Mercy Hospital

Private Plan Change

Transportation Assessment Report

July 2012

Traffic Design Group

11202-120706 ta_final

Mercy Hospital

Private Plan Change

Transportation Assessment Report
Quality Assurance Statement

Prepared by:

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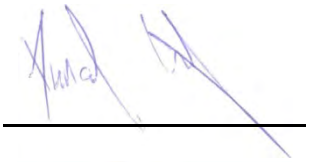

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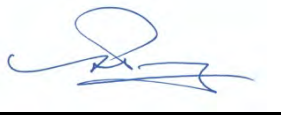

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Table of Contents

1. Introduction

Mercy Hospital Dunedin Limited (Mercy Hospital) proposes to undertake a Private Plan Change to the Dunedin City District Plan to re-zone its site at 72 Newington Avenue, Dunedin to a Mercy Hospital Special Zone that will permit hospital related activities as of right subject to compliance with specific performance standards.

The proposed zone is expected to allow improved flexibility for the future development of activities within the site boundaries. It is recognised that the planned future development will lead to an increase in traffic associated with the hospital activities, with consequent effects on the adjacent road network, and increasing parking demands.

Traffic Design Group (TDG) have been requested to assess the traffic effects of proposed changes to the sites operation that are likely to occur under a newly proposed Structure Plan.

The key transportation issues associated with the proposed designation and associated future development of the hospital are as follows:

- The level of traffic that is likely to be generated by the planned future development of hospital and clinic activities.
- The number of on-site car parking spaces likely to be required to support the planned future extension of activities.
- The ability of the site accesses and the surrounding road network to accommodate the planned future increase in traffic safely and efficiently.
- The need for any zone specific transportation rules to be included in the District Plan.

These and other matters are addressed in the body of the report. By way of a summary, it is concluded that, with the proposed plan change re-zoning of the hospital site, that the traffic and parking generated by the proposed future development of the hospital activities in accordance with the recommended rules can be accommodated safely and efficiently within the surrounding transportation environment.

2. Existing Transport Infrastructure

2.1 Site Location

The site lies in the Roslyn / Maori Hill area of Dunedin, as shown on **Figures 1 and 2**. It is bounded to the south by Newington Avenue and to the northwest by Burwood Avenue. To the north and east the site is bounded by the Town Belt.

Newington Avenue and Burwood Avenue connect to Highgate, to the west of the site. Newington Avenue also connects to Queens Drive to the south which provides a route towards the city centre. Hamel Street connects to Newington Avenue directly opposite the site and forms a potential alternative route to the site from Highgate west.

The site is presently zoned Residential 1 within the Dunedin City District Plan.

2.2 Newington Avenue

Newington Avenue is classified as a Collector Road in the District Plan and has a 50km/h speed limit. The road links to Queens Drive at its southern end which in turn links to Stuart Street a regional road connecting to the centre of the city. At its northern end Newington Avenue connects to Highgate, a District Road that runs along the ridge line of the western suburbs. Newington Avenue ascends relatively steeply between Queens Drive and Highgate, and has a tight geometry particularly on the lower sections.

The length of Newington Avenue adjacent to the site can be considered in two sections. The first section between Highgate and the location of the hospital main entrance, a length of approximately 160 metres, and then below this point. Over the upper section the road carriageway is straight and approximately 10 metres wide, with footpaths provided adjacent to both sides of the road. Parking is banned along the northern kerb to either side of the site entrance, and up to Burwood Avenue

Below the main entrance the remaining road progressively narrows, firstly to a width of approximately 6 metres adjacent to the site, and then further to approximately 5 metres wide on the lower section. Over these sections there is a footpath on the south side only and kerbside parking is generally not available.

Photographs 1 and 2 below show the typical form of Newington Avenue on the upper section and lower section respectively.

Friday, 13 April 2012

MERCY HOSPITAL

ROAD NETWORK HIERARCHY & SITE LOCATION

Traffic Design Group

1

SCALE: N.T.S.

G:\11000-11999\11200-11299\11202-2 - Mercy Hospital\Drawings\From Tauranga\11202-T2A FIG 1.dwg

REVISION	DATE	DESCRIPTION
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MERCY HOSPITAL

AERIAL PHOTO OF SITE AND SURROUNDING ROAD NETWORK

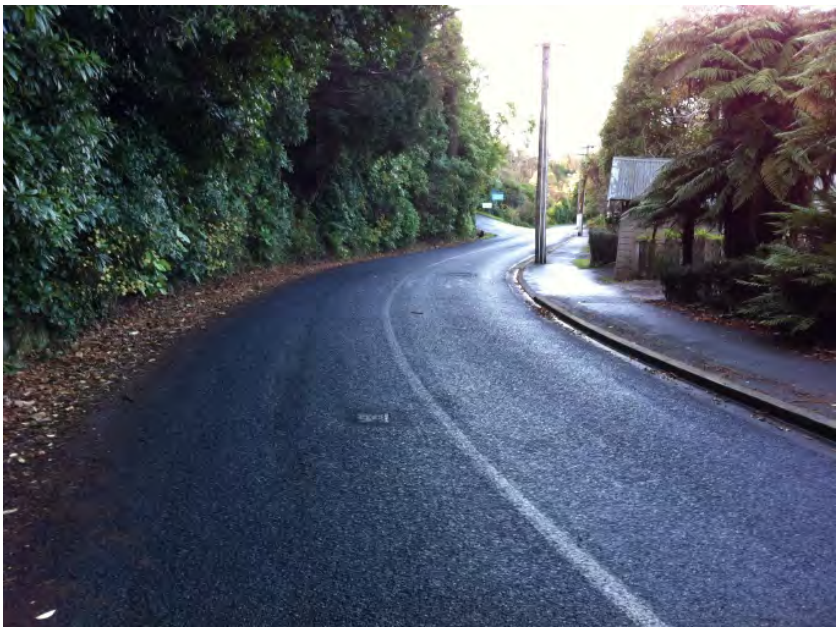
DRAWN: J.TAYLOR
DATE: 04.07.2012
SCALE: 1:2500@A3
DWG NO:11202-T2A FIG 2

Traffic Design Group

2

G:\Tauranga Jobs\11000 - 11499\11202 - Mercy Hospital\Drawing\11202-T2A FIG 2.dwg

Photograph 1: Newington Avenue looking east from adjacent to the Burwood Avenue intersection



Photograph 2: Newington Avenue looking east from a location adjacent to the lower section of the site

The site has three access / egress points onto Newington Avenue as described later at Section 2.8 *Site Access Provisions*.

2.3 Burwood Avenue

Burwood Avenue is classified as a Local Road in the District Plan and has a 50km/h speed limit. The road is a one way road linking Highgate to Newington Avenue, primarily for the purpose of property access.

The section of Burwood Avenue leading from Highgate has footpaths on both sides and kerbside parking on the north side only. There is a single kerbside space near the bend in the road that is restricted to authorised residents parking at all times. The section of Burwood Avenue adjacent to the site has a carriageway width of 6 metres, and is marked with no parking lines on the hospital side of the road. Footpaths are provided on both sides of the road.

Photographs 3 and 4 below show the typical form of Burwood Avenue.

Photograph 3: Burwood Avenue looking east from a location just south of Highgate

Photograph 4: Burwood Avenue looking east from a location adjacent to the hospital site

The hospital site has a single egress only vehicle crossing onto Burwood Avenue and a pedestrian only access, both described later at Section 2.8 *Site Access Provisions*.

2.4 Hamel Street

Hamel Street is classified as a Local Road in the District Plan and has a 50km/h speed limit. The road is a two way residential road linking Newington Avenue to Claremont Street, up a relatively steep incline.

Photograph 5 below shows Hamel Street as viewed from Newington Avenue. As can be seen, the Hamel Street / Newington Avenue intersection is an uncontrolled priority T-intersection.

Photograph 5: Hamel Street viewed from Newington Avenue

2.5 Highgate

Highgate is classified as a District Road in the District Plan and has a 50km/h speed limit. The road runs along a ridge line with an undulating vertical geometry.

The section of Highgate in the vicinity of its intersection with Newington Avenue is straight and allows good visibility as shown in the following two photographs.

Photograph 6: Highgate looking north from adjacent to the Newington Avenue Intersection

Photograph 7: Highgate looking south from adjacent to the Newington Avenue Intersection

In this area Highgate has a 12 metre wide carriageway, marked with a centre line. Footpaths are provided adjacent to both sides of the road.

2.6 Newington Avenue / Highgate Intersection

The Newington Avenue / Highgate intersection is a Stop controlled Tee intersection. The intersection forms a left to right stagger with the Tee intersection of McMillan Street on the opposite side of Highgate. The side road centrelines are offset by approximately 10 metres.

The form of the intersection as viewed from Newington Avenue, is shown in Photograph 8 below. The sections of Highgate in the immediate vicinity of the intersection are shown in Photograph 6 and 7 above. No specific turn lanes are provided on any approaches to the intersection.

Photograph 8: Newington Avenue Approach to Highgate

2.7 Newington Avenue / Burwood Avenue Intersection

Newington Avenue / Burwood Avenue intersection is an uncontrolled Tee intersection. The form of the intersection as viewed from Burwood Avenue, is shown in Photograph 9 below. The section of Newington Avenue in the immediate vicinity of the intersection was shown in Photograph 1 earlier. No specific turn lanes are provided on any approaches to the intersection

Photograph 9: Burwood Avenue Approach to Newington Avenue

2.8 Site Access Provisions

The site has four vehicular access/ egress locations, as described below:

2.8.1 Burwood Avenue Exit

The exit only driveway onto Burwood Avenue, services the main public car park within the Mercy Hospital site. The form of the driveway is shown in Photograph 10 below. The driveway is located approximately 30 metres before the Newington Avenue intersection.

Operating speeds on Burwood Avenue are low and good sight lines are available because there is no parking on the hospital side of Burwood Avenue.

A pedestrian only access is provided at the right angle bend in Burwood Avenue providing direct access to the site for pedestrians that walk from / to Highgate via Burwood Avenue.

Photograph 10: Burwood Avenue Exit Only driveway

Photograph 11: Burwood Avenue pedestrian access

2.8.2 Newington Avenue Main Entrance

The two-way main public entrance driveway onto Newington Avenue services the main public car park, and provides access / egress to the top level of the multi-storey car park building that is also allocated to public parking. The form of the vehicle crossing is shown in Photograph 12 below. A footpath is provided adjacent to the western side of the driveway, running into the site.

This driveway connects with Newington Avenue at the lower end of the section of the road where the carriageway is 10 metres wide. Kerbside parking is not permitted on Newington Avenue in the vicinity of the vehicle crossing on the hospital side of the road, preserving good sight lines along Newington Avenue in both directions.

Photograph 12: Main Access Driveway onto Newington Avenue

2.8.3 Newington Avenue Exit Only

There is an exit only driveway onto Newington Avenue approximately 20 metres east of the right angle bend in Newington Avenue at the south western corner of the site. Sight lines to the west from this driveway are poor as a result of the tight road geometry.

This egress receives low usage serving mainly as the only available exit for vehicles using the car parking adjacent to the driveway which links from the main driveway.

The following Photograph 13 shows the form of this driveway, which has a “No-Entry” sign and operates as an exit only in spite of the road markings which indicate two-way operation.

Photograph 13: Exit Only driveway onto Newington Avenue

2.8.4 Newington Avenue Staff and Service Entrance

There is a secondary entry and exit driveway onto the southern section of Newington Avenue which provides access / egress for the main servicing areas and the staff car parking areas at the back of the hospital. The driveway also provides access / egress to the lower levels of the multi-storey car park building that are allocated to staff parking. The form of the driveway at Newington Avenue is shown in Photograph 14 below. Some localised widening has been provided to facilitate the left turn exit and right turn entry movements, as shown in the photograph.

The driveway joins Newington Avenue toward the southern end of the site approximately 80m downhill and east of the exit only driveway described above.

Photograph 14: Staff and Service Driveway onto Newington Avenue

The service driveway is quite narrow and requires drivers to give way if they meet a vehicle traveling in the opposite direction at certain pinch points. There is however adequate flared width on the approach to Newington Avenue to ensure that no vehicles are required to reverse back onto the road.

The sight distance at this driveway to the left down the hill is clear for in excess of 90m and the sight line uphill is approximately 70 metres. Operating speeds are assessed to be in the range of 40-50km/h. Assuming a 50km/h operating speed, Approach Sight Distance (ASD) of 60 metres is required to enable a driver on Newington Avenue to stop before the conflict point. This minimum criterion is achieved. Austroads allows of the application of Extended Design Domain (EDD) principles when assessing brownfield sites and difficult terrain settings such as is the case here. Safe Intersection Sight Distance (SISD) calculated using the EDD parameters of a 1.5 second observation time, a 1.5 second reaction time, and a higher deceleration rate of 0.46g is 66 metres. This SISD criterion is also met at the site. Based on the sight lines meeting these minimum criteria, and the absence of an existing crash problem, it is expected that this access will continue to operate safely.

2.9 Public Transport

Highgate forms part of two bus routes:

- Route 66: Roslyn / Maori Hill / Prospect Park - to - University / Octagon; and
- Route 68: Octagon - to – Octagon via Roslyn / Maori Hill / University

Two pairs of bus stops are located on both sides of Highgate within the vicinity of Burwood Avenue and Claremont Street making them a short and convenient distance from the site via Newington Avenue or via Burwood Avenue and the direct pedestrian access to the site from Burwood Avenue. Footpaths are provided on the pedestrian routes between the site and the bus stops on Highgate, making public transport a good option for both staff and mobile patients to travel to / from the site.

2.10 Cycle Routes

There is no specific provision for cyclists in the vicinity of the site. Current travel patterns indicate a low demand for travel to and from the site by bicycle, which is expected to be primarily due to the topography of the surrounding area.

3. Traffic Patterns

Dunedin City Council has provided details of their latest automatic traffic counts carried out in the vicinity of the site as indicated in Appendix A. Count data is available for Highgate, and Upper Newington Avenue.

LOCATION	DATE OF SURVEY	AVERAGE DAILY TRAFFIC (7-DAY)	AVERAGE DAILY TRAFFIC (WEEKDAY)	WEEKDAY AM PEAK HOUR	WEEKDAY PM PEAK HOUR
Highgate northbound	June 2005	4,169	4,489	665	550
Highgate southbound	June 2005	4,130	4,456	504	582
Highgate total	June 2005	8,299	8,945	1,169	1,132
Upper Newington Avenue	December 2010	1,223	1,513	174	150

Table 1: Traffic Flows in Vicinity of the Site

Table 1 shows that Highgate is a moderately busy arterial road, carrying relatively high traffic flows during the peak periods. All the other roads in the vicinity of the site including those which the site uses for its access and egress carry relatively low traffic flows, as demonstrated by the volumes recorded on Newington Avenue.

Further analysis of the traffic flows on Highgate indicates that the flows are strongly peaked during the morning peak period, but are more sustained at the higher volumes during the afternoon /evening period. The AM peak hour flow between 8:00am and 9:00am is approximately triple the preceding hours flow, and is double the following hours flow. However in the evening the flow peaks between 3:00pm and 4:00pm, and then drops slightly before peaking again between 5:00pm and 6:00pm, at a similar level to that between 3:00pm and 4:00pm, which reflects the presence of schools in the vicinity.

3.1 Traffic Growth

As the count data for Highgate dates from 2005, an assessment of DCC's available count data for their recording sites throughout the city was undertaken to identify a potential growth rate. The analysis has identified the following trends:

- Of the sites that had data recorded in 2005 and also 2008, 35 sites experienced a drop in traffic, 5 experienced an increase in traffic and 5 remained static (to within 100 veh / day) over the three year period.
- The most recent data is for 2011 and the majority of these sites also had data recorded in 2009. Over this two year period 14 sites experienced a drop in traffic, one experienced an increase and eight remained static, to within 100 veh / day.
- Two recording sites elsewhere on Highgate have data recorded more recently than 2005. The first between Epsilon Street and Ross Street experienced a 2% increase in traffic between 2005 and 2009, and the second between Merlin Street and Garfield Avenue (600m from Newington Avenue) experienced a 5.7% reduction between 2007 and 2009.

From this review it is apparent that traffic volumes have dropped slightly between 2005 and 2011 globally within Dunedin, and that it is likely that the recorded 2005 traffic flows for Highgate in the vicinity of Newington Avenue will be representative of existing volumes.

4. Road Safety

The NZ Transport Agency Crash Analysis System (CAS) has been used to identify all reported crashes on Highgate, Burwood Avenue, Newington Avenue, Hamel Street and Claremont Street inclusive of their respective intersections in the vicinity of the site. The search covered all reported crashes, both injury and non-injury, for the most recent full five year period between 2007 and 2011 inclusive.

The location of each accident and the type of accident is illustrated in the diagram provided in Appendix B while the full details are also provided in tabular form.

A total of fifteen crashes were reported within this area, with one of these resulting in serious injury, five in minor injury, and the remaining nine being classified as non-injury crashes.

- Five crashes occurred on Newington Avenue. Three of these involved loss of control of a single vehicle and occurred on the lower section of Newington Avenue adjacent to the site east of Hamel Street. One of the three resulted in serious injury, with no injuries reported for the other two crashes. Causal factors for these three crashes are listed as excessive speed while cornering, excessive speed for conditions (icy), and dazzling sunlight. Of the remaining two crashes on Newington Avenue, one occurred approximately 100m west of Hamel St when a vehicle manoeuvring into a parking space hit a parked vehicle; the other occurred near the intersection with Wallace Street when a distracted driver cut a corner and collided with an on-coming vehicle.
- One crash occurred at the intersection of Highgate and Newington Avenue, when a vehicle exiting Newington Avenue failed to give way to northbound traffic and collided with two vehicles.
- No crashes were recorded on Burwood Avenue.
- One crash was recorded on Claremont Street, approximately 100m east of Highgate, when a driver showing off lost control under heavy acceleration.
- One crash was recorded at the intersection of Highgate with Claremont Street, when a vehicle exiting Fairfax Street (opposite Claremont St) at speed lost control and hit a parked vehicle.
- The remaining seven crashes were recorded at the intersection of Highgate with Lynn Street. Of these, four involved southbound vehicles colliding with vehicles which were slowing or stopped to turn right into Lynn Street. Two crashes resulted from failures to give way while turning and one involved a single vehicle losing control due to ice on the road. Five of the crashes at this intersection resulted in minor injuries.

Overall, no significant trends in crash type, cause or location have been identified with the exception of the intersection of Highgate with Lynn Street, where a cluster of rear-end collisions has been identified. Further analysis reveals that the recorded causes of these crashes are driver-related, three being drivers following too closely in heavy traffic, and one being a driver distracted by emotions and/or road rage.

5. The Proposed Development

5.1 Existing Site Use

Mercy Hospital currently operates as a private surgical hospital and consulting clinic rooms, and is made up of the following buildings housing various surgical facilities and ancillary activities:

- Mercy Hospital
- Marinoto Clinic (Linked to the main hospital building);
- Marinoto House (The convent);
- Mercy Care East; and
- Multi storey car park building.

Currently the site operates with 65 patient beds split between 41 inpatient and 24 day surgery beds. The hospital, clinic and all ancillary activities occupy a gross floor area (GFA) of 11,774m^2 (excluding the car park building and Convent).

The Convent lower floor is currently used for in-house staff meetings and other non-clinical activities. It has been excluded from the calculations of existing and future parking / traffic generation on the basis that it does not form part of the clinical activities on site, and on the basis that its future use is intended to be largely the same as it is now, i.e. a location for onsite staff to meet outside of the clinical setting.

If in the future it is developed as part of the commercial operation of the hospital or clinic then any additional parking demand and traffic generation will need to be considered at that time.

5.2 Proposed Site Use

The hospital site has expansion plans that are described further in other documents making up the Plan Change application.

For the purposes of assessing the transportation effects of the potential development, analysis has considered the increase in the GFA of the buildings and the increase in bed capacity.

Based on the completion of proposed development, the existing GFA and number of patient beds is projected to increase as follows:

Development	Gross Floor Area (m²)	Patient Beds
Existing 2012	11,774	65
Site Plan Development Complete	16,500	85

Table 2: Projected Development Growth for the Mercy Hospital Site

The following **Figure 3** shows the proposed site layout, after completion of the currently planned development.

Figure 3 : Proposed Site Layout under the Structure Plan

6. Traffic Generation and Distribution

6.1 Traffic Generation Rates

Relevant traffic generation data for smaller scale hospitals is available from the NZ Trips and Parking Database Bureau (NZTPDB). The database contains six surveys of hospitals in the Small Hospital category, these hospitals ranged in size from 1000m^2 GFA to 8,000m^2 GFA, and the survey data was collected between 1987 and 1996. For comparison we have also included data from a recent detailed survey undertaken by TDG at the Whakatane public hospital in 2009, a site with 21,000 m^2 of GFA, 110 beds and outpatient clinic facilities on-site. The available data on peak hour traffic generation rates is summarised in Table 3 below.

DATA SOURCE	RATE BASED ON FLOOR AREA (veh/h/100m^2)		RATE BASED ON BEDS (veh/h/bed)	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
Whakatane Hospital	1.3	1.3	2.5	2.5
NZTPDB – small hospital	1.7	2.2	1.4	1.7

Table 3: Peak Hour Traffic Generation Rates

Using the peak hour values from the NZTPDB survey data, the existing hospital site would be expected to be generating traffic as shown in Table 4 below.

BASED ON FLOOR AREA			BASED ON BEDS		
Floor Area (m^2 GFA)	Traffic Generation (veh/h)		Existing Beds	Traffic Generation (veh/h)	
	AM Peak Hour	PM Peak Hour		AM Peak Hour	PM Peak Hour
11,774	200	259	65	91	111

Table 4: Expected Peak Hour Traffic Generation of Existing Hospital Based on NZTPDB Data

Using the data from the Whakatane survey the existing hospital operation would be expected to be generating traffic as shown in Table 5 below.

BASED ON FLOOR AREA			BASED ON BEDS		
Floor Area (m^2 GFA)	Traffic Generation (veh/h)		Existing Beds	Traffic Generation (veh/h)	
	AM Peak Hour	PM Peak Hour		AM Peak Hour	PM Peak Hour
11,774	153	153	65	163	163

Table 5: Expected Peak Hour Traffic Generation of Existing Hospital Based on Whakatane Data

A previous survey of traffic generation for the site in 2006[1], identified a peak hour generation of 152veh/h. This survey was undertaken when the site had a marginally smaller operating GFA than it does now, and is assessed as showing very good correlation with the surveyed generation rates from Whakatane.

[1] Traffic Operation and Parking Assessment Mercy Hospital Redevelopment, 72 Newington Avenue Dunedin, December 2006, Traffic Plan Ltd

This level of traffic generation is also consistent with existing traffic volumes on Newington Avenue. On this basis the peak hour traffic generation of the site has been assessed using the surveyed rates from Whakatane.

6.2 Proposed Traffic Generation

The expected peak hour traffic generation of the proposed future expansion of the hospital, has been assessed on the basis of the existing peak hour traffic generation rates from Whakatane (1.3 veh/h/100m^2 GFA and 2.5veh/h/bed).

Application of these rates to the proposed development predicts the growth in traffic generation dictated in Table 6 below.

DEVELOPMENT LEVEL	BASED ON FLOOR AREA			BASED ON BEDS		
	Floor Area (m^2 GFA)	Traffic Generation (veh/h)		Beds	Traffic Generation (veh/h)	
		AM Peak Hour	PM Peak Hour		AM Peak Hour	PM Peak Hour
Existing	11,774	153	153	65	163	163
Structure Plan Development Complete	16,500	215	215	85	212	212

Table 6 : Expected Peak Hour Traffic Generation Increase with Additional Development

The table shows the expected traffic generation assessed on the basis of both the increased GFA and increased number of patient beds. The table shows that the traffic generation of the Mercy Hospital site is expected to grow from the assessed existing peak hour generation of 153veh/h to a post development forecast of 212veh/h -215veh/h.

For the purpose of assessing the effects of the additional traffic we have assumed 56 additional traffic movements are generated during the peak hour of hospital activity. This is the average traffic increase prediction of the two calculations.

The hospital's peak traffic generation is not expected to be aligned exactly with both the morning and afternoon on-road peak traffic volumes. The 2006 survey of traffic generation at the hospital used tube counters on the hospital driveways and was therefore able to provide a profile throughout the day for the traffic generation of the hospital. From this profile it has been established that:

- Between 8:00am and 9:00am during the Highgate morning commuter peak hour, the site generated 84% of its peak hour traffic volume; and
- Between 4:00pm and 5:00pm the site generated 100% of its peak hour traffic volume, a time which coincides with the Highgate evening peak.

For the purpose of assessing expected effects from the proposal 84% of 56, or 47 new trips have been assigned to the road network during the morning peak hour of 8:00am to 9:00am, and during the evening peak hour all the additional 56 peak hour trips have been assigned to the road network.

Based on an assessment of traffic volumes on the adjacent roads and on observations of traffic movement, the new traffic generated by the proposal has been allocated to the network on the basis of the following diagram.

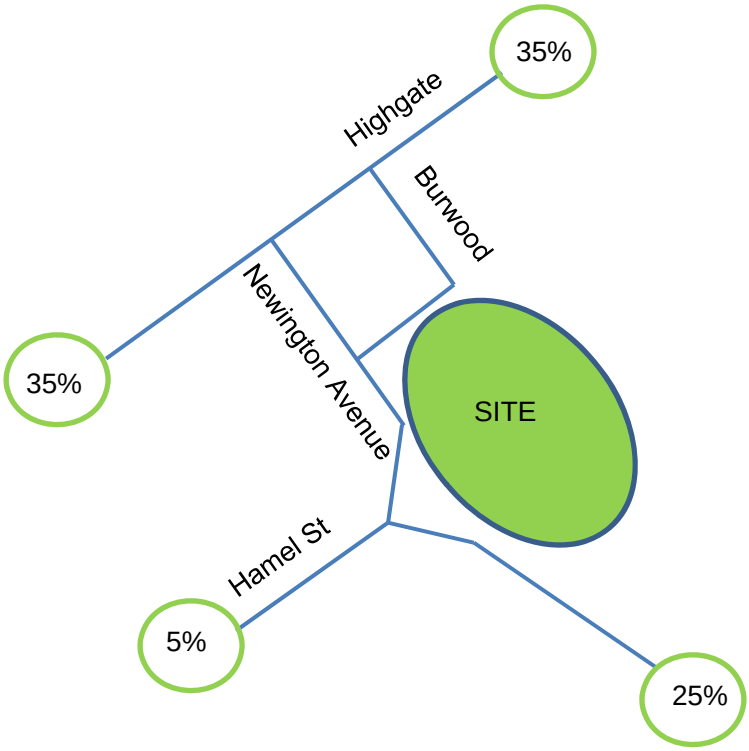


Figure 4: Distribution of Site Traffic onto the Road Network

Based on the distribution percentages shown on Figure 4 above the additional peak hour traffic movements from completion of the potential development have been added to the adjacent road flows. The following table summarises the effects on two-way traffic volumes on the subject road sections.

ROAD	AM PEAK HOUR			PM PEAK HOUR		
	Existing (veh/h)	Expected Increase (veh/h)	Post Development (veh/h)	Existing (veh/h)	Expected Increase (veh/h)	Post Development (veh/h)
Highgate (south of Newington)	1,169	16	1,185	1,132	20	1,152
Highgate (north of Newington)	1,169	17	1,186	1,132	19	1,151
Newington Avenue (west of site)	174	33	207	150	39	189
Newington Avenue (east of site)	110 (estimate)	12	122	110	14	124
Hamel Street	20 (estimate)	3	23	20	4	24

Table 7: Projected Future Traffic Volumes (2-Way)

Table 7 shows that the most marked increase in traffic flows will occur on the upper section of Newington Avenue between the site and Highgate, where peak hour flows can be expected to increase from a weekly peak of approximately 174veh/h to 207veh/h. Other road sections will accommodate lesser increases with the next largest, an increase of 16 veh/h on Highgate, to a peak flow in the morning of approximately 1,200 veh/h.

7. Traffic Effects

The capacity of a two lane two way road varies based on characteristics that include:

- Carriageway width;
- Number and function of property access points;
- Extent of permitted on-street parking;
- Road geometry; and
- Traffic speeds

Urban roads typically have capacities in the range of 600veh/h - 1,200veh/h per lane, dependant on the interaction of the factors detailed above.

Roads such as the lower section Newington Avenue with its tight geometry, steep grades and narrow carriageway would be expected to have lane capacities in the order of 600veh /h, while roads such as Highgate with a wider carriageway, more level and straight geometry, would be expected to have a capacity in order of 1,000veh/h per lane, (or per direction) which is 2,000 veh/h for a two lane road such as Highgate.

As indicated in Table 7 the predicted traffic volumes on Highgate are considerably less than 2,000 veh/hr. Further it is evident that the other roads surrounding the subject site currently have and are projected to continue to have traffic flows that are well within the carrying capacity of the roads.

Notwithstanding this it is often intersections that dictate the effective capacity of road sections within a network. It has been assessed that the intersection of Highgate and Newington Avenue is the most critical intersection with respect to the additional traffic from the Mercy Hospital development.

An assessment of this intersection's operating performance has been carried out assuming that 70% of the new traffic generated by the completed development would use this intersection.

For this assessment the recorded AM and PM peak hour flows on Highgate were used, along with the concurrent flows on Newington Avenue.

The following figures show the AM and PM peak hour flows that were modelled. The expected traffic from the development is shown as additional values in green.

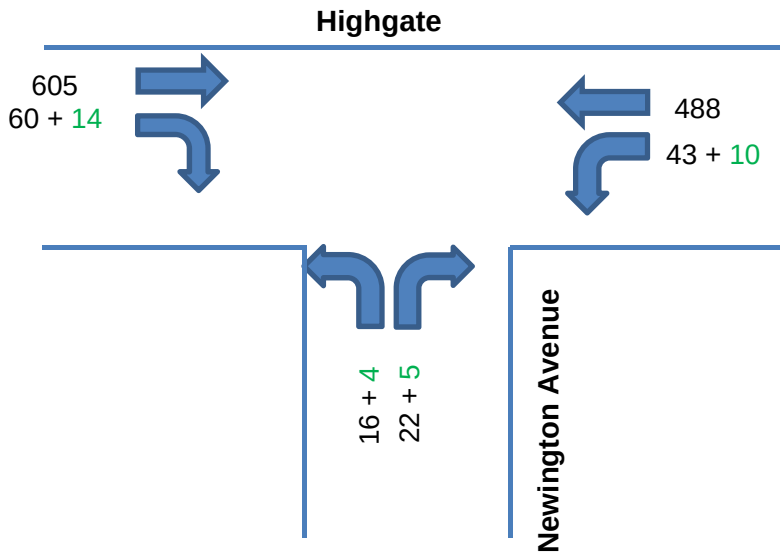


Figure 5: Highgate / Newington Avenue (AM Peak Hour)

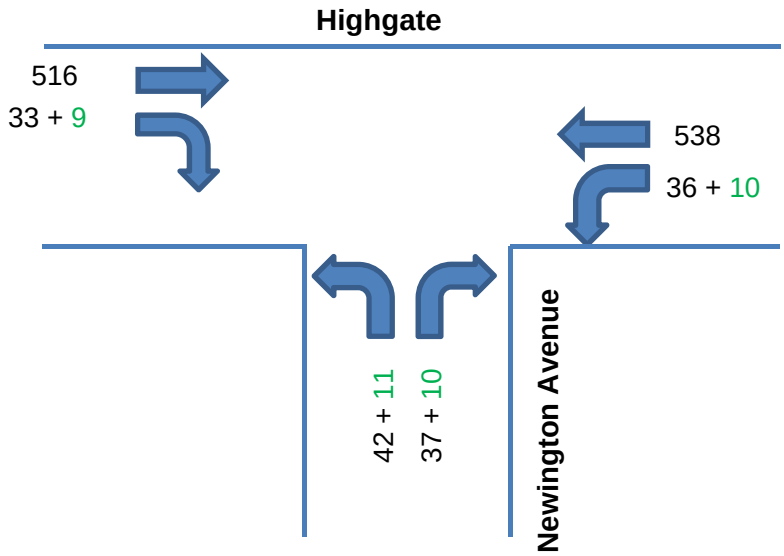


Figure 6: Increased Traffic Volumes – Highgate / Newington Avenue (PM Peak Hour)

As a sensitivity test a further model run was done with the post development flows exiting Newington Avenue onto Highgate increased by 20%, and the base flows on Highgate increased by 10%. The results of the modelling are summarised in Tables 8 and 9 below.

APPROACH	MOVEMENT	EXISTING			POST DEVELOPMENT			SENSITIVITY ANALYSIS		
		V/C Ratio	Average Delay (s)	LOS	V/C Ratio	Average Delay (s)	LOS	V/C Ratio	Average Delay (s)	LOS
Newington Avenue	Left	0.03	12.2	B	0.05	12.2	B	0.05	12.7	B
	Right	0.12	26.2	D	0.15	27.1	D	0.22	33.9	D
Highgate (north-east)	Left	0.29	6.5	A	0.30	6.5	A	0.33	6.5	A
	Through	0.29	0.0	A	0.30	0.0	A	0.33	0.0	A
Highgate (south-west)	Through	0.33	0.0	A	0.33	0.0	A	0.37	0.0	A
	Right	0.07	9.0	A	0.09	9.1	A	0.1	9.5	A

Table 8: Highgate / Newington Avenue intersection performance, Morning Peak

APPROACH	MOVEMENT	EXISTING			POST DEVELOPMENT			SENSITIVITY ANALYSIS		
		V/C Ratio	Average Delay (s)	LOS	V/C Ratio	Average Delay (s)	LOS	V/C Ratio	Average Delay (s)	LOS
Newington Avenue	Left	0.09	12.7	B	0.12	12.8	B	0.15	13.5	B
	Right	0.18	24.6	C	0.23	26.1	D	0.34	32.7	D
Highgate (north-east)	Left	0.32	6.5	A	0.32	6.5	A	0.36	6.5	A
	Through	0.32	0.0	A	0.32	0.0	A	0.36	0.0	A
Highgate (south-west)	Through	0.28	0.0	A	0.28	0.0	A	0.31	0.0	A
	Right	0.04	9.2	A	0.05	9.3	A	0.06	9.8	A

Table 9: Highgate / Newington Avenue intersection performance, Evening Peak

The most difficult movement to make at a Tee-intersection with this configuration is typically the right turn out from the minor road. This is the case at this intersection, and this movement will have an increased average delay of 0.9 and 1.5 seconds during the AM and PM peak periods respectively with the expected increased traffic on the road network.

This right turn movement will continue to operate with an acceptable level of service (LOS D) and with considerable spare capacity, during both the AM and PM peak hours. The volume to capacity ratio (v/c) of the movement increases from 12% to 15% in the AM peak and from 18% to 25% in the PM peak, indicating a reduction in spare capacity of 5% and 7% for the AM and PM peak hours respectively.

The delay for this movement increases by a further 7 seconds during the AM and PM peak periods with the increased sensitivity test flows. While the sensitivity test delay is beginning to reach marginally acceptable levels, the capacity of the movement remains well above the modelled flow, with a v/c ratio of 22% and 34% in the AM and PM peak hours respectively.

Due to the relatively low right turn volumes from Newington Avenue onto Highgate the modelling does not predict any significant queuing for this movement, with the longest predicted 95th percentile queue being 1.2 vehicles for the sensitivity analysis scenario.

Based on our assessment it is concluded that the intersection will continue to operate safely and efficiently after the addition of the projected traffic from the hospital development. Further, sensitivity testing with base road network flows that are unlikely to be achieved in the short to medium term on Highgate, and with additional traffic exiting onto Highgate shows that the intersection continues to operate satisfactorily with spare capacity, although delays to the side road traffic are beginning to become less acceptable during the peak hours.

8. On-Site Parking and Internal Circulation

8.1 Current Parking Demand

A survey of the existing car parking supply and demand at Mercy Hospital was undertaken on 12 July 2011, between 7:00am and 7:00pm.

The survey zones encompassed all of the on-site car parking areas plus kerbside parking spaces on the Local Road network including:

- Newington Avenue;
- Burwood Avenue; and
- Hamel Street.

The peak parking demand of the hospital site activity occurred between 10:00am and 11:00am and again between 1:30pm and 3:00pm, with an on-site occupancy of 184 and 188 spaces at these two times respectively. An additional 33 cars parked on the surrounding roads at the time of the peak parking demand between 10:00am and 11:00am were identified as potentially being associated with the Mercy Hospital site.

On this basis the hospital had a peak demand for 217 car parking spaces. Using the operational GFA and bed numbers on the day of the survey, the following parking rates have been established for the hospital:

- 3.3 spaces per bed (inpatient and outpatient); and
- 1.9 spaces per 100m^2 of building GFA.

Since the time of the survey there has been a 645m^2 GFA expansion of the onsite activities, with no increase in bed numbers.

Applying the surveyed GFA rate to the additional 645m^2, the current peak parking demand is assessed to be for 230 spaces,

8.2 Current Parking Supply

The total on-site provision at the time of the July 2011 survey was 205 car parking spaces, a time when the new multi-storey car park was under construction. Since the full commissioning of the multi-storey car park the following table summarises the current total car park supply on-site. In March 2012 a spot survey of car park occupancy was undertaken during the busy late morning period and the results of this have been added to the following table for information, as this provides some guidance on which parking areas were underutilised and on the split between staff demand and public demand for parking.

PARKING AREA	FIGURE 2 REFERENCE	STAFF PARKING (SPACES)		PUBLIC PARKING (SPACES)	
		Provision	Occupied	Provision	Occupied
Main Public	1	-	-	55	55
Marinoto Clinic (Rear)	2	37	31	-	-
Hospital (Rear)	3	33	20	-	-
Hospital (Rear)	4	3	3	-	-
Multi Storey	5	84	59	44	14
Mercy Care East	6	(6)	(Construction)	-	-
One way Lane	7	-	-	10	8
Doctors	8	12	12	-	-
Total		**175**	**125**	**109**	**77**

Table 10: Existing Car Parking

The following **Figure 7** illustrates the parking demand profile during the day as surveyed in 2011. An additional curve has been added showing the assessed current demand allowing for growth since the time of the survey, and the current on-site supply line is also shown.

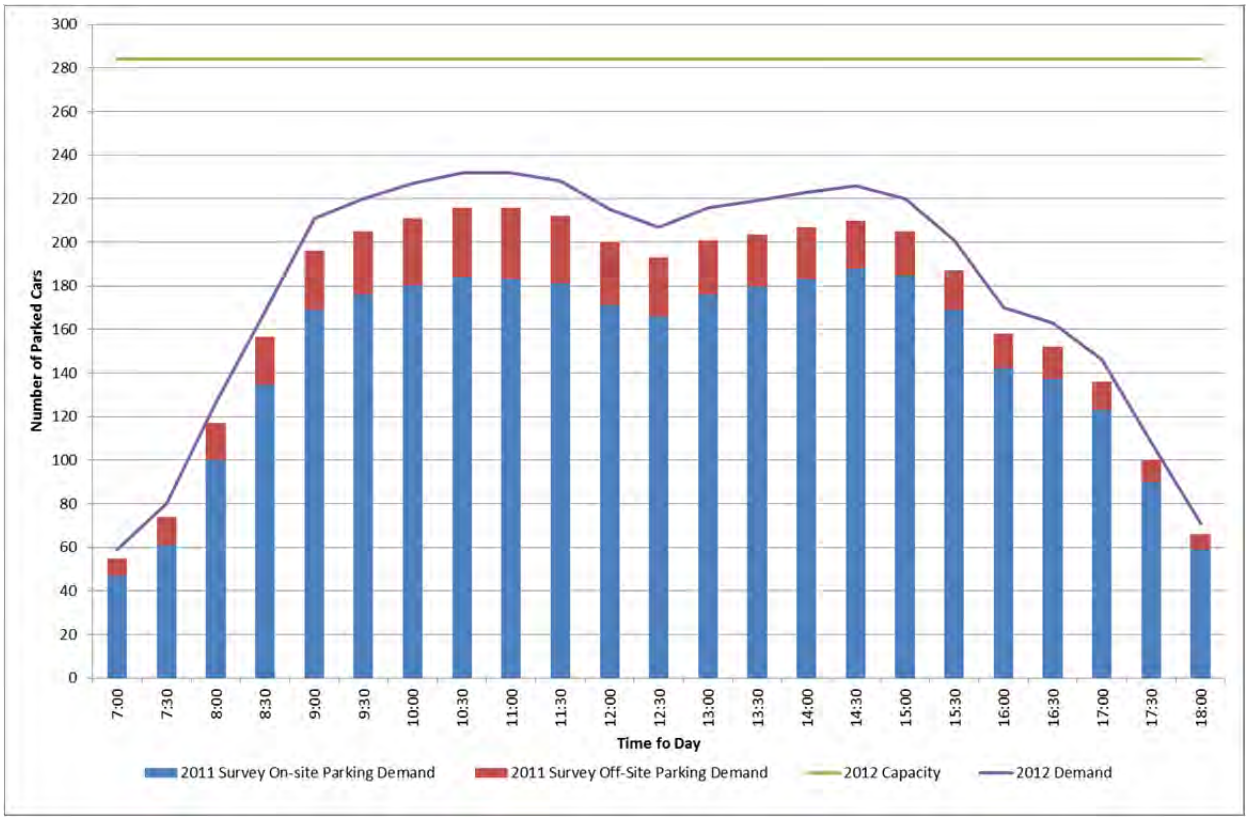


Figure 7: Parking Demand Profile and Supply

It is evident that the site now provides on-site car parking well in excess of its current peak period demands.

8.3 Future Parking Demands

Using the parking rates that were established in the July 2011 survey the following table outlines the expected parking demands for the site once the proposed project works are complete.

	BASED ON FLOOR AREA		BASED ON BEDS	
	Floor Area (m^2 GFA)	**Parking Spaces Required**	**Beds**	**Parking Spaces Required**
Structure Plan Development Complete	16,500	314	85	281

Table 11: Expected Future Parking Demands

Table 11 shows that the site is expected to generate a demand for between 286 and 314 car parking spaces once the proposed development is complete.

During the parking surveys at the hospital no accurate distinction was able to be made between parking that was exclusively for the hospital activities and that which was for the clinic activities. Given that this distinction was difficult to make and is likely to remain so in the future, it has been assessed that adoption of both the parking rate calculated as a function of total site building GFA and of total site bed numbers (inpatient and outpatient) is not appropriate for predicting future parking demands. Using the rates based on GFA alone will ensure that the effect of expansions to both clinic and surgical activities will be captured and the predicted increase in GFA is likely to be more reliable than the predicted increase in beds.

8.4 Future Parking Supply

The Proposed Structure Plan (Figure 3) does not provide specific details regarding future parking provision, but does recognise that some existing parking will be lost.

Regardless of the exact form of the future car parking supply, it is recommend that a zone specific rule is incorporated into the District Plan for the Mercy Hospital site that requires the site to provide a minimum on-site car parking rate based on the proposed GFA. The parking requirement rate has been calculated from the existing GFA and parking demands from the 2011 survey and is expected to satisfy the overall parking demand for the expanded development. Further a rate based on GFA is easily calculated and unambiguous and therefore the following requirement is recommended for inclusion in the District Plan.

- 1.9 car parking spaces per $100m^2$ of building GFA.

If the recommended parking rate is adopted it is expected that the site will be able to accommodate its normal peak parking demand on site after completion of the proposed development.

On this basis a total parking supply of 314 spaces would be required on-site after the development, requiring the site to provide an additional 30 parking spaces over and above the existing supply of 284.

It is noted that the existing assessed over supply of parking spaces is 54, and that this number of car parks will be able to provide for up to $2,740m^2$ of additional GFA.

Notwithstanding the proposed on-site parking supply, parking on Burwood Avenue by people associated with the hospital site will be likely to continue. This reflects the fact that this parking is very conveniently located to the hospital and clinic public entrances. If this is a concern for residents further zones could be implemented where parking is prohibited for all but residents and their visitors.

Details regarding future loading provisions, parking for people with disabilities, cycle / motorcycle / car parking layout design, and manoeuvring are all appropriately covered by existing District Plan Rules set out at Section *20.5 Transportation Rules,* and these rules should still be applicable to any development within the Mercy Hospital Zone.

8.5 Onsite Roadways

The internal layout of the site is challenging for the management of traffic due to the sloping nature of the terrain, the existing location of buildings and the historic and protected status of some buildings and trees on the site.

While there are current construction works on-site it is noted that the marking and signage of the on-site roadways and access to the public parking areas could be improved. Public accessing the site from the main entrance can readily find their way to the at-grade public car park adjacent to Burwood Avenue. However this car park is the most visible and popular and consequently fills up first. Once this car park is full members of the public may be seeking on-street parking rather than driving to the multi-storey car park which is not visible or currently well signed from the main entrance. Further to this if they do look for a space in the public car park adjacent to Burwood Avenue and cannot find one they are directed back out onto Burwood Avenue, and may elect to park on the street rather than re-enter the site and look for the alternative public parking.

It has been identified that there is a need to improve overall signage, and potentially internal roadway circulation to optimise use of the public parking facilities. Signage requirements may need to extend onto the public road reserve to ensure visitors are directed correctly to the main entrance, from which they can then be directed to the available parking areas.

It is intended that a review of on-site traffic circulation, and signage is undertaken once the current construction is completed to ensure that efficient use is achieved of all the existing and future parking areas on-site.

9. Construction Traffic Management Plan

The requirement for a Construction Traffic Management Plan (CTMP), when undertaking works that require Building Consent, is recommended for inclusion in the Mercy Hospital Zone Rules.

The Plan should be required to address the following issues:

- Overview of proposed traffic management.
- Proposed hours of operation and duration.
- Proposed location of construction vehicle parking.
- Proposed traffic management methods, including any signage and delineation.
- Public notification / communication requirements.
- Staff travel planning initiatives to reduce parking demand by staff, including options such as temporary park and ride services or incentives to use Public Transport, if required.
- Monitoring.
- Contingency plans.
- Confirmation of acceptance of the CTMP by Council.

The level of detail required by Council should be commensurate with the extent of development being constructed, but the requirement for a CTMP should ensure that the relevant transportation issues and solutions are considered in advance, to avoid construction activities that will have an adverse effect on neighbours and hospital users alike.

10. Zone Transportation Rules

Based on our assessments of parking and traffic generation associated with Mercy Hospital, it has been concluded that site specific rules should be provided in the Plan Change that:

- Specify the required on-site parking rate for development on the site into the future. It is recommend that the rule requires that the on-site car parking meet the following rate:
  - 1.9 spaces per 100m^2 of building GFA
- Require a CTMP to be submitted to Council for their approval each time works are carried out on site that require a Building Consent;

11. Conclusions

This Transport Assessment has been undertaken giving consideration to the need for site specific transportation rules for inclusion in a Plan Change application to have the hospital's site rezoned from *Residential 1* to a *Hospital Zone- Mercy Hospital*. The assessment has identified, evaluated and assessed the various transport, parking and access elements of the Structure Plan proposal for the upgrading of Mercy Hospital over the medium term.

Based on these assessments for redevelopment of the hospital site up to a total GFA of 16,500m^2, the following conclusions have been reached.

- The development is expected to generate an additional 56 vehicle movements per hour during peak hours of activity.
- The effects of this additional traffic on the road network have been analysed, including an assessment of the operating performance of the Highgate / Newington Avenue intersection. It has been concluded that the network can accommodate this traffic with only minor effects.
- Parking demand rates for the site have been calculated from a survey of the site, based on GFA (and patient bed numbers,) and it has been recommend that the parking rate based on GFA be included in the site rules to ensure that an appropriate supply of on-site parking spaces continues to be provided.
- It has been identified that a rule should be included stating that the hospital should be required to provide to Council a CTMP, when works are to occur on site that require a building consent. The issues that should be addressed in this CTMP have also been identified.

Accordingly and subject to adoption of the recommended new site specific transportation rules it is concluded that the proposed development can be implemented without significantly affecting the safe and efficient operation of the surrounding road network.

Traffic Design Group Ltd
July 2012

Appendix A

Traffic Count Data

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2966 -- English (ENZ)

Datasets:

Site:	**[0424.1819.ec0] Highgate: Dunblane to Fairfax**
Direction:	5 - South bound A>B, North bound B>A., **Lane:** 0
Survey Duration:	12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005
File:	G:\TRANPLAN\Traffic Surveys\Count Data\vehicles\2005\0424.1819.09JUN2005.EC0 (Plus)
Identifier:	24061N55 MC56-6 [MC55] (c) Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, South, West (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 58685 / 58746 (99.90%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2966
Site: 0424.1819.ec0.0NS
Description: **Highgate: Dunblane to Fairfax**
Filter time: **12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	43.0	11.0	22.0	25.0	26.0	61.0	96.0	25.4	40.6
0100-0200	28.0	9.0	11.0	14.0	13.0	35.0	47.0	15.0	22.4
0200-0300	22.0	6.0	5.0	9.0	12.0	31.0	41.0	10.8	18.0
0300-0400	14.0	7.0	10.0	5.0	14.0	11.0	20.0	10.0	11.6
0400-0500	15.0	15.0	6.0	9.0	9.0	11.0	16.0	10.8	11.6
0500-0600	11.0	39.0	39.0	35.0	30.0	6.0	20.0	30.8	25.7
0600-0700	27.0	105.0	91.0	82.0	94.0	44.0	35.0	79.8	68.3
0700-0800	39.0	336.0	330.0	288.0	311.0	75.0	53.0	260.8	204.6
0800-0900	91.0	**1129.0<**	**1159.0<**	**1072.0<**	**632.0<**	169.0	129.0	**816.6<**	**625.9<**
0900-1000	190.0	580.0	540.0	538.0	575.0	294.0	259.0	484.6	425.1
1000-1100	306.0	542.0	480.0	468.0	542.0	474.0	341.0	467.6	450.4
1100-1200	**464.0<**	510.0	521.0	534.0	513.0	**568.0<**	**538.0<**	508.4	521.1
1200-1300	480.0	700.0	662.0	511.0	679.0	583.0	549.0	590.5	584.4
1300-1400	546.0	643.0	645.0	709.0	687.0	613.0	551.0	646.0	627.7
1400-1500	612.0	667.0	629.0	674.0	618.0	629.0	602.0	640.0	633.0
1500-1600	626.0	**1066.0<**	897.0	**1130.0<**	713.0	630.0	**632.0<**	886.4	813.4
1600-1700	**689.0<**	1005.0	931.0	981.0	**788.0<**	**655.0<**	581.0	878.8	804.3
1700-1800	630.0	1010.0	**1098.0<**	1040.0	752.0	566.0	625.0	**906.0<**	**817.3<**
1800-1900	442.0	572.0	597.0	625.0	539.0	434.0	378.0	555.0	512.4
1900-2000	354.0	436.0	419.0	484.0	350.0	354.0	300.0	408.6	385.3
2000-2100	305.0	267.0	300.0	384.0	225.0	204.0	219.0	296.2	272.0
2100-2200	165.0	235.0	229.0	261.0	184.0	178.0	140.0	214.8	198.9
2200-2300	91.0	104.0	136.0	157.0	155.0	173.0	156.0	128.6	138.9
2300-2400	57.0	52.0	63.0	96.0	101.0	155.0	87.0	73.8	87.3
Totals									
0700-1900	5115.0	8760.0	8489.0	8570.0	7349.0	5690.0	5238.0	7640.7	7019.7
0600-2200	5966.0	9803.0	9528.0	9781.0	8202.0	6470.0	5932.0	8640.1	7944.1
0600-0000	6114.0	9959.0	9727.0	10034.0	8458.0	6798.0	6175.0	8842.5	8170.2
0000-0000	6247.0	10046.0	9820.0	10131.0	8562.0	6953.0	6415.0	8945.3	8300.1
AM Peak	1100	0800	0800	0800	0800	1100	1100		
	464.0	1129.0	1159.0	1072.0	632.0	568.0	538.0		
PM Peak	1600	1500	1700	1500	1600	1600	1500		
	689.0	1066.0	1098.0	1130.0	788.0	655.0	632.0		

*** - No data.**

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2968 -- English (ENZ)

Datasets:

Site:	**[0424.1819.ec0] Highgate: Dunblane to Fairfax**
Direction:	5 - South bound A>B, North bound B>A., **Lane:** 0
Survey Duration:	12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005
File:	G:\TRANPLAN\Traffic Surveys\Count Data\vehicles\2005\0424.1819.09JUN2005.EC0 (Plus)
Identifier:	24061N55 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, West (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 29476 / 58746 (50.18%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2968
Site: 0424.1819.ec0.0NS
Description: **Highgate: Dunblane to Fairfax**
Filter time: **12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NEW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	23.0	4.0	10.0	12.0	9.0	29.0	52.0	11.6	19.9
0100-0200	14.0	4.0	9.0	10.0	6.0	15.0	25.0	8.6	11.9
0200-0300	6.0	2.0	1.0	4.0	3.0	19.0	15.0	3.2	7.1
0300-0400	6.0	4.0	4.0	2.0	5.0	3.0	12.0	4.2	5.1
0400-0500	10.0	7.0	3.0	5.0	5.0	5.0	7.0	6.0	6.0
0500-0600	4.0	17.0	11.0	13.0	10.0	3.0	11.0	11.0	9.9
0600-0700	16.0	59.0	47.0	47.0	51.0	24.0	18.0	44.0	37.4
0700-0800	17.0	169.0	186.0	150.0	163.0	40.0	25.0	137.0	107.1
0800-0900	52.0	**625.0<**	**665.0<**	**596.0<**	353.0	85.0	84.0	**458.2<**	**351.4<**
0900-1000	104.0	313.0	299.0	282.0	**384.0<**	148.0	117.0	276.4	235.3
1000-1100	152.0	255.0	257.0	245.0	299.0	242.0	181.0	241.6	233.0
1100-1200	**238.0<**	275.0	226.0	280.0	274.0	**292.0<**	**274.0<**	258.6	265.6
1200-1300	238.0	347.0	314.0	251.0	332.0	297.0	267.0	288.8	287.1
1300-1400	264.0	326.0	319.0	354.0	366.0	315.0	262.0	325.8	315.1
1400-1500	300.0	321.0	317.0	356.0	313.0	**344.0<**	317.0	321.4	324.0
1500-1600	308.0	**512.0<**	441.0	**550.0<**	338.0	324.0	**319.0<**	**429.8<**	**398.9<**
1600-1700	**341.0<**	438.0	422.0	424.0	**372.0<**	328.0	288.0	399.4	373.3
1700-1800	326.0	469.0	**516.0<**	476.0	354.0	280.0	300.0	428.2	388.7
1800-1900	228.0	274.0	278.0	284.0	277.0	232.0	192.0	268.2	252.1
1900-2000	177.0	210.0	209.0	252.0	182.0	171.0	151.0	206.0	193.1
2000-2100	143.0	138.0	154.0	184.0	108.0	101.0	96.0	145.4	132.0
2100-2200	78.0	112.0	130.0	138.0	95.0	81.0	79.0	110.6	101.9
2200-2300	52.0	55.0	70.0	82.0	87.0	84.0	71.0	69.2	71.6
2300-2400	25.0	24.0	27.0	50.0	54.0	75.0	41.0	36.0	42.3
Totals									
0700-1900	2568.0	4324.0	4240.0	4248.0	3825.0	2927.0	2626.0	3833.4	3531.7
0600-2200	2982.0	4843.0	4780.0	4869.0	4261.0	3304.0	2970.0	4339.4	3996.1
0600-0000	3059.0	4922.0	4877.0	5001.0	4402.0	3463.0	3082.0	4444.6	4110.0
0000-0000	3122.0	4960.0	4915.0	5047.0	4440.0	3537.0	3204.0	4489.2	4169.8
AM Peak	1100	0800	0800	0800	0900	1100	1100		
	238.0	625.0	665.0	596.0	384.0	292.0	274.0		
PM Peak	1600	1500	1700	1500	1600	1400	1500		
	341.0	512.0	516.0	550.0	372.0	344.0	319.0		

*** - No data.**

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2971 -- English (ENZ)

Datasets:

Site: **[0424.1819.ec0] Highgate: Dunblane to Fairfax**
Direction: 5 - South bound A>B, North bound B>A., **Lane:** 0
Survey Duration: 12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005
File: G:\TRANPLAN\Traffic Surveys\Count Data\vehicles\2005\0424.1819.09JUN2005.EC0 (Plus)
Identifier: 24061N55 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm: Factory default
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: **12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005**
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range: 10 - 160 km/h.
Direction: East, South, West (bound)
Separation: All - (Headway)
Name: Factory default profile
Scheme: Vehicle classification (AustRoads94)
Units: Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile: Vehicles = 29209 / 58746 (49.72%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2971
Site: 0424.1819.ec0.0NS
Description: **Highgate: Dunblane to Fairfax**
Filter time: **12:00 Thursday, 2 June 2005 => 12:32 Thursday, 9 June 2005**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(ESW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	20.0	7.0	12.0	13.0	17.0	32.0	44.0	13.8	20.7
0100-0200	14.0	5.0	2.0	4.0	7.0	20.0	22.0	6.4	10.6
0200-0300	16.0	4.0	4.0	5.0	9.0	12.0	26.0	7.6	10.9
0300-0400	8.0	3.0	6.0	3.0	9.0	8.0	8.0	5.8	6.4
0400-0500	5.0	8.0	3.0	4.0	4.0	6.0	9.0	4.8	5.6
0500-0600	7.0	22.0	28.0	22.0	20.0	3.0	9.0	19.8	15.9
0600-0700	11.0	46.0	44.0	35.0	43.0	20.0	17.0	35.8	30.9
0700-0800	22.0	167.0	144.0	138.0	148.0	35.0	28.0	123.8	97.4
0800-0900	39.0	**504.0<**	**494.0<**	**476.0<**	**279.0<**	84.0	45.0	**358.4<**	**274.4<**
0900-1000	86.0	267.0	241.0	256.0	191.0	146.0	142.0	208.2	189.9
1000-1100	154.0	287.0	223.0	223.0	243.0	232.0	160.0	226.0	217.4
1100-1200	**226.0<**	235.0	295.0	254.0	239.0	**276.0<**	**264.0<**	249.8	255.6
1200-1300	242.0	353.0	348.0	260.0	347.0	286.0	282.0	301.7	297.3
1300-1400	282.0	317.0	326.0	355.0	321.0	298.0	289.0	320.2	312.6
1400-1500	312.0	346.0	312.0	318.0	305.0	285.0	285.0	318.6	309.0
1500-1600	318.0	554.0	456.0	**580.0<**	375.0	306.0	313.0	456.6	414.6
1600-1700	**348.0<**	**567.0<**	509.0	557.0	**416.0<**	**327.0<**	293.0	**479.4<**	**431.0<**
1700-1800	304.0	541.0	**582.0<**	564.0	398.0	286.0	**325.0<**	477.8	428.6
1800-1900	214.0	298.0	319.0	341.0	262.0	202.0	186.0	286.8	260.3
1900-2000	177.0	226.0	210.0	232.0	168.0	183.0	149.0	202.6	192.1
2000-2100	162.0	129.0	146.0	200.0	117.0	103.0	123.0	150.8	140.0
2100-2200	87.0	123.0	99.0	123.0	89.0	97.0	61.0	104.2	97.0
2200-2300	39.0	49.0	66.0	75.0	68.0	89.0	85.0	59.4	67.3
2300-2400	32.0	28.0	36.0	46.0	47.0	80.0	46.0	37.8	45.0
Totals									
0700-1900	2547.0	4436.0	4249.0	4322.0	3524.0	2763.0	2612.0	3807.3	3488.0
0600-2200	2984.0	4960.0	4748.0	4912.0	3941.0	3166.0	2962.0	4300.7	3948.0
0600-0000	3055.0	5037.0	4850.0	5033.0	4056.0	3335.0	3093.0	4397.9	4060.3
0000-0000	3125.0	5086.0	4905.0	5084.0	4122.0	3416.0	3211.0	4456.1	4130.3
AM Peak	1100	0800	0800	0800	0800	1100	1100		
	226.0	504.0	494.0	476.0	279.0	276.0	264.0		
PM Peak	1600	1600	1700	1500	1600	1600	1700		
	348.0	567.0	582.0	580.0	416.0	327.0	325.0		

*** - No data.**

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2972 -- English (ENZ)

Datasets:

Site:	**[0430.83.] !Newington Ave: Highgate to Burwood (Bal 106.30)**
Direction:	6 - West bound A>B, East bound B>A., **Lane:** 0
Survey Duration:	23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010
File:	G:\TRANPLAN\Traffic Surveys\Count Data\vehicles\2010\0430.83.10Dec2010.EC0 (Plus)
Identifier:	K2823AP1 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, South, West (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 8737 / 8754 (99.81%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2972
Site: 0430.83..0EW
Description: **!Newington Ave: Highgate to Burwood (Bal 106.30)**
Filter time: **23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NESW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	1.0	0.0	1.0	1.0	1.0	3.0	5.0	0.8	1.6
0100-0200	0.0	2.0	2.0	4.0	1.0	1.0	1.0	1.7	1.5
0200-0300	2.0	0.0	0.0	0.0	1.0	0.0	7.0	0.7	1.4
0300-0400	1.0	1.0	2.0	2.0	1.0	3.0	3.0	1.3	1.8
0400-0500	3.0	4.0	4.0	4.0	1.5	0.0	0.0	3.0	2.3
0500-0600	1.0	0.0	3.0	1.0	2.0	2.0	3.0	1.5	1.8
0600-0700	16.0	18.0	17.0	21.0	20.0	10.0	11.0	18.7	16.6
0700-0800	67.0	64.0	77.0	66.0	57.0	8.0	8.0	64.7	50.5
0800-0900	**127.0<**	132.0	140.0	133.0	77.5	18.0	19.0	114.5	90.5
0900-1000	120.0	133.0	148.0	**158.0<**	123.0	43.0	16.0	136.4	105.9
1000-1100	120.0	**156.0<**	**174.0<**	118.0	126.0	37.0	**30.0<**	**138.8<**	**108.7<**
1100-1200	106.0	143.0	147.0	82.0	**145.0<**	**48.0<**	24.0	124.6	99.3
1200-1300	125.0	135.0	139.0	84.0	**125.0<**	30.0	33.0	121.6	95.9
1300-1400	111.0	149.0	123.0	48.0	107.0	**45.0<**	31.0	107.6	87.7
1400-1500	113.0	150.0	137.0	115.0	111.0	27.0	**58.0<**	125.2	101.6
1500-1600	129.0	134.0	137.0	**124.0<**	115.0	43.0	36.0	**127.8<**	**102.6<**
1600-1700	126.0	**150.0<**	109.0	111.0	108.0	32.0	35.0	120.8	95.9
1700-1800	**138.0<**	133.0	**139.0<**	104.0	91.0	37.0	47.0	121.0	98.4
1800-1900	74.0	72.0	79.0	64.0	59.0	25.0	30.0	69.6	57.6
1900-2000	48.0	44.0	61.0	53.0	34.0	26.0	31.0	48.0	42.4
2000-2100	26.0	27.0	32.0	40.0	31.0	19.0	11.0	31.2	26.6
2100-2200	9.0	21.0	20.0	16.0	16.0	5.0	12.0	16.4	14.1
2200-2300	9.0	14.0	9.0	9.0	10.0	12.0	11.0	10.2	10.6
2300-2400	7.0	7.0	10.0	6.0	7.0	16.0	5.0	7.2	8.0
Totals									
0700-1900	1356.0	1551.0	1549.0	1207.0	1244.5	393.0	367.0	1372.6	1094.4
0600-2200	1455.0	1661.0	1679.0	1337.0	1345.5	453.0	432.0	1486.8	1194.2
0600-0000	1471.0	1682.0	1698.0	1352.0	1362.5	481.0	448.0	1504.2	1212.8
0000-0000	1479.0	1689.0	1710.0	1364.0	1370.0	490.0	467.0	1513.2	1223.0
AM Peak	0800	1000	1000	0900	1100	1100	1000		
	127.0	156.0	174.0	158.0	145.0	48.0	30.0		
PM Peak	1700	1600	1700	1500	1200	1300	1400		
	138.0	150.0	139.0	124.0	125.0	45.0	58.0		

*** - No data.**

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2976 -- English (ENZ)

Datasets:

Site:	**[0430.83.] !Newington Ave: Highgate to Burwood (Bal 106.30)**
Direction:	6 - West bound A>B, East bound B>A., **Lane:** 0
Survey Duration:	23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010
File:	G:\TRANPLAN\Traffic Surveys\Count Data\vehicles\2010\0430.83.10Dec2010.EC0 (Plus)
Identifier:	K2823AP1 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, South, West (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 4380 / 8754 (50.03%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2976
Site: 0430.83..0EW
Description: **!Newington Ave: Highgate to Burwood (Bal 106.30)**
Filter time: **23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NSW) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	1.0	0.0	1.0	1.0	0.0	3.0	2.0	0.5	1.0
0100-0200	0.0	1.0	1.0	2.0	0.5	0.0	1.0	0.8	0.8
0200-0300	1.0	0.0	0.0	0.0	0.5	0.0	4.0	0.3	0.8
0300-0400	1.0	1.0	2.0	1.0	0.5	2.0	2.0	1.0	1.3
0400-0500	1.0	2.0	2.0	1.0	0.5	0.0	0.0	1.2	0.9
0500-0600	1.0	0.0	1.0	0.0	1.0	1.0	3.0	0.7	1.0
0600-0700	2.0	1.0	2.0	7.0	3.5	0.0	3.0	3.2	2.8
0700-0800	18.0	16.0	18.0	22.0	15.0	2.0	6.0	17.3	14.0
0800-0900	37.0	32.0	37.0	38.0	26.0	7.0	9.0	32.7	26.5
0900-1000	46.0	47.0	61.0	**70.0<**	49.0	21.0	8.0	54.6	43.1
1000-1100	**46.0<**	70.0	**75.0<**	62.0	54.0	20.0	**15.0<**	61.4	48.9
1100-1200	45.0	**72.0<**	69.0	51.0	**74.0<**	**33.0<**	12.0	**62.2<**	**50.9<**
1200-1300	67.0	68.0	66.0	57.0	66.0	20.0	15.0	64.8	51.3
1300-1400	50.0	68.0	56.0	35.0	56.0	**26.0<**	18.0	53.0	44.1
1400-1500	49.0	66.0	69.0	73.0	60.0	15.0	**32.0<**	63.4	52.0
1500-1600	68.0	65.0	68.0	**79.0<**	64.0	25.0	22.0	68.8	55.9
1600-1700	70.0	87.0	66.0	57.0	68.0	21.0	18.0	69.6	55.3
1700-1800	**87.0<**	**97.0<**	**84.0<**	70.0	**68.0<**	18.0	26.0	**81.2<**	**64.3<**
1800-1900	49.0	49.0	54.0	38.0	38.0	10.0	17.0	45.6	36.4
1900-2000	30.0	25.0	41.0	33.0	18.0	20.0	19.0	29.4	26.6
2000-2100	18.0	16.0	25.0	27.0	20.0	13.0	4.0	21.2	17.6
2100-2200	6.0	16.0	17.0	12.0	10.0	4.0	7.0	12.2	10.3
2200-2300	6.0	10.0	4.0	5.0	5.0	5.0	7.0	6.0	6.0
2300-2400	6.0	5.0	8.0	5.0	7.0	12.0	3.0	6.0	6.4
Totals									
0700-1900	632.0	737.0	723.0	652.0	638.0	218.0	198.0	674.6	542.6
0600-2200	688.0	795.0	808.0	731.0	689.5	255.0	231.0	740.6	599.8
0600-0000	700.0	810.0	820.0	741.0	701.5	272.0	241.0	752.6	612.2
0000-0000	705.0	814.0	827.0	746.0	704.5	278.0	253.0	757.1	617.8
AM Peak	1000	1100	1000	0900	1100	1100	1000		
	46.0	72.0	75.0	70.0	74.0	33.0	15.0		
PM Peak	1700	1700	1700	1500	1700	1300	1400		
	87.0	97.0	84.0	79.0	68.0	26.0	32.0		

*** - No data.**

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-2975 -- English (ENZ)

Datasets:

Site:	**[0430.83.] !Newington Ave: Highgate to Burwood (Bal 106.30)**
Direction:	6 - West bound A>B, East bound B>A., **Lane:** 0
Survey Duration:	23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010
File:	G:\TRANPLAN\Traffic Surveys\Count Data\vehicles\2010\0430.83.10Dec2010.EC0 (Plus)
Identifier:	K2823AP1 MC56-6 [MC55] (c)Microcom 02/03/01
Algorithm:	Factory default
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	North, East, South (bound)
Separation:	All - (Headway)
Name:	Factory default profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (meter, kilometer, m/s, km/h, kg, tonne)
In profile:	Vehicles = 4357 / 8754 (49.77%)

Weekly Vehicle Counts (Virtual Week)

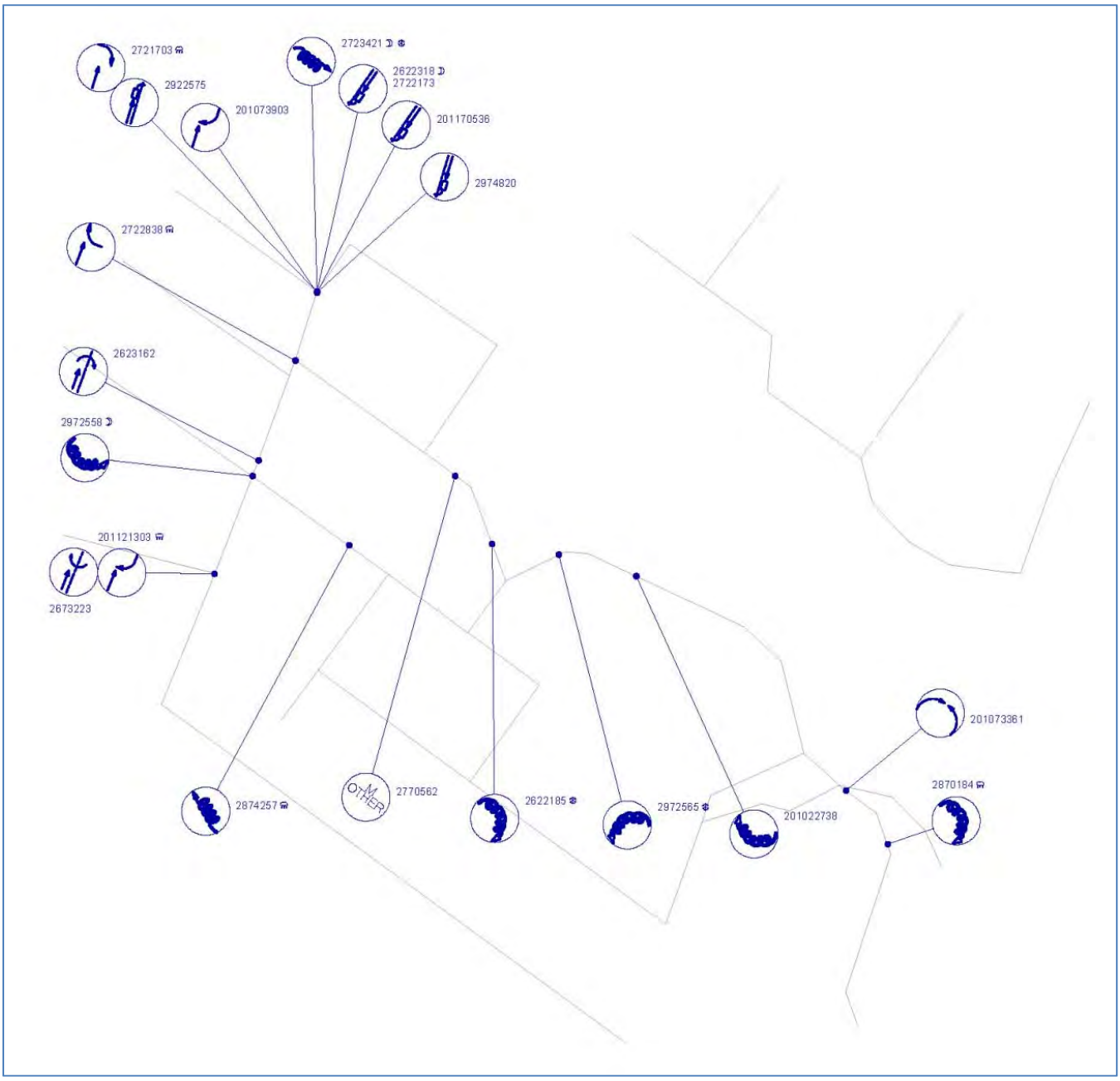
VirtWeeklyVehicle-2975
Site: 0430.83..0EW
Description: **!Newington Ave: Highgate to Burwood (Bal 106.30)**
Filter time: **23:00 Thursday, 2 December 2010 => 8:20 Friday, 10 December 2010**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1 2 3 4 5 6 7 8 9 10 11 12) Dir(NES) Sp(10,160) Headway(>0)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	0.0	0.0	0.0	0.0	1.0	0.0	3.0	0.3	0.6
0100-0200	0.0	1.0	1.0	2.0	0.5	1.0	0.0	0.8	0.8
0200-0300	1.0	0.0	0.0	0.0	0.5	0.0	3.0	0.3	0.6
0300-0400	0.0	0.0	0.0	1.0	0.5	1.0	1.0	0.3	0.5
0400-0500	2.0	2.0	2.0	3.0	1.0	0.0	0.0	1.8	1.4
0500-0600	0.0	0.0	2.0	1.0	1.0	1.0	0.0	0.8	0.8
0600-0700	14.0	17.0	15.0	14.0	16.5	10.0	8.0	15.5	13.9
0700-0800	49.0	48.0	59.0	44.0	42.0	6.0	2.0	47.3	36.5
0800-0900	**90.0<**	**100.0<**	**103.0<**	**95.0<**	51.5	11.0	10.0	**81.8<**	**64.0<**
0900-1000	74.0	86.0	87.0	88.0	**74.0<**	**22.0<**	8.0	81.8	62.7
1000-1100	74.0	86.0	99.0	56.0	72.0	17.0	**15.0<**	77.4	59.9
1100-1200	61.0	71.0	78.0	31.0	71.0	15.0	12.0	62.4	48.4
1200-1300	58.0	67.0	**73.0<**	27.0	**59.0<**	10.0	18.0	56.8	44.6
1300-1400	61.0	81.0	67.0	13.0	51.0	19.0	13.0	54.6	43.6
1400-1500	**64.0<**	**84.0<**	68.0	42.0	51.0	12.0	**26.0<**	**61.8<**	**49.6<**
1500-1600	61.0	69.0	69.0	45.0	51.0	18.0	14.0	59.0	46.7
1600-1700	56.0	63.0	43.0	**54.0<**	40.0	11.0	17.0	51.2	40.6
1700-1800	51.0	36.0	55.0	34.0	23.0	**19.0<**	21.0	39.8	34.1
1800-1900	25.0	23.0	25.0	26.0	21.0	15.0	13.0	24.0	21.1
1900-2000	18.0	19.0	20.0	20.0	16.0	6.0	12.0	18.6	15.9
2000-2100	8.0	11.0	7.0	13.0	11.0	6.0	7.0	10.0	9.0
2100-2200	3.0	5.0	3.0	4.0	6.0	1.0	5.0	4.2	3.9
2200-2300	3.0	4.0	5.0	4.0	5.0	7.0	4.0	4.2	4.6
2300-2400	1.0	2.0	2.0	1.0	0.0	4.0	2.0	1.2	1.6
Totals									
0700-1900	724.0	814.0	826.0	555.0	606.5	175.0	169.0	698.0	551.8
0600-2200	767.0	866.0	871.0	606.0	656.0	198.0	201.0	746.3	594.4
0600-0000	771.0	872.0	878.0	611.0	661.0	209.0	207.0	751.6	600.6
0000-0000	774.0	875.0	883.0	618.0	665.5	212.0	214.0	756.1	605.2
AM Peak	0800	0800	0800	0800	0900	0900	1000		
	90.0	100.0	103.0	95.0	74.0	22.0	15.0		
PM Peak	1400	1400	1200	1600	1200	1700	1400		
	64.0	84.0	73.0	54.0	59.0	19.0	26.0		

*** - No data.**

Appendix B

Crash Analysis Data


2721703
2922575
201073903
2723421
2622318
2722173
201170536
2974820
2722838
2623162
2972558
201121303
2673223
2874257
OTHER
2770562
2622185
2972565
201022738
201073361
2870184

First Street	Distance	D/I/R	Second street or landmark	Crash Number	Date DD/MM/YYYY	Day	Time HHMM	Description of Events	Crash Factors (ENV = Environmental factors)	Road	Natural Light	Weather	Junction	Cntrl	Tot Inj F	S A	M E	I R	M W
CLAREMONT ST	100	S	HIGHGATE	2874257	04/12/2008	Thu	2030	VAN1 NBD on CLAREMONT ST lost control; went off road to right, VAN1 hit Parked Vehicle	VAN1 too fast on straight, lost control under heavy acceleration, showing off ENV: slippery	Wet	Overcast	Light Rain	Unknown	N/A					
FAIRFAX ST		I	FAIRFAX STREET	2972558	15/07/2009	Wed	2205	CAR1 EBD on FAIRFAX STREET lost control turning left, CAR1 hit Fence, Parked Vehicle	CAR1 alcohol test above limit or test refused, too fast entering corner	Dry	Dark	Fine	X Type Junction	Stop Sign					
HIGHGATE		I	DUNBLANE ST	2673223	22/07/2006	Sat	1540	CAR1 NBD on HIGHGATE hit CAR2 U-turning from opposite direction of travel	CAR2 didnt see/look behind when changing lanes, position or direction	Dry	Bright	Fine	T Type Junction	Nil					
HIGHGATE		I	DUNBLANE ST	201121303	22/03/2011	Tue	1525	CAR2 turning right hit by oncoming SUV1 NBD on HIGHGATE	CAR2 failed to give way when turning to non-turning traffic, didnt see/look when required to give way to traffic from another direction	Wet	Overcast	Light Rain	T Type Junction	Nil				3	
HIGHGATE		I	LYNN ST	2723421	13/06/2007	Wed	0140	CAR1 EBD on LYNN ST lost control but did not leave the road, CAR1 hit Fence	CAR1 alcohol suspected, too fast on straight ENV: road slippery (frost or ice)	Ice/ Snow	Dark	Fine	T Type Junction	Give Way Sign				1	
HIGHGATE		I	LYNN ST	2722173	14/02/2007	Wed	1507	CAR1 SBD on HIGHGATE hit rear of CAR2 turning right from centre line	CAR1 failed to notice car slowing, emotionally upset/road rage	Dry	Bright	Fine	T Type Junction	Give Way Sign				3	
HIGHGATE		I	LYNN ST	2721703	14/04/2007	Sat	1245	MOTOR CYCLE1 NBD on HIGHGATE hit CAR2 turning right onto HIGHGATE from the left	CAR2 failed to give way at give way sign, didnt see/look when visibility obstructed by other vehicles	Wet	Overcast	Light Rain	T Type Junction	Give Way Sign				1	
HIGHGATE		I	LYNN ST	201170536	09/02/2011	Wed	0915	VAN1 SBD on HIGHGATE hit rear of CAR2 turning right from centre line	VAN1 following too closely, failed to notice car slowing, new driver showed inexperience	Dry	Bright	Fine	T Type Junction	Nil					
HIGHGATE		I	LYNN ST	2622318	25/06/2006	Sun	1735	CAR1 SBD on HIGHGATE hit rear of CAR2 turning right from centre line	CAR1 following too closely, failed to notice car slowing	Dry	Twilight	Fine	T Type Junction	Give Way Sign				1	
HIGHGATE		I	LYNN ST	201073903	23/11/2010	Tue	1515	CAR2 turning right hit by oncoming SUV1 NBD on HIGHGATE	CAR2 failed to give way when turning to non-turning traffic, attention diverted by scenery or persons outside vehicle, attention diverted by other traffic	Dry	Bright	Fine	T Type Junction	Nil					
HIGHGATE		I	LYNN ST	2922575	17/08/2009	Mon	1645	MOTOR CYCLE1 NBD on HIGHGATE hit rear of SUV2 turning right from centre line	MOTOR CYCLE1 following too closely, failed to notice car slowing	Dry	Overcast	Fine	T Type Junction	Give Way Sign				1	
HIGHGATE	900	S	NEWINGTON AVENUE	2623162	11/10/2006	Wed	1105	MOTOR CYCLE1 NBD on HIGHGATE hit CAR2 U-turning from same direction of travel	CAR2 didnt see/look behind when changing lanes, position or direction, didnt see/look behind when pulling out from parked position, impaired ability due to old age	Dry	Bright	Fine	Unknown	N/A	1		1		
HIGHGATE		I	NEWINGTON AVENUE	2722838	28/08/2007	Tue	1712	CAR1 NBD on HIGHGATE hit CAR2 merging from the right	CAR2 failed to give way at stop sign, didnt see/look when required to give way to traffic from another direction	Wet	Overcast	Light Rain	T Type Junction	Stop Sign				2	
LYNN ST		I	HIGHGATE	2974820	26/11/2009	Thu	1145	CAR1 SBD on HIGHGATE hit rear of CAR2 turning right from centre line	CAR1 following too closely, failed to notice car slowing	Dry	Bright	Fine	T Type Junction	Give Way Sign					
NEWINGTON AVENUE	100	E	BURWOOD AVENUE	2622185	25/06/2006	Sun	1540	CAR1 EBD on NEWINGTON AVENUE lost control turning right, CAR1 hit Tree on right hand bend	CAR1 lost control due to road conditions ENV: road slippery (frost or ice)	Ice/ Snow	Bright	Fine	Unknown	N/A				1	
NEWINGTON AVENUE	50	E	HAMEL ST	2972565	26/07/2009	Sun	0920	CAR1 WBD on NEWINGTON AVENUE lost control turning left, CAR1 hit Tree	CAR1 too fast entering corner, lost control due to road conditions ENV: road slippery (frost or ice)	Ice/ Snow	Bright	Fine	Unknown	Nil					

First Street	Distance	[D] Second street [I] or landmark [R]	Crash Number	Date DD/MM/YYYY	Day	Time HHMM	Description of Events	Crash Factors (ENV = Environmental factors)	Road	Natural Light	Weather	Junction	Cntrl	Tot Inj F A I	Tot Inj S E R	Tot Inj M I W
NEWINGTON AVENUE	120E	HAMEL ST	201022733	15/09/2010	Wed	1640	CAR1 WBD on NEWINGTON AVENUE lost control turning right, CAR1 hit Post Or Pole on right hand bend	CAR1 attention diverted by driver dazzled by sun/lights, misjudged size or position of fixed object or obstacle ENV: dazzling sun	Dry	Bright	Fine	Unknown	M/A		1	
NEWINGTON AVENUE	100W	HAMEL ST	2770562	06/03/2007	Tue	0900	CAR1 SBD on NEWINGTON AVENUE hit Parked Vehicle while manoeuvring	CAR1 didnt see/look behind when reversing/manoeuvering	Dry	Bright	Fine	Unknown	M/A			
NEWINGTON AVENUE	160W	QUEENS DRIVE	2870184	01/02/2008	Fri	1352	CAR1 SBD on NEWINGTON AVENUE lost control turning right, CAR1 hit Post Or Pole on right hand bend	CAR1 too fast entering corner, lost control when turning	Wet	Overcast	Heavy Rain	Unknown	M/A			
NEWINGTON AVENUE	220S	QUEENS DRIVE	201073361	15/10/2010	Fri	1810	CAR1 SBD on NEWINGTON AVENUE cutting corner hit CAR2 head on	CAR1 cutting corner on bend, attention diverted by scenery or persons outside vehicle ENV: road surface unusually narrow	Dry	Bright	Fine	Unknown	M/A			