } 7$ additional trips per hour during the peak hours
Conclusion	<ul style="list-style-type: none"> • Additional traffic generation is minor and will have no noticeable impact on the existing road network.

Conclusions

- Proposed parking provision
 - Complies with State Environmental Planning Policy (Affordable Rental Housing) 2009 for car, bicycle and motorcycle parking.
- Traffic impacts
 - The additional traffic from the proposed development will be minimal and will have no noticeable impacts on street network operation.
- Design of access, car parking and servicing facilities
 - Complies with the relevant Standards
- The proposed development is supportable on traffic and parking grounds.



Oleg I. Sannikov

Director

MEngSc (Traffic Engineering)

MIEAust, PEng

FAITPM

References:

State Environmental Planning Policy (Affordable Rental Housing) 2009 (ARHSEPP 2009)

Penrith Development Control Plan 2014

Guide to Traffic Generating Developments RMS (2002)

AS/NZS 2890.1:2004: Parking Facilities – Off-street car parking

AS 2890.3:2015: Parking Facilities – Bicycle parking

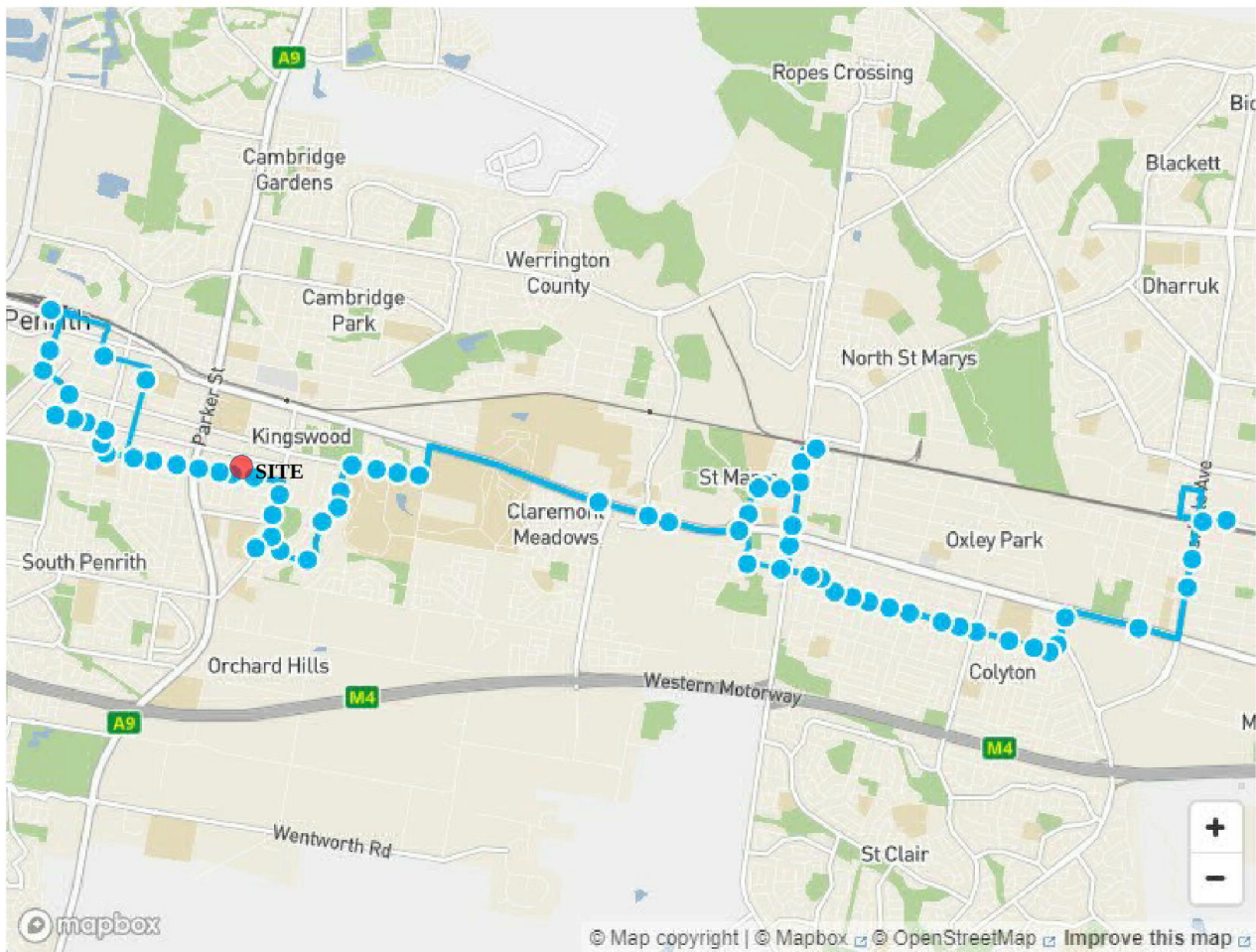
AS/NZS 2890.6:2009: Parking Facilities – Off-street parking for people with disabilities

Appendix

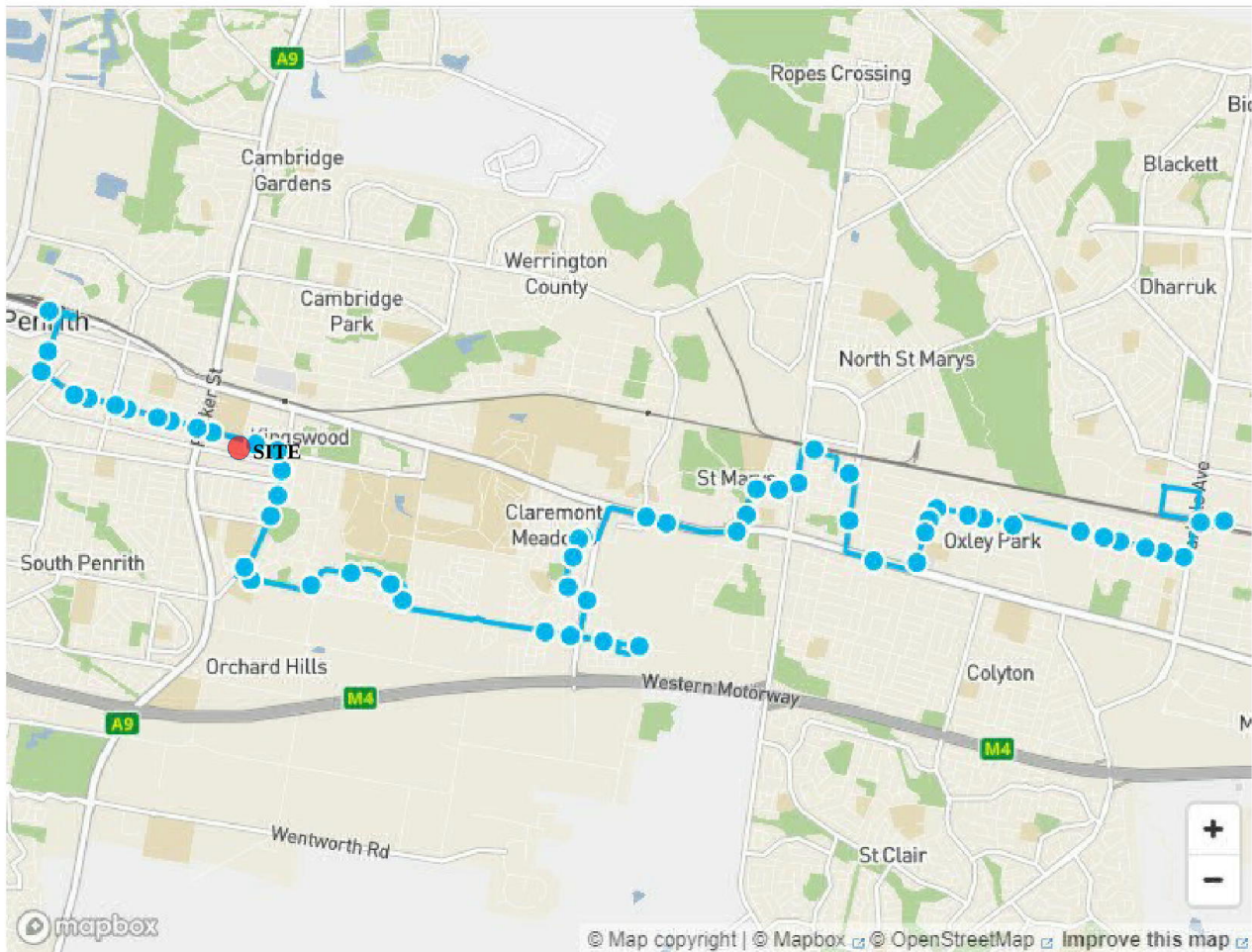
Bus routes

Car park design checks and vehicle turning diagrams

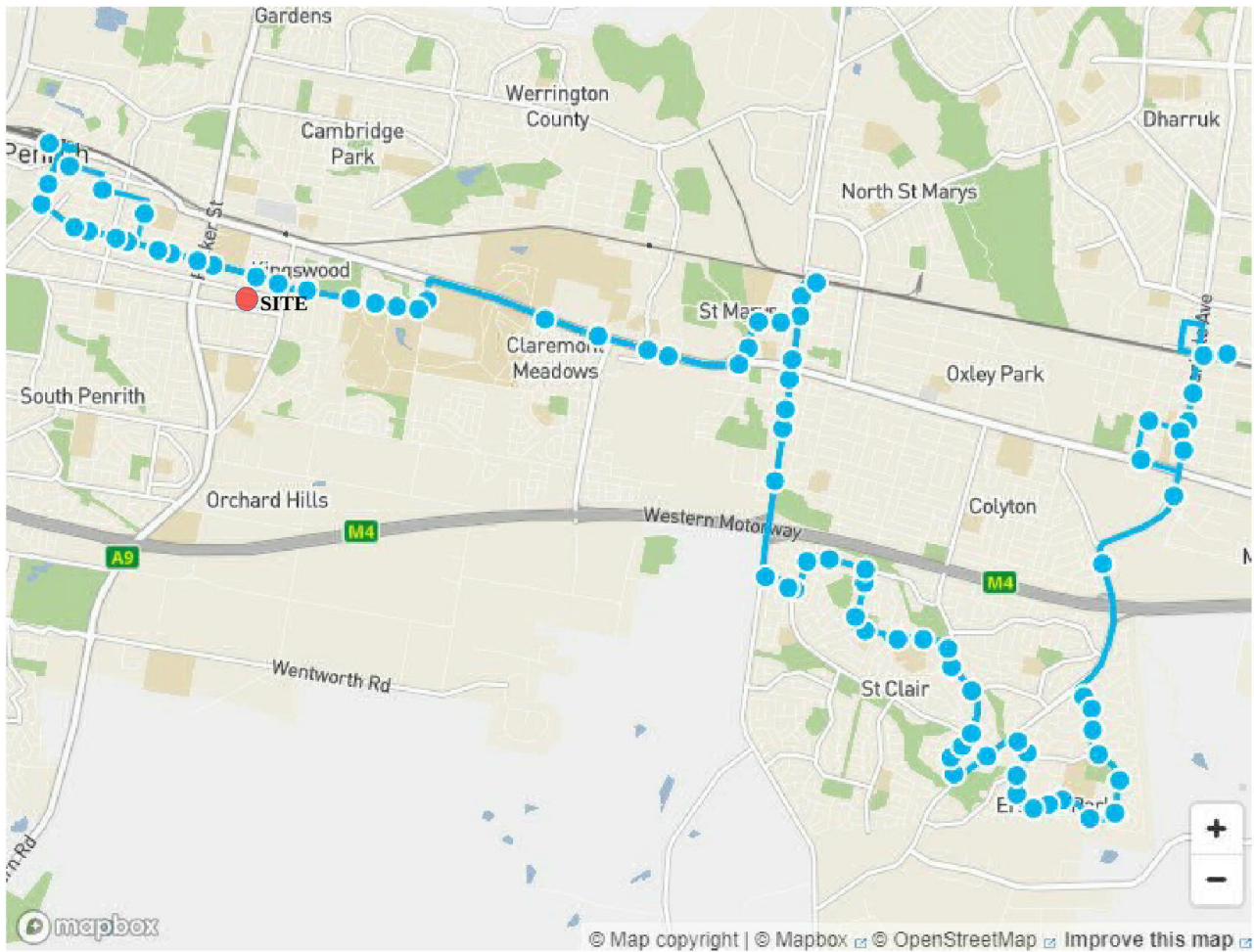
Bus Route 770



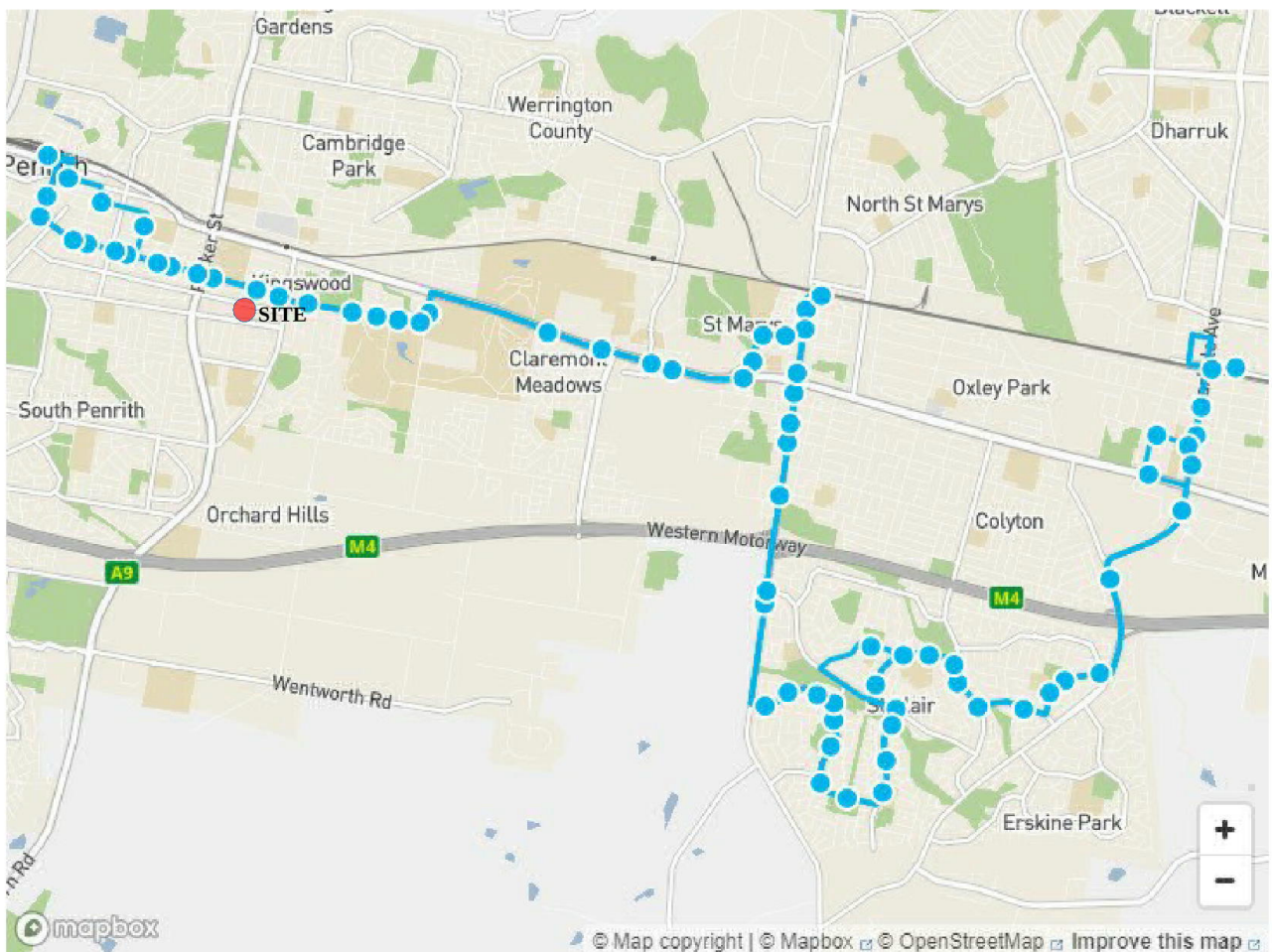
Bus Route 770

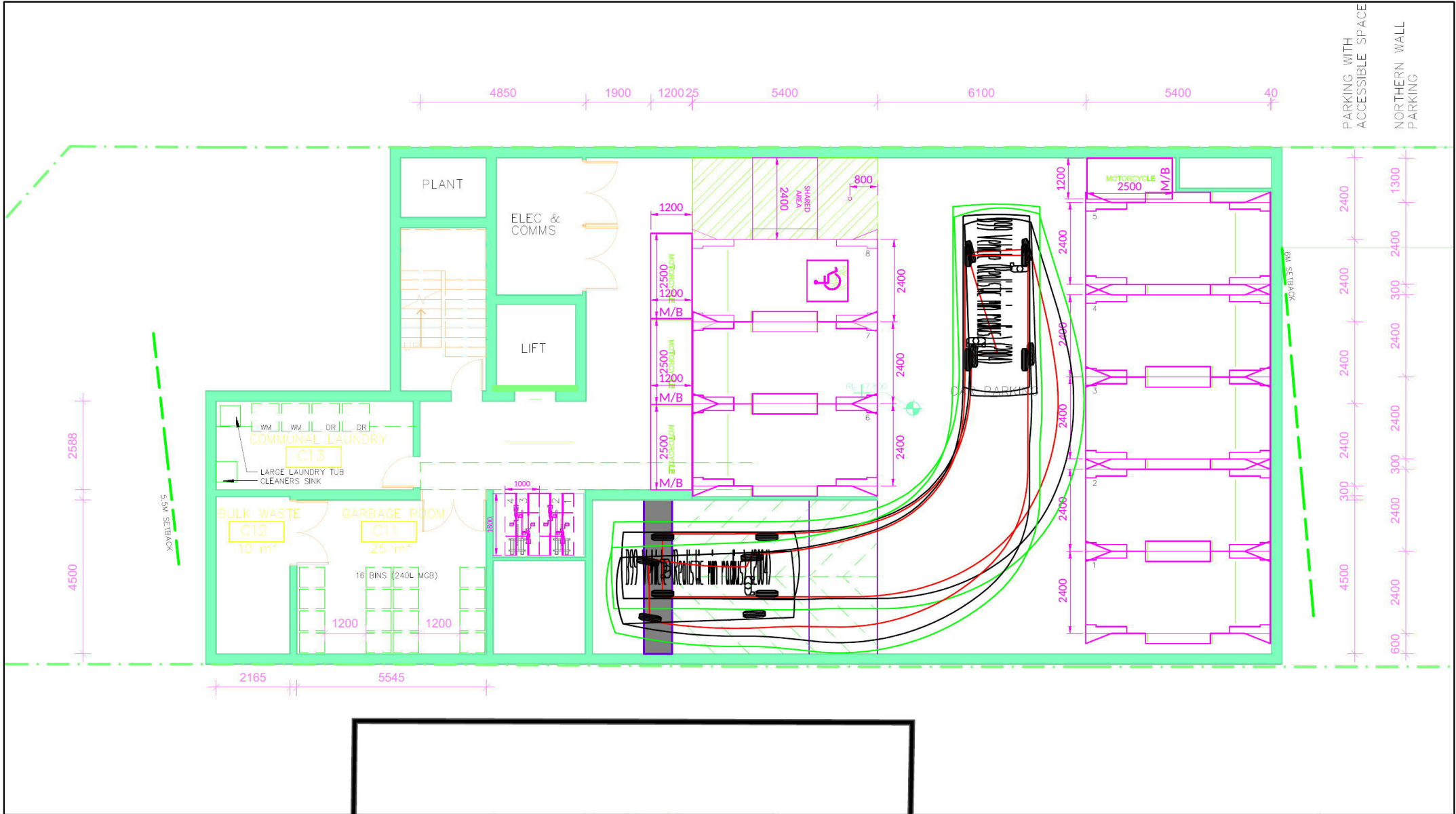


Bus Route 775

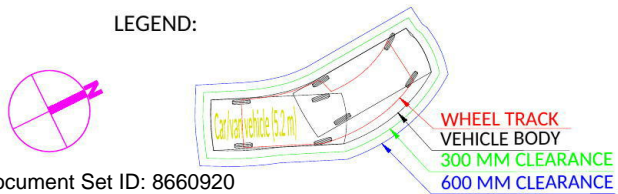


Bus Route 776





LEGEND:



Dwg No 17106/02 | Rev. A | 21/03/2019

Client:
Liquid Design

51 Jamison Rd, Kingswood NSW 2747

Proposed car park layout
Design checks as per AS/NZS 2890 series

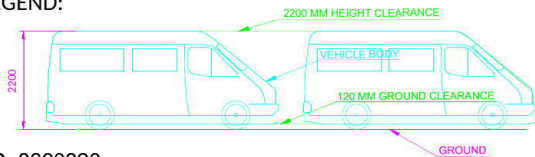
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Vert. Clearance (2004)

Vert. Clearance (2004)

LEGEND:



Dwg No 17106/04 | Rev. A | 21/03/2019

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SCALE 1:150@A4