

26 June 2012

Our Ref: BRT000275

Your Ref:

Attention: Con De Grot

ULDA
GPO Box 2202
Brisbane, QLD 4001

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 2 / 10 / 2012

Dear Con,

RE: Assessment of Traffic Impact of the proposed Expansion of the Parking Facilities at 55 - 66 Abbotsford Road, Bowen Hills.

TTM have been asked to assess the proposed minor change to the existing approval of a 39,743m² GFA commercial development at 55 to 66 Abbotsford Road, Bowen Hills.

1. Development

This assessment is an addendum to the original assessment carried out by Arup May 2011 Issue 2 220514-27.

The original development proposal consisted of the following elements:

- Total proposed area of 39,743m² GFA,
- Parking provision of 196 spaces (based on 1 space per 200m² GFA),
- Access via signalised intersection with existing Abbotsford Rd / Folkstone Street intersection (no right turn in from Abbotsford Rd and left turn exit only).

TTM carried out a further assessment of the development traffic impacts using the Bowen Hills Microsimulation Model in September 2011 (28147), which shows that the original proposed intersection and development impacts to be considered as acceptable.

2. Proposed Changes

The proposed change in relation to the approved development include:

- Parking provision of 399 spaces (based on 1 space per 100m² GFA),

3. Back Ground Traffic

The proposed development traffic and intersection design has been assessed in relation to the Bowen Hills 2026 final year. The Bowen Hills model was developed by TTM and includes a set of trip generation and distribution calculations for background and development trips. In relation to back ground trips a certain element of discounting has been applied to future traffic to account for in infrastructure projects present and proposed, which it is accepted will produce a variation in the strategic movements within the network. However it should be noted that the discount trips are still significantly higher than those shown within the BSTM model created for DTMR and BCC.

TTM Consulting (QLD) Pty Ltd

ABN 65 010 868 621

Brisbane | Gold Coast | Sunshine Coast
Melbourne | Sydney | Adelaide

PO Box 1310
Coorparoo BC, QLD 4151,

1/129 Logan Road
Woolloongabba, QLD 4102

t (07) 3327 9500
f (07) 3327 9501

ttmbris@ttmgroup.com.au
www.ttmgroup.com.au

4. Trip Generation and Distribution

TTM developed a set of land use categories which have been used as the basis for the estimation of development associated travel demand. Each category has been given a trip generation rate which is dependent on the land and development category type.

The trip generation rates have been taken from various sources, including the NSW RTA guidelines, Queensland Department of Transport and BCC policy.

Due to the strong emphasis within the Development Scheme in support of ToD principles, focussing on non car modes of transport and low parking rates, TTM Trip Generation rates provide for discount vehicular trip generation factors.

The low car dependency nature of the development scheme aims to promote sustainable forms of accessibility to and from the Bowen Hills area. Therefore the already existing highly accessible and integrated public transport network locally will significantly reduce private car usage below that of the Brisbane average.

TTMs Trip Generation Model has produced a peak hour generation factor roughly equivalent to 0.6 private vehicular trip movements per car available car spaces.

5. Distribution of Vehicle Trips

As the Bowen Hills UDA consists of a large number of land uses it was considered essential that in order to provide a representative distribution of trips that trip distribution was split into categories. The categorization of journey types has been used in order to create a realistic distribution of trips has been shown Table 6.3.

Table 1: Land Use Typical Origin/Destinations

Category	Uses	Typical Peak Destinations
A	Residential Short Term Accommodation	Employment and Education
B	Commercial Industrial	Residential
C	Retail Education Fast Food Restaurants Gym Medical	Mixed destinations, generally local

This model was used to create the original development distribution for which TTM tested the proposed development.

Trip distribution within the model has been set out in accordance with TTM's own Trip Distribution Model, which does differ significantly from that proposed within the Arup Report. However, in general, this does not impact on the assessment of either trip generation or the functionality of the proposed development access.

6. 2026 Original Development Peak Model Volumes

Output from the TTM Bowen Hills Microsimulation model for the proposed access intersection has been shown below within Figure 1. For the proposed development, the shown traffic generation is equivalent to 117 vehicle movements across the peak hour. For the originally proposed 196 parking spaces, this equates to 0.6 traffic movements per parking space.

The model reflects the latest known road design and known development currently included within the master plan as of the 10th June 2012. The updated base model criteria include the changed trip generation associated with development in the south western section of Waters Street district. These planning changes include the redesign of the road network adjacent Water Street and Anderson Street and the removal of the northern extension of Mayne Road.

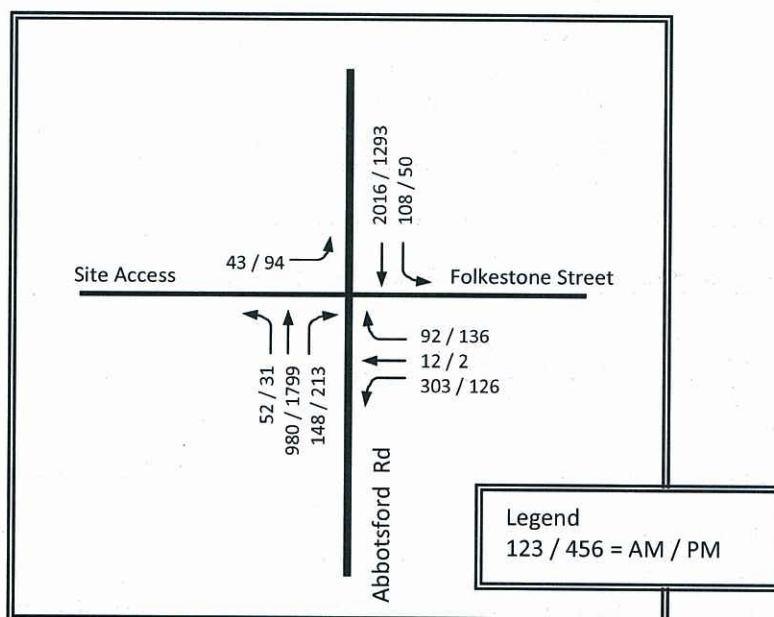


Figure 1: Peak Hour Traffic Volumes 2026 - Original Abbotsford Road Generation

7. 2026 Original Development Peak Model Volumes

Traffic Generation has been calculated based on the additional spaces provided by the proposed change in parking provision. The proposed doubling of parking provision has been used to provide a basis for trip generation and TTM have essentially doubled the original trip generation. This is shown below within Figure 2.

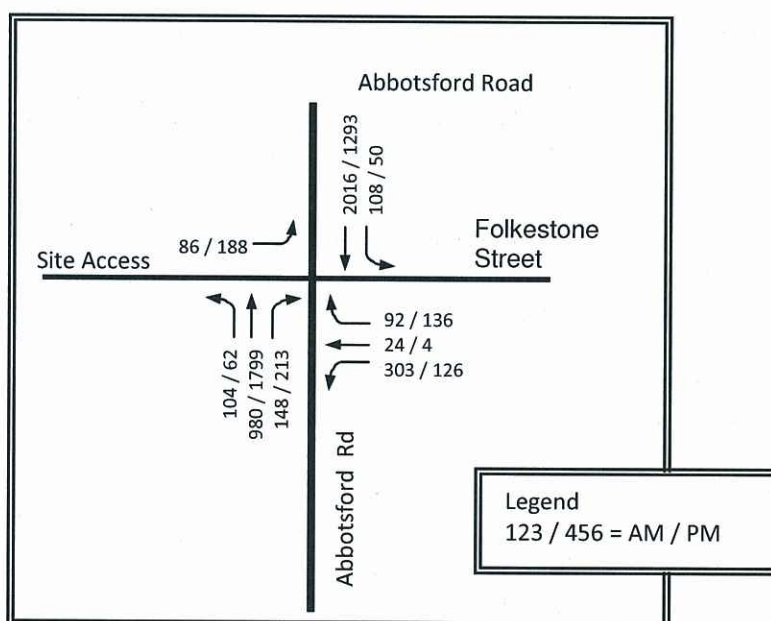


Figure 2: 2026 Modelled Peak Hour Traffic Volumes 2026 (399 spaces)

8. Analysis of Site Access/Abbotsford Road and Folkestone Intersection

Table 2 gives a summary of the outputs for the various traffic cases applied to the intersection.

Table 2: Summary of Sidra Outputs

Case	Degree of Saturation	Average Delay	Level of Service	95 th Percentile Critical Queue (m)			
				South	East	North	West
AM Base Case 2026	84.8%	15.5	B	84.9	73.6	167.4	2.8
AM Project Case 2026	84.8%	15.5	B	91.4	73.6	167.4	5.9
PM Base Case 2026	83.3%	18.1	B	91.8	17.9	141.4	5.5
PM Project Case 2026	83.3%	18.1	B	94.8	17.9	141.4	13.2

The results in the above table demonstrate that the proposed additional traffic will have a negligible impact on the operation of the intersection at the site frontage. Overall intersection degree of saturation and delay is unaffected and queues will generally increase by less than one vehicle, only on approaches where additional development traffic is applied.

This minimal impact results as the proposed development traffic is not applied to critical movements within the intersection.

Furthermore a review of the microsimulation model, which identifies congestion across the local network in both AM and PM periods, does not differ significantly in terms of approximated delay. This would be expected in consideration of the development generated trips being distributed over the modelled network, beyond the access intersection.

9. Conclusions

This analysis shows that there is ample spare capacity at this intersection in all cases, therefore the development will have no significant impact on the operation of this intersection. Additionally, the increased development traffic above that of the previous scheme has no significant impact on the operation of the external road network.

If you have any queries in relation to the information provided in this letter, contact Simon Crank on 3327 9500.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'S. Crank', with a long horizontal stroke extending to the right.

Simon Crank
Director

Appendix A

SIDRA OUTPUTS

MOVEMENT SUMMARY

New Site
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Site: 2026 Original AM

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Des. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abbotsford Rd Sth											
1	L	55	3.0	0.449	16.8	LOS B	11.6	84.5	0.54	0.96	42.6
2	T	1032	3.0	0.449	8.5	LOS A	11.6	84.9	0.54	0.48	46.5
3	R	156	3.0	0.783	55.7	LOS E	7.4	53.2	1.00	0.99	23.7
Approach		1242	3.0	0.783	14.8	LOS B	11.8	84.9	0.60	0.56	41.4
East: Folkstone Rd											
4	L	319	3.0	0.446	20.8	LOS C	10.3	73.6	0.78	0.82	33.1
5	T	13	3.0	0.274	31.8	LOS C	4.1	28.1	0.87	0.89	29.2
6	R	97	3.0	0.274	40.1	LOS D	4.1	28.1	0.87	0.78	28.7
Approach		428	3.0	0.446	32.0	LOS C	10.3	73.6	0.80	0.81	31.9
North: Abbotsford Rd Nth											
7	L	114	3.0	0.648	20.1	LOS C	22.5	161.8	0.68	0.93	40.4
8	T	2122	3.0	0.648	12.4	LOS B	23.3	167.4	0.70	0.65	42.5
Approach		2236	3.0	0.648	12.8	LOS B	23.8	167.4	0.70	0.69	42.4
West: Site Access											
9	L	45	3.0	0.053	9.4	LOS A	0.4	2.8	0.21	0.64	47.9
Approach		45	3.0	0.053	9.4	LOS A	0.4	2.8	0.21	0.64	47.9
All Vehicles		3952	3.0	0.848	15.5	LOS B	23.3	167.4	0.67	0.66	40.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

New Site
Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

Site: 2026 Proposed AM

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Des. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abbotsford Rd Sth											
1	L	239	3.0	0.478	17.0	LOS B	22.8	80.6	0.85	0.98	42.6
2	T	1052	3.0	0.478	8.7	LOS A	22.7	81.4	0.85	0.48	46.2
3	R	956	3.0	0.788	53.7	LOS E	7.4	53.2	1.00	0.98	23.7
Approach		1287	3.0	0.788	15.1	LOS B	22.7	81.4	0.89	0.89	41.2
East: Folkstone Rd											
4	L	319	3.0	0.446	29.6	LOS C	10.3	73.6	0.78	0.82	33.1
5	T	25	3.0	0.304	32.0	LOS C	4.6	32.7	0.88	0.70	29.2
6	R	97	3.0	0.304	40.3	LOS D	4.6	32.7	0.88	0.78	28.7
Approach		441	3.0	0.446	32.1	LOS C	10.3	73.6	0.81	0.81	31.5
North: Abbotsford Rd Nth											
7	L	114	3.0	0.648	20.1	LOS C	22.5	161.8	0.68	0.93	40.4
8	T	2122	3.0	0.648	12.4	LOS B	23.3	167.4	0.70	0.65	42.5
Approach		2236	3.0	0.648	12.6	LOS B	23.3	167.4	0.70	0.69	42.4
West: Site Access											
9	L	91	3.0	0.107	9.5	LOS A	0.8	5.9	0.22	0.88	47.9
Approach		91	3.0	0.107	9.5	LOS A	0.8	5.9	0.22	0.88	47.9
All Vehicles		3720	3.0	0.848	15.5	LOS B	23.3	167.4	0.67	0.67	40.7

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2026 Original PM

New Site
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Dep. Satn sat	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abbotsford Rd Sth											
1	L	33	3.0	0.759	10.3	LOS B	8.0	57.4	0.22	1.05	47.3
2	T	1094	3.0	0.759	4.1	LOS A	12.6	91.8	0.27	0.28	62.5
3	R	224	3.0	0.759	34.8	LOS C	12.6	91.8	0.53	0.53	31.4
Approach		2151	3.0	0.760	7.3	LOS A	12.6	91.8	0.34	0.34	49.0
North: Abbotsford Rd Nth											
4	L	136	3.0	0.635	17.6	LOS B	2.5	12.9	0.51	0.76	40.6
5	T	2	3.0	0.622	25.3	LOS D	1.7	12.9	0.81	0.62	32.1
6	R	53	3.0	0.622	35.8	LOS D	1.7	12.9	0.91	0.75	31.2
Approach		167	3.0	0.635	22.2	LOS C	2.5	17.9	0.60	0.74	37.3
West: Site Access											
7	L	53	3.0	0.633	42.3	LOS D	19.7	141.4	0.99	1.00	29.2
8	T	1361	3.0	0.633	34.3	LOS C	19.7	141.4	1.00	0.99	29.4
Approach		1414	3.0	0.633	34.6	LOS C	19.7	141.4	1.00	0.99	29.3
East: Site Access											
9	L	53	3.0	0.633	9.1	LOS A	0.8	5.5	0.21	0.65	43.2
Approach		85	3.0	0.630	9.1	LOS A	0.8	5.5	0.21	0.65	43.2
All Vehicles		3851	3.0	0.633	15.1	LOS B	19.7	141.4	0.59	0.61	38.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

MOVEMENT SUMMARY

Site: 2026 Proposed PM

New Site
Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Dep. Satn sat	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Abbotsford Rd Sth											
1	L	65	3.0	0.811	11.2	LOS B	8.8	63.0	0.24	1.03	46.9
2	T	1094	3.0	0.811	4.5	LOS A	13.2	94.8	0.28	0.38	51.8
3	R	224	3.0	0.811	35.0	LOS C	13.2	94.8	0.54	0.51	31.2
Approach		2153	3.0	0.811	7.9	LOS A	13.2	94.8	0.35	0.38	48.4
North: Abbotsford Rd Nth											
4	L	133	3.0	0.635	17.8	LOS B	2.5	17.9	0.51	0.75	40.5
5	T	4	3.0	0.627	25.3	LOS D	1.7	12.5	0.81	0.62	32.1
6	R	53	3.0	0.627	33.7	LOS D	1.7	12.5	0.81	0.75	31.2
Approach		190	3.0	0.635	22.2	LOS C	2.5	17.9	0.60	0.74	37.2
West: Site Access											
7	L	53	3.0	0.633	42.3	LOS D	19.7	141.4	0.99	1.00	29.2
8	T	1361	3.0	0.633	34.3	LOS C	19.7	141.4	1.00	0.99	29.4
Approach		1414	3.0	0.633	34.6	LOS C	19.7	141.4	1.00	0.99	29.3
East: Site Access											
9	L	195	3.0	0.253	9.6	LOS A	1.8	13.2	0.25	0.67	47.7
Approach		195	3.0	0.253	9.6	LOS A	1.8	13.2	0.25	0.67	47.7
All Vehicles		3804	3.0	0.633	15.1	LOS B	19.7	141.4	0.59	0.62	38.8

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.