JOINT REGIONAL PLANNING PANEL (SYDNEY EAST)

ASSESSMENT OF TRAFFIC, TRANSPORT AND PARKING ISSUES IN PROPOSED "AFFORDABLE HOUSING DEVELOPMENT", 2 & 4 RIVERHILL AVENUE AND 751-757 WARRINGAH ROAD, FORESTVILLE

30 NOVEMBER 2011

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APPENDIX B Riverhill Avenue Traffic Flows

1.0 INTRODUCTION

1.1 Background

A development application was received by Warringah Council on 25th March 2011 for an affordable housing development under SEPP (Affordable Rental Housing) 2009. This Application was referred to the JRPP (Sydney East Region) and a report was prepared for the meeting of 27 July 2011. At that meeting, the Panel resolved:

> 1. *The Panel resolves unanimously to defer the determination of the application to allow the applicant to submit an amended application that further amends the recently submitted amended proposal.*

The proposal as discussed in the report for the meeting of 27 July 2011 had two-way vehicular access off Warringah Road, from the eastern end of the existing bus bay, and an egress only to Riverhill Avenue. With the proposed development being 79 dwellings accessing Warringah Road, a Classified Road, referral to the Roads & Traffic Authority was required. The RTA provided their response which advised that *"as the subject site has alternate vehicular access via Riverhill Avenue, the RTA will not grant its concurrence to the proposed driveway on Warringah Road, classified road, under Section 138 of the Roads Act, 1993".* The report to the meeting of 27 July 2011 thus concluded that this access issue is a reason for refusal.

In preparing an amended application, the traffic consultants for the applicant discussed the issue of access off Warringah Road with the RTA. A letter to the applicant's traffic consultants, Colston Budd Hunt & Kafes Pty Ltd was sent by the Sydney Regional Development Advisory Committee on 19 September 2011. This letter of advice states in part:

> *"...Following the RTA's letters and a meeting held on 12 July 2011 amended plans were submitted to the RTA for comment. These plans indicated that all vehicular access was from Riverhill Avenue, in line with RTA policy. Council received a number of submissions during the advertising period and requested the applicant review the vehicular access arrangements. The submissions noted that Riverhill Avenue is used as a through traffic route for vehicles accessing Warringah Road at the Forestville Avenue traffic signals. Parents, associated with the adjacent school also utilise this street for parking during the peak pick up/drop off times.*
>
> *A number of options were discussed and the RTA agreed to grant "in-principle agreement" to a left in/left out access to Warringah Road into a car park containing no more than 30 vehicle spaces. Entry to the property is to be via a new deceleration lane to be constructed across the frontage of the property.*
>
> *The remaining parking spaces are to be accommodated in a second car park with access to and from Riverhill Avenue. This car park is to be fully segregated from the first and must accommodate service vehicles for the property.*

The RTA will review and provide comments when amended plans are received, reflecting the above access arrangements. The access arrangements must result in an efficient and safe access to and from the road network."

A subsequent letter to Warringah Council dated 17 October 2011 confirmed this position of the RTA. A further confirmation e-mail was sent from the RMS (RTA) to Council on 4 November 2011. This letter and memo are reproduced in Appendix A.

The amended plans for the development that have been submitted do not meet the above recommendations of the RTA. They are similar to the plans reviewed in the 27 July 2011 Meeting in that two-way vehicular access to the site is proposed off Warringah Road, plus egress only to Riverhill Avenue. This means that all ingress traffic will be from Warringah Road. Internal car park management will aim to restrict the egress to Warringah Road to the traffic from 30 parking spaces. As such, this revised proposal does NOT meet the access conditions set by the RTA.

To address the amended plans submitted, a Supplementary Report has been prepared for the JRPP, by Council staff. This report recommends the refusal of the application.

1.2 Scope of Report – The Access Issue

With the significant divergence in opinion on the traffic issues associated with this development, the JRPP commissioned Christopher Hallam, of Christopher Hallam & Associates Pty Ltd, to review all traffic issues and to report to the JRPP, with conclusions and recommendations. In undertaking this study, I have visited the site and adjacent streets on a weekday morning, when school children were being delivered to the nearby school. I have also visited the site in the afternoon, to observe traffic patterns at the conclusion of school, and the subsequent period. I have reviewed the material provided, in particular the amended plans and the traffic assessment reports by Colston Budd Hunt & Kafes Pty Ltd dated March 2011 and September 2011. To provide additional information on the current traffic situation, I commissioned a traffic count in Riverhill Avenue, using tubes to count movements over a seven day period.

With regard to the views of the RTA, their concurrence is desired for any access off Warringah Road. However, ultimately I also need to be convinced that any such access arrangement is safe and appropriate.

The traffic issues in this proposal revolve around the access locations, and the relative proportion of development traffic using each. From the perspective of the traffic efficiency and safety of the arterial road network, it would be better to have all access off Riverhill Avenue. However this has an implication for the residential amenity and safety of residents and other locals. From their perspective, all access should be off Warringah Road. The current amended proposal splits the access between the two roads, but this current proposal still puts more traffic onto Warringah Road than desired by the RTA, in terms of their recommended condition relating to only 30 parking spaces having such access. The RTA's *Guide to Traffic Generating Developments* discusses access location

issues in Section 1.3.2 of that document, where it states that access planning should consider the objectives:

- Maintaining safety standards
- Maintaining traffic flow standards
- Protecting the environment
- Maintaining and improving pedestrian flow along footpaths

Relevant statements on these objectives in this Guide are:

Maintaining safety standards

> *Generally, it is advisable to avoid direct access between developments and major roads. If such access is proposed, the RTA requires studies which demonstrate that the resulting situation does not adversely affect safety. Where possible, vehicle access to developments should be from service roads/lanes...*

Maintaining traffic flow efficiency

> *The design of direct vehicular access to developments fronting major roads should include the provision of:*

- *Deceleration lanes*
- *Acceleration lanes*
- *Right turn lanes*

> *Where proposed developments front minor roads, issues relating to traffic safety and amenity are of greater importance than traffic efficiency. Nevertheless, some assessments of traffic efficiency impacts are appropriate where the level of parking required for the development is 50 or more spaces as stipulated in SEPP11.*

Protecting the environment

> *By encouraging traffic to use the major roads instead of local streets, safety and environmental amenity of the local roads improve markedly as compared to marginal reduction in safety and efficiency of major roads.*

Pedestrian flow efficiency

> *Many developments attract pedestrian traffic, particularly commercial developments in retail and CBD areas. It is important that proper assessment is made of pedestrian traffic on footpaths, eg the sufficiency of footpaths widths.*

This report reviews the access implications and the external traffic impacts through the following Sections:

- Section 2 briefly reviews the road network adjacent to the site and the current traffic flows, by way of providing background to the assessment;

- Section 3 describes the amended proposed development, with regard to site access, parking layout and traffic generation;
- Section 4 sets out my assessment of the key issues identified by objectors, and
- Section 5 sets out my conclusions and recommendations.

2.0 CURRENT SITUATION

2.1 Road Network

The site stretches between Warringah Road and Riverhill Avenue. Warringah Road is an arterial road with a three plus three lane divided carriageway. There is an indented bus bay along the front of the site.

Riverhill Avenue has a carriageway width between kerbs that measures 7.2m at the site, and to the west of the site. This widens to 7.8m further to the east. If cars are parked on both sides of the street, the width only allows for one lane of travel. There is a footpath along the northern side, but not along the southern side. This footpath links in with the marked foot crossing over Melwood Avenue. In the before/after school period school children and parents typically move across Melwood Avenue at the marked foot crossing and walk directly to the Riverhill Avenue footpath, typically to access cars parked in that street, or to walk to dwellings further to the West.

Melwood Avenue has a 12.8m wide carriageway, allowing for parked cars on both sides plus two traffic lanes. Melwood Avenue and the eastern end of Riverhill Avenue are subject to a 40km/hr speed limit in the before/after school periods.

Forestville Avenue has a carriageway width of 7.5m just to the north of Riverhill Avenue. As with Riverhill Avenue, if cars are parked on both sides of the street, there is only one travel lane available. The traffic signals at the junction of Forestville Avenue with Warringah Road provides for all turning movements out of Forestville Avenue. However the right turn in from Warringah Road (West) is prohibited. This means that drivers wishing to access the site from this direction need to turn right at Darley Street, at the traffic signal controlled junction of Warringah Road and Darley Street, and then use Bushland Avenue to travel across to Melwood Avenue, and thence to either Riverhill Avenue or the Warringah Road front of the site.

In my site inspections I have observed substantial parking activities associated with the Forestville Public School. These are focussed on Melwood Avenue and Riverhill Avenue. After this school related activities are finished, there remains a moderate level of on-street parking. I understand that local residents believe that many parked cars belong to commuters using the bus services along Warringah Road.

2.2 Traffic Flows

The traffic reports by Colston Budd Hunt and Kafes Pty Ltd (CBHK) contain peak period traffic count data, in their Figures 2 and 3. The actual hours of each count are not stated. In this location, this makes the assessment difficult, given the substantial traffic activity associated with the school,

which might or might not correspond with the commuter peak periods. I requested, and received the full traffic count data from CBHK. The hours of highest traffic flow at three key intersections were:

Warringah Road/Forestville Avenue/Arthur Street	7.00-8.00am	4.30-5.30pm
Warringah Road/Darley Street	7.15-8.15am	5.00-6.00pm
Melwood Avenue/Riverhill Avenue	8.30-9.30am	5.15-6.15pm

To provide a basis for traffic impact assessment, I have extracted the traffic movement data for the hours 7.00-8.00am and 5.00-6.00pm, which I have categorised as the on-street commuter peak hours. I have also extracted the traffic movement data for the hours 8.30-9.30am and 3.00-4.00pm, which correspond with the school peak traffic loads. (The CBHK afternoon traffic counts started at 3.00pm). Figure 1 shows the weekday morning traffic flows while Figure 2 shows the afternoon traffic flows. These figures have been used in my assessment.

A major concern of objectors is the impact of additional traffic on Riverhill Avenue. For this reason, I undertook a seven day survey of traffic flows in Riverhill Avenue. The counting tubes were located at the site, at No.4 Riverhill Avenue. The survey results are set out in Appendix B. The average daily traffic flow for the week beginning 18 November 2011 was 1472 veh/day, while the average weekday flow was 1615 veh/day. Table 2.1 sets out the average weekday hourly traffic flows, averaged over the five weekdays.

TABLE 2.1 Average Weekday Hourly Traffic Flows in Riverhill Avenue (veh/hour)

Hour	Eastbound	Westbound	Two-way Total
0-1am	2	2	4
1-2am	0	1	1
2-3am	1	1	2
3-4am	0	0	0
4-5am	0	1	1
5-6am	3	5	8
6-7am	9	54	63
7-8am	36	154	190
8-9am	96	136	232
9-10am	30	85	115
10-11am	24	54	78
11-12noon	21	48	69
12-1pm	16	42	58
1-2pm	24	47	71
2-3pm	46	51	97
3-4pm	40	87	127
4-5pm	45	68	113
5-6pm	47	75	122
6-7pm	43	64	107
7-8pm	31	38	69
8-9pm	10	22	32
9-10pm	11	18	29
10-11pm	6	10	16

11-12mnight	3	7	10

The survey also recorded the speeds of vehicles. The weekly 85th percentile speeds were 45 km/hr eastbound and 46 km/hr for westbound vehicles.

2.3 Environmental Capacity of Minor Roads

Many objectors to the proposal are concerned about the traffic implications on the local roads, particularly on Riverhill Avenue. These concerns relate to residential amenity, and the "environmental capacity" of these roads. The assessment by CBHK of Residential Amenity is misleading and only tells half the picture. They only quote the "maximum" flows, ignoring what are termed the "environmental goals". Table 2.2 reproduces Table 4.6 of the RTA's *Guide to Traffic Generating Developments.*

TABLE 2.2 Environmental Capacity Performance Standards on Residential Streets

Road class	Road type	Max. Speed (km/hr)	Max.peak hour flow (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
		40	300 maximum
Collector	Street	50	300 environmental goal
		50	500 maximum

The Guide comments: *"In the performance standards set out in Table [4.6], two levels are given – one the desirable maximum (the environmental goal), and one for the absolute maximum. There may be situations where alterations to these levels might be appropriate, however it is up to the developer to justify a departure from the standards."*

Looking at Table 2.1, the average weekday traffic flow in Riverhill Avenue in the period 8-9am is 232 veh/hr, a figure in excess of the environmental goal of 200 veh/hr. The figure in the 7-8am period is 190 veh/hr, close to this threshold. After 9am traffic flows drop off. In the afternoon, the highest flow is in the 3-4pm period, with 127 veh/hr, substantially less than the goal of 200 veh/hr. In the afternoon commuter peak hour of 5-6pm the figure is 123 veh/hr. As noted, the current 85th percentile speed of travel in Riverhill Avenue is 45-46 km/hr. This is close to the desirable speed in Table 2.2 of 40 km/hr. The implications of traffic flows in excess of the environmental goal would be greater if the traffic speeds were higher.

3.0 TRANSPORT IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 Description

The amended proposal, with plans identified as Revision I, dated 16/9/2011, has been reviewed. The number of dwellings has been reduced, with the following numbers:

- Studio 6 dwellings
- One-bedroom 42 dwellings
- Two-bedroom 24 dwellings
- Total 72 dwellings

The plans state that 36 dwellings – 50% of the total – will be "affordable housing". Some 8 dwellings will be "accessible". Car parking proposed is stated to be 77 resident spaces plus 8 visitor spaces.

3.2 Access, Layout and Parking

All site vehicular ingress is proposed to be from a two-way driveway on Warringah Road. Egress to Warringah Road will be internally restricted to the egress movements from 30 parking spaces. This arrangement is different to that which the RTA gave "in-principle agreement". As discussed in the following Section, the current proposal will put 100 vehicles/day extra onto Warringah Road, instead of to Riverhill Avenue.

With the proposed two-way driveway from Warringah Road, the CBHK report describes it as located east of the existing bus bay, so that if a bus is stopped at this bus stop, it will not affect vehicles exiting the site. CBHK state *"To assist with ingress to the site the existing indented bus bay will be extended to the east to provide a slip lane into the site".* The JRPP Supplementary Report states that there will be a 70m long deceleration lane measured from the centre of the proposed driveway and extending east. I consider that such a deceleration lane length, if the development is approved, will be satisfactory. With the site driveway to Warringah Road, I have considered the proposed width and gradient profile and consider the design to be satisfactory. A key design element is to have the final 6m of driveway approaching the site boundary to be at a gradient not exceeding 5%, to allow views to pedestrians on the footpath. This is proposed.

The proposed driveway to Riverhill Avenue will have its gradient profile in accordance with the requirements of AS2890.1-2004, with the critical issue in regard to pedestrian safety being that the final 6.0m will have a gradient not exceeding 5%. This is proposed. With the building setback onto the Riverhill Avenue site frontage to be 6.0m, there will be no side obstructions to sight lines. I

recommend that no side walls, apart from a retaining wall that starts 300mm deep at the building line and reduces to kerb height only at the property boundary be provided.

As discussed, the currently proposed site layout requires all ingress via Warringah Road and egress to Warringah Road from 30 parking spaces. The plan has a line within the lower northern parking area with the note "keyed boomgate - one-way traffic device". Details are not provided. Details would be necessary prior to any granting of consent, or as a consent condition. The intent of this control is to allow all traffic to pass this point and head in a southerly direction into the bulk of the parking area, but to not allow any traffic northbound, to access the Warringah Road driveway. A system that requires an access key is probably not required. A card reader with intercom for visitors could probably be installed along the western side, given that this gateway is for southbound traffic only. An easier system might be to simply install a loop detector in the ground to pick up an approaching southbound vehicle, to open a boom gate. A one-way traffic device could be angled road spikes that allow southbound travel but which would catch any northbound vehicles trying to travel towards the Warringah Road exit. Again, details need to be provided, but I consider that a suitable system is possible.

The service bay is proposed to be accessed off the Warringah Road driveway. This is contrary to the advice and conditions recommended by the RTA. This service bay, designed to accept up to a Small Rigid Vehicle, appears to be designed to take away all garbage, with the storage bin room adjacent to the bay. I assume this will be a contract garbage collection service. With 72 dwellings, the collection frequency would probably be once a day, particularly taking into account the relatively small size of the truck.

I note the comment of Council's Traffic Engineer in the Supplementary Report on the amended proposal that: *"The site is not accessible by Medium Rigid Vehicles (8.8m service vehicles) or Council's garbage collection vehicles. A development of this size must allow access by appropriate service vehicles."*

Car parking provision and distribution proposed will be:

- Lower North 30 resident spaces
- Lower South 13 + 6x2 resident spaces plus 4 visitor spaces
- Upper South 28 resident + 4 visitor spaces
- Totals 77 resident (or 83 if tandem spaces counted as 2) plus 8 visitor

As a quick check on parking, to assess if a lower level of parking will constrain traffic generation, if the parking required is assessed based on the recommendations in the RTA's *Guide to Traffic Generating Developments,* and treating the development as medium density, the parking recommended is 48 x 1.0 (for studio plus one bedroom units) + 24 x 1.2 (two-bedroom units) = 77 spaces. In addition, visitor parking is recommended at the rate 0.2/dwelling, so 0.2 x 72 = 14 visitor spaces. With 77 resident spaces (or 83 counting tandem spaces), the level of parking proposed will not constrain traffic generation.

3.3 Traffic Generation

The traffic generation assessment by CBHK assumed medium density dwellings, with traffic generation rates taken from the RTA's *Guide to Traffic Generating Developments.* I agree with this approach and these generation rates. For the daily traffic generation this means:

48 (studio + one-bed) x 4.0 + 24 (two-bed) x 5.0 = 310 vehicles per day

The peak hour flows are 10% of the daily flows, so 31 vehicles per hour. I anticipate that 70% of trips will be in the peak tidal direction, that is, OUT in the morning, with 30% counter-tidal, that is, IN in the morning. The counter-tidal movements might be related to dropping off workers or children, and returning to the home. The peak hour movements would thus be:

Period	IN	OUT	Total
AM peak hour	9	22	31
PM peak hour	22	9	31

As to the actual peak hour, based on traffic patterns in the area, I have taken the AM peak hour to be 7.00-8.00am, and the PM peak hour to be 5.00-6.00pm. Since I have also assessed the school hours of 8.30-9.30am and 3.00-4.00pm, I have made an assumption that 50% of the commuter peak hour traffic generation will be in these school hours. This is possibly an over-estimate.

As to the distribution of traffic, the assessment b y CBHK appears to assume 50% to/from Warringah Road East and 50% to/from Warringah Road West. I have shown on Figures 1 and 2 my assessment of the additional traffic movements. The split of the egress traffic takes the internal parking split into account. Note that for drivers from the front 30 parking spaces with a destination towards Warringah Road East, I have assumed they turn left onto Warringah Road, left into Forestville Avenue, left into Riverhill Avenue, and then via Bushland Avenue to Darley Street. I accept that an alternative route would be to exit via the Riverhill Avenue driveway and then into Forestville Avenue, and a right turn at the Warringah Road/Forestville Avenue traffic signals. The additional traffic in Riverhill Avenue will be the same.

4.0 ASSESSMENT OF ISSUES

4.1 Background

I have considered the traffic-related issues raised in submissions, plus any additional traffic matters that I consider relevant. In addressing these issues, I have considered the traffic assessments by CBHK for the applicant, and the JRPP Business Papers, dated 27 July 2011 and the Supplementary Report. I also rely on my own investigations and observations.

4.2 Access to Site

This is a key issue. The proposed access arrangement is not in accordance with the requirements of the RMS (RTA), as confirmed in their e-mail to Council on 4 November 2011. The intent of the restriction of only 30 car parking spaces having access to Warringah Road can be seen from a review of traffic generation. Starting with a daily site traffic generation of 310 veh/day, and 85 parking spaces, the front 30 spaces would see 30/85 x 310 = 109 veh/day, being say 55 veh/day IN and 54 veh/day OUT. If the Warringah Road access takes all vehicles entering the site, this will be 155 veh/day IN. With the 54 veh/day OUT from the 30 parking spaces, the total use of the Warringah Road driveway will increase from 109 veh/day to 209 veh/day, almost double that regarded as satisfactory by the RTA. To this would be added a two-way service vehicle movement.

State Environmental Planning Policy (Infrastructure) 2007 is very relevant to this issue, with Clause 101 being the main reference. Paragraph 3.10 of CBHK (September 2011) quotes the relevant section, although it omits point (b) (iii). I repeat this Clause 101 (2) below:

> *"(2) The consent authority must not grant consent to the development on land that has frontage to a classified road unless it is satisfied that:*
>
> *(a) Where practicable, vehicular access to the land is provided by a road other than the classified road, and*
> *(b) The safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development as a result of:*
> *(i) The design of the vehicle access to the land, or*
> *(ii) The emission of smoke or dust from the development, or*
> *(iii) The nature, volume or frequency of vehicles using the classified road to gain access to the land, and..."*

CBHK comment that *"The proposed development satisfies Clause 101 2(a) by having access to Riverhill Avenue."* This is contrary to my interpretation of this clause. My understanding of the

intent of this clause is that if no alternative "practicable" access is available then the RTA might consider a direct access off the classified road. Clearly the site has access to Riverhill Avenue, so clause (a) does not trigger a positive response to a proposal for classified road access. That being said, I do accept an approach that the provision of a direct access off a classified road might achieve planning and traffic operational benefits. Planning benefits might be the reduction in additional traffic on a local residential street and operational benefits might be the reduction in delays on an intersection on the classified road network.

If any classified road access is to be contemplated, the design of that access must be satisfactory. I note the RTA letter to Council dated 17 October 2011 where they require an extension of the current bus bay to provide a deceleration lane, to be designed to meet RTA's requirements, and endorsed by a suitably qualified practitioner. I accept that an appropriate consent condition can be imposed that can cover this design and that such an access with deceleration lane would be satisfactory for the level of traffic movements permitted by the RTA. From my assessment of traffic generation and the implications of 30 parking spaces within the development having access to Warringah Road, there would be about 55 vehicles per day entering the site via the deceleration lane and the same number leaving.

As the situation currently stands, with the RTA not supporting the currently proposed access design, I cannot recommend consent to this current proposal.

4.3 Environmental Capacity and Pedestrian Safety

The current development proposal seeks to maximise the vehicular access off Warringah Road and hence to reduce the traffic that will need to use Riverhill Avenue. On the option required by the RTA, with the parking areas on-site broken up into 30 spaces accessed off Warringah Road and 55 spaces accessed off Riverhill Avenue, the development traffic in Riverhill Avenue will be approximately 200 vehicles per day. Under the access scheme built into the current proposal, this number would halve, to approximately 100 vehicles per day. This access scheme clearly would benefit the environmental capacity and amenity of Riverhill Avenue.

Since there is not an "RTA complying" proposal before the JRPP, I am not able to assess the traffic implications of such a proposal on environmental capacity and traffic congestion. I therefore assess the actual development currently proposed, with about 100 vehicles per day leaving the site via Riverhill Avenue.

As discussed in Section 2.2, current average weekday traffic flows in the morning exceed the environmental goal of 200 veh/hr, in the 8.00-9.00am period, which is not the period I term the commuter peak hour, which is 7.00-8.00am. I first consider the changes in peak hour traffic flows in Riverhill Avenue, taken from my Figures 1 and 2. Table 4.1 sets out the assessment by CBHK, of the impact on the "morning" and "afternoon" peak hours in Riverhill Avenue west of Melwood Avenue, while Table 4.2 sets out my own assessment.

TABLE 4.1 Riverhill Avenue West of Melwood Avenue – Colston Budd Hunt & Kafes (vehicles per hour, two-way)

Situation	Morning Peak	Afternoon Peak
Current	185	120
+ Development	195	125

TABLE 4.2 Riverhill Avenue West of Melwood Avenue – Christopher Hallam (vehicles per hour, two-way)

Situation	7.00-8.00am	8.30-9.30am	3.00-4.00pm	5.00-6.00pm
Current	186	192	101	128
+ Development	197	197	103	132

The relative figures set out in Tables 4.1 and 4.2 are not significantly different. I undertook my own assessment, making my own assumptions about trip distributions. Looking at Table 4.2, in the 7.00-8.00am commuter peak period, the additional development traffic would increase the traffic flow to just under the 200 veh/hr environmental goal. In the 8.30-9.30am school peak hour the development traffic will be at least halved, reducing its impact in this sensitive hour. The figure of 5 veh/hr averages one car leaving the site every 12 minutes. In the afternoon school peak hour of 3.00-4.00pm, the current traffic flows are substantially less than in the morning. Again the development traffic would add a car every 30 minutes. In the afternoon commuter peak hour of 5.00-6.00pm, current flows are a little higher, but the development would only add about one car every 15 minutes.

Table 4.3 sets out a similar analysis to Table 4.2, but using as current flows the average weekday traffic flows from my seven day traffic count, as set out in Table 2.1.

TABLE 4.3 Riverhill Avenue West of Melwood Avenue – November 2011 (vehicles per hour, two-way)

Situation	7.00-8.00am	8.00-9.00am	3.00-4.00pm	5.00-6.00pm
Current	190	232	127	123
+ Development	201	237	129	127

The current traffic flows, as counted in November 2011, are generally higher than those counted by CBHK. In the 7.00-8.00am period the additional development traffic results in the environmental goal just being exceeded. However if the traffic from the two dwellings to be demolished is deducted, the resulting flow will be 199 veh/hr. In the 8.00-9.00am period the current flows already exceed the goal, probably due to school-related traffic, but the additional traffic is relatively low. Current traffic in the afternoon school peak is a little higher, but the relative impact of the additional traffic remains the same. With the situation in the 7.00-8.00am period, where the

development traffic would result in the goal just being exceeded, the street would not suddenly change character, there would just be a little more traffic. In traffic safety terms, the current speed of traffic in Riverhill Avenue is moderate, and consistent with its local road function.

Table 4.4 presents Current and Future peak hour flows for other streets, with the flows taken from Figures 1 and 2.

TABLE 4.4 Current and Projected Peak Hour Flows (vehicles per hour, two-way)

Road	Situation	7.00-8.00am	8.30-9.30am	3.00-4.00pm	5.00-6.00pm
Forestville Ave	Current	232	195	110	119
South Warringah	+ Devt	242	200	112	123
Melwood Ave	Current	163	202	128	140
North Riverhill	+ Devt	167	204	133	151
Darley St	Current	349	534	503	581
S Warringah	+ Devt	364	542	511	596

Forestville Avenue is essentially a Local Street, but its connection to Warringah Road at the traffic signals does concentrate traffic here, so the high current flows in the morning are not entirely surprising. Flows are lower in other periods. In the circumstances, I consider that the implications are satisfactory. Melwood Avenue has a higher-order function, with the location of the school, but the flows are still within a reasonable range. Darley Street is a Collector Street that provides access to a shopping centre plus to adjoining residential areas. The current flows in most periods are in excess of the maximum for a Collector Road. The development would add some traffic to these flows, but not in a high proportional manner.

For this amended proposal as currently under review, I conclude that the impact on environmental capacity will be satisfactory.

With the issue of pedestrian safety, I have checked the amended plans and confirm that the exit ramp to Riverhill Avenue meets the requirements of AS2890.1-2004, with the final 6m being at a grade of 5%. As a consent condition I would require no side walls on either side of the last 6m of driveway, between the building line and the property line, providing adequate sight distance to pedestrians. With the safety of pedestrians crossing Riverhill Avenue, with the relative volume and speed of traffic and with the design of the site driveway, I conclude that the impact of this development on pedestrian safety will be satisfactory.

I have noted the advice of the Council Traffic Engineer in the JRPP Business Paper for the meeting of 27 July 2011, discussing the earlier proposal, which had virtually identical traffic implications. The Traffic Engineer concluded: *"The conclusions drawn in the accompanying Traffic Report that the nett increase in traffic will not have an adverse impact on the surrounding road system or the operating capacities of nearby intersections are generally concurred with".* The current Council Traffic Engineer's report in the JRPP Supplementary Report are not quite as positive. They appear to concentrate on a proposal that would comply with the RTA's requirements, with a two-way driveway

onto Riverhill Avenue. This is not the proposal before the JRPP, and hence are of limited value in the current assessment.

My conclusion that the current proposal would have a satisfactory impact on environmental capacity and pedestrian safety relates to the proposal before the JRPP. I am not aware of any alternative proposal that incorporated a two-way driveway to Riverhill Avenue.

4.4 Traffic Congestion

The CBHK report summarises the impacts in the peak hours on intersection operation. It covers the intersections of Warringah/Forestville, Warringah/Darley, Warringah/Melwood, Riverhill/Melwood and Riverhill/Forestville, and draws the conclusions that the small increases in traffic flows would not result in current conditions significantly changing. I re-analysed several intersections and concluded that the relative impacts would not be significant.

In the JRPP Supplementary Report, the Council Traffic Engineer expressed concerns about the implications in Forestville Avenue, with the CBHK modelling indicating that the 95%ile back of queue in Forestville Avenue back from the Warringah Road intersection will increase from 97.4m to 100.1m as a result of the development.

The CBHK predicted traffic patterns indicate an additional 7 veh/hr leaving the site and travelling down Forestville Avenue prior to making a left turn into Warringah Road. My traffic distribution is the same. An additional 7veh/hr is on average one car every 8.6 minutes. If the traffic signals were operating at a very high cycle time of 180 seconds, this would mean that on average, on every third cycle an additional car would travel down Forestville Avenue. Whatever the theoretical modelling might indicate, I cannot conclude that an additional car every third signal cycle is likely to cause any significant impact. The 7.00-8.00am peak hour is the most critical, when the total flow currently through the intersection is 6544 veh/hr. Daily fluctuations in these flows would probably be greater than the additional development traffic under review.

Based on the CBHK analysis, on my own analysis and on my observations of peak period traffic conditions in the area, I conclude that the impact of the proposed development on traffic congestion will be satisfactory. Again, this conclusion relates to the proposal currently before the JRPP and cannot necessarily be applied to a different proposal with revised access design.

4.5 Adequacy of Car Parking and Servicing

The proposed car parking provision is:

- Lower North 30 resident spaces
- Lower South 13 + 6x2 resident spaces plus 4 visitor spaces

- Upper South 28 resident spaces plus 4 visitor spaces
- Total 77 resident spaces (or 83 if tandem spaces counted) plus 8 visitor spaces

If the adequacy of parking is assessed using the RTA's *Guide to Traffic Generating Developments,* the parking recommended is:

- Bedsitter plus one-bedroom: 48 x 1.0 = 48.0 spaces
- Two-bedroom: 24 x 1.2 = 28.8
- Total resident spaces = 77 spaces
- Visitor spaces: 72 x 0.2 = 14 spaces

It can be seen that the proposed number of resident spaces meets the RTA recommended level but the number of Visitor spaces is less, with 8 proposed compared with 14 recommended.

Clause 11 of the SEPP (Affordable Rental Housing) 2009 plan requires that *"(a) The development is for the purposes of residential flat buildings where at least 50 per cent of the dwellings in the proposed development will be used for affordable housing".* The amended proposal plans state that 50% of the units will be "affordable housing". Under Clause 14 of the SEPP – *Standards that cannot be used to refuse consent,* car parking is required at the rate of 0.5 spaces per dwelling. With 72 dwellings, this requires 36 spaces, with no specific requirement for visitors. Putting aside this SEPP requirement for the moment, if it was accepted that 50% of the development was for affordable housing and 50% was normal housing, it might be argued that only 36 units should have their parking assessed at the 0.5 spaces per unit, with the other 36 units to be assessed at normal parking rates. However as set out above, the resident parking proposed meets the level recommended by the RTA, with the only issue being visitor parking. Taking all of the above into account, I have to conclude that the proposed level of car parking will be satisfactory and not a reason to refuse consent.

I consider that there is a site servicing issue. To start, the letter from the SRDAC (RTA) to CBHK dated 19 September 2011 stipulated that service vehicle access must be from Riverhill Avenue. I note that the letter from RTA to Council dated 17 October 2011 did not include the same stipulation, although this might have been an inadvertent omission. The current amended site layout requires all service vehicles to enter and leave the site via the Warringah Road access. The layout has been designed for a Small Rigid Vehicle, which is 6.4 m long. The garbage storage is adjacent to the service bay, so presumably this 6.4m long truck will be responsible for removing the garbage from the 72 dwellings. I have not seen a garbage management plan but I would imagine that garbage removal would need to be relatively frequent. With the restricted size of the truck, daily pick ups might be required. This is not consistent with the statement (paragraph 3.15) in the CBHK September 2011 report that *"The use of the service area would be infrequent".* Putting aside for the moment the service access location required by the RTA, as a minimum, a Waste Management Plan would be required to indicate if a Small Rigid Vehicle was able to service the site, and to indicate service frequencies, and any limitations on the time of the garbage collection.

4.6 Availability of Public Transport

The CBHK report states:

> *Public transport is provided by Sydney Buses and Forest Coaches along Warringah Road past the site. Sydney Buses operates the 136, 137 and L60 services that connect Manly/Dee Why with Chatswood. The 136 service operates seven days a week services. The 137 and L60 (Express) services are limited services operating only on weekday. Forest Coaches operates the 278 service between Killarney Heights and Chatswood. This is a seven day a week service. Forest Coaches also operates the Killarney Heights shuttle with a bus stop located in Melwood Avenue, just south of Riverhill Avenue.*

In the JRPP report for the 27 July 2011 meeting, the Council traffic engineer does not comment on public transport availability. However in the Supplementary Report for the amended proposal the comment is made:

> *This site has access to existing transport links. Bus movements on Warringah Road represent the best available public transport in the area; however this location cannot be described as having "good" public transport links. As with other developments in this area a high degree (80-90%) on reliance on private vehicles is likely.*

I note that the westbound bus stop on Warringah Road is at the site. Access to the eastbound bus stop is available via the pedestrian overpass at the Forestville Avenue junction with Warringah Road, and at the Darley Street traffic signals. I have looked at the timetables for the Sydney buses services along Warringah Road. Table 4.5 summarises the service frequency, while Table 4.6 summarises the service frequency of the Forest Coach Lines Route 278 service to Chatswood, each table listing the numbers of services in the specified time period.

TABLE 4.5 Sydney Buses Services 136, 137, L60: Dee Why to Chatswood

Period	Westbound Mon-Friday	Westbound Saturday	Westbound Sunday	Eastbound Mon-Friday	Eastbound Saturday	Eastbound Sunday
6-9am	13	4	3	6	2	2
9-12noon	7	6	6	6	4	6
12-3pm	6	6	6	6	6	6
3-6pm	6	6	6	9	6	6
6-10pm	8	8	3	6	5	2

TABLE 4.6 Forest Coach Lines Route 278, Forestville to Chatswood

Period	Westbound Mon-Friday	Westbound Saturday	Westbound Sunday	Eastbound Mon-Friday	Eastbound Saturday	Eastbound Sunday

6-9am	6	1	0	3	0	0
9am-3pm	9	6	2	9	6	2
3-6pm	4	2	2	5	2	2
6-10pm	3	0	0	5	1	0

I conclude that public transport accessibility can be described as good. Hence I agree with the CBHK assessment and disagree with the Council Traffic Engineer's assessment.

The point about public transport accessibility relates to Clause 10 of the SEPP (Affordable Rental Housing) 2009 policy, where there is a requirement that:

> *3) The site is within 400 metres walking distance of a bus stop used by a regular bus service (within the meaning of the* Passenger Transport Act 1990) *that has at least one bus per hour servicing the bus stop between 06.00 and 18.00 each day from Monday to Friday (both days inclusive).*

The Sydney Buses services comfortably exceeds these requirements for each direction of travel, with the Forest Coach Lines providing additional services. The site public transport accessibility thus meets the criteria in Clause 10.

5.0 CONCLUSIONS

Site Access

1. The vehicular access arrangements proposed are contrary to the RMS(RTA) recommendations. The RTA position, with only 30 parking spaces accessed off Warringah Road would result in a daily two-way flow on this driveway of approximately 110 vehicles per day. The proposed access arrangement would see approximately 210 vehicles per day using this driveway. Without support from the RMS (RTA) for the development as proposed, I cannot recommend approval.
2. If for any reason consent was to be granted, the applicant will need to construct a deceleration lane on Warringah Road. The design shall be in accordance with Austroads *Guide to Road Design* in association with relevant RMS supplements. The design shall be endorsed by a suitably qualified practitioner and submitted to the RMS for consideration and approval prior to the release of a construction certificate by the appointed Private Certifier or Council and commencement of road works. Other requirements shall be as set out in the letter from the RTA to Warringah Council, dated 17 October 2011.

Internal Layout

3. If consent was to be granted, all driveways and parking layouts shall be designed and constructed to conform with the relevant Standards including AS2890.1-2004, AS2890.2-2002 and AS/NZS2890.6-2009.
4. At the egress driveway to Riverhill Avenue, the design shall ensure that there are no side walls between the building line and the property boundary that obstruct sight lines to the footpath.
5. If consent was to be granted, further details are required of the proposed boomgate and one-way traffic device proposed in the parking area.

Servicing of Site

6. If consent was to be granted, further information will be required on how waste will be collected. As a minimum, a Waste Management Plan is to be prepared, indicating service capacities, frequencies and any limitations on the times of garbage collection. These times should be outside of peak periods and ideally be early in the morning or late in the evening.

Environmental Capacity and Pedestrian Safety

7. I consider that the current proposal will not have an unacceptable impact on the environmental capacity of local residential streets or on pedestrian safety. This conclusion applies to the current proposal only.

Traffic Congestion

8. I consider that the current proposal will not have an unacceptable impact on traffic congestion and intersection delays. This conclusion applies to the current proposal only.

Car Parking

9. I consider that the proposed amount of car parking will be satisfactory, and cannot be a reason to refuse consent, taking into account the relevant State Environmental Planning Policy (Affordable Rental Housing) 209.

Access to Public Transport

10. Public transport accessibility is good, and meets the requirements of the SEPP(Affordable Rental Housing) 2009.

RTA Ref: CAC 11M1313b SYD11/00287
Contact: Owen Hodgson T 8849 2012
Council Ref: DA-2011/0400

Transport Roads & Traffic Authority

WARRINGAH COUNCIL
SCANNED
20 OCT 2011
20___/

The General Manager
Warringah Council
Civic Centre
725 Pittwater Road
Dee Why NSW 2099

RECEIVED
WARRINGAH COUNCIL
20 OCT 2011
MAIL ROOM

Attention: John Slater

2 – 4 RIVERHILL AVENUE, FORESTVILLE
CONSTRUCTION OF AFFORDABLE HOUSING

Dear Sir/Madam,

Reference is made to your correspondence dated 26 September 2011, concerning the abovementioned development application which was referred to the Roads and Traffic Authority (RTA) for concurrence in accordance with Section 138 (2) of the Roads Act 1993.

Exercise of Concurrence Function under the Roads Act.

The RTA has reviewed the development application and grants concurrence to the proposed vehicular crossings on Warringah Road under section 138(2) of the Roads Act 1993, subject to Council's approval and the following requirements being met and included in the conditions of development consent:

1. The RTA provides "in-principle" support to the proposed access on Warringah Road provided that the car park accessed from Warringah Road is physically restricted to no more than 30 vehicle spaces. The proposed access on Warringah Road shall include a deceleration lane. The proposed deceleration lane along Warringah Road shall be designed to meet RTA's requirements, and endorsed by a suitably qualified practitioner.

   The submitted design shall be in accordance with Austroads Guide to Road Design in association with relevant RTA supplements (available on www.rta.nsw.gov.au). The certified copies of the civil design plans shall be submitted to the RTA for consideration and approval prior to the release of a construction certificate by the appointed Private Certifier or Council and commencement of road works.

   The RTA fees for administration, plan checking, civil works inspections and project management shall be paid by the developer prior to the commencement of works.

APPENDIX A

The developer may be required to enter into a Works Authorisation Deed (WAD) for the abovementioned works. Please note that the Works Authorisation Deed (WAD) will need to be executed prior to the RTA's assessment of the detailed civil design plans.

2. The layout of the proposed car parking areas associated with the subject development (including, driveways, grades, turn paths, sight distance requirements, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS 2890.1- 2004 and AS 2890.2 – 2002 for heavy vehicle usage.

3. Provision for car parking shall be to Council's satisfaction.

4. All vehicles shall enter and leave the site in a forward direction.

5. All vehicles shall be wholly contained on site before being required to stop.

6. The proposed turning areas are to be kept clear of any obstacles, including parked cars, at all times.

7. The required sight lines to pedestrians or other vehicles in or around the car park or entrances are not to be compromised by landscaping, signage, fencing or display materials

8. All demolition and construction vehicles shall be wholly contained within the site and vehicles must enter the site before stopping.

9. Provision for building maintenance vehicles and removalists shall be provided on-site.

10. Council should ensure that post development storm water discharge from the subject site into the RTA drainage system does not exceed the pre-development discharge.

    Detailed design plans and hydraulic calculations of any changes to the stormwater drainage system are to be submitted to the RTA for approval, prior to the commencement of any works.

    Details should be forwarded to:
    The Sydney Asset Management
    Roads and Traffic Authority
    PO Box 973 Parramatta CBD 2124.

    A plan checking fee will be payable and a performance bond may be required before the RTA's approval is issued. With regard to the Civil Works requirement please contact the RTA's Project Engineer, External Works Ph: 8849 2114 or Fax: 8849 2766.

11. The proposed development should be designed such that road traffic noise from Warringah Road is mitigated by durable materials in order to satisfy the requirements for habitable rooms under Clause 102 subdivision 3 of State Environmental Planning Policy (Infrastructure) 2007.

12. All works associated with the proposed development shall be at no cost to the RTA.

Should you require any further clarification in relation to this matter, please call the contact officer named at the top of this letter.

Yours faithfully

O. Hodgson

Owen Hodgson
Senior Land Use Planner
Transport Planning, Sydney Region

17 October 2011

From: MALLOCH Angela [mailto:Angela_MALLOCH@rta.nsw.gov.au]
Sent: Friday, 4 November 2011 1:57 PM
To: Tony Collier
Subject: TRIM: 2-4 Riverhill Avenue, Forestville

Hi Tony,

Thankyou for the opportunity to clarify the Roads and Maritime Services (RMS) (formally the RTA) position following the amended traffic report sent 26 October 2011 for development at 2-4 Riverhill Avenue, Forestville. Concurrence to the access point on Warringah Road was granted subject to:

- two-way access being available on Riverhill Avenue
- The car park be split in two parts, to restrict access to/from Warringah Road to 30 car parking spaces **only.** RMS stated "the car park accessed from Warringah Road is physically restricted to no more than 30 vehicle spaces"

amended traffic report (sent to RMS on 26 October 2011) states access onto Riverhill Avenue will be one-way egress, and all access into the property will be via Warringah Road, this arrangement is not supported by RMS. This proposed arrangement is not in accordance with RMS (RTA) latest letter dated 17 October 2011 and letter to the developer's traffic consultant (Colston Budd Hunt and Kafes Pty Ltd) dated 19 September 2011

ıld you require further clarification please contact me.

Regards,

Angela Malloch
Land Use & Transport Planner | Roads & Maritime Services |
☎ 8849 2041 | 🖷 fax 8849 2918 | ✉ Angela_Malloch@rta.nsw.gov.au

CfeIT bob.white@cfeit.com (02) 9740 8600

Traffic Count Summary Report

Count Number	**8115**	Ref : **CHAL**	**Lat/Long : S33 45 41.3 / E151 12 37.8** **UBD 176 D-10**
Street	**RIVERHILL AVENUE, FORESTVILLE : Between FORESTVILLE AVENUE & MELWOOD AVENUE (bidirectional) :**		
Location	Mid-block, near House No. 4, ELP K354		*Carriageway*

TOTAL COUNT MATRIX

Start Date	18-NOV-11
Start Time	100
Duration	7 DAYS
Interval	1 HOUR

Weekly 50th Percentile Speed	37
Weekly 85th Percentile Speed	46
Five Day AADT	1615
Seven Day AADT	1473

	MON *21ST*	TUE *22ND*	WED *23RD*	THU *24TH*	FRI *18TH*	SAT *19TH*	SUN *20TH*	5 Dav Total	5 Dav Average	7 Dav Total	7 Dav Average
Midnight - 1am	3	3	4	3	5	12	15	**18**	**4**	**45**	**6**
1am - 2am	0	4	0	2	0	3	5	**6**	**1**	**14**	**2**
2am - 3am	1	1	0	4	1	3	3	**7**	**1**	**13**	**2**
3am - 4am	0	0	0	0	0	2	2	**0**	**0**	**4**	**1**
4am - 5am	0	3	2	1	0	1	0	**6**	**1**	**7**	**1**
5am - 6am	9	14	7	5	6	7	4	**41**	**8**	**52**	**7**
6am - 7am	70	64	62	60	58	19	4	**314**	**63**	**337**	**48**
7am - 8am	187	188	209	200	165	43	16	**949**	**190**	**1008**	**144**
8am - 9am	**206**	**244**	**248**	**250**	**213**	74	25	**1161**	**232**	**1260**	**180**
9am - 10am	116	112	120	120	111	113	75	**579**	**116**	**767**	**110**
10am - 11am	74	73	72	91	82	**136**	**95**	**392**	**78**	**623**	**89**
11am - Midday	70	76	57	71	72	88	82	**346**	**69**	**516**	**74**
Midday - 1pm	57	67	53	48	65	124	78	**290**	**58**	**492**	**70**
1pm - 2pm	58	82	58	65	94	81	76	**357**	**71**	**514**	**73**
2pm - 3pm	81	122	101	85	93	96	53	**482**	**96**	**631**	**90**
3pm - 4pm	129	**129**	**134**	**132**	113	58	54	**637**	**127**	**749**	**107**
4pm - 5pm	112	98	108	124	124	110	**88**	**566**	**113**	**764**	**109**
5pm - 6pm	**133**	107	116	118	**140**	**127**	85	**614**	**123**	**826**	**118**
6pm - 7pm	93	114	96	96	137	82	58	**536**	**107**	**676**	**97**
7pm - 8pm	51	51	77	79	83	54	30	**341**	**68**	**425**	**61**
8pm - 9pm	26	26	30	33	48	42	29	**163**	**33**	**234**	**33**
9pm - 10pm	37	30	24	24	27	19	21	**142**	**28**	**182**	**26**
10pm - 11pm	10	16	15	17	24	15	7	**82**	**16**	**104**	**15**
11pm - Midnight	10	6	7	7	18	16	3	**48**	**10**	**67**	**10**
Total	**1533**	**1630**	**1600**	**1635**	**1679**	**1325**	**908**	**8077**	**1615**	**10310**	**1472**

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Data displayed has been compiled from pneumatic traffic count processes and is subject to the documented limitations

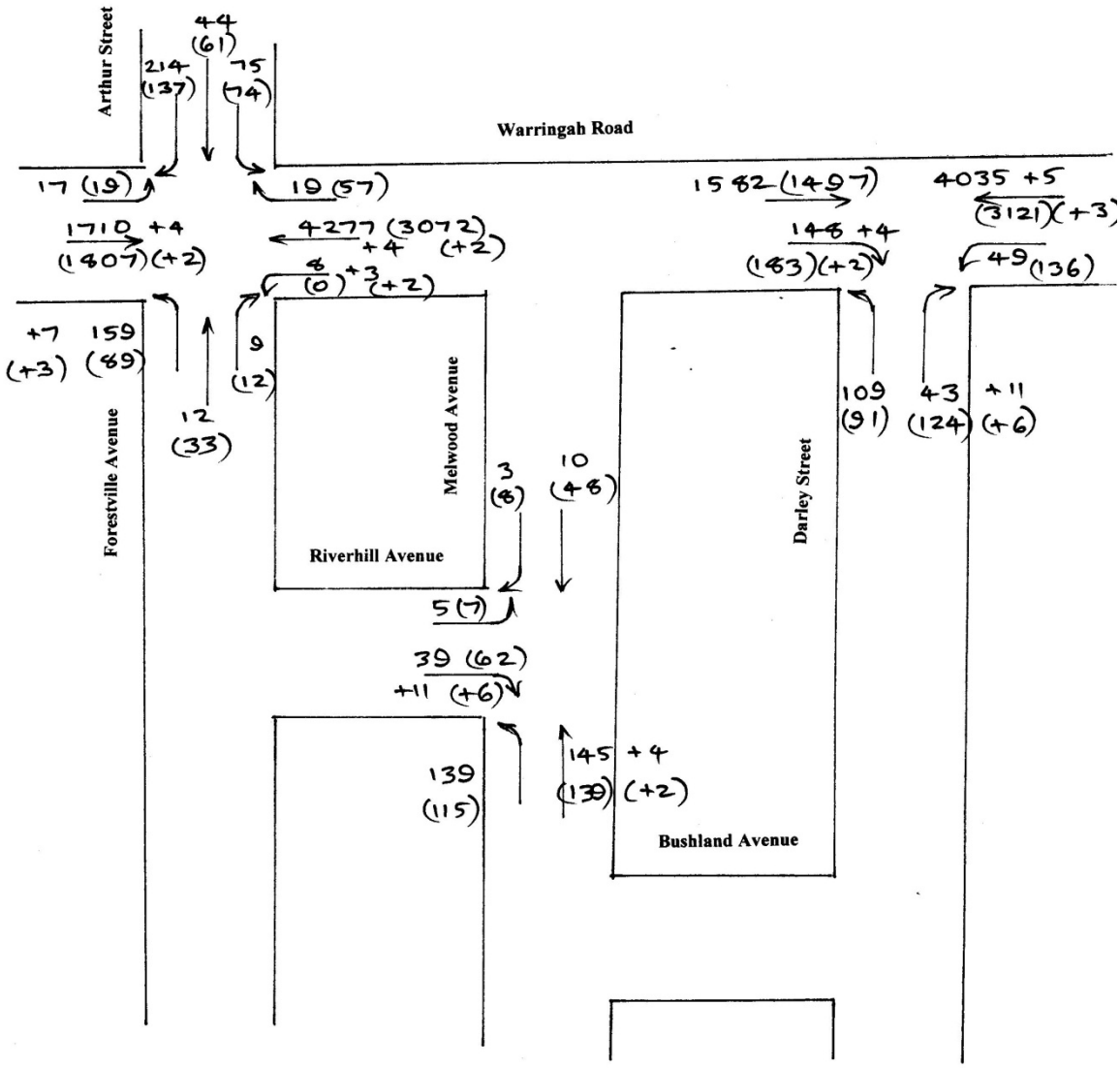

FIGURE 1 WEEKDAY MORNING PEAK HOUR TRAFFIC FLOWS

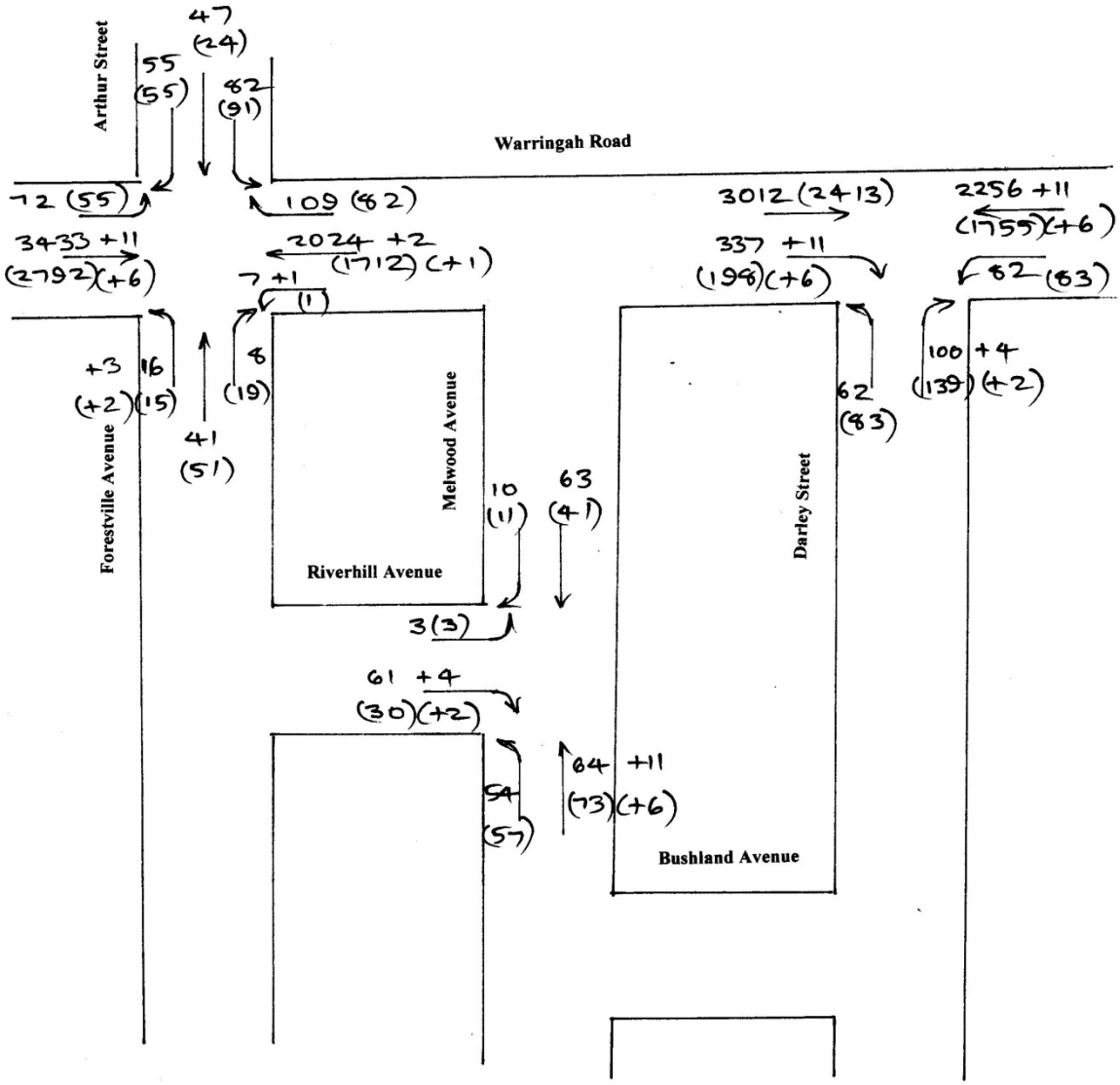

FIGURE 2 WEEKDAY AFTERNOON PEAK HOUR TRAFFIC FLOWS