



20 September 2013

General Manager  
City of Botany Bay City Council  
PO Box 331  
MASCOT NSW 1460

Attention: Chris Mackey

**140-148 DENISON STREET & 25-29 SMITH STREET, HILLSDALE  
PROPOSED DEMOLITION, SUBDIVISION & BUNNINGS WAREHOUSE  
DEVELOPMENT (DA 11/224)  
RESPONSE TO RESOLUTION OF THE SYDNEY EAST JRPP**

Dear Chris,

I refer to the above application and the resolution of the Sydney East Joint Regional Planning Panel on 4 September 2013, reproduced below:

- 1. The Panel resolves unanimously to defer the determination of the application.*
- 2. The Panel requests the applicant to submit amended drawings that relocate the loading dock away from residential boundaries. The amended drawings should be submitted by 4 October 2013.*
- 3. The Panel requests the council's planning assessment officer to prepare a supplementary report informing the Panel whether the applicant has complied with the above request. The planning assessment officer is to prepare a set of draft conditions, which include those proposed by Mr Len Gawecki and jointly by Mr Craig McLaren and Mr Ross Nettle. The above is to be provided by 18 October 2013.*
- 4. The Panel requests the applicant to undertake a survey of existing traffic conditions in Boonah, Smith and Fraser Streets, focusing on weekend traffic, and to submit the results by 4 October 2013.*
- 5. Following the receipt of the above material, the Panel will make a decision by communicating by electronic means unless it considers that a further meeting is necessary.*

This submission responds to points 2 and 4 of the above resolution.

**Response to Point 2**

With regard to the proposed store, Bunnings is very conscious of the need to be a good neighbour and establish and maintain a good relationship with its neighbours, whilst conducting a functional, safe and successful business. In this

regard Bunnings has investigated in detail the Panel's requirement and concluded that it presents a fundamental and unreasonable operational burden, it is counter productive in terms of eliminating forklift activity, it promotes conflict within the one-way driveway system, and collectively a better outcome can be achieved through an alternative amendment. The alternative submitted for Council's and the Panel's consideration and determination essentially involves enclosure of the "Goods Inwards" area ("GI") and increasing the height of the acoustic barrier from 3.5 metres to 5 metres continuously along the eastern edge of the perimeter driveway.

The circumstances and supporting reasons behind this proposal are:

- Under the scenario suggested by the Panel there would be a need to transport long lengths of timber (up to 6 metres), sheets of gyprock, cement bags, and similar bulky and heavy materials back down to the Timber Trade Sales (TTS) area along the external driveway on the northern side of the store. Due to the weight and size/shape of these products, forklifts would be in much greater use along this driveway each and every day
- There are no opportunities to take these products safely through the store during operating hours due to customer safety conflicts and a significant loss of productive floor area.
- Relocation of GI activity to the southern side of the building will bring forklift and trucks into conflict with customer vehicles
- Forklifts laden with bulky products making the 100+ metre journey down the driveway, would come into direct conflict with Goods delivery vehicles which are travelling in the opposite direction along the driveway (heading for the GI area) and there is no effective passing or turnaround facility to respond to these conflicts other than reversing which poses safety hazards for drivers (forklift and/or truck drivers) and team members who may be within the driveway area undertaking their duties.
- There will still be a need for forklift activity at the eastern end of the building even if GI was relocated to the western end of the building, therefore much of the perceived acoustic benefit would be lost
- Bunnings' preferred alternative includes an increase the height of the acoustic barrier from 3.5 metres to 5.0 metres along the entire eastern driveway edge as well as along the northern side of the GI, and adding a metal roof to enclose the GI area (inclusive of sound absorbing material to the underside of that roof).
- Even under the presumption of continual operational use of the GI, acoustic consultants Wilkinson Murray conclude that noise generated from the GI will reach only 41dBA or less at nearby residences, whereas the existing ambient noise in the locality is 46 and 44 dBA in the daytime and evening noise periods respectively, and whereas the site specific noise goals for residential properties in the locality is 50 and 49 dBA in the daytime and evening periods respectively.

- The area between the proposed building and the rear fence of the residential neighbours will be landscaped and the marginal increase in height of the acoustic wall provides no essential change to the development as exhibited previously.

An acoustic assessment of the proposal inclusive of this proposal has been undertaken by acoustic consultants Wilkinson Murray. Their assessment is appended to this submission.

#### **Response to Point 4**

Traffic count surveys of the following intersections have been undertaken on 7 September 2013:

- Smith/Corish/Denison Streets
- Fraser/Denison Streets
- Boonah/Denison Streets
- Smith St/Bunerong Rd/Parer Streets
- Fraser St/Bunerong Rd
- Boonah St/Bunerong Rd

These survey figures provide a benchmark figure upon which to assess future traffic counts post-opening for the Bunnings development.

Four (4) copies of the amended plans are attached for your use and referral to the Sydney East Joint Regional Planning Panel. Bunnings respectfully request the Panel to make their determination based on the submitted amended plans and supporting information.

Please contact me on 9846 7334 or 0413 098 609 if you wish to discuss any matter raised in this submission.

Yours sincerely,



Philip Drew  
**Development Approvals Manager**  
**Bunnings Group Ltd**

***Encl.***

*Wilkinson Murray submission dated 18 September, 2013*  
*R.O.A.R traffic survey results for 7 September 2013*

18 September 2013

WM Project Number: 11175  
Our Ref: PD 181013 ldbc

Phil Drew  
Bunnings  
11 Shirley Street,  
Rosehill NSW 2142

Dear Sir

**Re: Bunnings Warehouse East Gardens - Hillsdale  
Loading Dock Noise Levels at Residences**

At the recent Joint Regional Planning Panel concern was raised regarding the potential adverse impact of loading dock operations on the acoustic amenity of residences located to the north and east of the proposed dock.

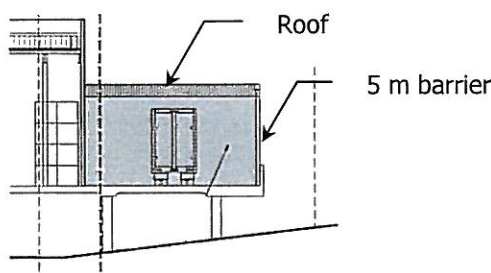
The DA noise assessment prepared by Wilkinson Murray determined that noise from the operation of the development, including the loading dock and roadway, will comply with established site specific noise criteria.

Further to this we have been requested to assess additional measures to contain noise from this area. The measures consist of:

- Increasing the height of the barrier on the eastern and northern side of the site to a height of 5 metres.
- Installing a roof over the loading dock and part of the roadway.

The area of the barrier and roof treatment is shown in the following figures:

**Figure 1 Part Section of Driveway Showing Roof and Barrier**



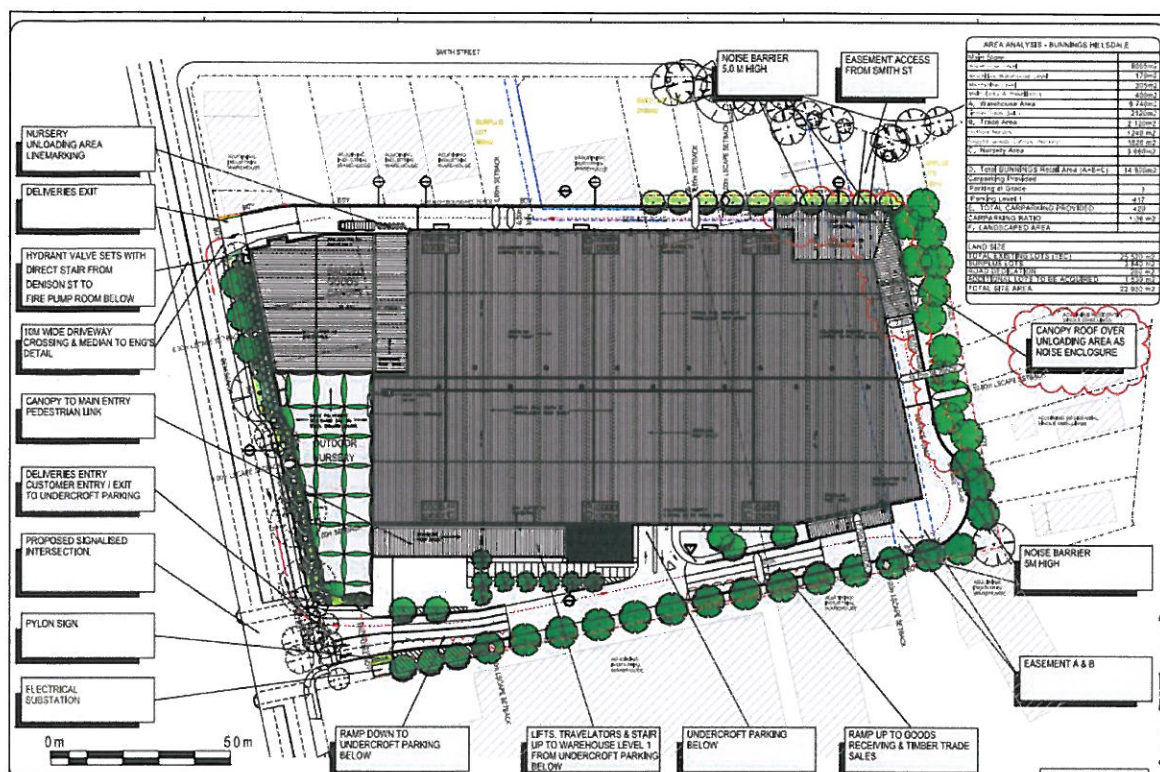
Wilkinson Murray Pty Limited · ABN 39 139 833 060

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t +61 2 9437 4611 • f +61 2 9437 4393 • e [acoustics@wilkinsonmurray.com.au](mailto:acoustics@wilkinsonmurray.com.au) • w [www.wilkinsonmurray.com.au](http://www.wilkinsonmurray.com.au)





**Figure 2 Site Plan Showing Proposed Dock Treatment**



Based on the proposed modifications noise predictions to residences surrounding the dock and roadway area have been conducted. These are detailed in the following sections.

## Noise Criteria

Applicable noise emission criteria have been determined based on previous noise measurements, along with Botany Council and EPA policies. Table 1 presents applicable site specific noise criteria:

**Table 1      Established Site Specific Noise Criteria at Residences \***

| Time Period |               | Noise Criterion, L <sub>Aeq</sub> (15 minutes) dBA |
|-------------|---------------|--|
| Daytime     | (7am to 6pm)  | 50   |
| Evening     | (6pm to 10pm) | 49   |
| Night Time  | (10pm to 7am) | 40   |

\*Reference Wilkinson Murray DA Noise Report "*Bunnings East Gardens DA Noise Assessment Report 11174 Version C dated October 2012*".

### Equipment Noise Levels

The following noise levels have been used in predicting loading dock and roadway noise emissions to residences:

**Table 2 Loading Dock Source Noise Levels**

| Noise Source             | Sound Pressure Level, $L_{Aeq}$ dBA | Distance (m) | Comments                     |
|--------------------------|-------------------------------------|--------------|------------------------------|
| Forklift unloading Truck | 76                                  | 7            | Continuous operation at load |
| Truck Moving on Site     | 76                                  | 7            | Truck travelling at 3km/hr   |
| Truck Engine Running     | 72                                  | 7            | Truck Stationary engine idle |

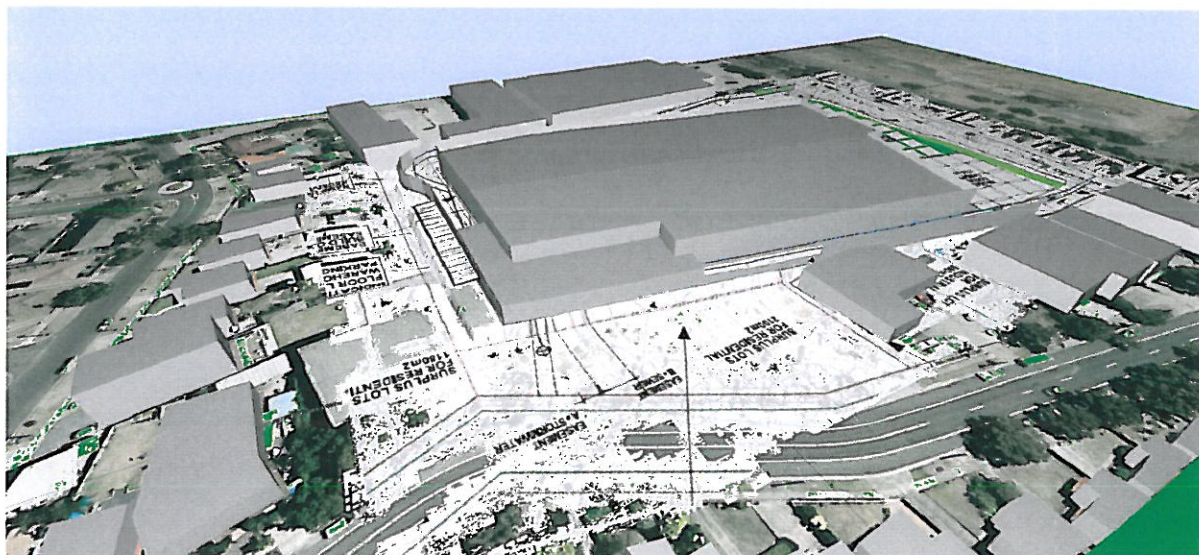
It is noted that the noise levels reported in the table for the forklift are higher than the previous assessment as they are meant to represent a "worst case" case where a medium sized fork lift operates in the loading dock area continuously.

### Noise Predictions

Noise predictions have been conducted using Cadna A noise modelling software. The modelling is based on the following 15 minute "worst case" operational scenario:

- Forklift operating continuously in the loading area.
- Truck travel along the dock driveway. Two source heights have been modelled being 1.5 metres for the engine and 3.6 metres for the exhaust,
- Truck engine is idling continuously for the entire period,
- The barrier on the northern and eastern sides of the loading has been increased to 5 metres,
- The dock area and the adjacent roadway are covered by a metal roof, and;
- Equipment noise levels as detailed in Table 2 have been used in the noise modelling.

The following figure shows a 3D view of the model and covered loading dock area:

**Figure 3 View of Noise Model**

Predictions of noise from the loading dock and driveway operation scenario have been conducted and the results are presented in Table 3.

**Table 3 Noise Modelling Results -  $L_{Aeq(15 \text{ minute})}$  dBA**

| Location                   | Level          | Predicted Noise Level | Daytime/Evening Criterion | Exceedance | Compliance |
|----------------------------|----------------|-----------------------|---------------------------|------------|------------|
| 95 Rhodes St               | Ground Yard    | 37                    | 50 /49                    | -          | Yes        |
|                            | Level 2 Facade | 38                    |                           |            |            |
| 93 Rhodes St               | Ground Yard    | 39                    | 50 /49                    | -          | Yes        |
|                            | Ground Facade  | 36                    |                           |            |            |
| 91 Rhodes St               | Ground Yard    | 38                    | 50 /49                    | -          | Yes        |
|                            | Ground Facade  | 37                    |                           |            |            |
| 89 Rhodes St               | Ground Yard    | 39                    | 50 /49                    |            | Yes        |
|                            | Ground Facade  | 36                    |                           |            |            |
| 87 Rhodes St               | Ground Yard    | 39                    | 50 /49                    |            | Yes        |
|                            | Ground Facade  | 37                    |                           |            |            |
| 83 Rhodes St               | Ground Yard    | 40                    | 50 /49                    |            | Yes        |
|                            | Level 2 Facade | 41                    |                           |            |            |
| 38 Smith St                | Ground Yard    | 38                    | 50 /49                    | -          | Yes        |
| 44 Smith St                | Ground Yard    | 38                    | 50 /49                    |            | Yes        |
| 23 Smith St                | Ground Yard    | 35                    | 50 /49                    | -          | Yes        |
|                            | Level 2 Facade | 38                    |                           |            |            |
| Commercial on Smith Street | Ground         | 58                    | 65                        | -          | Yes        |

A review of the results indicates that resultant noise levels at residences associated with the loading dock and driveway activities (with the proposed treatments) will be at least 8 dBA below the most stringent noise criterion.

The noise barrier and walls to the driveway and loading dock area will be of masonry construction and will provide adequate noise isolation between the development and residences. The roof to the dock area will be of metal sheeting construction with sarking and insulation to the underside of the roof.

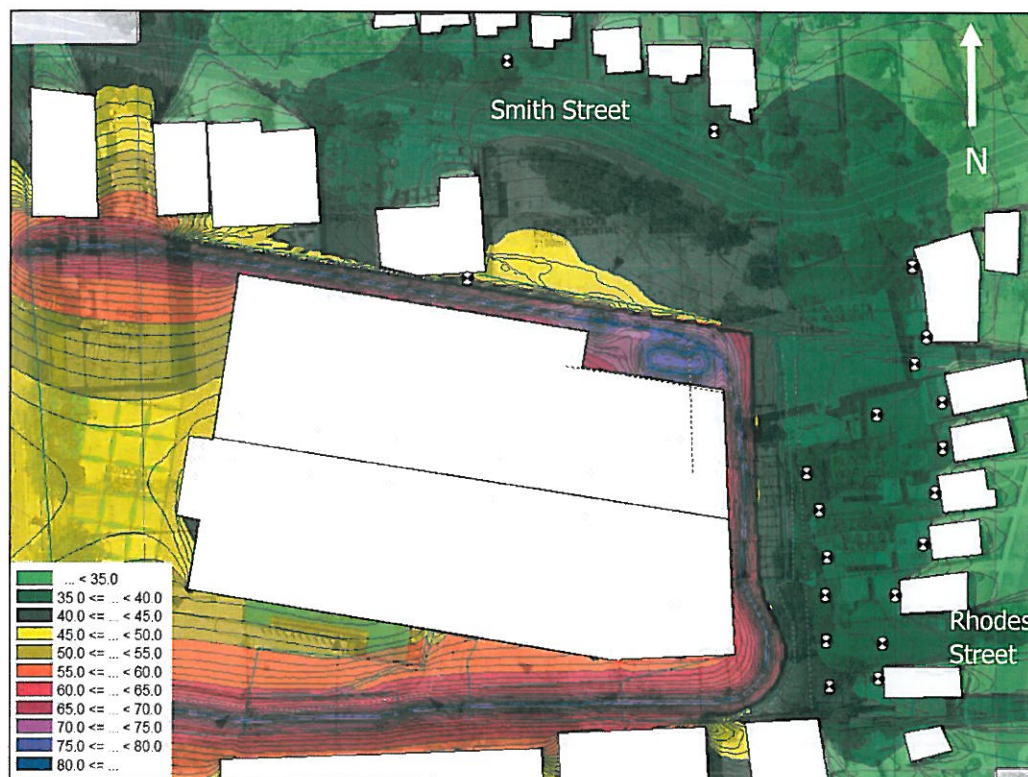
In addition it is recommended that acoustic insulation be installed on the underside of the loading dock roof area to reduce reverberant noise buildup in the dock area. A suitable material is 25 mm polyester insulation with a density of 24 kg/m<sup>3</sup>.



Should ventilation to the dock area be required this will be provided by an exhaust fan and ductwork. Acoustic treatment of the fan will be conducted should it be required. The level of acoustic treatment will be determined at the detail design stage of the project.

The following figure presents the modelled noise contours for this scenario.

**Figure 4**  $L_{Aeq}(15 \text{ minute})$  Bunnings Dock and Roadway noise contours - dBA



## Discussion and Conclusion

The highest noise associated with the loading dock and roadway operations are at 83 Rhodes Street where noise levels of up to 41 dBA are predicted at the upper level of this residence. At other surrounding residences noise levels in the order 38-39 dBA are predicted. These levels compare with measured background noise levels of 46 and 44 dBA, for the day and evening period respectively.

The predicted noise levels from the loading dock and driveway operation indicate that the operation of the loading dock and driveway will be barely audible to nearby residents based on current background noise levels, and are well below accepted noise nuisance standards for residential amenity. Further, much of the time it is envisaged noise from these areas will be inaudible given the above assessment conservatively assumes continuous and constant forklift use and truck use, both which are unlikely to be the case in practice.

Predictions were also conducted at locations representative of potential future upper levels of residences in Rhodes and Smith Streets. In these cases noise levels are predicted to increase by around 1 dBA. Therefore the proposed treatment of the dock and roadway does not restrict surrounding residents from adding an upper level to their residence.



It is noted that there are other noise sources associated with the development, predominately mechanical plant and fans. Given that noise from the dock is predicted to be at least 8 dBA below established noise criteria it is considered that noise from these items can be readily controlled by standard engineering noise control, where necessary. This is consistent with the DA noise assessment.

Further, it is noted that compliance with noise criteria is achieved at commercial receivers on Smith Street is also predicted.

Therefore it is concluded that the implementation of the proposed treatment of the dock and access roadway will protect the acoustic amenity of surrounding residences.

I trust this information is sufficient. Please contact us if you have any further queries.

Yours faithfully

**WILKINSON MURRAY**

A handwritten signature in cursive script, reading "Brian Clarke". The signature is written in dark ink and is positioned below the company name.

**Brian Clarke**

Senior Associate



# R.O.A.R. DATA

Reliable, Original & Authentic Results

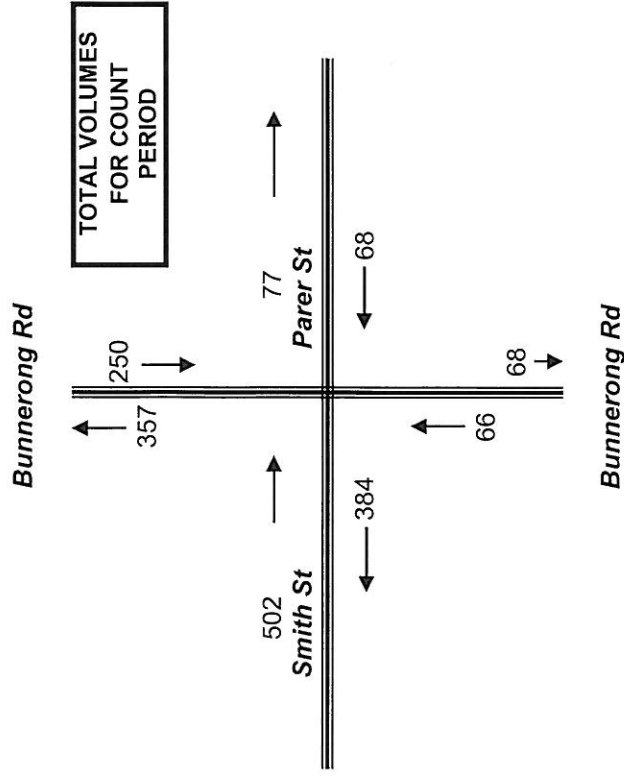
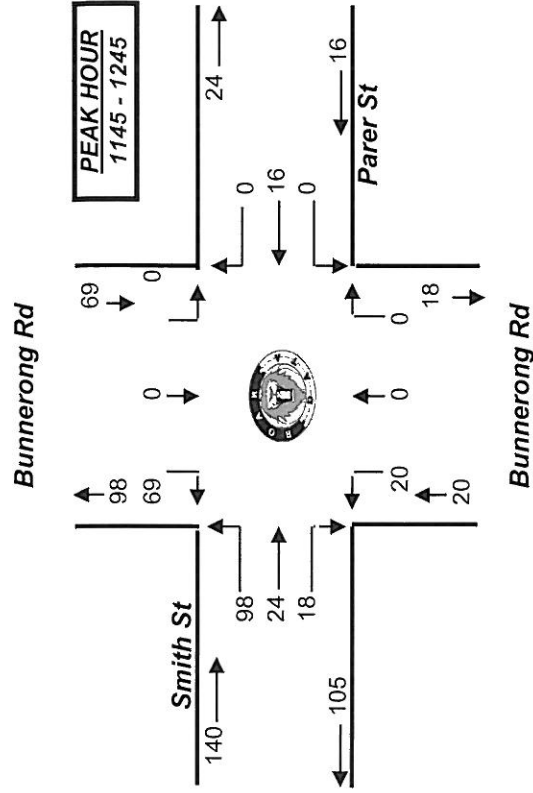
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : T.T.P.A.  
Job No/Name : 4793 EASTGARDENS Bunnings  
Day/Date : Saturday 7th September 2013

## All Vehicles

| Time Per    | NORTH        |          |          | WEST         |          |          | SOUTH        |          |          | EAST         |          |          | TOT |
|-------------|--------------|----------|----------|--------------|----------|----------|--------------|----------|----------|--------------|----------|----------|-----|
|             | Bunnerong Rd | Smith St | Parer St | Bunnerong Rd | Smith St | Parer St | Bunnerong Rd | Smith St | Parer St | Bunnerong Rd | Smith St | Parer St |     |
| 1100 - 1115 | 0            | 0        | 19       | 27           | 6        | 1        | 3            |          |          |              |          | 6        | 62  |
| 1115 - 1130 |              |          | 15       | 15           | 7        | 7        | 1            |          |          |              |          | 8        | 53  |
| 1130 - 1145 |              |          | 17       | 15           | 5        | 3        | 8            |          |          |              |          | 6        | 54  |
| 1145 - 1200 |              |          | 13       | 25           | 8        | 6        | 6            |          |          |              |          | 4        | 62  |
| 1200 - 1215 |              |          | 23       | 22           | 7        | 4        | 4            |          |          |              |          | 3        | 63  |
| 1215 - 1230 |              |          | 10       | 32           | 2        | 2        | 2            |          |          |              |          | 3        | 51  |
| 1230 - 1245 |              |          | 23       | 19           | 7        | 6        | 6            |          |          |              |          | 3        | 64  |
| 1245 - 1300 |              |          | 16       | 21           | 6        | 3        | 3            |          |          |              |          | 4        | 53  |
| 1300 - 1315 |              |          | 15       | 25           | 3        | 6        | 10           |          |          |              |          | 9        | 68  |
| 1315 - 1330 |              |          | 10       | 22           | 2        | 6        | 3            |          |          |              |          | 5        | 48  |
| 1330 - 1345 |              |          | 15       | 26           | 6        | 4        | 2            |          |          |              |          | 2        | 55  |
| 1345 - 1400 |              |          | 14       | 20           | 6        | 3        | 4            |          |          |              |          | 4        | 51  |
| 1400 - 1415 |              |          | 19       | 19           | 3        | 5        | 4            |          |          |              |          | 2        | 52  |
| 1415 - 1430 |              |          | 18       | 14           | 2        | 2        | 5            |          |          |              |          | 2        | 43  |
| 1430 - 1445 |              |          | 11       | 22           | 3        | 6        | 4            |          |          |              |          | 4        | 50  |
| 1445 - 1500 |              |          | 12       | 33           | 4        | 4        | 1            |          |          |              |          | 3        | 57  |
| Period End  | 0            | 0        | 250      | 357          | 77       | 68       | 66           | 0        | 0        | 0            | 68       | 0        | 886 |

| Peak Time   | NORTH        |          |          | WEST         |          |          | SOUTH        |          |          | EAST         |          |          | TOT |
|-------------|--------------|----------|----------|--------------|----------|----------|--------------|----------|----------|--------------|----------|----------|-----|
|             | Bunnerong Rd | Smith St | Parer St | Bunnerong Rd | Smith St | Parer St | Bunnerong Rd | Smith St | Parer St | Bunnerong Rd | Smith St | Parer St |     |
| 1100 - 1200 | 0            | 0        | 64       | 82           | 26       | 17       | 18           | 0        | 0        | 0            | 24       | 0        | 231 |
| 1115 - 1215 | 0            | 0        | 68       | 77           | 27       | 20       | 19           | 0        | 0        | 0            | 21       | 0        | 232 |
| 1130 - 1230 | 0            | 0        | 63       | 94           | 22       | 15       | 20           | 0        | 0        | 0            | 16       | 0        | 230 |
| 1145 - 1245 | 0            | 0        | 69       | 98           | 24       | 18       | 18           | 0        | 0        | 0            | 13       | 0        | 240 |
| 1200 - 1300 | 0            | 0        | 72       | 94           | 22       | 15       | 15           | 0        | 0        | 0            | 13       | 0        | 231 |
| 1215 - 1315 | 0            | 0        | 64       | 97           | 18       | 17       | 21           | 0        | 0        | 0            | 19       | 0        | 236 |
| 1230 - 1330 | 0            | 0        | 64       | 87           | 18       | 21       | 22           | 0        | 0        | 0            | 21       | 0        | 233 |
| 1245 - 1345 | 0            | 0        | 56       | 94           | 17       | 19       | 18           | 0        | 0        | 0            | 20       | 0        | 224 |
| 1300 - 1400 | 0            | 0        | 54       | 93           | 17       | 19       | 19           | 0        | 0        | 0            | 20       | 0        | 222 |
| 1315 - 1415 | 0            | 0        | 58       | 87           | 17       | 18       | 13           | 0        | 0        | 0            | 13       | 0        | 206 |
| 1330 - 1430 | 0            | 0        | 66       | 79           | 17       | 14       | 15           | 0        | 0        | 0            | 10       | 0        | 201 |
| 1345 - 1445 | 0            | 0        | 62       | 75           | 14       | 16       | 17           | 0        | 0        | 0            | 12       | 0        | 196 |
| 1400 - 1500 | 0            | 0        | 60       | 88           | 12       | 17       | 14           | 0        | 0        | 0            | 11       | 0        | 202 |
| PEAK HOUR   |              |          | 69       | 98           | 24       | 18       | 20           |          |          |              | 16       |          | 240 |





# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : T.T.P.A.

Job No/Name : 4793 EASTGARDENS Bunnings

Day/Date : Saturday 7th September 2013

## Intersection Layout

Obtained via satellite

May be incorrect

**Sat PEAK HOUR**  
**1145 - 1245**



Bunnerong Rd

Smith St

Parer St

Bunnerong Rd

|    |   |   |
|----|---|---|
| R  | T | L |
| 69 |   |   |

|    |    |    |
|----|----|----|
| L  | T  | R  |
| 98 | 24 | 18 |

|   |    |   |
|---|----|---|
| R | T  | L |
|   | 16 |   |

|    |   |   |
|----|---|---|
| L  | T | R |
| 20 |   |   |

Weather >>>







# R.O.A.R. DATA

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| All Vehicles | NORTH      |   |   | WEST        |    |   | SOUTH      |   |   | EAST     |     |     |
|--------------|------------|---|---|-------------|----|---|------------|---|---|----------|-----|-----|
|              | Denison Rd |   |   | Cornish Cct |    |   | Denison Rd |   |   | Smith St |     |     |
| Time Per     | L          | I | R | L           | I  | R | L          | I | R | L        | I   | R   |
| 1100 - 1115  | 24         |   |   |             | 3  |   |            |   |   | 7        | 10  | 3   |
| 1115 - 1130  | 24         |   |   |             | 1  |   |            |   |   | 6        | 8   | 3   |
| 1130 - 1145  | 29         |   |   |             | 0  |   |            |   |   | 2        | 4   | 2   |
| 1145 - 1200  | 26         |   |   |             | 2  |   |            |   |   | 5        | 10  | 2   |
| 1200 - 1215  | 26         |   |   |             | 1  |   |            |   |   | 5        | 8   | 3   |
| 1215 - 1230  | 18         |   |   |             | 0  |   |            |   |   | 1        | 10  | 3   |
| 1230 - 1245  | 12         |   |   |             | 1  |   |            |   |   | 3        | 7   | 4   |
| 1245 - 1300  | 17         |   |   |             | 0  |   |            |   |   | 4        | 7   | 4   |
| 1300 - 1315  |            |   |   |             |    |   |            |   |   |          |     |     |
| 1315 - 1330  | 17         |   |   |             | 3  |   |            |   |   | 4        | 8   | 1   |
| 1330 - 1345  | 25         |   |   |             | 0  |   |            |   |   | 6        | 3   | 3   |
| 1345 - 1400  | 25         |   |   |             | 1  |   |            |   |   | 5        | 8   | 9   |
| 1400 - 1415  | 30         |   |   |             | 5  |   |            |   |   | 4        | 9   | 3   |
| 1415 - 1430  | 26         |   |   |             | 4  |   |            |   |   | 1        | 5   | 5   |
| 1430 - 1445  | 19         |   |   |             | 2  |   |            |   |   | 2        | 10  | 7   |
| 1445 - 1500  | 19         |   |   |             | 6  |   |            |   |   | 3        | 4   | 3   |
| Period End   | 337        | 0 | 0 | 0           | 29 | 0 | 0          | 0 | 0 | 58       | 111 | 60  |
| TOT          |            |   |   |             |    |   |            |   |   |          | 218 | 813 |

| All Vehicles | NORTH      |   |   | WEST        |    |   | SOUTH      |   |   | EAST     |    |    |
|--------------|------------|---|---|-------------|----|---|------------|---|---|----------|----|----|
|              | Denison Rd |   |   | Cornish Cct |    |   | Denison Rd |   |   | Smith St |    |    |
| Time Per     | L          | I | R | L           | I  | R | L          | I | R | L        | I  | R  |
| 1100 - 1200  | 103        | 0 | 0 | 0           | 6  | 0 | 0          | 0 | 0 | 32       | 10 | 61 |
| 1115 - 1215  | 105        | 0 | 0 | 0           | 4  | 0 | 0          | 0 | 0 | 30       | 15 | 61 |
| 1130 - 1230  | 99         | 0 | 0 | 0           | 3  | 0 | 0          | 0 | 0 | 32       | 15 | 61 |
| 1145 - 1245  | 82         | 0 | 0 | 0           | 4  | 0 | 0          | 0 | 0 | 35       | 17 | 64 |
| 1200 - 1300  | 73         | 0 | 0 | 0           | 2  | 0 | 0          | 0 | 0 | 32       | 19 | 61 |
| 1215 - 1315  | 47         | 0 | 0 | 0           | 1  | 0 | 0          | 0 | 0 | 24       | 11 | 48 |
| 1230 - 1330  | 46         | 0 | 0 | 0           | 4  | 0 | 0          | 0 | 0 | 22       | 9  | 46 |
| 1245 - 1345  | 59         | 0 | 0 | 0           | 3  | 0 | 0          | 0 | 0 | 18       | 8  | 40 |
| 1300 - 1400  | 67         | 0 | 0 | 0           | 4  | 0 | 0          | 0 | 0 | 15       | 13 | 45 |
| 1315 - 1415  | 97         | 0 | 0 | 0           | 9  | 0 | 0          | 0 | 0 | 28       | 16 | 57 |
| 1330 - 1430  | 106        | 0 | 0 | 0           | 10 | 0 | 0          | 0 | 0 | 25       | 20 | 55 |
| 1345 - 1445  | 100        | 0 | 0 | 0           | 12 | 0 | 0          | 0 | 0 | 32       | 24 | 56 |
| 1400 - 1500  | 94         | 0 | 0 | 0           | 17 | 0 | 0          | 0 | 0 | 28       | 18 | 51 |
| TOT          |            |   |   |             |    |   |            |   |   |          |    |    |

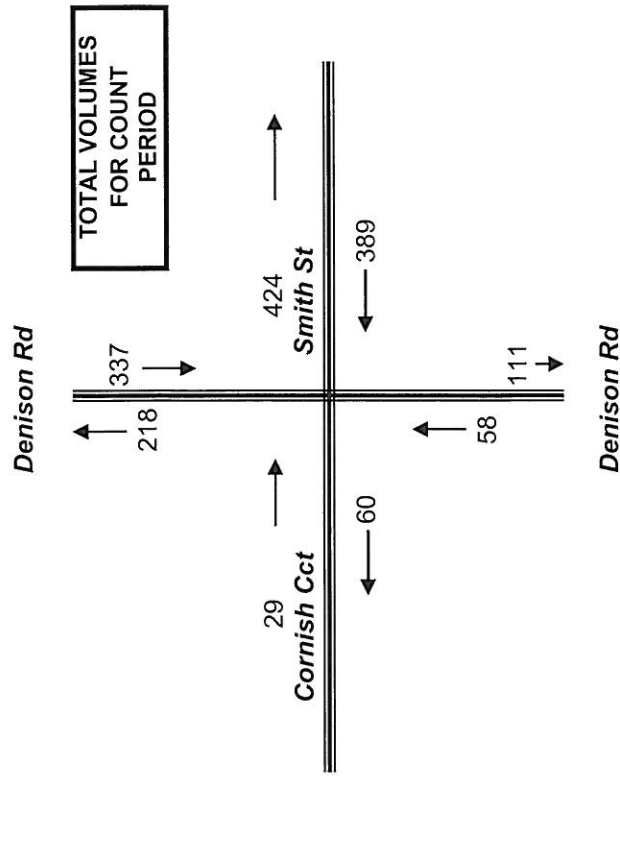
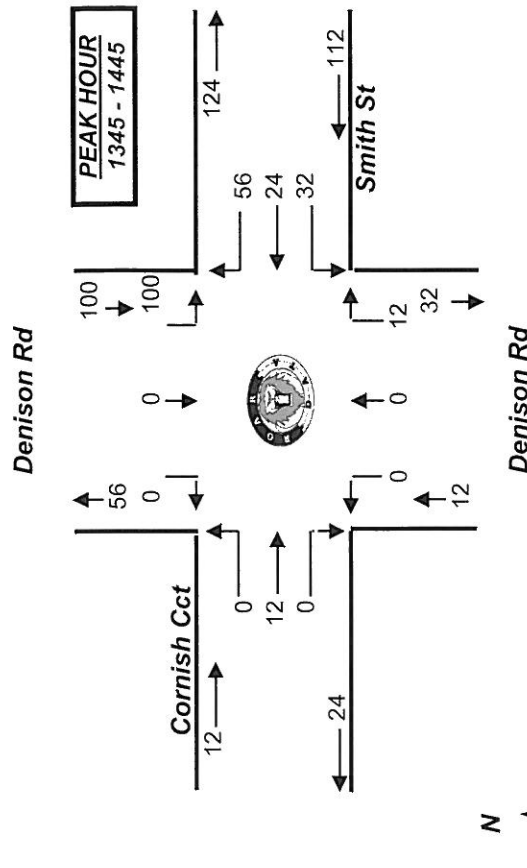
| PEAK HOUR | 100 |  |  | 12 |  |  |  | 12 | 32 | 24 | 56 | 236 |
|-----------|-----|--|--|----|--|--|--|----|----|----|----|-----|
|-----------|-----|--|--|----|--|--|--|----|----|----|----|-----|

People in Hensley Field

1100 43

1300 19

1500 160



TOTAL VOLUMES  
FOR COUNT  
PERIOD



# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : T.T.P.A.

Job No/Name : 4793 EASTGARDENS Bunnings

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Denison Rd

## Intersection Layout

Obtained via satellite

May be incorrect

Sat PEAK HOUR  
1345 - 1445

Cornish Cct



|    |   |   |
|----|---|---|
| L  | T | R |
| 12 |   |   |



|    |   |   |
|----|---|---|
| L  | T | R |
| 12 |   |   |



|   |   |     |
|---|---|-----|
| R | T | L   |
|   |   | 100 |



|    |    |    |
|----|----|----|
| R  | T  | L  |
| 56 | 24 | 32 |



Smith St



Weather >>>

Denison Rd



| All Vehicles | NORTH      |    |    | EAST       |    |   | SOUTH      |   |       |
|--------------|------------|----|----|------------|----|---|------------|---|-------|
|              | Denison Rd |    |    | Fraser Ave |    |   | Denison Rd |   |       |
|              | I          | L  | R  | R          | L  | R | R          | L | I     |
| Time Per     |            |    |    |            |    |   |            |   | TOTAL |
| 1100 - 1115  |            | 4  | 1  | 0          | 0  | 0 |            |   | 5     |
| 1115 - 1130  |            | 0  | 1  | 3          | 1  |   |            |   | 5     |
| 1130 - 1145  |            | 2  | 1  | 4          | 1  |   |            |   | 8     |
| 1145 - 1200  |            | 1  | 5  | 0          | 2  |   |            |   | 8     |
| 1200 - 1215  |            | 3  | 1  | 2          | 1  |   |            |   | 7     |
| 1215 - 1230  |            | 1  | 2  | 1          | 1  |   |            |   | 5     |
| 1230 - 1245  |            | 2  | 0  | 0          | 0  |   |            |   | 2     |
| 1245 - 1300  |            | 5  | 0  | 0          | 0  |   |            |   | 5     |
| 1300 - 1315  |            | 3  | 0  | 3          | 0  |   |            |   | 6     |
| 1315 - 1330  |            | 1  | 1  | 1          | 0  |   |            |   | 3     |
| 1330 - 1345  |            | 2  | 4  | 1          | 1  |   |            |   | 8     |
| 1345 - 1400  |            | 1  | 1  | 0          | 2  |   |            |   | 4     |
| 1400 - 1415  |            | 2  | 0  | 2          | 1  |   |            |   | 5     |
| 1415 - 1430  |            | 2  | 0  | 0          | 0  |   |            |   | 2     |
| 1430 - 1445  |            | 2  | 0  | 2          | 1  |   |            |   | 5     |
| 1445 - 1500  |            | 2  | 1  | 2          | 0  |   |            |   | 5     |
| Period End   | 0          | 33 | 18 | 21         | 11 | 0 | 11         | 0 | 83    |

| All Vehicles | NORTH      |    |   | EAST       |   |   | SOUTH      |   |       |
|--------------|------------|----|---|------------|---|---|------------|---|-------|
|              | Denison Rd |    |   | Fraser Ave |   |   | Denison Rd |   |       |
|              | I          | L  | R | R          | L | R | R          | L | I     |
| Peak Per     |            |    |   |            |   |   |            |   | TOTAL |
| 1100 - 1200  | 0          | 7  | 8 | 7          | 4 | 0 |            |   | 26    |
| 1115 - 1215  | 0          | 6  | 8 | 9          | 5 | 0 |            |   | 28    |
| 1130 - 1230  | 0          | 7  | 9 | 7          | 5 | 0 |            |   | 28    |
| 1145 - 1245  | 0          | 7  | 8 | 3          | 4 | 0 |            |   | 22    |
| 1200 - 1300  | 0          | 11 | 3 | 3          | 2 | 0 |            |   | 19    |
| 1215 - 1315  | 0          | 11 | 2 | 4          | 1 | 0 |            |   | 18    |
| 1230 - 1330  | 0          | 11 | 1 | 4          | 0 | 0 |            |   | 16    |
| 1245 - 1345  | 0          | 11 | 5 | 5          | 1 | 0 |            |   | 22    |
| 1300 - 1400  | 0          | 7  | 6 | 5          | 3 | 0 |            |   | 21    |
| 1315 - 1415  | 0          | 6  | 6 | 4          | 4 | 0 |            |   | 20    |
| 1330 - 1430  | 0          | 7  | 5 | 3          | 4 | 0 |            |   | 19    |
| 1345 - 1445  | 0          | 7  | 1 | 4          | 4 | 0 |            |   | 16    |
| 1400 - 1500  | 0          | 8  | 1 | 6          | 2 | 0 |            |   | 17    |

|         |   |   |   |   |  |    |
|---------|---|---|---|---|--|----|
| PEAK HR | 6 | 8 | 9 | 5 |  | 28 |
|---------|---|---|---|---|--|----|

| All Vehicles | NORTH      |    |    | EAST       |    |   | SOUTH      |   |       |
|--------------|------------|----|----|------------|----|---|------------|---|-------|
|              | Denison Rd |    |    | Boonah Ave |    |   | Denison Rd |   |       |
|              | I          | L  | R  | R          | L  | R | R          | L | I     |
| Time Per     |            |    |    |            |    |   |            |   | TOTAL |
| 1100 - 1115  |            | 0  | 2  | 1          | 0  |   |            |   | 3     |
| 1115 - 1130  |            | 1  | 4  | 0          | 0  |   |            |   | 5     |
| 1130 - 1145  |            | 1  | 0  | 0          | 0  |   |            |   | 1     |
| 1145 - 1200  |            | 1  | 0  | 1          | 0  |   |            |   | 2     |
| 1200 - 1215  |            | 0  | 1  | 0          | 1  |   |            |   | 2     |
| 1215 - 1230  |            | 1  | 1  | 0          | 3  |   |            |   | 5     |
| 1230 - 1245  |            | 1  | 2  | 1          | 1  |   |            |   | 5     |
| 1245 - 1300  |            | 1  | 2  | 1          | 2  |   |            |   | 6     |
| 1300 - 1315  |            | 0  | 1  | 0          | 0  |   |            |   | 1     |
| 1315 - 1330  |            | 1  | 0  | 1          | 1  |   |            |   | 3     |
| 1330 - 1345  |            | 0  | 0  | 0          | 0  |   |            |   | 0     |
| 1345 - 1400  |            | 4  | 2  | 1          | 0  |   |            |   | 7     |
| 1400 - 1415  |            | 1  | 0  | 0          | 0  |   |            |   | 1     |
| 1415 - 1430  |            | 0  | 3  | 0          | 0  |   |            |   | 3     |
| 1430 - 1445  |            | 2  | 1  | 0          | 1  |   |            |   | 4     |
| 1445 - 1500  |            | 2  | 1  | 0          | 2  |   |            |   | 5     |
| Period End   | 0          | 16 | 20 | 6          | 11 | 0 | 11         | 0 | 53    |

| All Vehicles | NORTH      |   |   | EAST       |   |   | SOUTH      |   |       |
|--------------|------------|---|---|------------|---|---|------------|---|-------|
|              | Denison Rd |   |   | Boonah Ave |   |   | Denison Rd |   |       |
|              | I          | L | R | R          | L | R | R          | L | I     |
| Peak Per     |            |   |   |            |   |   |            |   | TOTAL |
| 1100 - 1200  | 0          | 3 | 6 | 2          | 0 | 0 |            |   | 11    |
| 1115 - 1215  | 0          | 3 | 5 | 1          | 1 | 0 |            |   | 10    |
| 1130 - 1230  | 0          | 3 | 2 | 1          | 4 | 0 |            |   | 10    |
| 1145 - 1245  | 0          | 3 | 4 | 2          | 5 | 0 |            |   | 14    |
| 1200 - 1300  | 0          | 3 | 6 | 2          | 7 | 0 |            |   | 18    |
| 1215 - 1315  | 0          | 3 | 6 | 2          | 6 | 0 |            |   | 17    |
| 1230 - 1330  | 0          | 3 | 5 | 3          | 4 | 0 |            |   | 15    |
| 1245 - 1345  | 0          | 2 | 3 | 2          | 3 | 0 |            |   | 10    |
| 1300 - 1400  | 0          | 5 | 3 | 2          | 1 | 0 |            |   | 11    |
| 1315 - 1415  | 0          | 6 | 2 | 2          | 1 | 0 |            |   | 11    |
| 1330 - 1430  | 0          | 5 | 5 | 1          | 0 | 0 |            |   | 11    |
| 1345 - 1445  | 0          | 7 | 6 | 1          | 1 | 0 |            |   | 15    |
| 1400 - 1500  | 0          | 5 | 5 | 0          | 3 | 0 |            |   | 13    |

|         |   |   |   |   |  |    |
|---------|---|---|---|---|--|----|
| PEAK HR | 3 | 6 | 2 | 7 |  | 18 |
|---------|---|---|---|---|--|----|



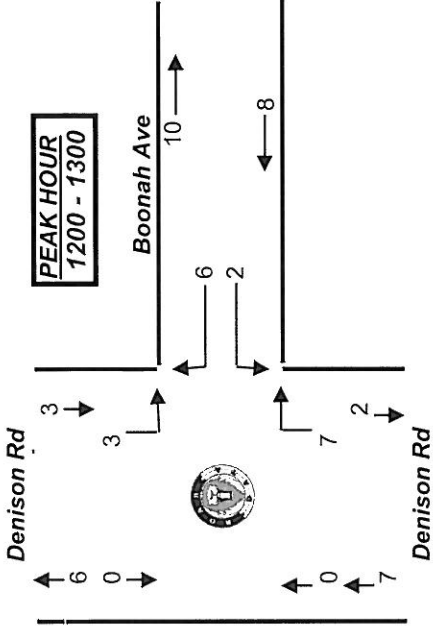
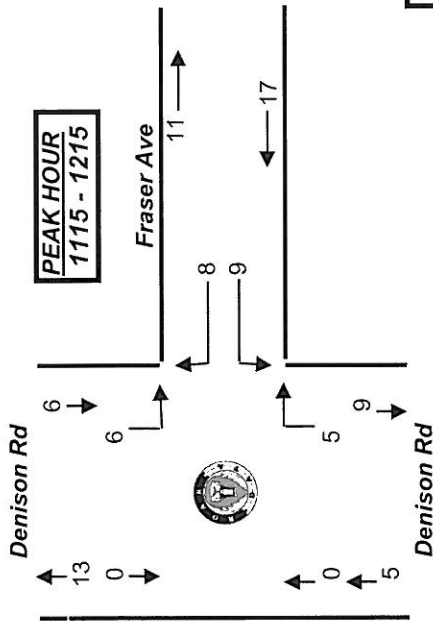


## R.O.A.R. DATA

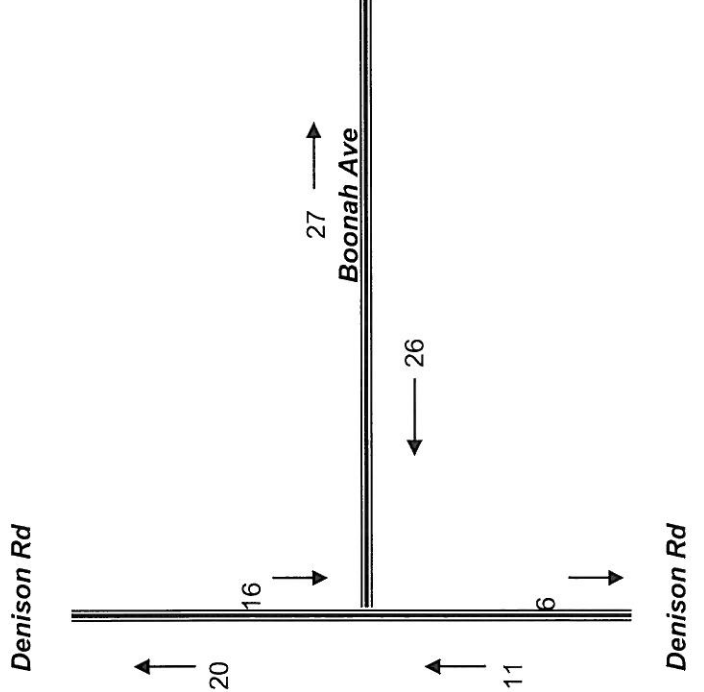
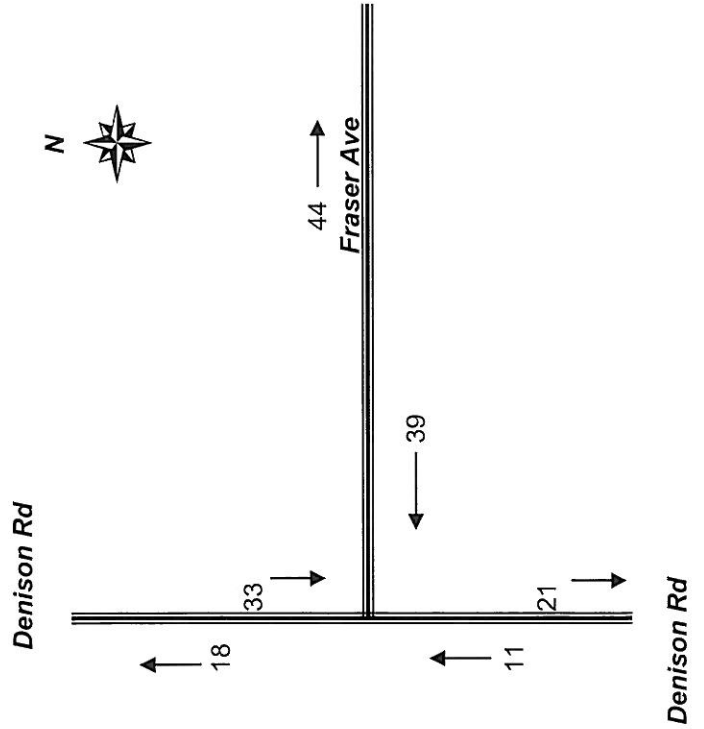
Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : T.T.P.A.  
Job No/Name : 4793 EASTGARDENS Bunnings  
Day/Date : Saturday 7th September 2013



TOTAL VOLUMES  
FOR COUNT  
PERIODS

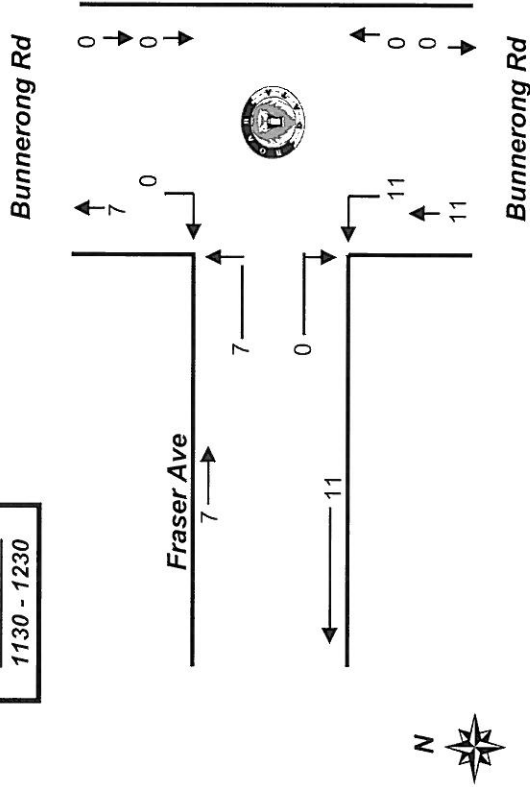




**All Vehicles**

| Time Per    | WEST       |           | NORTH      |           | SOUTH      |           | TOTAL |
|-------------|------------|-----------|------------|-----------|------------|-----------|-------|
|             | Fraser Ave | Bunnerong | Fraser Ave | Bunnerong | Fraser Ave | Bunnerong |       |
| 1100 - 1115 | 1          |           |            |           | 0          |           | 1     |
| 1115 - 1130 | 0          |           |            |           | 2          |           | 2     |
| 1130 - 1145 | 5          |           |            |           | 1          |           | 6     |
| 1145 - 1200 | 0          |           |            |           | 3          |           | 3     |
| 1200 - 1215 | 0          |           |            |           | 2          |           | 2     |
| 1215 - 1230 | 2          |           |            |           | 5          |           | 7     |
| 1230 - 1245 | 1          |           |            |           | 3          |           | 4     |
| 1245 - 1300 | 1          |           |            |           | 0          |           | 1     |
| 1300 - 1315 | 2          |           |            |           | 0          |           | 2     |
| 1315 - 1330 | 5          |           |            |           | 2          |           | 7     |
| 1330 - 1345 | 2          |           |            |           | 0          |           | 2     |
| 1345 - 1400 | 2          |           |            |           | 0          |           | 2     |
| 1400 - 1415 | 4          |           |            |           | 2          |           | 6     |
| 1415 - 1430 | 0          |           |            |           | 1          |           | 1     |
| 1430 - 1445 | 1          |           |            |           | 3          |           | 4     |
| 1445 - 1500 | 2          |           |            |           | 5          |           | 7     |
| Period End  | 28         | 0         | 0          | 0         | 29         | 0         | 57    |

PEAK HOUR  
1130 - 1230



| Peak Per    | WEST       |           | NORTH      |           | SOUTH      |           | TOTAL |
|-------------|------------|-----------|------------|-----------|------------|-----------|-------|
|             | Fraser Ave | Bunnerong | Fraser Ave | Bunnerong | Fraser Ave | Bunnerong |       |
| 1100 - 1200 | 6          | 0         | 0          | 0         | 6          | 0         | 12    |
| 1115 - 1215 | 5          | 0         | 0          | 0         | 8          | 0         | 13    |
| 1130 - 1230 | 7          | 0         | 0          | 0         | 11         | 0         | 18    |
| 1145 - 1245 | 3          | 0         | 0          | 0         | 13         | 0         | 16    |
| 1200 - 1300 | 4          | 0         | 0          | 0         | 10         | 0         | 14    |
| 1215 - 1315 | 6          | 0         | 0          | 0         | 8          | 0         | 14    |
| 1230 - 1330 | 9          | 0         | 0          | 0         | 5          | 0         | 14    |
| 1245 - 1345 | 10         | 0         | 0          | 0         | 2          | 0         | 12    |
| 1300 - 1400 | 11         | 0         | 0          | 0         | 2          | 0         | 13    |
| 1315 - 1415 | 13         | 0         | 0          | 0         | 4          | 0         | 17    |
| 1330 - 1430 | 8          | 0         | 0          | 0         | 3          | 0         | 11    |
| 1345 - 1445 | 7          | 0         | 0          | 0         | 6          | 0         | 13    |
| 1400 - 1500 | 7          | 0         | 0          | 0         | 11         | 0         | 18    |
| PEAK HR     | 7          |           |            |           | 11         |           | 18    |

TOTAL VOLUMES  
FOR COUNT  
PERIODS

