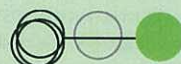
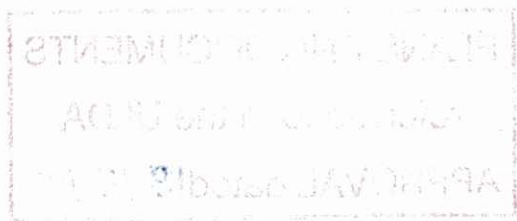


PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 15 / 5 / 10

Woolworths Petrol
Transport Impact Assessment
136 - 146 Abbotsford Road
Bowen Hills



GTA consultants



Woolworths Petrol

136 - 146 Abbotsford Road, Bowen Hills

Transport Impact Assessment

Client: Woolworths Limited

Reference: IB10601

GTA Consultants Office: Brisbane

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By
A	27/01/10	Final	Brendan Nielsen	Beth Meehan (RPEQ# 8373)	Original Signed
B	27/01/10	Minor Amendments	Brendan Nielsen	Beth Meehan (RPEQ# 8373)	

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1. Introduction

1.1 Background

It is understood that a development application is to be lodged with the Urban Land Development Authority for a proposed petrol filling station on land located at 136 - 146 Abbotsford Road, Bowen Hills. The proposed development incorporates six petrol filling dispensers, two LPG gas dispensers and a cashier / retail building of 120sq.m. A total of six car parking spaces and a separate loading/deliveries bay are proposed.

GTA Consultants was commissioned by the Applicant in November 2009 to undertake a transport impact assessment for the proposed development.

1.2 Purpose of this Report

This report sets out an assessment of the anticipated transport implications of the proposed development, including consideration of the following:

- i existing traffic conditions surrounding the site
- ii parking demand likely to be generated by the proposed development
- iii suitability of the proposed parking supply in terms of supply (quantum) and layout
- iv service vehicle requirements
- v the traffic generating characteristics of the proposed development
- vi suitability of the proposed access arrangements for the site.

1.3 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds
- 'Bowen Hills Urban Development Area Development Scheme', Urban Land Development Authority, July 2009
- Brisbane City Council's Planning Scheme
- Australian / New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS / NZS 2890.1-2004
- traffic surveys undertaken by GTA Consultants as referenced in the context of this report
- plans for the proposed development prepared by TfA Project Group, Drawing Number 09089-Do4, Revision A, dated 25 January 2010, Drawing Number 09089-Do9, Revision C, dated 27 January 2010 and Drawing Number 09089-Do2, Revision F dated 25 January 2010
- other documents and data as referenced in this report.

2. Site Environs

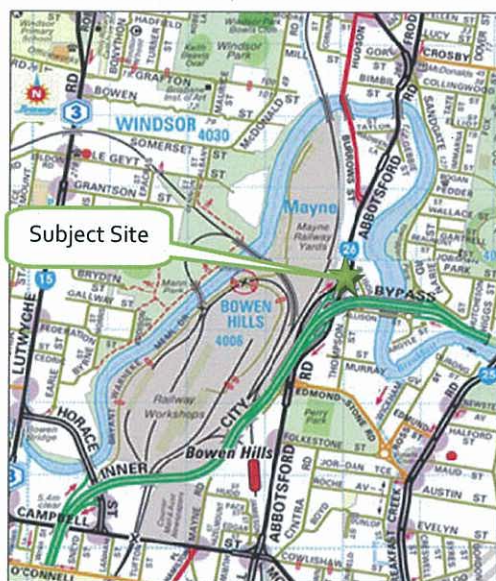
2.1 Subject Site

The subject site is located at 136 - 146 Abbotsford Road, Bowen Hills and is approximately 1,979sq.m in area with a frontage of some 90m to Abbotsford Road. The site is classified by Brisbane City Council as Light Industry and is currently occupied by an automotive mechanic and car hire yard. It is noted that the subject site is located within the Urban Land Development Authority's 'Bowen Hills Urban Development Area' and Brisbane City Council's 'Bowen Hills Local Plan' area.

The subject site is located adjacent to a railway line and surrounding properties predominantly include light industrial land uses.

The location of the subject site and its surrounding environs is shown in **Error! Reference source not found.** and Figure 2.2.

Figure 2.1: Subject Site and Its Environs (Brisway)



(Reproduced with Permission from Brisway Publishing Pty Ltd)

Figure 2.2: Subject Site (Google Earth)



2.2 Road Network

Abbotsford Road

Abbotsford Road is classified in Brisbane City Council's road hierarchy as an Arterial Route and in the vicinity of the site it is aligned in a north-south direction. It is a two-way road which immediately north of the site is configured with a six-lane, 25m wide carriageway, set within a 35m wide road reserve (approx). Adjacent to the subject site, intersections with ramps for the Inner City Bypass result in site access being restricted to left-in / left-out.

On street parking is not provided on either side Abbotsford Road and is a clearway at all times.

Brisbane City Council has indicated that there are no proposed widening or road works planned for Abbotsford Road along the site's frontage¹.

Abbotsford Road is shown on Figure 2.3 and Figure 2.4 and carries approximately 2,300 vehicles in the northbound direction in the road network PM peak hour².

Figure 2.3: Abbotsford Road (facing north)



Figure 2.4: Abbotsford Road (facing south)



2.3 Traffic Volumes

GTA Consultants undertook AM and PM traffic volume surveys on Abbotsford Road adjacent to the site on Thursday 26 November 2009 during the following peak periods:

- 8:00am to 9:00am
- 4:00pm to 6:00pm.

In addition, in order to determine the traffic absorption capacity of this intersection, and in particular the left turn from the site into Abbotsford Road, GTA Consultants also conducted gap analysis surveys at these times. These surveys recorded the frequency and duration of gaps in the traffic stream along Abbotsford Road. The purpose of the survey was to identify the total number of vehicles that could enter Abbotsford Road based on existing 'actual' opportunities.

The available capacity was determined on the basis of the following gap acceptance criteria, which were adopted for movements from the site.

- Left turn critical gap: 5 seconds
- Left turn follow-up headway: 3 seconds.

These values are consistent with those set out in AUSTROADS Part 5.

The surveyed AM and PM peak hour traffic volumes and recorded capacity for vehicles to turn left out of the site are contained at Appendix A and summarised below:

- AM Peak Hour:
 - 911 vehicles northbound
 - Capacity for 403 vehicles to exit the site.
- PM Peak Hour:

¹ Phone call between Mr Darryl S. of Brisbane City Council and Miss Renee Nystrom of GTA Consultants on Friday 25 September 2009.

² Based on peak hour traffic counts undertaken by GTA Consultants in November 2009.

- 2,352 vehicles northbound
- Capacity for 133 vehicles to exit.

The suitability of the existing gaps to accommodate vehicles exiting the site is discussed further in Section 6.3.

2.4 Integrated Transport Infrastructure

2.4.1 Public Transport

A review of the public transport available in the vicinity of the site is summarised in Table 2.1.

Table 2.1: Public Transport Provision

Service	Route #	Route Description	Location of Stop	Distance to Nearest Stop	Frequency On/Off peak
Bus	320	City to Chermside	Abbotsford Road	Adjacent to site	15 minutes peak / 30 minutes off peak
Bus	310	City to Sandgate	Abbotsford Road	Adjacent to site	15 minutes peak / 30 minutes off peak
Bus	301	Cultural Centre to Toombul	Abbotsford Road	Adjacent to site	30 minutes on and off peak
Train	N/A	All services through Bowen Hills	Bowen Hills railway station	800m (approx)	<10 minutes on and off peak

2.4.2 Pedestrian Infrastructure

Pedestrian paths are located on both sides of Abbotsford Road. The footpath on the eastern side is 2.5m wide and 3.5m wide on the western side.

A signalised crossing adjacent to the site provides a safe crossing point for pedestrians on Abbotsford Road.

2.4.3 Cycle Infrastructure

Bicycle lanes or paths are not currently located along Abbotsford Road in the vicinity of the site. However, the 'Bowen Hills Urban Development Area Infrastructure Plan' indicates that a bikeway is proposed on Abbotsford Road along the site's frontage.

3. Development Proposal

3.1 Land Uses

The proposal includes a petrol filling station with six dispensers, two LPG dispensers and an associated pay station / retail building of 120sq.m. It is assumed that the retail component of the building is 55sq.m.

A copy of the development plans is contained at Appendix B.

3.2 Vehicle Access

Two vehicle crossovers are proposed for the site, these include:

- a 14.8m wide entry crossover (southernmost crossover)
- a 9.4m wide exit crossover (northernmost crossover).

The suitability of the proposed access arrangements is discussed in Section 5.3 of this report.

3.3 Car Parking

The proposed development seeks to provide a total of six car parking spaces, including one space for staff and one space allocated for persons with a disability.

The suitability of the car parking provision and layout is discussed in Section 4 of this report.

3.4 Loading Areas

A loading bay and bin enclosure is located in the northern corner of the site. It is proposed that service vehicles will enter the site through the southernmost crossover and exit via the northernmost crossover.

Fuel fill points, requiring articulated vehicle access, are located on the western side of the site.

The suitability of the proposed loading arrangements is discussed in Section 5.6 of this report.

4. Car Parking

4.1 Statutory Requirement

The Urban Land Development Authority's *'Bowen Hills Urban Development Area Development Scheme'* requires that car parking for non-industrial uses in the Breakfast Creek Precinct to be provided *"as per the planning scheme for the local government for the area"*.

In this regard, the site is located just within the City Frame. Brisbane City Council's *'Transport, Access, Parking and Servicing Planning Scheme Code'* (TAPS Code) requires commercial uses within the City Frame boundary to provide car parking at a maximum rate of one car parking space for every 200sq.m of gross floor area. On the basis of the proposed 55sq.m of shop floor area, a maximum of one car parking space is permitted.

In terms of the requirements for a maximum parking provision within the City Frame, this is a mechanism which aims to reduce the reliance on the private vehicle as a mode of transport in the central business areas. In this instance, the proposed development is convenience driven and also targets 'drop in' trips of car drivers already passing the site and the intent of the City Frame car parking rates would not be compromised by the provision of car parking on this site.

In areas outside the City Frame, the *'Transport, Access, Parking and Servicing Planning Scheme Policy'* (TAPS Policy) does not specifically require car parking for petrol filling stations. On the basis of the 'shop' area of 55sq.m and applying the relevant 'shop' rate for car parking of three spaces per 50sq.m, four spaces would be required.

4.2 Adequacy of Parking Supply

The development proposes a total of six car parking spaces, including one car parking space for staff and one space for persons with a disability.

The proposed provision of six car parking spaces is acceptable given the nature of the proposed land use and the requirement of the TAPS Policy for the 'shop' component in locations outside the City Frame.

5. Site Layout Review

As the Urban Land Development Authority does not contain requirements for car park design, the development has been reviewed against the requirements of the Australian / New Zealand Standard for Parking Facilities (AS / NZS 2890.1-2004). Details of this review are provided below.

The review documented below indicates that the proposed car parking layout is expected to operate satisfactorily.

5.1 Bay and Aisle Width

The Australian Standard requires that high turnover car parking bays are a minimum of 5.4m long by 2.6m, where access aisles are a minimum of 6.6m wide.

In this regard, the proposed car parking bays are a minimum of 5.4m long by 2.6m wide with an access aisle in excess of 6.6m, this complies with the requirements of the Australian Standard.

5.2 Parking for Persons with Disabilities

The development plans show one parking space for persons with a disability, this equates to 20% of proposed supply. It is GTA Consultants view that this is adequate for the proposed development.

The disabled parking space is a minimum of 5.4m long by 3.2m wide with a 2m wide shared area on one side. This combined width exceeds the minimum 4.8m width required by the 'Australian / New Zealand Standard Parking Facilities Part 6: Off-street Parking for People with Disabilities'. Further, a bollard is located in the shared area, in accordance with the Australian Standard.

5.3 Suitability of Site Access

The Urban Land Development Authority's 'Bowen Hills Urban Development Area Development Scheme' requires that "vehicle service areas, crossovers and car parking must not detract from the character of active edges and the public realm".

In this regard the proposed development includes a separate left-in / entrance and a left-out exit which complements the flow of traffic along Abbotsford Road and the circulation of vehicles through the site.

It is noted that separate entry and exit crossovers are preferable for pedestrians as they provide improved safety and amenity when compared with a wider two-way crossover. In addition the development proposes to reduce the existing number of crossovers to the site.

The proposed access has been designed to accommodate vehicles up to and including a fuel tanker which is the largest vehicle that is anticipated to access the site, as shown at Appendix C.

The Australian Standard for 'Parking Facilities Part 1: Off-Street Car Parking' requires that access points be located clear of queue areas at signalised intersections. In this regard, whilst the southern access may be located within the queuing area for the Abbotsford Road / Alison Street intersection, as this access is a left-in only there will be a minimal impact on external road operations and the proposed location is appropriate.

5.4 Sight Distance

The Australian Standard requires that in 60km/hr speed environments, driveways are to be located with a desirable minimum sight distance of 83m. A review of the available sight distance to the south of the access driveways indicates that clear sight lines in excess of 83m are available.

5.5 Circulation

As access to the site will be restricted to left-in / left-out, vehicles from the north and east wishing to access the site will be required to U-turn at the Abbotsford Road / Edmondstone Road signals some 300m south of the site, where a U-turn permitted sign is located.

In addition the internal layout of the vehicle manoeuvring areas has been designed to ensure that any queuing associated with the development can be accommodated on-site.

5.6 Loading Facilities

The proposed development has been designed to accommodate a fuel tanker which is the largest vehicle that is anticipated to access the site. This vehicle is anticipated to require occasional access and the Australian Standard for 'Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities' requires occasional access to meet the following criteria:

- *The vehicle shall be able to stand wholly within the site.*
- *Reverse manoeuvres at the property boundary, if permitted by the relevant authority shall be limited to one only, either on entering or departing, and shall be subject to consideration of both safety and obstruction to other on-street traffic.*
- *The swept path plus clearances shall be accommodated within the access driveway or circulation roadway.*
- *The full width of the access driveway may be used for both entering and leaving the site.*

In this regard, swept path assessments for an articulated vehicle (AV) have been completed by TfA Project Group and checked by GTA Consultants. These assessments indicate that the development can accommodate design vehicles up to and including articulated vehicles in accordance with the above. A copy of the swept path assessments is provided at Appendix C.

In addition, a 4.4m wide by 11m long service vehicle bay is provided near the refuse storage area. This bay will be used by vehicles delivering goods to the site and refuse collection vehicles. The dimensions of this bay meet the requirements of the Australian Standard for 'Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities' for a medium rigid vehicle (MRV).

As the site is located within Brisbane City Council and access by their refuse collection vehicles is anticipated. A swept path assessment of the loading bay by a 12.5m large rigid vehicle has been undertaken. By testing this vehicle, access by a smaller refuse collection vehicle and medium rigid vehicle will also be possible.

A minimum clearance of 4.5m is required to accommodate articulated vehicles on-site. The development plans indicate that a minimum height clearance of 4.5m will be provided under the canopy.

It is noted that the subject site is relatively flat, as such it is anticipated that the grade requirements of the Australian Standard can be met.

On the basis of the results of the swept path assessments, specifically the ability for deliveries by a petrol tanker and a loading bay capable of accommodating a large rigid vehicle or refuse collection vehicle, it is the author's view that the proposed loading provision is appropriate.

6. Traffic Impact Assessment

6.1 Assessment Scenarios

For the purposes of this assessment, it has been assumed that the development will be operational by 2010. To consider a ten year design horizon, consideration has been given to traffic operation of the site at the year 2020.

To forecast the exiting capacity, a 4% per annum growth rate (linear) has been assumed in relation to the in traffic on Abbotsford Road. This results in a reduced number of gaps and reduces capacity available to enter the Abbotsford Road traffic stream.

6.2 Traffic Generation

6.2.1 Design Rates

Traffic generation estimates for the proposed development have been sourced from the Department of Main Roads' *'Road Planning and Design Manual'*. An estimate of peak hour and daily traffic volumes resulting from the proposal are set out in Table 6.1.

Table 6.1: Estimated Development Traffic Generation

Use	Size	Design Generation Rates		Traffic Generation Estimates	
		Peak Hour	Daily	Peak Hour	Daily
Service Station	120sq.m GFA	70 veh / 100sq.m GFA	700 veh / 100sq.m GFA	84 veh / hour	840 veh / day

veh = vehicle movements

Table 6.1 indicates the proposed development could be expected to generate approximately 840 vehicle movements per day and some 84 vehicle movements during each respective peak hour on a typical weekday.

6.2.2 Characteristic Trip Types

An important characteristic of the traffic generation of the above uses is the different types of trips which may occur. These different trip types correspond to:

- 'Primary Trips'
- 'Link-diverted trips'
- 'Non-link-diverted trips'.

'Primary trips' and 'link-diverted trips' involve a vehicle either making a special trip or a modification of the route to an existing trip. 'Non-link-diverted trips', on the other hand, correspond to those trips which do not involve a diversion from the route that would otherwise have been taken, or in other words are trips generated by passing traffic. The important distinction here is that it is only 'primary trips' and 'link-diverted trips' which impact upon the external road network. 'Non-link-diverted trips' are already present on the adjacent road network, and although these trips need to be considered in the design of access driveways, turning lanes and so on, they do not constitute additional traffic per se.

Due to the location of the proposed service station on Abbotsford Road and the purpose the road serves in connecting Fortitude Valley to Sandgate Road, it has been assumed that a high proportion of vehicles using the service station will be 'non-link-diverted trips'.

In addition to this, the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) has been assumed to be at 50% in / 50% out for both peaks.

6.3 Access Operation

The commonly used measure of intersection performance is essentially a volume-to-capacity ratio. For unsignalised intersections an X-value of 0.80 is typically the 'ideal' limit, beyond which queues and delays increase disproportionately.

The gap acceptance survey undertaken showed that in 2009 the gaps between vehicles allowed for the following capacity for vehicles to exit the site in each peak period.

- 403 vehicles exiting in the AM peak hour
- 133 vehicles exiting in the PM peak hour.

To account for an assumed linear growth rate of 4% to these existing capacities per annum, the overall capacity of the access has been reduced by 44%³. Table 6.2 shows the capacity for vehicles exiting onto Abbotsford Road during each peak period at the year 2020 and the expected operation of the site access.

Table 6.2: 2020 Access Capacity

Peak	2009 Capacity	Exiting Traffic Volume	2020 Adjusted Capacity	Volume-to-Capacity Ratio
AM peak hour	409 vph	42 vph	229 vph	0.18
PM peak hour	133 vph	42 vph	74 vph	0.57

Vph = vehicles per hour

Table 6.2 indicates that the existing gaps in the traffic on Abbotsford Road are sufficient to accommodate vehicles exiting the service station in 2020.

³ On the basis of 11 years of growth at 4% per annum.

7. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i The proposed supply of six car parking spaces is appropriate for the likely demand.
- ii The proposed parking layout is consistent with the dimensional requirements as set out in the Australian / New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking (AS / NZS 2890.1-2004).
- iii The swept path assessments indicate that vehicles up to and including an AV can access the site, with vehicles up to and including a 12.5m large rigid vehicle able to access the separate loading/deliveries bay.
- iv The site is expected to generate up to 84 and 840 vehicle movements in any peak hour and daily respectively.
- v There is adequate capacity in the surrounding road network to cater for the traffic generated by the proposed development.
- vi The proposed access arrangements are anticipated to operate safely and efficiently.

Appendix A

Appendix A

Surveyed Traffic Volumes and Gap Acceptance

Gap Acceptance Values

Left Turn From Access	Critical Gap (T)	5 sec
Follow Up Gap (To)		3 sec

Summary of Gaps

Time	Vehicle Capacity		Total Volume Thru
	Northbound		
	(Left Turn)		
AM			
8:00 - 8:15	129		188
8:15 - 8:30	98		244
8:30 - 8:45	83		202
8:45 - 9:00	93		277
Total	403		911
PM			
4:00 - 4:15	51		525
4:15 - 4:30	55		490
4:30 - 4:45	72		617
4:45 - 5:00	65		530
5:00 - 5:15	49		622
5:15 - 5:30	12		522
5:30 - 5:45	7		678
5:45 - 6:00	66		465
Total	311		4449

Peak Vehicle Capacity		Peak
8:00 - 9:00	403	
Total thru volume		911

Peak Vehicle Capacity		Peak
4:00 - 5:00	243	
4:15 - 5:15	241	
4:30 - 5:30	198	
4:45 - 5:45	133	
5:00 - 6:00	134	
Total thru volume		2,352

Gaps in north bound traffic - Left Turning Vehicle Gaps

Survey Date: 26 November 2009
Survey Start: TH

Critical Gap (T)	5sec
Follow Up Gap (To)	3sec

Time period: 5:00pm - 5:15pm				Time period: 5:15pm - 5:30pm				Time period: 5:30pm - 5:45pm				Time period: 5:45pm - 6:00pm			
Gap Number	Gap (seconds)		Capacity	Gap Number	Gap (seconds)		Capacity	Gap Number	Gap (seconds)		Capacity	Gap Number	Gap (seconds)		Capacity
	Free flow	Queue on Abbotford Road			Free flow	Queue on Abbotford Road			Free flow	Queue on Abbotford Road			Free flow	Queue on Abbotford Road	
1	10		2	1	10		0	1			0	1	5		1
2	10		2	2	16		4	2		5	0	2	16		4
3	8		2	3		5	0	3		7	0	3	5		1
4	6		1	4		8	0	4		8	0	4	6		1
5	26		8	5		9	0	5		3	0	5	5		1
6	26		8	6	22		6	6	16		4	6	5		1
7	5		1	7	10		2	7	10		2	7	10		2
8	10		2	8		17	0	8	5		1	8	6		1
9	19		5	9		8	0	9			0	9	7		1
10	7		1	10		10	0	10			0	10	6		1
11	10		2	11			0	11			0	11	5		1
12	12		3	12			0	12			0	12	10		2
13	13		3	13			0	13			0	13	26		8
14	24		7	14			0	14			0	14	5		1
15	5		1	15			0	15			0	15	6		1
16	7		1	16			0	16			0	16	5		1
17			0	17			0	17			0	17	9		2
18			0	18			0	18			0	18	8		2
19			0	19			0	19			0	19	10		2
20			0	20			0	20			0	20	5		1
21			0	21			0	21			0	21	7		1
22			0	22			0	22			0	22	15		4
23			0	23			0	23			0	23	9		2
24			0	24			0	24			0	24	12		3
25			0	25			0	25			0	25	10		2
26			0	26			0	26			0	26	5		1
27			0	27			0	27			0	27	5		1
28			0	28			0	28			0	28	6		1
29			0	29			0	29			0	29	14		4
30			0	30			0	30			0	30	20		6
31			0	31			0	31			0	31	9		2
32				32				32				32	8		2
33				33				33				33	9		2
34				34				34				34			
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45				45				45				45			
46				46				46				46			
47				47				47				47			
			49				12				7				66

Gaps in north bound traffic - Left Turning Vehicle Gaps

Critical Gap (T)	5sec
Follow Up Gap (To)	3sec

Survey Date: 26 November 2009
Survey Staff: TH

Time period: 4:00pm - 4:15pm			
Gap Number	Free flow	Queue on Abbotsford Road	Capacity
1	5		1
2	5		1
3	12		3
4	7		1
5	5		1
6	20		6
7	9		2
8	10		2
9	8		2
10	8		2
11	21		6
12	10		2
13	5		1
14	8		2
15	6		1
16	11		3
17	5		1
18	9		2
19	5		1
20	6		1
21	8		2
22	5		1
23	7		1
24	18		5
25	7		1
26			0
27			0
28			0
29			
30			
31			
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38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
			51

Time period: 4:15pm - 4:30pm			
Gap Number	Free flow	Queue on Abbotsford Road	Capacity
1	5		1
2	8		2
3	5		1
4	9		2
5	7		1
6	5		1
7	11		3
8	12		3
9	6		1
10	5		1
11	6		1
12	5		1
13	8		2
14	8		2
15	10		2
16	6		1
17	8		2
18	10		2
19	30		9
20	20		6
21	19		5
22	6		1
23	7		1
24	8		2
25	6		1
26	7		1
27			
28			
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45			
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47			
			55

Time period: 4:30pm - 4:45pm			
Gap Number	Free flow	Queue on Abbotsford Road	Capacity
1	10		2
2	13		3
3	5		1
4	5		1
5	8		2
6	7		1
7	16		4
8	28		8
9	5		1
10	24		7
11	12		3
12	26		8
13	28		8
14	8		2
15	9		2
16	5		1
17	9		2
18	16		4
19	28		8
20	5		1
21	5		1
22	10		2
23			0
24			0
25			0
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
			72

Time period: 4:45pm - 5pm			
Gap Number	Free flow	Queue on Abbotsford Road	Capacity
1	13		3
2	7		1
3	17		5
4	7		1
5	9		2
6	18		5
7	11		3
8	6		1
9	11		3
10	5		1
11	6		1
12	7		1
13	12		3
14	8		2
15	13		3
16	7		1
17	5		1
18	8		2
19	16		4
20	28		8
21	12		3
22	5		1
23	6		1
24	5		1
25	7		1
26	8		2
27	14		4
28	5		1
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
43			
44			
45			
46			
47			
			65

Gaps in north bound traffic - Left Turning Vehicle Gaps

Survey Date: 26 November 2009
Survey Staff: TH

Critical Gap (T)	5sec
Follow Up Gap (To)	3sec

Time period: 8:00 - 8:15am				Time period: 8:15 - 8:30am				Time period: 8:30 - 8:45am				Time period: 8:45 - 9:00am			
Gap Number	Free flow	Gap (seconds)	Capacity	Gap Number	Free flow	Gap (seconds)	Capacity	Gap Number	Free flow	Gap (seconds)	Capacity	Gap Number	Free flow	Gap (seconds)	Capacity
1	15		4	1	35		11	1	26		8	1	26		8
2	14		4	2	7		1	2	5		1	2	35		11
3	6		1	3	10		2	3	7		1	3	22		6
4	8		2	4	8		2	4	7		1	4	33		10
5	43		13	5	11		3	5	5		1	5	10		2
6	6		1	6	16		4	6	6		1	6	6		1
7	13		3	7	6		1	7	10		2	7	10		2
8	6		1	8	23		7	8	9		2	8	15		4
9	5		1	9	7		1	9	25		7	9	12		3
10	8		2	10	38		12	10	15		4	10	5		1
11	45		14	11	15		4	11	11		3	11	6		1
12	7		1	12	5		1	12	25		7	12	10		2
13	13		3	13	6		1	13	9		2	13	5		1
14	6		1	14	6		1	14	6		1	14	16		4
15	10		2	15	21		6	15	12		3	15	16		4
16	54		17	16	8		2	16	7		1	16	14		4
17	6		1	17	8		2	17	5		1	17	30		9
18	7		1	18	6		1	18	43		13	18	8		2
19	7		1	19	5		1	19	10		2	19	8		2
20	33		10	20	11		3	20	6		1	20	9		2
21	9		2	21	22		6	21	8		2	21	5		1
22	10		2	22	12		3	22	16		4	22	10		2
23	15		4	23	11		3	23	9		2	23	8		2
24	20		6	24	26		8	24	35		11	24	23		7
25	7		1	25	40		12	25	8		2	25	9		2
26	7		1	26	17			26	23			26	13		
27	33		10	27	5			27	7			27	23		
28	5		1	28	6			28	9			28	8		
29	34		10	29	39			29	20			29	5		
30	30		9	30	5			30	16			30			
31				31	6			31	5			31			
32				32	14			32	9			32			
33				33	13			33	8			33			
34				34	6			34	31			34			
35				35	10			35	5			35			
36				36				36	8			36			
37				37				37	8			37			
38				38				38	24			38			
39				39				39	7			39			
129				98				83				93			

Appendix B

Development Plans

Appendix B

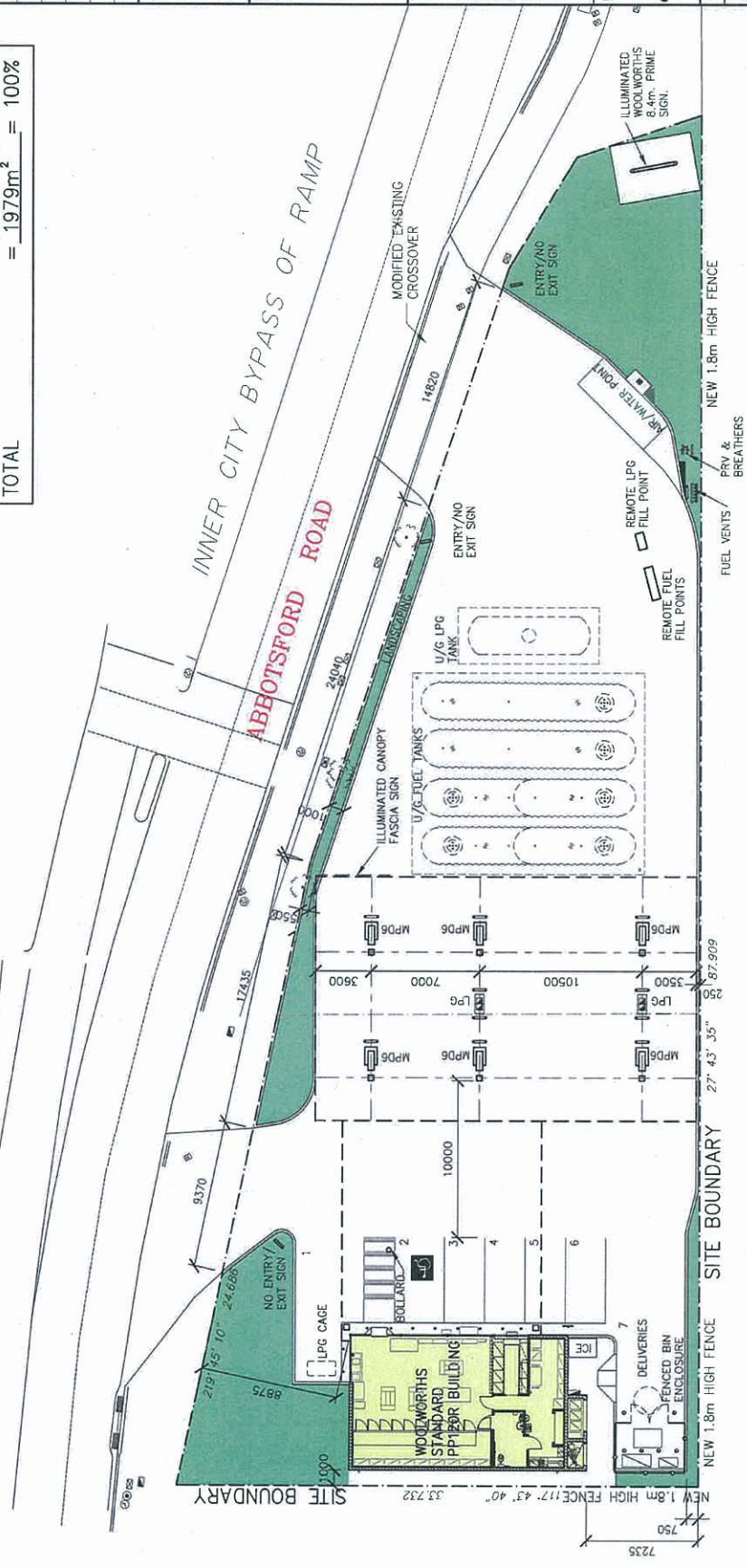


RPD:
LOT 5 ON FUTURE PLAN
LOT 1 ON RP131680
LOTS 2 & 12 ON RP125339
LOTS 1 & 11 ON RP125340
AREA=1979m²

BUILDING - WOOLWORTHS STANDARD PP120R
DISPENSERS - 6 TANDEM + 2 LPG, PASSING
CARPARKS PROVIDED - 7

SITE COVERAGE

ROOFED AREA	= 698m ²	= 35.2%
LANDSCAPED AREA	= 329m ²	= 16.7%
PAVEMENT AREA	= 952m ²	= 48.1%
TOTAL	= 1979m ²	= 100%



NORTH COAST RAILWAY

DRAINAGE NOTE:
ALL UNDER CANOPY DRAINAGE TO BE SEPARATELY CAPTURED AND FALL TO AN OILY WATER SEPARATOR (INTERCEPTOR UNIT) WHERE WASTE OIL IS STORED IN A CONTAINER FOR REMOVAL.
ALL DRAINAGE TO BE DETAILED DESIGN AT B.A. STAGE.
FINAL SITE CONTOURS WILL INDICATE STORMWATER TO FLOW AWAY FROM UNDER CANOPY CATCHMENT AREA.



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NOTES
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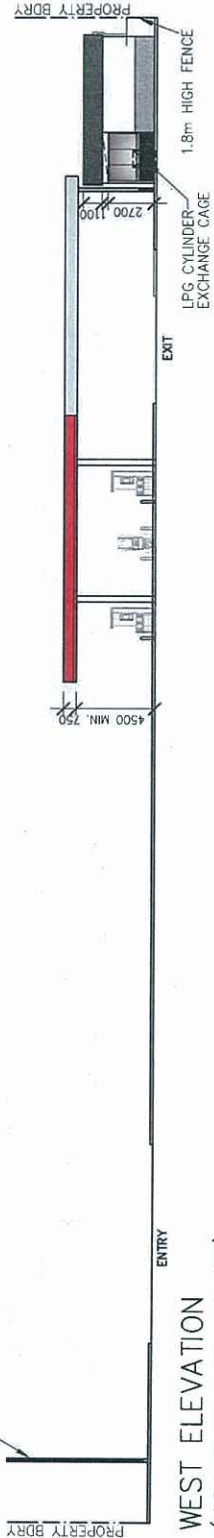


PROPOSED SERVICE STATION
for **WOOLWORTHS LIMITED**
ABBOTSFORD ROAD
BOWEN HILLS

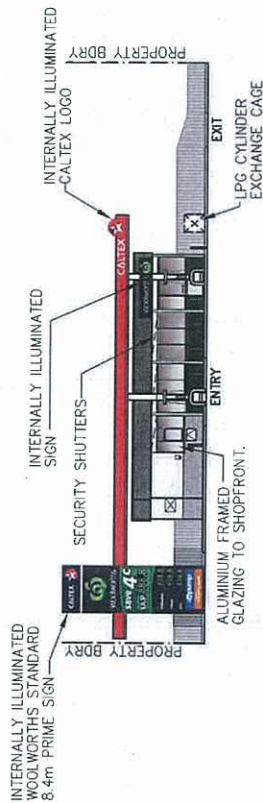
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DESIGNED BY	je	CHECKED
DATE	NOV 2009	PLOT DATE
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STATUS	A3	

D.A. ISSUE
PROJECT No. 09089-D02
ISSUE No. F

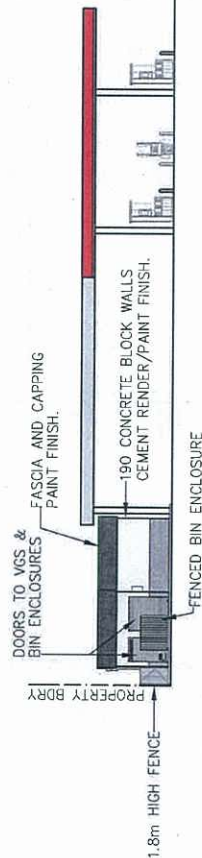
INTERNALLY ILLUMINATED
WOOLWORTHS STANDARD
8.4m PRIME SIGN



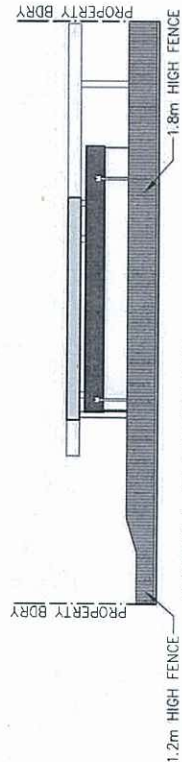
WEST ELEVATION
(ABBOTSFORD ROAD)
SCALE 1:300



SOUTH ELEVATION
SCALE 1:300



EAST ELEVATION
SCALE 1:300



NORTH ELEVATION
SCALE 1:300

NOTES

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6. ALL DIMENSIONS SHALL BE TO THE OUTSIDE OF THE BUILDING UNLESS OTHERWISE SPECIFIED
7. ALL DIMENSIONS SHALL BE TO THE OUTSIDE OF THE BUILDING UNLESS OTHERWISE SPECIFIED
8. ALL DIMENSIONS SHALL BE TO THE OUTSIDE OF THE BUILDING UNLESS OTHERWISE SPECIFIED
9. ALL DIMENSIONS SHALL BE TO THE OUTSIDE OF THE BUILDING UNLESS OTHERWISE SPECIFIED
10. ALL DIMENSIONS SHALL BE TO THE OUTSIDE OF THE BUILDING UNLESS OTHERWISE SPECIFIED

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Email: info@projectgroup.com.au
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Project Managers, Designers & Engineers
CONSULTANTS PROJECT No.

**PROPOSED SERVICE STATION
for WOOLWORTHS LIMITED**
ABBOTSFORD ROAD
BOWEN HILLS

SITE & BUILDING ELEVATIONS

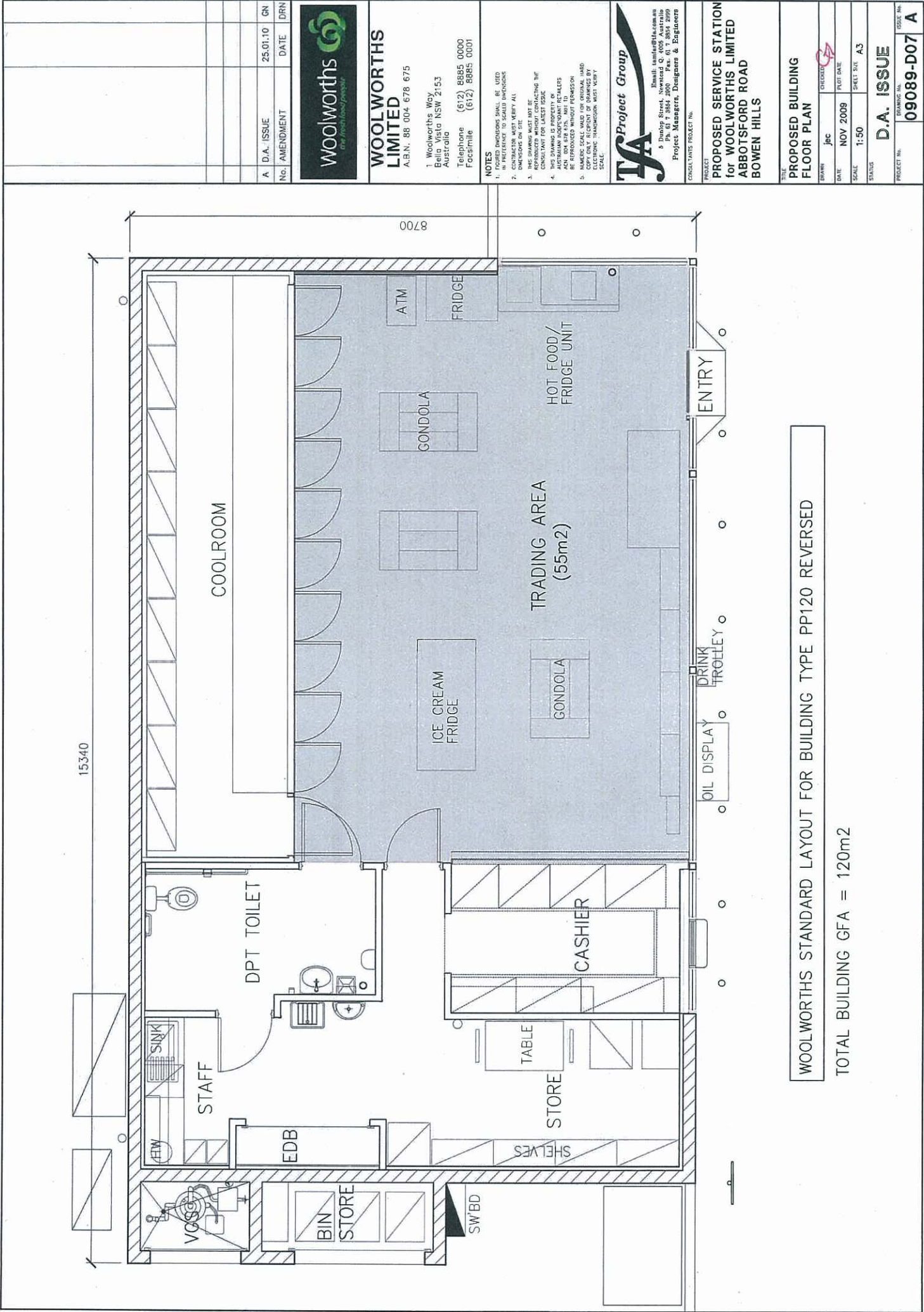
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STATUS									

PROJECT No.		DRAWING No.		ISSUE No.	
09089-D03		09089-D03		B	



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6. PROJECT GROUP

Project Group
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Phone: 7 3464 3000 Fax: 7 3464 3001
Project Managers, Designers & Engineers

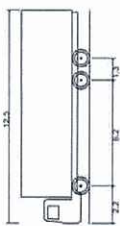
**PROPOSED SERVICE STATION
for WOOLWORTHS LIMITED
ABBOTSFORD ROAD
BOWEN HILLS**

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DATE	NOV 2009	PLOT DATE	
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STATUS			
PROJECT NO.		D.A. ISSUE	
DRAWING NO.		09089-D07	
ISSUE NO.		A	

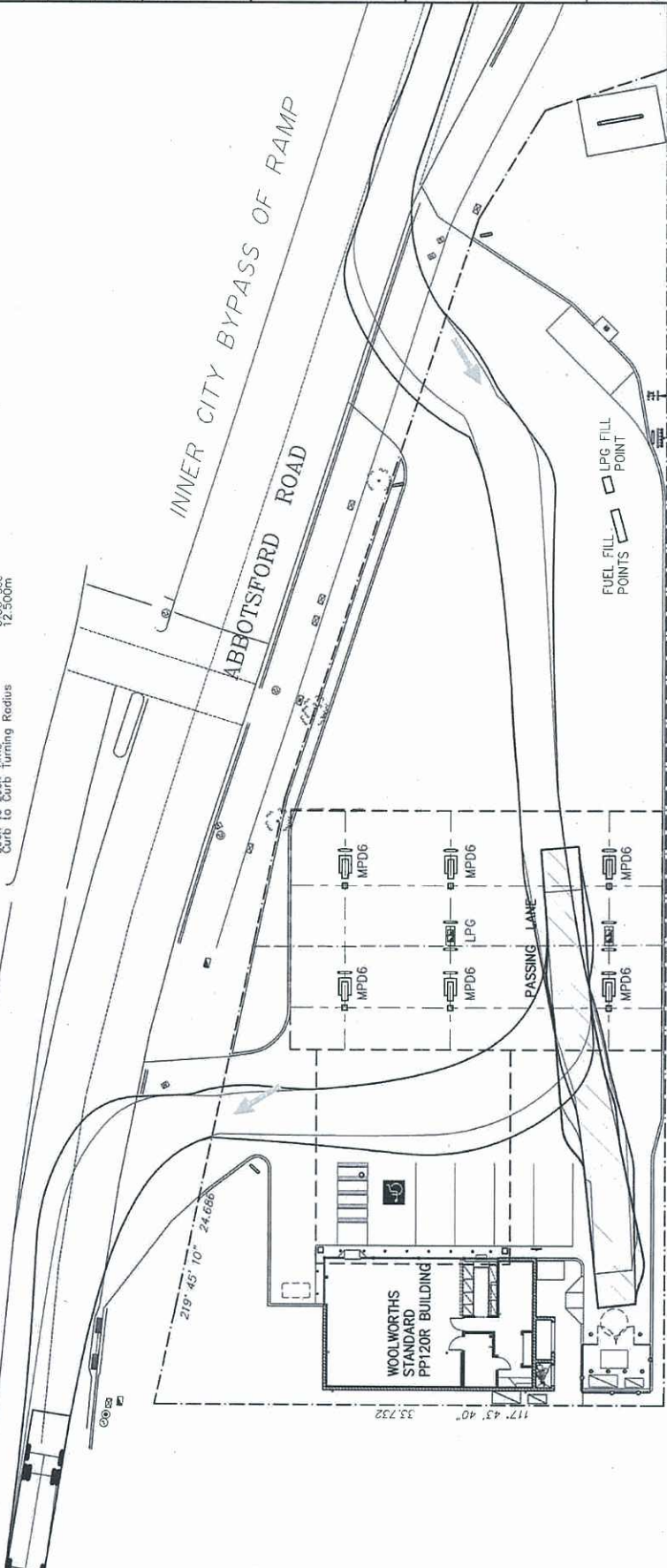
Appendix C

Swept Path Assessments

RPD:
 LOT 5 ON FUTURE PLAN
 LOT 1 ON RP131880
 LOTS 2 & 12 ON RP125339
 LOTS 1 & 11 ON RP125340
 AREA=1979m²



Single Unit Truck/Bus (12.5 m)
 Overall Length
 Overall Width
 Overall Height
 Min Body Ground Clearance
 Lock Time
 Curb to Curb Turning Radius



27' 4.3\"/>

NORTH COAST RAILWAY



C	D.A. ISSUE	27.01.10	GN
B	D.A. ISSUE	25.01.10	GN
A	ISSUED FOR REVIEW	13.01.10	VRC
No.	AMENDMENT	DATE	DRN



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 5. NUMBER OF COPIES OF DRAWINGS BY ELECTRONIC TRANSMISSION MUST VERIFY SCALE



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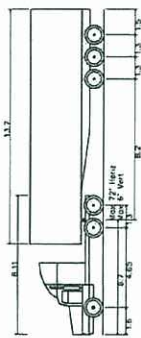
PROPOSED SERVICE STATION for WOOLWORTHS LIMITED ABBOTSFORD ROAD BOWEN HILLS

REFUSE VEHICLE TURNING PATH

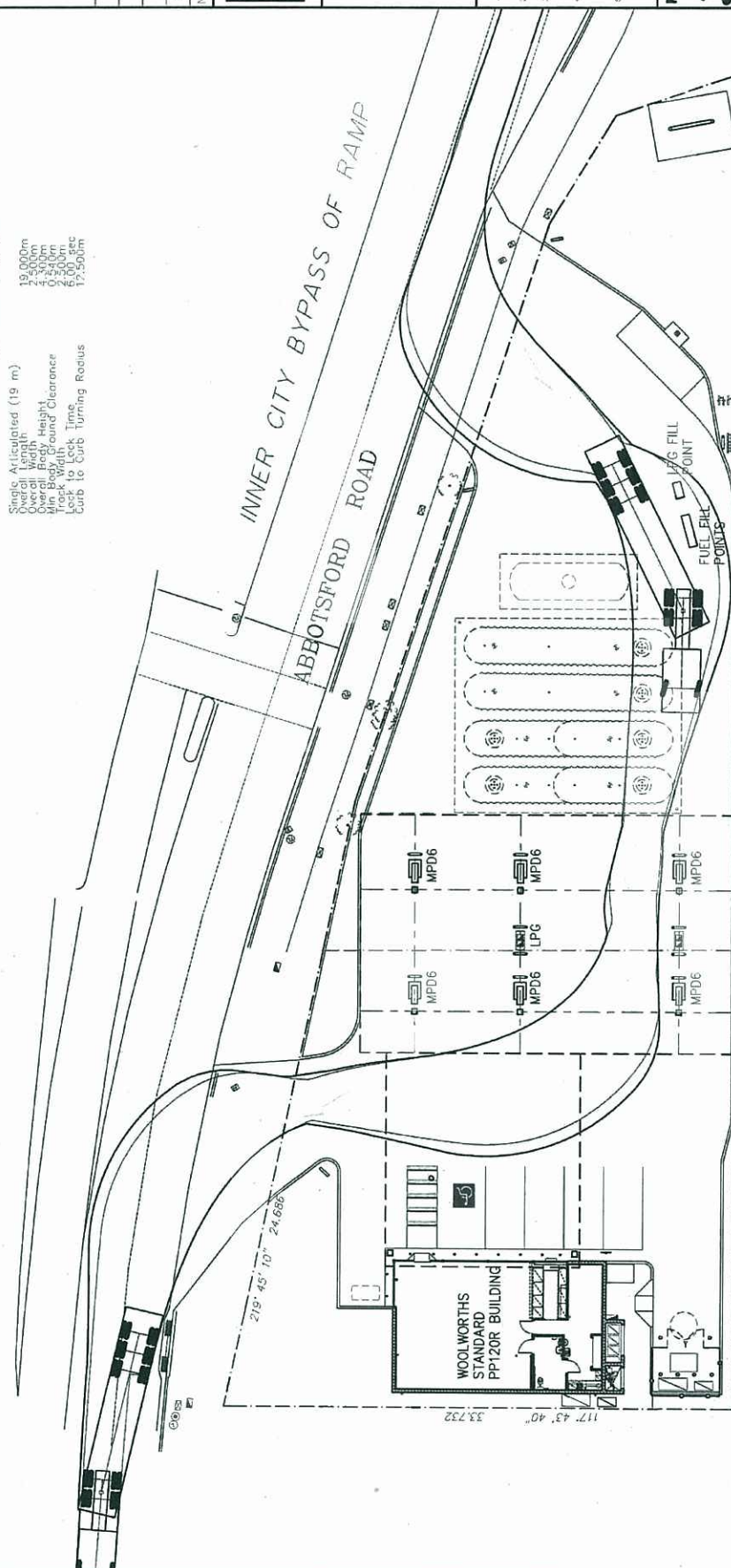
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DATE	NOV 2009	PLT DATE	
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STATUS			

D.A. ISSUE
 PROJECT No. 09089-D09
 ISSUE No. C

BPD:
 LOT 5 ON FUTURE PLAN
 LOT 1 ON RP131860
 LOTS 2 & 12 ON RP125339
 LOTS 1 & 11 ON RP125340
 AREA=1979m²



Single Articulated (19 m)
 Overall Length
 Overall Width
 Overall Body Height
 Overall Body Width
 Overall Body Depth
 Overall Body Radius Clearance
 Track Width
 Lock to Lock Time
 Curb to Curb Turning Radius



INNER CITY BYPASS OF RAMP
 ABBOTSFORD ROAD

WOOLWORTHS
 STANDARD
 PP120R BUILDING

NORTH COAST RAILWAY

FUEL VENTS
 PRV & BREATHERS
 LPG FILL POINT
 FUEL FILL POINTS



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 6. DIMENSION SCALE MUST BE VERIFIED



CONSULTANTS PROJECT NO.

PROPOSED SERVICE STATION
for WOOLWORTHS LIMITED
ABBOTSFORD ROAD
BOWEN HILLS

TITLE
TANKER TURNING PATH

DRAWN	je	CHECKED	
DATE	NOV 2009	PILOT DATE	
SCALE	1:300	SHEET SIZE	A3
STATUS			

D.A. ISSUE
 PROJECT NO. **09089-D04**
 SCALE No. **A**

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