

19 June 2012
Our Ref: BRT0001
Your Ref:

Attention: Tony Blackshaw

Metro Property
PO Box 7076, Riverside Centre,
Brisbane QLD 4001

PLANS AND DOCUMENTS
referred to in the ULDA
APPROVAL dated 26 / 7 / 17.

Dear Tony,

RE: Project Waters – Parking Supply Analysis

1. Introduction

The purpose of this letter is to justify the parking supply for resident and visitor parking provided for the above mentioned development. The justification is based in surveys conducted by TTM to determine parking demands associated with similar developments.

Proposed Development

The development schedule by stage for the proposed development, including car parking is summarised in Table 1.1.

Unit Type	Qty	Rate	Spaces
1 Bedroom	756 units	0.4 spaces / unit	303 spaces
2 Bedroom	3324 units	1.0 spaces / unit	324 spaces
Sub Total	1080 units (1404 bedrooms)		627 spaces
Visitors		1 space / 20 units	54 spaces
Retail			5 spaces

The resident parking supply for the proposed development equates to:

- 0.58 spaces / unit,
- 0.44 spaces / bedroom

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
129 Logan Road, Woolloongabba

t (07) 3327 9500
f (07) 3327 9501
ttmbris@ttmgroup.com.au
www.ttmgroup.com.au

2. Parking Demand Surveys

2.1 Methodology & Site Details

TTM have surveyed the parking demands at nine (9) high density residential developments within the Brisbane CBD fringe, located in relatively close proximity to public transport. The catchment area considered relevant to the study is shown in Figure 2.1.

The details of each residential development is summarised in Table 2.1.

Table 2.1 Surveyed Site Details

Site	Address	Total Car Parks (res)	No of units
1	Oxygen Apartments, Spring Hill	147	111
2	Trilogy Apartments, Spring Hill	132	121
3	Universal, South Brisbane	95	69
4	Manning St, West End	97	83
5	The Village at West End	83	68
6	The Parc, Brisbane	126	93
7	The Vue, Brisbane	239	185
8	Elysees, Milton	46	34
9	The Edge, Milton	85	72
		Total Units	764

The surveys were conducted over a two week period. TTM visited each of the nominated sites after 8pm and recorded the number of vehicles (residential and visitor) parked on site. The count was undertaken each weeknight and twice on weekends (AM and PM count), with the exception of Thursday evening.

Whilst the surveys were conducted on sites of similar characteristics with respect to location, it is noted that there a few developments currently occupied that have as a high a proportion of one (1) bedroom apartments as that proposed for Metro Property Developments. The developments surveyed have a high proportion of two (2) bedroom units, therefore the analysis of the results includes a parking demand rate per bedroom.

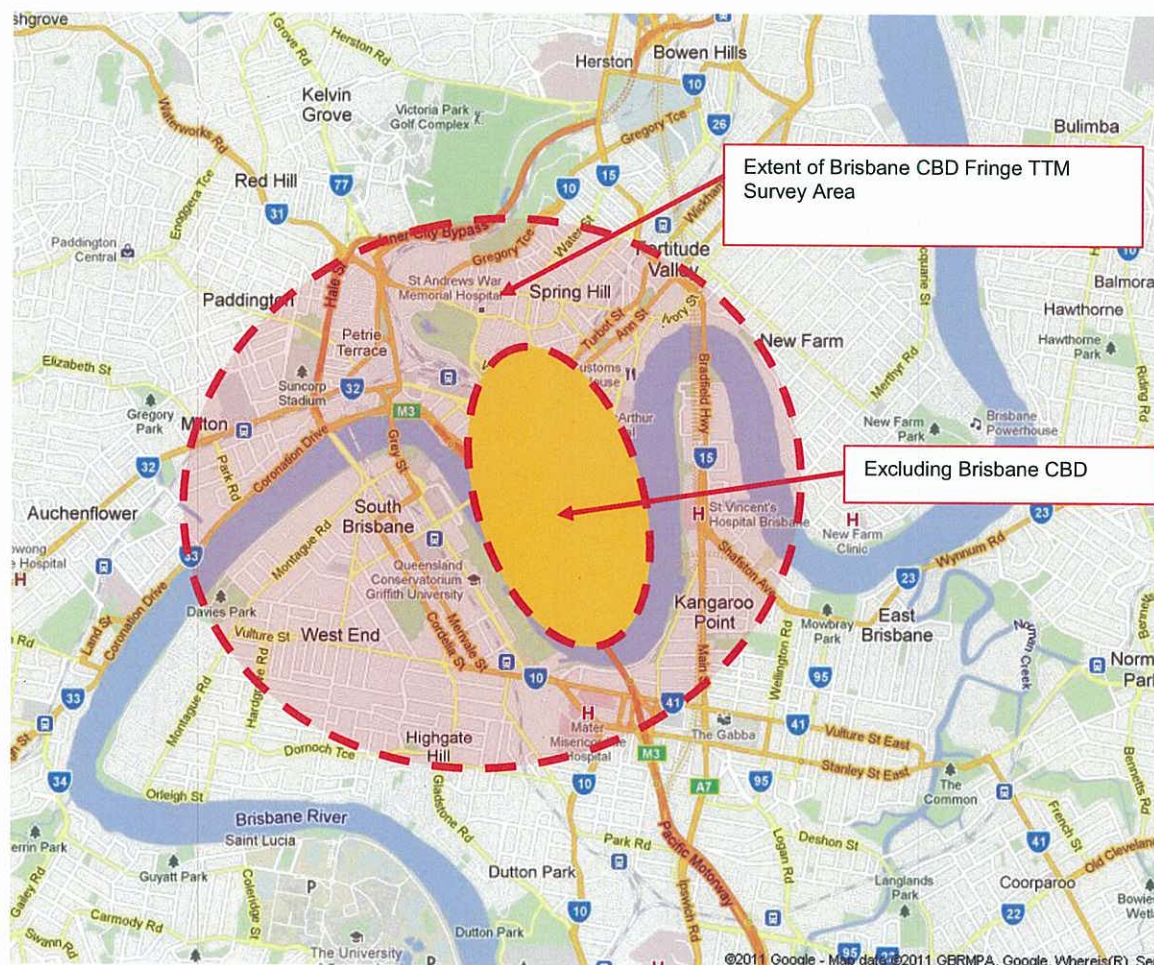


Figure 2.1: Extent of Survey Area – Brisbane CBD fringe

2.2 Survey Results

The results of the surveys are presented in Table 2.2. on a “per Unit” basis and Table 2.3 on a “per Bedroom” basis.

The data analysis provided is based on the 85thile demands, which is the standard design criteria adopted by the traffic engineering industry.

The survey data which forms the basis of the analysis is also attached.

Table 2.2 Parking Demands per Unit

Site	Address	Total Car Parks (res)	No of units	Provision rate	Site Average Demand	Surveyed average demand per unit	85th percentile	Overall 85th Percentile Demand
1	Oxygen Apartments, Spring Hill	147	111	1.32	73	0.66	0.68	0.77
2	Trilogy Apartments, Spring Hill	132	121	1.09	63	0.52	0.55	
3	Universal, South Brisbane	95	69	1.37	53	0.76	0.80	
4	Manning St, West End	97	83	1.17	59	0.71	0.79	
5	The Village at West End	83	68	1.22	52	0.76	0.79	
6	The Parc, Brisbane	126	93	1.35	48	0.51	0.52	
7	The Vue, Brisbane	239	185	1.3	121	0.65	0.68	
8	Elysees, Milton	46	34	1.35	18	0.54	0.59	
9	The Edge, Milton	85	72	1.18	47	0.65	0.65	
		Total Units	764					

Table 2.3 Parking Demands per Bedroom

Site	Address	Total Car Parks (res)	No of B'rooms	Provision rate	Site Average Demand	Surveyed average demand per bed	85th percentile	Overall 85th Percentile Demand
1	Oxygen Apartments, Spring Hill	147	222	0.66	73	0.33	0.34	0.39
2	Trilogy Apartments, Spring Hill	132	192	0.69	63	0.33	0.34	
3	Universal, South Brisbane	95	138	0.69	53	0.38	0.40	
4	Manning St, West End	97	163	0.60	59	0.36	0.40	
5	The Village at West End	83	132	0.63	52	0.39	0.41	
6	The Parc, Brisbane	126	177	0.71	48	0.27	0.27	
7	The Vue, Brisbane	239	421	0.57	121	0.29	0.30	
8	Elysees, Milton	46	84	0.55	18	0.22	0.24	
9	The Edge, Milton	85	137	0.62	47	0.34	0.34	
		Total Units	1529					

Key findings from the study are summarised as follows:

- The data analysis clearly demonstrates that despite a parking provision of at least one (1) space per unit, the demands surveyed were **0.77 spaces per unit**,
- The parking demand rate of 0.77 spaces per unit is based on a unit mix of 10% one (1) bedroom units / 80% two (2) bedroom units / 10% three (3) bedroom units, which significantly increases the potential resident population compared to the unit mix proposed by Metro Property Development for the subject site which relates to 70%
- The data analysis indicates that the parking demand rate per bedroom, which essentially compensates for disproportionate unit mixes, is **0.39 spaces per bedroom**
- The only complex surveyed with a relatively high proportion of one (1) bedroom units (41%) was the Trilogy complex in Spring Hill. The surveyed peak parking demand for this complex was **0.55 spaces per unit** and **0.34 spaces per bedroom**.

3. Conclusion

The proposed development parking provision of 0.44 spaces per bedroom, exceeds the surveyed parking rate of 0.39 spaces per bedroom. The parking supply proposed is also consistent with the demands per unit surveyed for the Trilogy development at Spring Hill which has a relatively high proportion of one (1) bedroom units.

On the basis of the survey results, it is concluded that the proposed parking supply is adequate to accommodate the resident parking demands associated with the proposed development.

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

Yours faithfully,

Brian Camilleri
Principal Director

RESIDENTS PARKING DEMAND (VEHICLES/UNIT) - SUMMARY TABLE											
Week 1						Week 2					
Site	Total no of units	Monday	Tuesday	Wednesday	Friday	Monday	Tuesday	Wednesday	Friday	Site Average	Site 85th percentile
1	111	0.64	0.66	0.68	0.63	0.68	0.62	0.70	0.66	0.66	0.68
2	121	0.53	0.50	0.53	0.46	0.55	0.55	0.54	0.55	0.52	0.55
3	69	0.78	0.78	0.80	0.68	0.75	0.77	0.81	0.71	0.76	0.80
4	83	0.92	0.57	0.64	0.69	0.66	0.63	0.78	0.80	0.71	0.79
5	68	0.78	0.74	0.81		0.78		0.76	0.69	0.76	0.79
6	93	0.59	0.52	0.47	0.48	0.52	0.52	0.49	0.51	0.51	0.52
7	185	0.62	0.65	0.61	0.68	0.68	0.64	0.68	0.67	0.65	0.68
8	34	0.56	0.53	0.47	0.56	0.59	0.59	0.41	0.59	0.54	0.59
9	72	0.65			0.65	0.65				0.65	0.65
85th percentile overall (All Sites) =											0.77

20 June 2012

Our Ref: 27703

Your Ref:



Attention: Stephen Buhmann

**Metro Property Developments Pty Ltd
C/- Brannock and Associates
Level 16, Matisse Tower
110 Mary Street
Brisbane QLD 4001**

Dear Stephen,

**RE: Project Waters, 332-342 Water Street, Fortitude Valley
Updated Road Network Traffic Volumes**

TTM Consulting has been engaged by Metro Property Development Pty Ltd to undertake traffic assessments for the proposed Project Waters development at 332-342 Water Street, Fortitude Valley. This letter outlines the expected changes in traffic volumes on the local roads surrounding the development site as a result of the updated development scheme and alterations to the internal road/access layouts. These proposed alterations were detailed in the revised Project Waters Master Plan + Stage 1 & 2 Preliminary Development Approval Traffic Engineering report prepared by TTM on 24th May 2012 (TTM Report: 27703Trep3).

Prior to undertaking this development application, TTM was engaged by the Urban Land Development Authority (ULDA) to prepare a traffic model of the wider Bowen Hills Urban Development Area (UDA) to estimate future traffic volumes and road upgrades required. The traffic generated by the Project Waters site (Precinct 4: Water Street Precinct of the Bowen Hills UDA) was originally determined in the Bowen Hills Model by applying generation rates to the site based on the assumed land use and maximum plot ratios. The original generation rate adopted for the Project Waters site in the original Bowen Hills Model was derived as being 174vph in the AM/PM weekday peak hours. As outlined in the TTM report, the revised Project Waters development is expected to generate between 154 – 244 vph during the weekday AM/PM peak hour periods. It can therefore be seen that there is only a slight difference in the traffic generation assumptions made for the original Bowen Hills model compared to what is actually expected from the Project Waters site.

The effects that this slight traffic generation increase will have with respect to the peak hour volumes on the roads surrounding the Project Waters site was therefore determined by comparing the outputs of the original Bowen Hills UDA model with the outputs of an updated model assuming a traffic generation rate of 244vph from Precinct 4. This traffic generation value represents the upper limit of the expected range for the Project Waters site to give a conservative estimate of traffic volume increases on the surrounding roads.

It should be noted that the original Bowen Hills Model assumed there was a "New Road" linking from Diggles Close through to Water Street (midblock between Brunswick Street and Baxter Street). The revised development master plan, however, shows this link is planned to connect to the existing Baxter Street / Water Street "T" intersection (named the "Baxter Street Extension"). As such, it is expected that there will be slight changes to traffic volumes on the surround roads as a result of the changed network and redistribution of trips. This fact should be considered when comparing the outputs of the old and new Bowen Hills Models.

Figures 1 to 4 show the outputs of the Bowen Hills Model for the 2026 AM/PM scenarios, for the old and new model iterations.

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

129 Logan Road, Woolloongabba

t (07) 3327 9500

f (07) 3327 9501

ttmbris@ttmgroup.com.au

www.ttmgroup.com.au

Figure 1: 2026 AM Peak – Original Bowen Hills Model Outputs

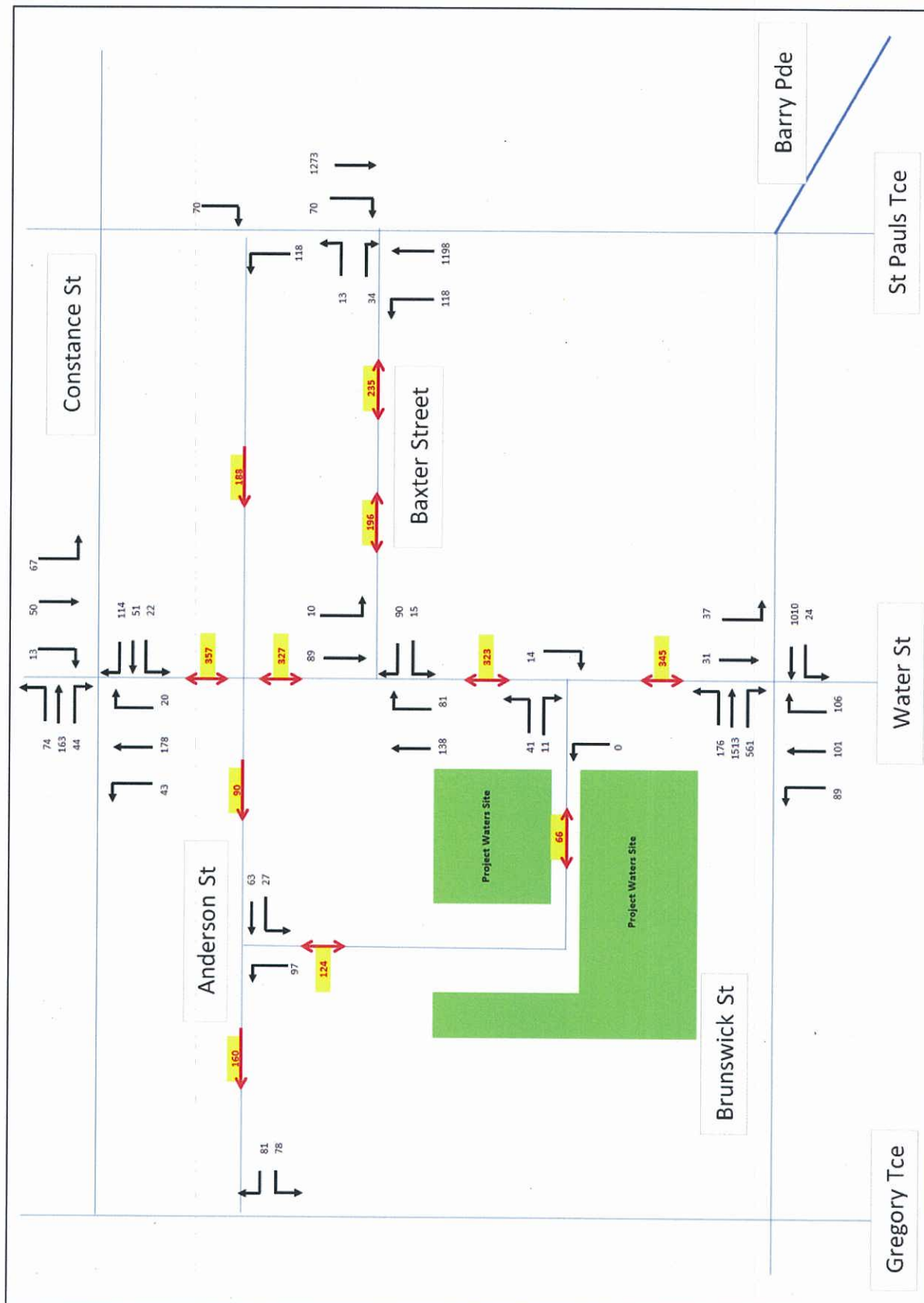


Figure 2: 2026 AM Peak – New Bowen Hills Model Outputs (Updated Project Waters Scheme)

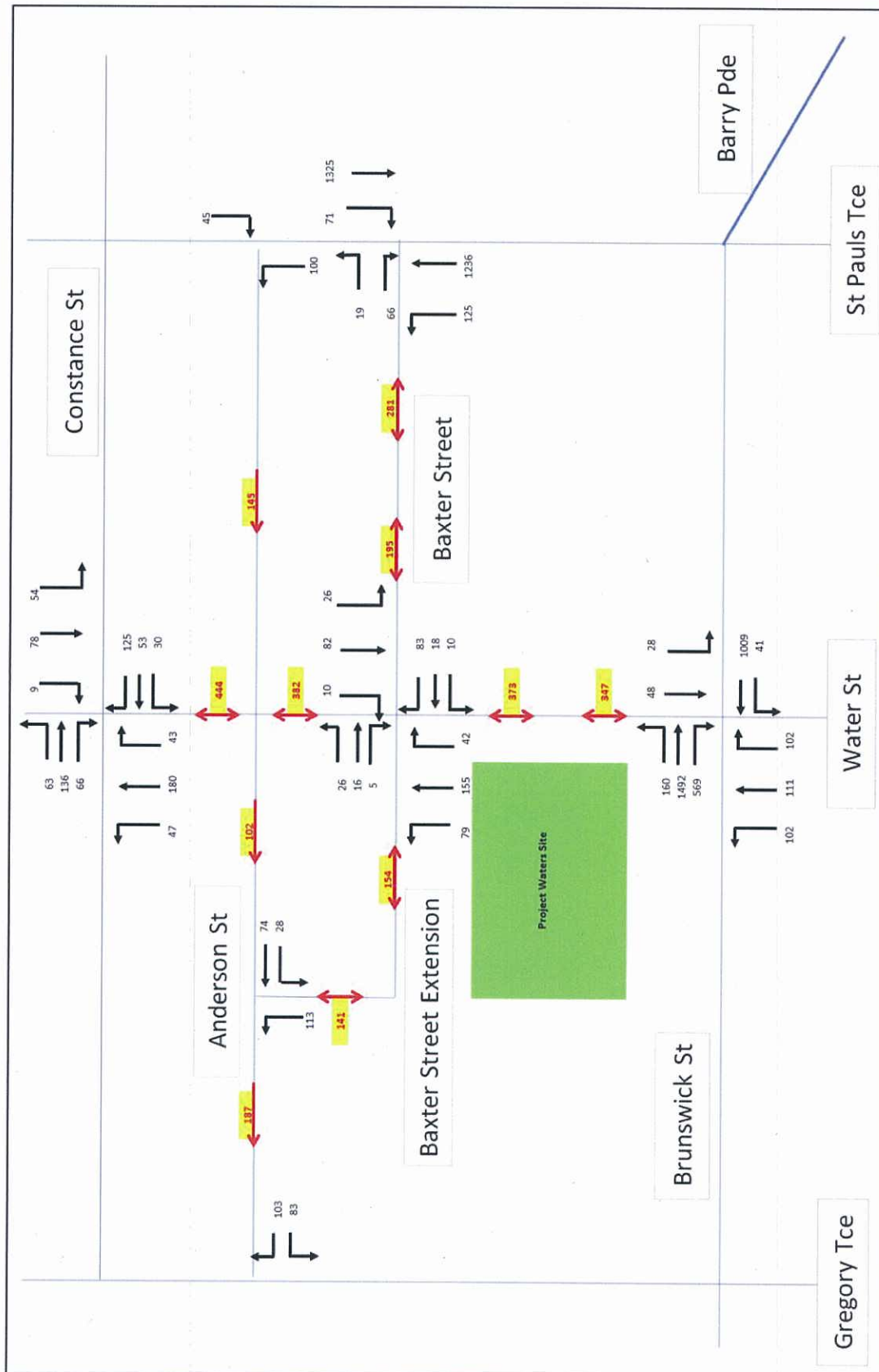


Figure 3: 2026 PM Peak – Original Bowen Hills Model Outputs

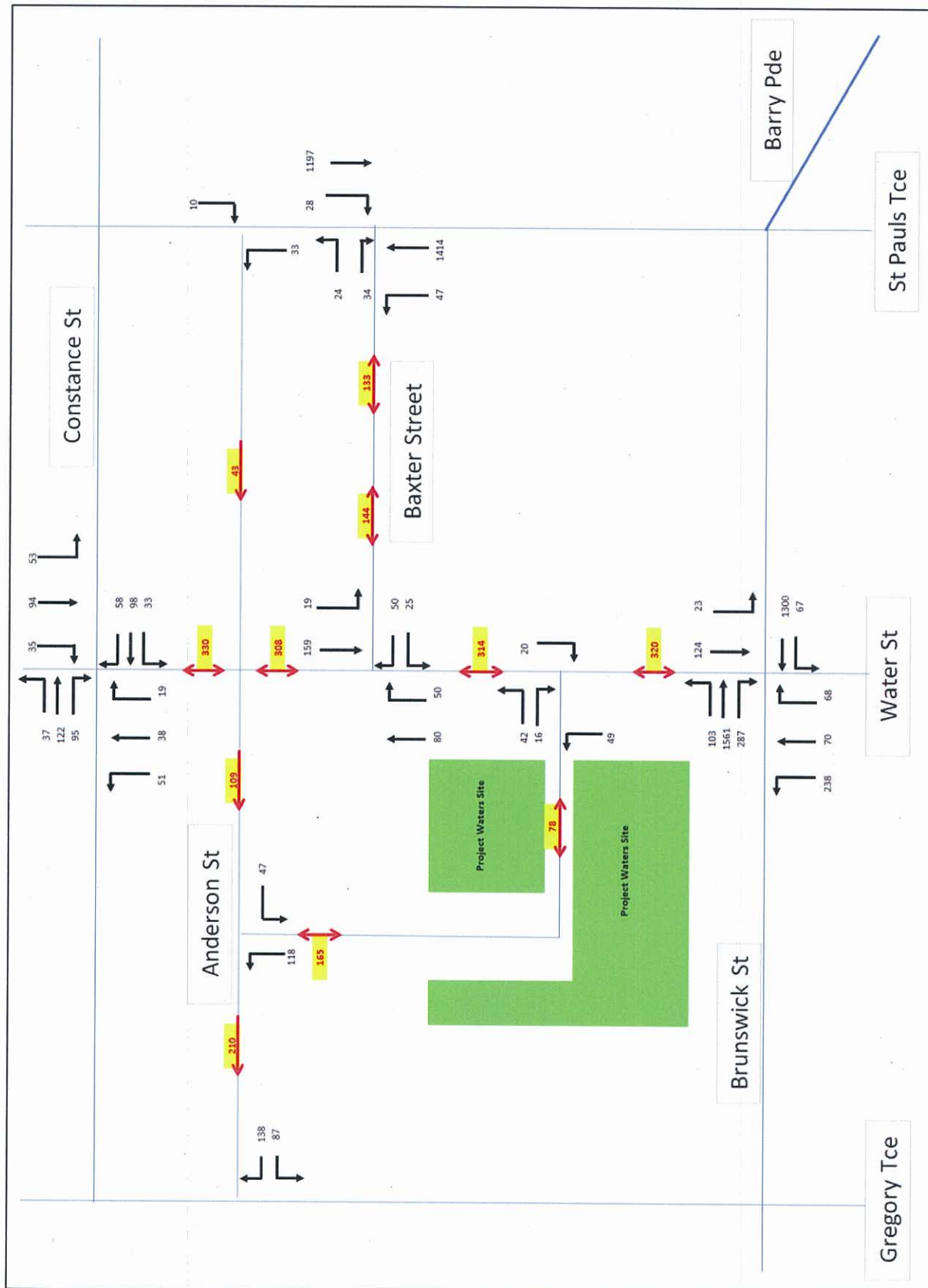
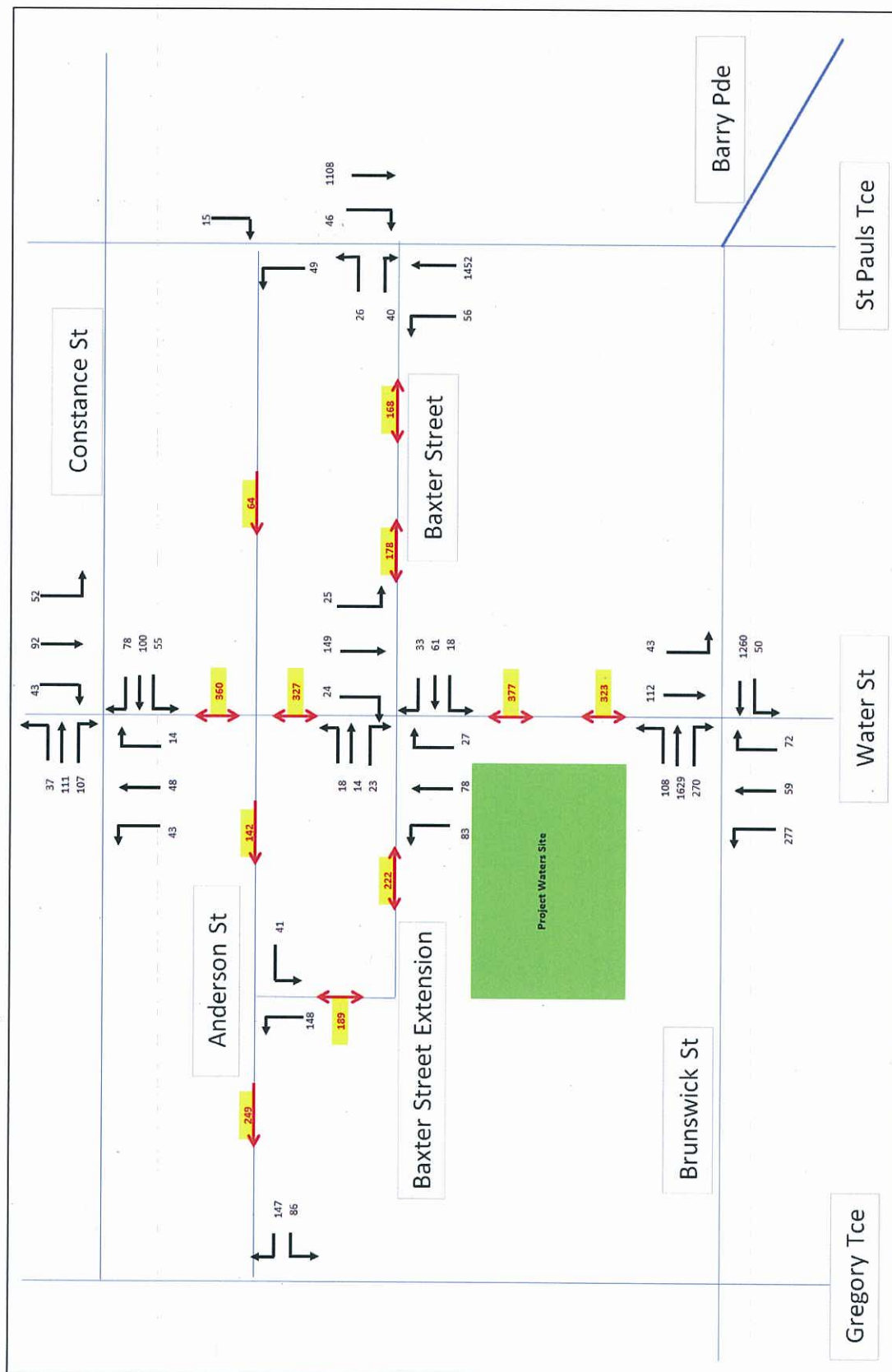


Figure 4: 2026 PM Peak – New Bowen Hills Model Outputs (Updated Project Waters Scheme)



Although the relocation of the "New Road" servicing the Project Waters development causes some redistribution of trips around the site (notably on Baxter and Andersons Street), it can be seen from the above figures that the expected link volumes for the AM/PM scenarios are quite similar between the old and new model.

During the AM Peak hour, the greatest change in through volume traffic is apparent on Water Street (to the east of the site), where the through volumes between Anderson Street and Constance Street are expected to increase from 357vph to 444vph (87vph or 25% increase). The other roads, however, are expected to have minimal traffic volume increases, generally up to 20vph. It should be noted that although the values on Baxter Street and Anderson Street (south of the Project Waters site) are quite different between the new and old model, this is more due to the redistribution of trips as a result of the relocated "New Road" servicing the Project waters development. The combined traffic using both Baxter Street and Anderson Street is 592vph (two way) in the old model, and this has only slightly increased to 621vph in the new model.

During the PM peak hour, the greatest change in through volumes is 63vph which occurs on Water Street (outside the Project Waters site just west of Baxter Street). This is also, however, an effect of the relocation of the "New Road" to the eastern boundary of the site as all vehicles accessing Project Waters from the "New Road" were not originally included in the through volumes on Water Street. Apart from this, the traffic volume increases on the other roads surrounding in the surrounding area is at most 39vph.

Based on the outputs of the Bowen Hills Model, it is apparent that the changes to Project Waters site proposed in the revised masterplan development approval will have negligible effects on the traffic volumes using the surrounding road up to the 2026 design horizon. As such, no additional road upgrades – or changes to the road planning layouts developed by TTM as part of the original Bowen Hills modelling exercise - are warranted.

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

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Brian Camilleri', is written over a light blue horizontal line.

Brian Camilleri
Principal Director