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NEWINGTON LATM

DRAFT REPORT v3

FOR PUBLIC EXHIBITION

February 2019

Prepared for

Inner West Council

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Report Document Control

Project	**A Local Area Traffic Management Plan for Newington**
Date	18 February 2019
Author(s)	L Hawley, O Sannikov
Client	Inner West Council
Job No.	18040
Keywords	Traffic Engineering/Local Transport Planning/Traffic Calming
Disclaimer	This report is believed to be true and correct at the time of writing. It is based on the information and data provided by the client and other relevant organisations during preparation. TEF Consulting does not accept any contractual, tortuous or other form of liability for any consequences arising from its use. People using the information in the report should apply and rely on their own skill and judgement to a particular issue they are considering.

Title	Date	Author/s	Reviewer
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Working Paper 1	12 June 2018	L Hawley / A Tan	
Working Paper 1 v2	22 June 2018	L Hawley / A Tan	
Working Paper 2	5 July 2018	L Hawley / A Tan/ O Sannikov	
Working Paper 2 v2	25 July 2018	L Hawley / A Tan/ O Sannikov	
Working Paper 2 v3	14 August 2018	L Hawley / A Tan	
Draft Report v1	17 September 2018	L Hawley/ O Sannikov	
Draft Report v2	19 October 2018	L Hawley/ O Sannikov	
Draft Report v3 (Public Exhibition version)	18 February 2019	L Hawley	L Hawley

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EXECUTIVE SUMMARY

KEY FINDINGS

LAND USE AND POPULATION GROWTH

- The area is principally zoned Low Density Residential R2 with only small pockets of higher density R3 and R4 in the southeast corner of the study area.
- Retailing is located principally in the B1 (neighbourhood) and B2 (local centre) zonings on Stanmore Road (north east and south east corners) and Addison Road, principally in the south east corner.
- The area is not self-sufficient in any of the supporting land uses required for a residential area.
- There is a dearth of open space within the area; food retailing is also outside the area with a small fruit and grocery near Albert Street being the only service inside the study area.
- The railway stations are north of the study area while the Metro Bus service runs along Enmore Road.
- Both the public primary schools and the High School which service the study area, are outside the area.

MODE OF TRAVEL TO WORK

- In the last 5 years from 2011-2016 the mode to work has changed in car use – down by 3% and public transport use – up by 6% - public transport is now the leading mode to work.

STATE AND COUNCIL STRATEGIES AND PLANS

- In line with the Marrickville DCP, there is no proposed urban renewal or substantial increase in housing growth in the area
- The Marrickville Urban Strategy identified areas suitable for renewal in Petersham between the shops and station and near Enmore Park;
- The Marrickville Public Domain Study identified the main destinations in this area as Enmore Park, Annett Kellerman Aquatic Centre adjacent, Addison Road Community Centre, and Marrickville Metro.
- The Bike Plan Identified both Regional and Local Routes through the area, and a design concept prepared for part of Addison Road, has not been adopted and will require further consultation.
- The PAMP identifies Addison Road as a high priority pedestrian route.
- Only small street sections were recommended for parking control in the area by the Petersham and Stanmore Parking Studies.

TRAFFIC AND TRANSPORT

- There are only three roads in the area where the 85th percentile speed is 10% over the posted speed limit, those roads are Addison Road, Enmore Road and Bright Street. It is noted that there were no recorded roads with volume non-compliance.
- Treatments installed to manage the speed of traffic in the study area include roundabouts, and pedestrian refuges.

ROAD CRASHES

- There were 245 recorded incidents over the 5 year period from July 2011 to June 2016.
- Most crashes occurred on State Roads (62%), followed by Regional Roads (26%) and 30 on Council roads (12%).

- Most crashes were at intersections with 183 incidents (75%).
- The main crash type was RUM Code 21 (right through) - 40 on State and Regional Roads and 11 on local roads.
- The intersection of Enmore Road / Llewelyn Street had the highest number of crashes - 7 in 5 years.
- The intersection of Enmore Road / Addison Road intersection had 5 crashes in 5 years.

COMMUNITY INPUT

Initial Web Survey

- A total 112 persons responded from the study area, representing about 4-5% of the households.
- The largest number of respondents were from Addison Road – 13, Fotheringham Street – 9, North Street – 8, Newington Road, William Street and Wemyss Street – 6 from each.
- the highest rated problem is the volume of traffic - 55% of respondents, with most problematic times being afternoon peaks and weekends.
- The highest levels of concern are:
- Addison Road - too much traffic, heavy vehicle use and exceeding the speed limit;
- Stanmore Road and Enmore Road - too much traffic;
- Newington Road - rat running and too much traffic.

Workshops and Second Web Survey

Two community workshops were held to present and discuss the LATM proposals. Attendance was very low (8 persons). From the issues raised inspections were undertaken of Tupper Street/Newington Road and Stanmore Road intersections together with desk analyses resulting in a further management recommendation for the Tupper Street/Newington Road.

The second web survey yielded only 19 responses. The question posed was in relation to the introduction of a 40km/h speed zone in the study area. The response was as follows:

- Support – 5
- Support in principle with changes – 11
- No support – 3

The most relevant issue raised was in relation to Marshall Street where no devices are proposed. A watching brief may be necessary in Marshall Street in relation to traffic diversion from treated streets.

TRAFFIC COMMITTEE REVIEW AND RECOMMENDATIONS

The Draft Report (version 2) was reviewed by the Local Traffic Committee in December 2018 with some changes requested before Public Exhibition. The following are a summary of the changes requested and clarifications required:

- Addison Road has been a sensitive issue for some residents and any cycleway design will be considered separately to this project, including a full community engagement.
- Recommendation for a 50km/h scheme at this stage.
- Addison Road kerb extensions to be retained as an option and recommended to be further explored in conjunction with the public domain works planned for this area.
- All recommendations for intersection treatments on Addison Road and Enmore/Illawarra Roads intersections require the attention and action from the RMS.

- Enmore Road/Newington Road intersection – the option for Stop sign preferred.
- Tupper Street/Newington Road intersection – change in priority and removal of speed hump is recommended, however No Parking 7am-7pm Mon-Fri on Newington Road at the intersection to remain as an option.
- Pedestrian refuge island between Denby and Philpott Streets - this has been submitted to the RMS for 2019/2020 state and federal government grant funding with a project cost estimate of $78,000.
- Omission of kerb extensions on Enmore Road kerb extensions south of Newington Road as kerb extension would reduce traffic capacity from 2 lanes to 1 lane in each direction during the peak hour.

RECOMMENDATIONS

A. A range of improvements are documented for the existing traffic management devices, signs and pavement markings and active transport facilities which would result with contemporary compliance with Standards and prevailing guidelines. These are for input into Council's maintenance programme.

B. Key intersections on regional roads were analysed, and actions for upgrading traffic and road safety performance are to be forwarded to the RMS for action are as follows:

- Enmore Road / Llewelyn Street intersection - dedicated right hand turn on Enmore Road into Llewelyn Street southern approach;
- Enmore Road / Addison Road intersection - dedicated right hand turn on Enmore Road into Addison Road northern approach;
- Addison Road / Agar Street / Illawarra Road intersection - lagging right hand turn phase for the eastern approach, and camera for illegal right hand turns into Agar Street;
- Enmore Road / Newington Road intersection - replace Give Way sign with Stop sign on Newington Road
- Tupper Street / Newington Road intersection -
    - In the short term - a change of priority to Tupper Street with Stop signs on Newington Road;with the removal of the speed hump west of the intersection in Newington Road
    - An additional option is to prohibit parking opposite Tupper Street in Newington Road from 7am-7pm on weekdays;.

C. Addison Road –

- A new pedestrian refuge between Denby and Philpott Streets to address the free flow of vehicles between the two signals is proposed and has been approved by Council independently for implementation in the near future.
- An upgrade of road safety is proposed with kerb extensions at the six existing pedestrian refuges to increase pedestrian crossing safety by physically decreasing the travel lane for cars. These treatments are to be reviewed in concert with new works proposed for a bicycle facility along the road.

D. LATM treatments are proposed which address speed reduction assisting with compliance with the prevailing 50km/h speed limit as follows:

- Bright Street – two thresholds to address the speed non-compliance;
- Albert Street, near the intersection with James Street – a raised threshold to contain speed

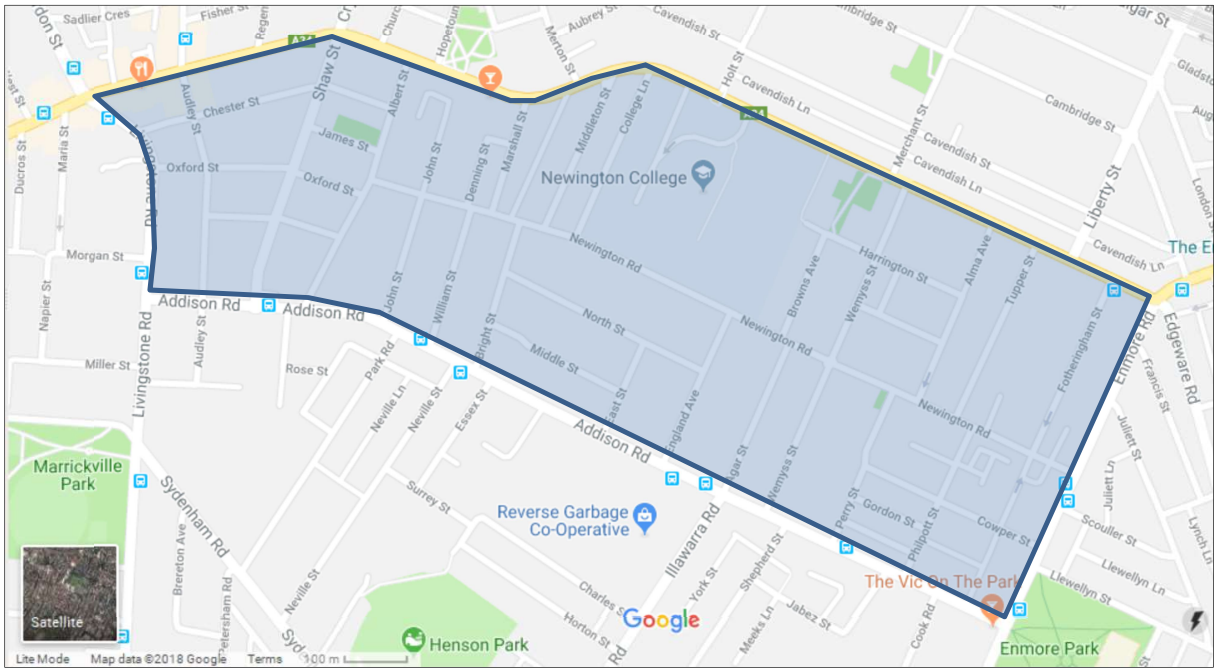
at a potential pedestrian crossing point to the children's playground – the only playground in the study area.

E. An option for the establishment of a local area 40km/h speed zone in the study area was is presented to upgrade active transport road safety and residential amenity. To establish this, compliance with RMS guidelines requires that the speed zone is self-enforcing, and the RMS is not prepared at this stage to trial a signs-only approach. To implement this option, Council will need a substantial budget which will require the construction of 14 additional speed slowing devices. This option is to be reviewed in the future by Council.

1. INTRODUCTION

The purpose of this project is to develop a Local Area Traffic Management (LATM) scheme for the Newington (Area 8). This area is bounded by Livingstone Road, New Canterbury Road, Stanmore Road, Enmore Road and Addison Road as in **Figure 1.1.**

Figure 1.1 Newington Study Area



The general objectives of this project as stated in the Brief are to:

- *Investigate and review the performance of the existing Local Area Traffic Management (LATM) schemes and recommend proposed LATM works.*
- *Integration of traffic planning based on Local Area Traffic Management and parking management integration.*
- *To access vehicles speed across the study area and propose additional control measure where applicable;*
- *Integration of traffic planning based on Local Area Traffic Management and parking management integration.*
- *To investigate traffic intrusion into the predominantly residential study area and propose solution as required;*
- *To improve pedestrians and cyclist accessibility through the study area (taking into account measures proposed in the InnerWest Council Bicycle Plan) and strategies for LATM management including price control techniques, quality control techniques and countermeasure techniques.*

In developing recommendations LATM Strategy, the Brief states that consideration must be given to incorporate the following principals of Local Area Traffic Management:

- *Reduction in vehicle speeds.*
- *Minimise traffic levels and intruding traffic in a local street.*
- *Minimise crash risk.*
- *Improve local amenity by:*
- *Reducing car use,*
- *Increasing use of public transport,*
- *Increasing walking and cycling.*
- *Improving the streetscape.*

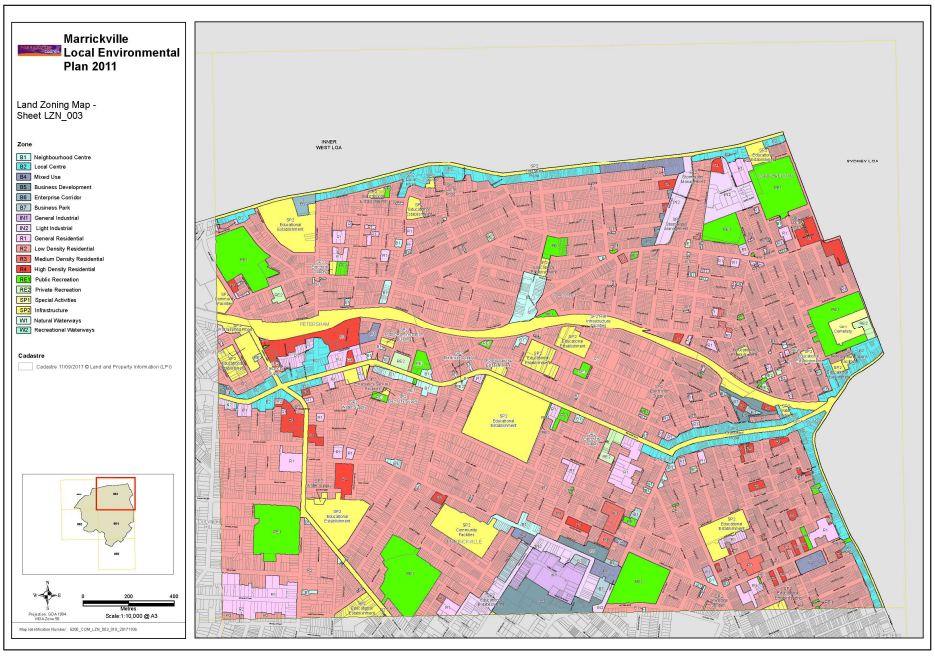
2. CONTEXT

2.1 LAND USE AND POPULATION GROWTH

2.1.1 Marrickville LEP 2011

The study area consists of about 78 hectares of the previous Marrickville Council area. Within this area, the area is principally zoned Low Density Residential R2 with only small pockets of higher density R3 and R4 in the southeast corner of the study area, as in **Figure 2.1** below. Retailing is located principally in the B1 (neighbourhood) and B2 (local centre) zonings on Stanmore Road (north east and south east corners) and Addison Road, principally in the south east corner.

Figure 2.1 Marrickville LEP 2011



Source: IWC

2.1.2 Surrounding Land Use Attractors

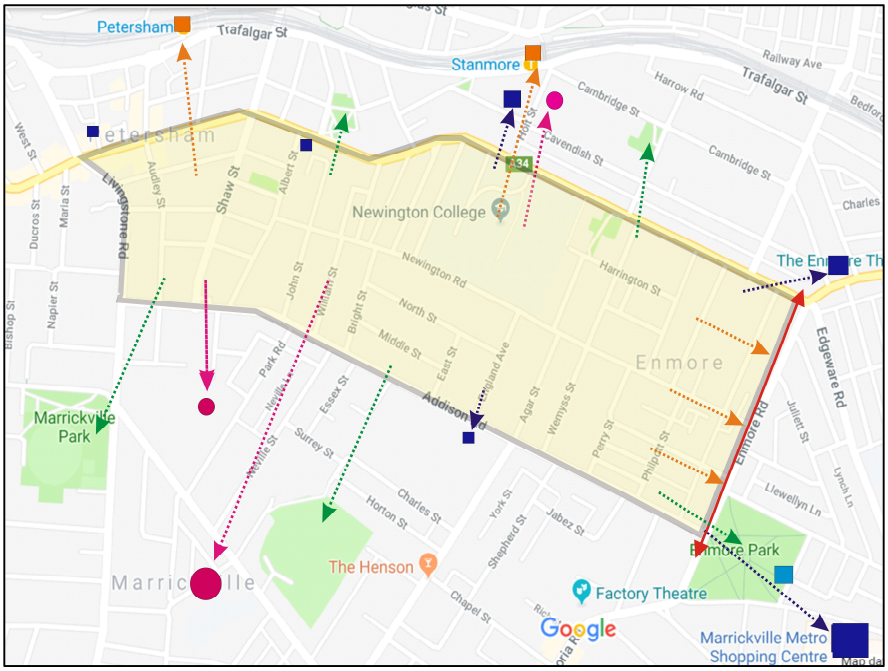
There is a dearth of open space within the area with Marr Playground and Ryan Park being the only public open spaces within the area. Maundrell Park and Enmore Park/Aquatic Centre are on the boundary of the area to the north and east, with Henson Park and Marrickville Park lying to the south.

Food retailing is also outside the area with a small fruit and grocery near Albert Street being the only service inside the study area. The Organic Food Markets on the southern side of Addison Road, an IGA on Enmore Road north of Stanmore Road and near Stanmore Station are the closest supermarket/ food outlets. The Marrickville Metro is about 500m to the east.

The railway stations are north of the study area while the Metro Bus service runs along Enmore Road.

Both the public primary schools which service the study area are outside the area.

Figure 2.2 Land Use Attractors outside the Study Area



2.1.3 Public School Catchments

Two public primary schools service the area, these being Wilkins PS and Stanmore PS. The catchments of which are illustrated below in **Figure 2.3.** To attend these schools, children would have to cross Addison Road to Wilkins PS or Stanmore Road to Stanmore PS. Marrickville High School services most of the study area and requires crossing of Addison Road.

Figure 2.3 Local Primary School Catchments

Source: Australian Public School Website

2.1.4 Marrickville DCP 2011

The ***Marrickville DCP 2011*** states the Desired Future Character of the area includes:

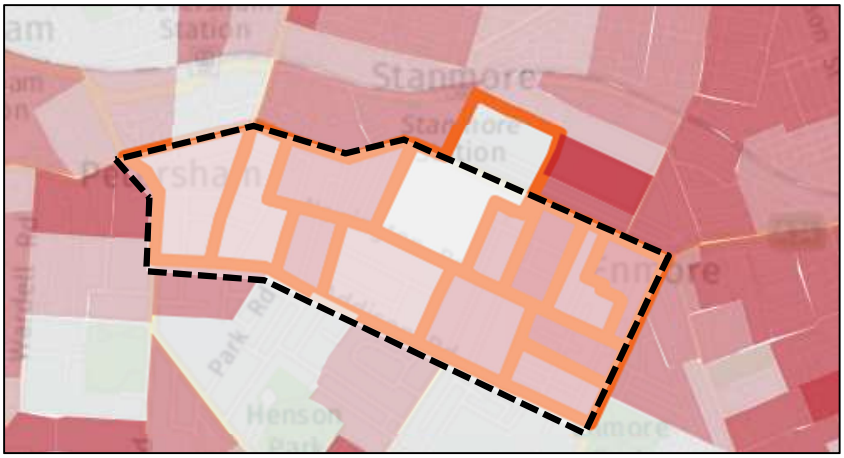
> *Item 6 - To preserve the predominantly low density residential character of the precinct.*
> *Item 7 – To support pedestrian and cyclist access, activity and amenity including maintaining and enhancing the public domain quality.*

The area has specific planning controls relating to the three heritage areas in HCA 18 Petersham South (Norwood Estate), HCA 19 Norwood Park Estate and HCA 14 Llewellyn Estate. Based on the zoning and the Desired Future Character, there is likely to be little change in the population or dwelling growth in the area.

2.2 MODE OF TRAVEL TO WORK OF RESIDENTS

Census 2011 and 2016 data was reviewed for the study area. **Figure 2.4** below outlines in orange the thirteen SA1 areas which cover the study area outlined in a black broken line.

Figure 2.4 Statistical Areas within Newington



Source: IWC Social Atlas

Of the 5034 residents in the employable age groups in the area in 2016, 3449 persons (69%) were in the labour force compared to 72% in 2011. In the last 5 years from 2011-2016 the mode to work has changed in car use – down by 3% and public transport use – up by 6%; public transport is now the leading mode to work.

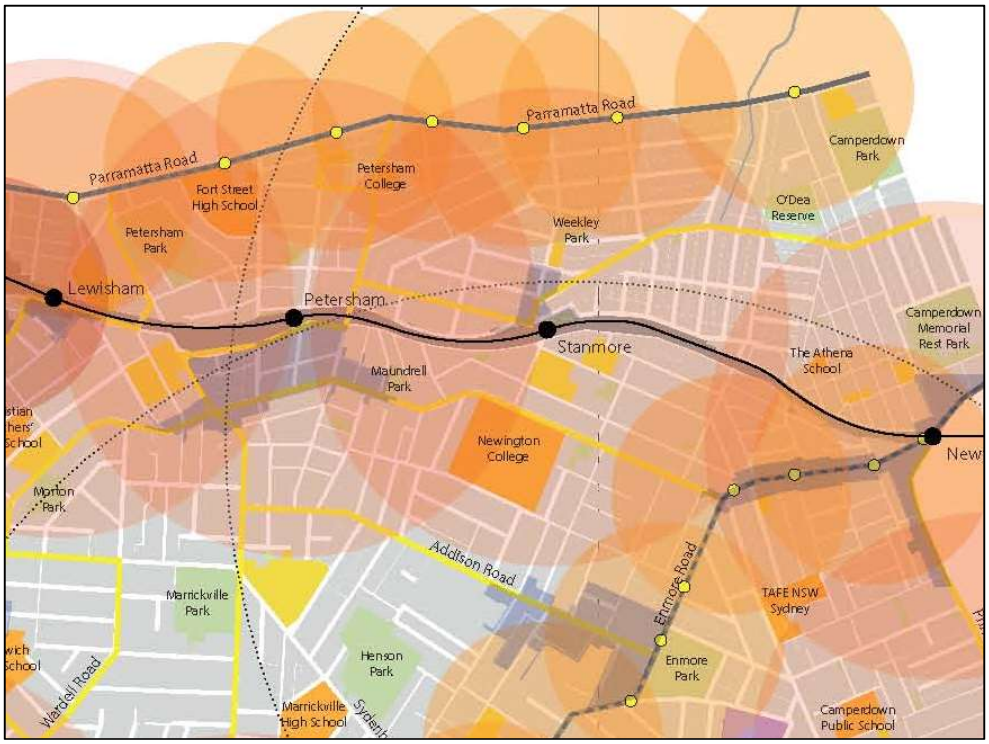
Table 2.1 Workforce Method of Travel to Work

	2016 Labour force participation - 3449			2011 Labour force participation - 3349			Newington % Change
Main method of travel	**Number**	**%**	**Total Responses**	**Number**	**%**	**Total Responses**	**2011 to 2016**
Public transport	1372	41	3318	1150	35	3276	+6%
Car	1126	34	3318	1200	37	3276	-3%
Walk	215	7	3318	185	6	3276	+1%
Cycle	135	4	3318	156	5	3276	-1%
Worked at home	80	2	3289	88	3	3185	-1%
Households without car	430	18	2436	470	20	2837	-2%

Source: 2016 ABS Census

Most of the study area is within walking distance of Stanmore and Petersham Stations. The improvements in the rail service since 2011 as well as the growth in road congestion may account for this change in mode. **Figure 2.5** illustrates the railway station walking catchments (800m) as well as the catchments for the Metro Bus stops (400m). The western part of the study area is serviced by two rail stations, while the east is within walking distance of Stanmore station as well as the Metro Bus stops on Enmore Road.

Figure 2.5 Walking Catchments to Rail Stations and Metro Bus Stops



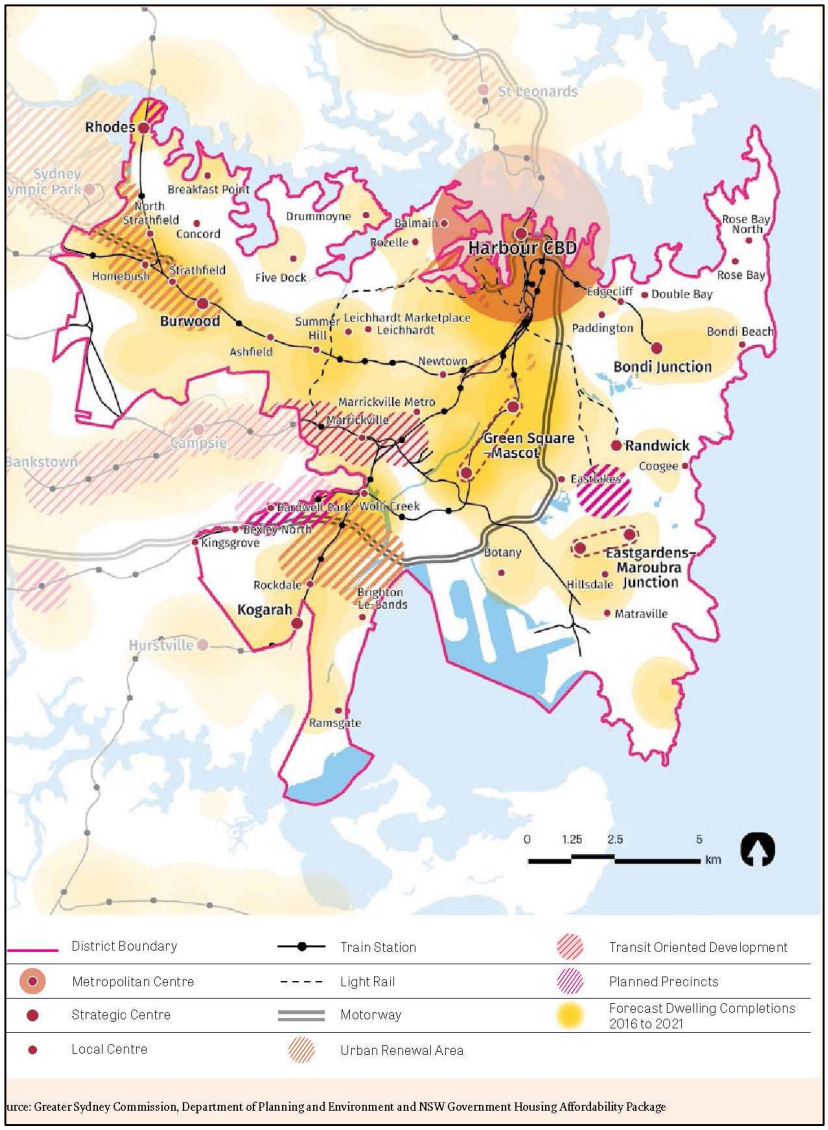
Source: Marrickville Public Domain Study

3. STATE AND COUNCIL STRATEGIES AND PLANS

3.1 GREATER SYDNEY COMMISSION EASTERN DISTRICT PLAN 2018

The Greater Sydney Commission identified Transit Oriented Development (TOD) sites in the southern part of the Inner West Council Area, surrounding the railway stations at Sydenham, Marrickville and Dulwich Hill. In the study area, in line with the Marrickville DCP, there is no proposed urban renewal or increased housing growth as illustrated in **Figure 3.1** below.

Figure 3.1 Eastern City District Future Housing Supply



Source: Greater Sydney Commission

3.2 COUNCIL STRATEGIES

3.2.1 Marrickville Urban Strategy 2007

This strategy provides the planning context for future development across the former Marrickville LGA. It informed the review of the LEP and Council's planning controls. The strategy proposed that Council should plan for 3,830 new dwellings over 25 years with 80% of new dwellings located in or near centres, in walking distance to shops, services and public transport.

Of relevance to the study area, the Urban Strategy Map (**Figure 3.2**) identifies:

- the areas suitable for renewal are in Petersham between the shops and station and near Enmore Park;
- a strategic bus corridor on Enmore Road linking frequent bus services to the CBD.

Figure 3.2 Marrickville Urban Strategy

See following page for map key.

The main elements of the Urban Strategy are shown in the map.

STRATEGY DIRECTIONS

1. Continue to support Marrickville's diverse community;
2. Focus new residential development in existing centres with good public transport and services to improve housing choice;
3. Strengthen and renew the Marrickville/Sydenham strategic employment lands;
4. Enhance the distinctive character of local centres;
5. Improve local public transport, walking and cycling connections to centres;
6. Continue to improve local parks and public domain in centres;
7. Investigate opportunities to increase community facilities; and
8. Continue to improve the environment with a focus on the Cooks River and creating new "green corridors" linking the River to the Hawthorne Canal and Sydney Park.

Source: IWC Urban Strategy

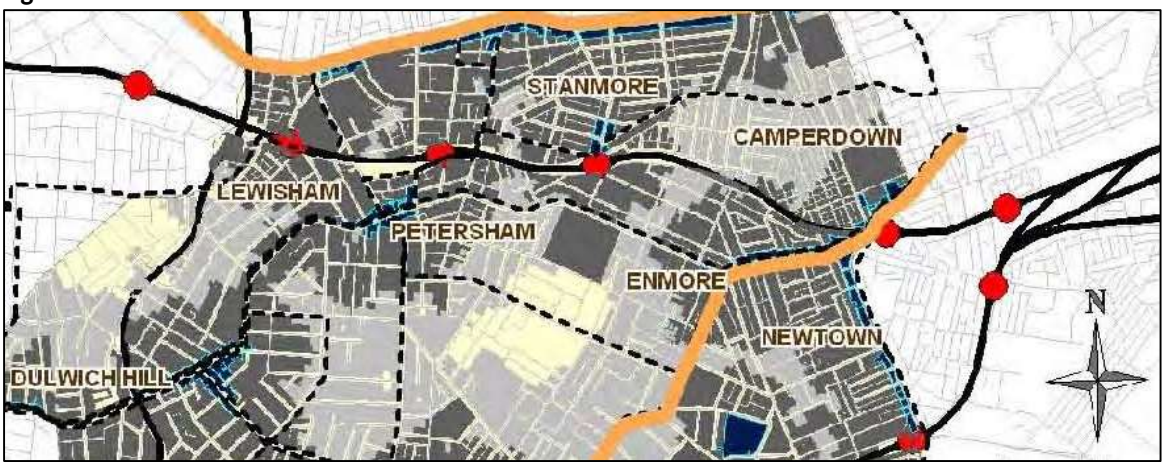
3.2.2 Integrated Transport Strategy 2007

This strategy states its aim as providing:

> *The rationale and recommended actions for addressing local transport issues and moving Marrickville toward sustainable transport – that is, reducing car use….*

Towards achieving that aim, accessible areas to public transport were proposed to inform redevelopment and density increase. The figure below shows areas within walking distance of railway stations and strategic bus corridors as a focus of new development. Within the study area, the western and north-eastern areas are identified.

Figure 3.3 Accessible Areas in Marrickville



Source: Integrated Transport Strategy

In relation to LATM schemes, the strategy notes that LATM works can significantly improve active transport use of local roads as road crossing widths and traffic speeds are reduced. Safety for motorists is also noted. The strategy states that:

> *The amenity of streets can be significantly improved by through reduced traffic, lower speeds and the integration of street trees and gardens into LATM devices.*

Council's LATM focus is to be on high crash sites, excessive traffic volumes and speeds and streets wgere there is a need and opportunity to improve amenity.

3.2.3 Marrickville Public Domain Study 2015

This is a costed action plan for adoption by Council for the public domain. The eastern end of Addison Road is identified as a village precinct from Agar Street to Enmore Road in the study area. Addison Road is not a regional road with its principal function being access to the industry south of the study area and residential land use areas either side.

The main destinations in this precinct are:

- Enmore Park and Annett Kellerman Aquatic Centre adjacent;
- Addison Road Community Centre;
- Marrickville Metro in proximity.

The opportunities suggested for the precinct are:

- Kerb extensions and footpath widening on Addison Road and side streets;
- On street tree planning
- Mid-block crossings
- Threshold treatment to side streets
- Pedestrianize laneways with Shared Zones
- Improve linkages and way-finding to Marrickville Metro, Enmore Road shops and Newtown Station.

3.3 COUNCIL PLANS

3.3.1 Marrickville Bicycle Strategy 2007

The 2007 Bicycle Strategy prepared by Sustainable Transport Consultants and Jamieson Foley Traffic and Transport recommended the following:

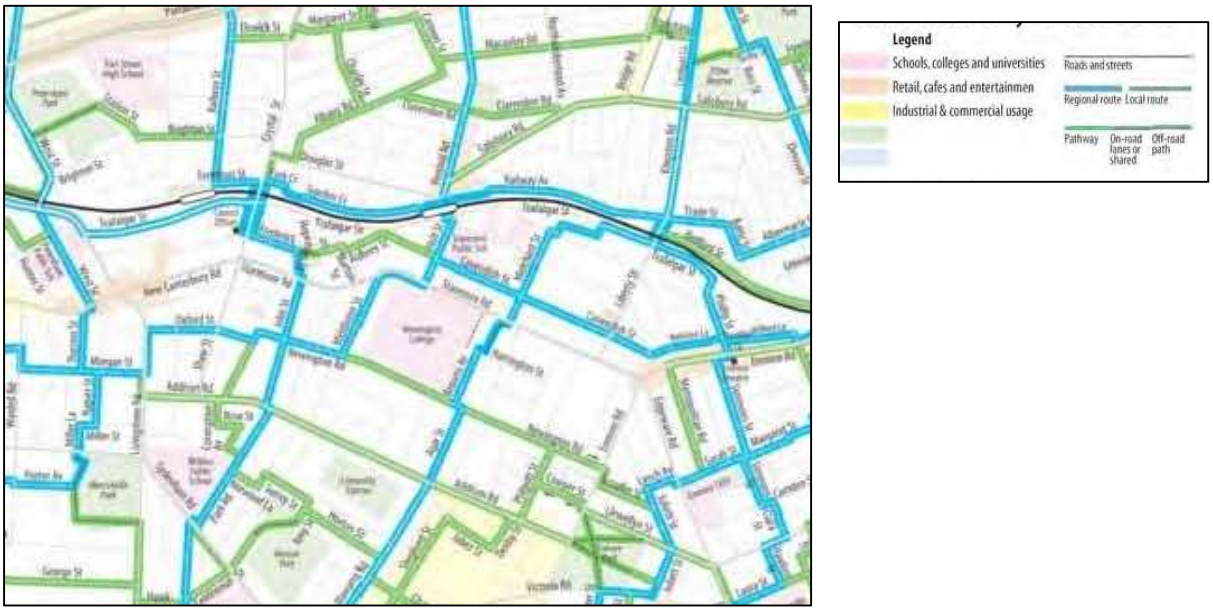
Regional bike routes on:

- Livingston Road, Oxford Street, Newington Road, Middleton Street and Stanmore Road to Holt Street;
- Agar Street, Browns Avenue;
- John Street.

Local bike routes on

- Addison Road;
- Newington Road from Middleton Road to Enmore Road;
- Cowper Street;
- Philpott Street, and
- Albert Street from Addison Road to Newington Road.

Figure 3.4 Bike Routes through Study Area



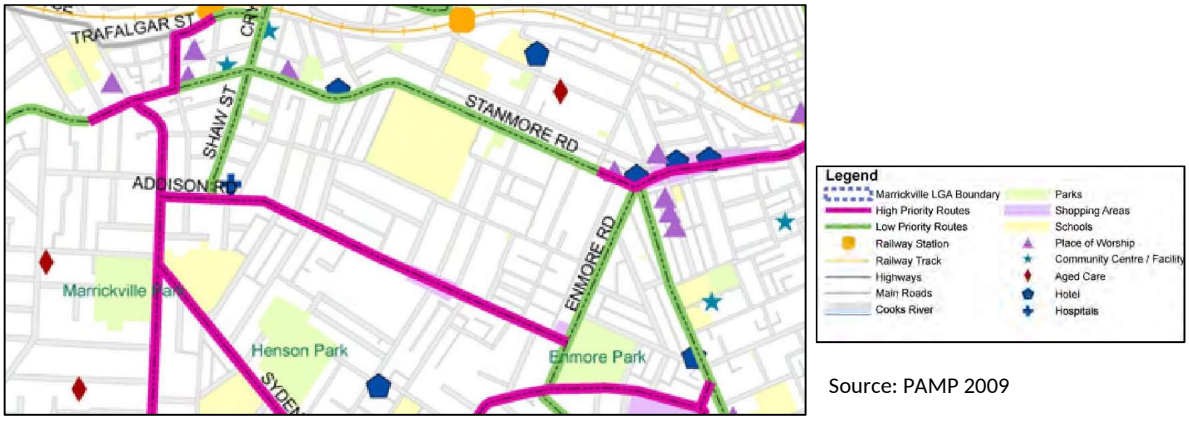
Design drawings for the Addison Road route have been prepared, however as at January 2019, the design and implementation of this route has been deferred as the local community were not fully supportive of the initial design. Clarity on this final design is required before final LATM recommendations relating to pedestrian crossing upgrades are adopted by Council.

3.3.2 Marrickville Pedestrian Access Mobility Plan 2009

The Pedestrian Access Mobility Plan (PAMP) prepared by ARUP proposed:

- High priority routes on Addison Road and Livingstone Road, and
- Low priority routes on Shaw Street, Enmore Road and Stanmore Road.

Figure 3.5 PAMP Routes



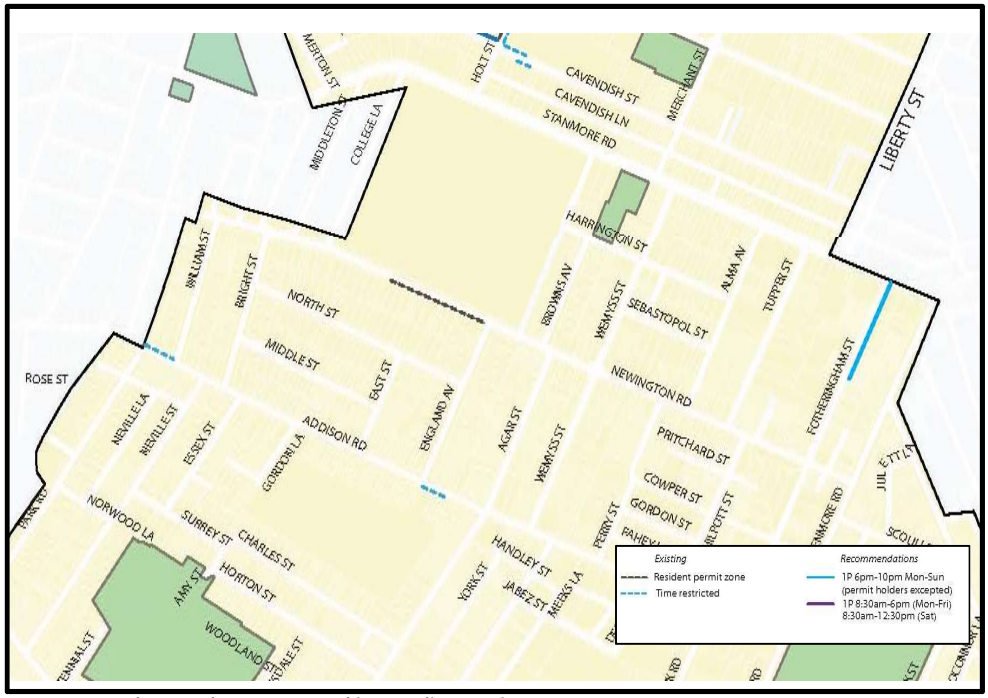
Source: PAMP 2009

3.3.3 Stanmore and Petersham Parking Studies

The studies were undertaken in 2016-2017 by ARUP. The parking recommendations of relevance to the study area are contained in the figures below and show that only small sections are recommended for parking control in the study area.

Figure 3.6 Petersham Parking Study Recommendations

Figure 3.7 Stanmore Parking Study Recommendations



Source: Petersham and Stanmore Parking Studies 2016, 2017

4. TRAFFIC AND TRANSPORT MOVEMENT AND CONTROL

4.1 ROAD HIERARCHY, TRAFFIC VOLUMES AND SPEEDS

Two types of road classification are used in NSW. Each type of classification caters for a different purpose as discussed below.

4.1.1 Funding and Functional Classifications

The funding classification is an administrative classification based on funding where the State and Local Authority allocate responsibilities between them. Thus:

- State Roads are fully funded by the RMS (previously RTA);
- Regional Roads involve shared funding between the RMS and the Local Council; and
- Local roads are fully funded by Local Councils.

Around the study area, there are a number of State Roads which carry large volumes of traffic including heavy vehicles. These roads are:

- Stanmore Road, New Canterbury Road and Livingstone Road.

The Regional Roads are:

- Enmore Road, Addison Road and Shaw Street.

All other roads in the study area are local roads within the care and control of Inner West Council.

The functional classification includes Arterial, Sub-arterial, Collector and Local roads. Together the roads make up a road network. The functional road classification can be described as:

- Arterial - Predominantly carry through traffic from one region to another, forming principal avenues of communication for urban traffic movements.
- Sub-Arterial - Connect the Arterial roads to areas of development and carries traffic directly from one part of a region to another. They may also relieve traffic on Arterial roads in some circumstances.
- Major Collector (or Distributor) - Connect the Sub-Arterial roads to the Local road system in developed areas. May also be commercial collectors which connect to a commercial centre such as East Gardens or Eastlakes
- Residential Collector - sub-divisional roads within a particular developed area. These are used solely as local access roads

Map 1 illustrates the functional road hierarchy in the study area based on RMS classification and traffic volumes as well as roads with 3 tonne load limits. The RMS (previously RTA) functional road classification parameters for the metropolitan area are in **Table 4.1**.

Table 4.1 Road Classification Parameters

Factor	Measure of Effectiveness	Desirable Feature for Each Road Class			
		Arterial	Sub Arterial	Collector	Local
Vehicle speed	Operating speed	60-100 km/h	50-60 km/h	40-50 km/h	40 km/h or less
Traffic use	Daily volume (vehicles per day) Residential area	No limit	20,000 vehicles per day max	5,000 vehicles per day max	2,000 vehicles per day max
	Other area	No limit	20,000 vehicles per day max	10,000 vehicles per day max	4,000 vehicles per day max
Intersection spacing	Cross street interference	Approx 1 km	Approx 0.5 km		
Road geometry	Number of travel lanes Medians Min. carriageway width	4 or more Yes 13 m	2 or more As needed 7 m	2 or more No 7 m	1 or more No 4 m
Traffic management	Parking Lane and separation lines Property access Control of turning vehicles Right turn bays Road closures LATM devices SATM devices	None Yes Minimised Median control Yes None	Prefer none Yes Minimised Maybe control Preferred None Yes	Yes Maybe Yes No No Possible Yes	Yes No Yes No No Yes Yes
Pedestrian crossings	Type of crossing	Grade separated or signals	Signals or refuge	Marked crossing, children's crossing or refuge	Marked crossing, children's crossing or refuge

Source: RMS

4.1.2 Environmental Capacity

The RTA's (RMS) ***Guide to Traffic Generating Developments 2002*** gives the guidance on the environmental capacity of residential streets (used for new residential subdivision design) as set out in **Table 4.2**. The Guide also states that speed is an important contributor to environmental capacity:

> *The Environmental Capacity of a street can be increased through a reduction in speed. For example, on an existing residential street where traffic volumes reach the Environmental Capacity maximum (and a proposed development could cope with the volume over the standard), traffic speed may be reduced by the introduction of traffic calming methods…….*
>
> *In existing residential environments, 40km/h is an acceptable speed objective, usually achieved by LATM schemes e.g. adjusting existing roadways with retrofitted design items such as speed humps and slow points.*

Table 4.2 Environmental Capacity Performance Standards on Residential Streets

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

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

In terms of daily traffic volumes, the peak hour bi-directional volumes can be interpreted in most cases as 10% of the daily volume on the road. Where the volume exceeds 500 vehicles per hour the Guide states that residential amenity begins to decline noticeably. These volumes will be applied to the Botany Bay roads and conclusions on performance based thereon.

4.1.3 Implications for the LATM

The main implication of a road hierarchy is that some Council roads have a higher traffic function than others, usually by virtue of:

- connectivity, particularly to the State and Regional road system;
- the traffic attracting/generating land uses such as shops, schools, industry;
- road design such as road width, sight distance, design speed;
- access control to the main road system such as signals.

From an environmental point of view it is desirable to have traffic volume of less than 2,000 vehicles per day on residential streets and 3,000 vehicles per day on residential collectors. However in existing residential areas, residential collectors usually carry higher traffic volumes die to their geometry and connectivity, therefore using the maximum (5,000 vehicles per day would be more realistic).

The Guidelines state that in order to achieve a better amenity and safety in residential areas, lowering of the speed limit can address the negative impacts of higher vehicle volumes. A residential speed limit of 50km/h has already been established for the whole of the metropolitan Sydney area. Thus the undesirable impacts of higher volume levels on residential streets can be tempered to some degree by the 50km/h speed limit. Where 85th percentile speeds are presently over 55km/h, speed reduction treatments may need to be implemented to lower the speed within acceptable limits.

Traffic volume and speed counts for a number of streets were made available for this study**. Table 4.3** illustrates the vehicles per day and the 85th percentile speeds for those streets that are included in the LATM study area.

For the road hierarchy, the following volumes are applied:

- Sub-Arterials / Regional - 10 -20,000 vehicles per day'
- Major Collectors - 5-10,000 vehicles per day,
- Collector - residential roads with 3-5,000 vehicles per day,
- Local - residential roads with less than 3,000 vehicles per day.

These are applied in **Table 4.3** overleaf. Locations where volume clearly exceeds the guidelines, and where 85th percentile speeds are 10% higher than posted speed limit are highlighted in the table.

A review of the overleaf reveals that in the study area there are only three roads where the 85th percentile speed is 10% over the posted speed limit, those roads are Addison Road, Enmore Road and Bright Street. It is noted that there were no recorded roads with volume non-compliance.

Table 4.3 Traffic Volumes and Speeds in Newington

Road	Suburb	Location - between streets	Count date	Functional classification	Total AADT	Acceptable max total AADT	Posted speed limit	85 %tile speed	Acceptable speed
Addison Road	PETERSHAM 2049	Audley St & Shaw St	May-14	Regional	12469	Y	50	39.6	Y
Addison Road	PETERSHAM 2049	Albert St & John St	Mar-14	Regional	13951	Y	50	50	Y
Addison Road	MARRICKVILLE 2204	Essex St & Gordon Sq	Mar-14	Regional	12033	Y	50	57.6	N
Addison Road	MARRICKVILLE 2204	Wemyss St & Perry St	May-14	Regional	12609	Y	50	48.2	Y
Addison Road	MARRICKVILLE 2204	Bright St & East St	Jun-15	Regional	11777	Y	50	47.5	Y
Addison Road	MARRICKVILLE 2204	Essex St & Gordon Sq	Oct-15	Regional	12317	Y	50	54.4	Y
Addison Road	MARRICKVILLE 2204	Bright St & East St	Jul-17	Regional	11739	Y	50	52.5	Y
Albert Street	PETERSHAM 2049	Oxford St & Belgrave St	Dec-13	Local	855	Y	50	52.9	Y
Albert Street	PETERSHAM 2049	Chester St & James St	Mar-14	Local	1225	Y	50	50.4	Y
Audley Street	PETERSHAM 2049	Belgrave St & Addison Rd	May-14	Local	1701	Y	50	41.8	Y
Audley Street	PETERSHAM 2049	New Canterbury Rd & Chester St	May-15	Local	3060	Y	50	36	Y
Belgrave Street	PETERSHAM 2049	Audley St & Shaw St	Dec-13	Local	163	Y	50	27.4	Y
Belgrave Street	PETERSHAM 2049	Shaw St & Albert St	May-15	Local	104	Y	50	36.7	Y
Bright Street	MARRICKVILLE 2204	North St & Middle St	May-15	Local	857	Y	50	57.6	N

Road	Suburb	Location - between streets	Count date	Functional classification	Total AADT	Acceptable max total AADT	Posted speed limit	85 %tile speed	Acceptable speed
Chester Street	PETERSHAM 2049	Audley St & Shaw St	Jun-15	Local	374	Y	50	38.9	Y
Cowper Street	MARRICKVILLE 2204	Philpott St & Perry St	Apr-15	Local	347	Y	50	38.2	Y
Cowper Street	MARRICKVILLE 2204	Philpott St & Fotheringham Ln	Apr-15	Local	411	Y	50	39.2	Y
Cowper Street	MARRICKVILLE 2204	Enmore Rd & Fotheringham Ln	May-15	Local	649	Y	50	35.6	Y
Denning Street	PETERSHAM 2049	Newington Rd & Marshall St	May-14	Local	89	Y	50	32.4	Y
East Street	MARRICKVILLE 2204	North St & Addison Road	Feb-15	Local	214	Y	50	30.6	Y
England Avenue	MARRICKVILLE 2204	North St & Newington Rd	Feb-15	Local	784	Y	50	44.3	Y
Enmore Road	MARRICKVILLE 2204	Juliett St & Newington Rd	Feb-14	Regional	14413	Y	50	55.4	N
Fotheringham Street	ENMORE 2042	Stanmore Rd & Newington Rd	Mar-15	Local	552	Y	50	37.1	Y
Gordon Street	MARRICKVILLE 2204	Philpott St & Perry St	Apr-15	Local	238	Y	50	33.8	Y
Harrington Street	ENMORE 2042	Alma Avenue & Wemyss St	Mar-15	Local	265	Y	50	34.6	Y
James Street	PETERSHAM 2049	Shaw St & Albert St	May-15	Local	196	Y	50	35.3	Y
Marshall Street	PETERSHAM 2049	Newington Rd & Denning St	Mar-15	Local	1307	Y	50	36.4	Y
Middle Street	MARRICKVILLE 2204	Bright St & East St	Feb-15	Local	127	Y	50	39.9	Y
Middleton Street	PETERSHAM 2049	Stanmore Rd & Newington Rd	Mar-15	Local	1115	Y	50	43.9	Y
Newington Road	MARRICKVILLE 2204	Perry St & Wemyss St	Mar-15	Local	1690	Y	50	38.2	Y

Road	Suburb	Location - between streets	Count date	Functional classification	Total AADT	Acceptable max total AADT	Posted speed limit	85 %tile speed	Acceptable speed
Newington Road	MARRICKVILLE 2204	Enmore Rd & Fotheringham St	Mar-14	Local	1516	Y	50	35.6	Y
Newington Road	MARRICKVILLE 2204	Short St & Fotheringham St	Mar-15	Local	1343	Y	50	30.6	Y
Newington Road	MARRICKVILLE 2204	England Ave & Middleton St	Mar-15	Local	1658	Y	50	42.5	Y
Newington Road	MARRICKVILLE 2204	William St & Marshall St	Mar-15	Local	1474	Y	50	42.1	Y
Newington Road	MARRICKVILLE 2204	Wemyss St & Enmore Rd	Mar-15	Local	1592	Y	50	34.9	Y
North Street	MARRICKVILLE 2204	Bright St & East St	Feb-15	Local	369	Y	50	49.7	Y
Oxford Street	PETERSHAM 2049	Shaw St & Audley St	May-15	Local	962	Y	50	40.7	Y
Perry Street	MARRICKVILLE 2204	Cowper St & Newington Rd	Feb-15	Local	817	Y	50	43.2	Y
Philpott Street	MARRICKVILLE 2204	Newington Rd & Cowper St	May-15	Local	572	Y	50	27.7	Y
Philpott Street	MARRICKVILLE 2204	Addison Rd & Cowper St	May-15	Local	750	Y	50	32.8	Y
Sebastopol Street	ENMORE 2042	Alma Ave & Wemyss St	Mar-15	Local	173	Y	50	32	Y
Shaw Street	PETERSHAM 2049	Oxford St & Belgrave St	Mar-14	Regional	10240	Y	50	54	Y
Shaw Street	PETERSHAM 2049	Stanmore Rd & Chester St	Jun-15	Regional	10774	Y	50	40.3	Y
Tupper Street	ENMORE 2042	Stanmore Rd & Newington Rd	Mar-15	Local	1246	Y	50	40.7	Y
Wemyss Street	ENMORE 2042	Sebastopol St & Newington Rd	Mar-14	Local	1962	Y	50	32.4	Y
Wemyss Street	MARRICKVILLE 2204	Newington Rd & Addison Rd	Feb-15	Local	897	Y	50	40.7	Y

4.2 EXISTING TRAFFIC MANAGEMENT

Map 2 summarises the traffic management infrastructure in Newington.

4.2.1 Traffic Signals

The following intersections are signalised:

- Enmore Road / Stanmore Road
- Enmore Road / Llewellyn St
- Enmore Road / Addison Road
- Addison Road / Agar Street / Illawarra Road
- Addison Road / Livingstone Road
- Livingstone Road / New Canterbury Road
- New Canterbury Road / Audley Street
- New Canterbury Road / Shaw Street / Enmore Road / Crystal Street
- Stanmore Road / Merchant Street
- Stanmore Road / Liberty Street

The only midblock signal is located at:

- Stanmore Road – east of Holt Street

4.2.2 Traffic Calming Treatments

The following treatments are installed to manage the speed of traffic in the study area:

- Roundabouts are at the intersections of:
  - Newington Road / Wemyss Street
  - Addison Road / Shaw Street
- Speed humps and thresholds are located on:
  - Newington Road
    - Between College Lane and Enmore Road
  - Agar Street
  - Wemyss Street
  - Tupper Street
  - Philpott Street
  - Fotheringham Street
- Pedestrian refuge islands are situated at the following locations:
  - Stanmore Road
    - Between Hopetoun Street and Marshall Street
  - Enmore Road
    - Between Newington Road and Llewellyn Street
  - Addison Road
    - Between Audley Street and Shaw Street
    - Between John Street and Park Road
    - Between Bright Street and Essex Street
    - Between Gordon Lane and East Street
    - Between England Avenue and Agar Street
  - Oxford Street
    - Between Audley Street and Shaw Street

- Between Shaw Street and Albert Street

4.2.3 Bicycle Facilities

The bicycle routes are indicated in **Map 3** as per the Inner West Cycling Route Map on the Inner West Council website. The cycling facilities in the study area for cyclists are predominantly Mixed Traffic facilities. It is noted that a majority of these routes do not provide the requisite cycling facility design, as such warning signs, directional signs and pavement markings. The Mixed Traffic routes are located on the following streets:

- Livingstone Road
  - Between Morgan Street and Addison Road
- Addison Road
  - Between Livingstone Road and Park Road and
  - Between Bright Street and Essex Street
- Enmore Road
  - Between Newington Road and Llewellyn Street
- Stanmore Road
  - Between Middleton Street and Holt Street
- Newington Road
- John Street
- Bright Street
- Middleton Street
- College Lane
- Brown Avenue
- Agar Street

There is also an off-street cycle link through Ryan Park, connecting Harrington Street and Stanmore Road. It is noted that the cycling routes presented in the Inner West Cycling Route Map differs to the cycling routes described in the ***2006 Bike Plan*** discussed previously in Section 3.1.1

4.2.4 Parking Facilities

A site inspection was carried out by TEF Consulting to determine car parking facilities in the study area aside from standard kerbside parking. It was observed that there are 90° parking opportunities on Gordon Street and Middleton Street and 45° parking opportunities on Perry Street.

It is also observed that there is an off-street car park located off Alma Avenue comprising 91 marked car parking spaces and a spacious unmarked grass area which is also used for parking, however it is likely that this is a private car park belonging to Cyprus Community Club of NSW.

4.3 PUBLIC TRANSPORT

The locations of bus stops and bus routes passing through the study are illustrated in **Map 4**. Bus routes and bus stops are of relevance to the LATM study which deals with pedestrian movements, as the crossing of pedestrians to/from stops must be managed for safety in some locations. They are also relevant to the LATM in relation to the road width required for buses and impact on traffic management and traffic calming devices which can be used.

Petersham and Stanmore railway stations lie outside the study area to the north and require crossing Stanmore Road/New Canterbury Road.

5. ROAD CRASHES

5.1 VEHICULAR, CYCLIST AND PEDESTRIAN CRASH PROFILE

Crashes for the latest 5 year period (July 2011 to June 2016) from the RMS crash data base have been examined. There were 245 recorded incidents over this period, the findings from this examination are:

- **Age and sex**
  - The 20-34 age group represent the largest number of the crashes (36.4%) followed closely by the 35-49 age group (30.4%)
  - 20-34 age group was over-represented in crashes compared with total population of Marrickville – Sydenham – Petersham. Area also known as Statistical Area Level 3 (SA3) code 11702
  - 66% of the total number of people involved in the accidents were males.
- **Breakdown and severity**
  - In total there were 496 vehicles (93%), 23 pedestrians (4%) and 17 cyclists (3%) involved across all accidents.
  - 1 fatal incident was recorded, with 144 injuries (59%) and 100 (41%) non-casualties.
- **Time of crashes**
  - High prevalence of crashes during the working week with 165 incidents (66%)
  - Most crashes occurred during the afternoon commuter peak with 73 crashes (30%), with the afternoon peak period occurring between 3:00 p.m. and 6:00 p.m.

Table 5.1 Crash Age Groups

Age Group (years)	0-9	10-19	20-34	35-49	50-59	60+	Unk.	Total
No. of persons involved	1	12	190	158	76	57	26	520
% of persons involved	0.2	2.4	36.4	30.4	15.0	10.9	4.7	100
% of SA3 - 10702 population 2016	10.2	7.2	30.7	24.8	11.1	15.9	N/A	100

5.2 LOCATION OF CRASHES

The documented location of crashes from the RMS data base, are in **Appendix A**. Most crashes were on State Roads, however Sub Arterial and Council roads are also represented:

Suburb and road hierarchy
- 40% of the accidents occurred in the suburb of Petersham, more than any of the other suburbs in the study area.
- Most crashes occurred on State Roads (62%), followed by Regional Roads (26%) and the rest on Council roads (12%).

5.3 CRASH TYPES

Of the 245 crashes in the study area, most were at intersections with 183 incidents (75%) with the remaining 62 crashes occurring mid-block (25%).

Intersection Crashes
- The majority were RUM Code 21 (right through) with 40 incidents
- RUM Code 30 (rear end) had 28 incidents
- RUM Code 10 (cross traffic) had 16 incidents

Midblock crashes
- The majority were RUM Code 21 (Right through) with 11 incidents
- RUM Code 30 (rear end) had 10 incidents

- RUM Code 10 (cross traffic) had 5 incidents

5.4 CRASH ANALYSIS

The location and crash types were further analysed to determine if there were certain recurring patterns, and if so what may be the cause of the particular issue. It is noted that the high occurring accident types were uniform across intersection and mid-block incidents.

The following is a breakdown of all observations on Regional and Council roads.

5.4.1 Enmore Road / Llewelyn Street intersection - 7 crashes

Crash type RUM code 21 (right through) occurred 3 times in this intersection, one of which involved a cyclist. This crash type occurs when a vehicle attempting to turn right collides with an opposing vehicle attempting to travel straight through the intersection. It is likely that these accidents are caused by speeding issues, as evidenced by the speed counts in **Table 4.3** where Enmore Road is one of the only three roads in the study area with 85th percentile speed issues. It is most likely that these accidents are cause when speeding through the intersection, which may cause drivers to misjudge perceived safe gaps in traffic for turning. Drivers may also speed in an attempt to proceed through an amber light before it turns red. Further investigation into speed reduction will be required for Enmore Road. There was also a rear end accident (RUM code 30) and an out of control vehicle on carriageway (RUM code 74), both of which are most almost certainly caused by speeding. There were no other noticeable patterns at this particular intersection.

5.4.2 Enmore Road / Addison Road intersection - 5 crashes

Like the Enmore Road / Llewelyn Street intersection, there were three instances of right through (RUM code 21) and a total of 4/5 incidents involving a turning movement. Both intersections are signalised with very similar lane configurations and geometry. It is highly likely the causes of accidents at this intersection will be similar, if not identical to the Enmore Road / Llewelyn Street intersection. As discussed previously the most likely cause of these accidents is speeding along Enmore Road, which will be examined in the future. There was also an incident involving an out of control vehicle, which may also be attributed to speeding.

5.4.3 Addison Road / Agar Street intersection - 4 crashes

This intersection also had multiple occurrences of right through (RUM code 21) crashes. As discussed previously, it is highly likely that these crashes can be attributed to speeding motorists. The remaining crashes involved vehicles travelling at right angles to one another, most likely due to speeding and possibility poor visibility approaching the intersection. Further investigation is needed.

5.4.4 Enmore Road / Newington Road intersection - 3 crashes

The three crashes at this intersection involved three different types of crashes, but it is observed that all three incidents involve a turning vehicle colliding with a vehicle travelling through the intersection. In all three accidents a vehicle is turning onto Enmore Road from Newington Road (which is a one way travelling eastbound) and it hit by a vehicle travelling along Enmore Road. This again can most likely be caused by vehicles speeding on Enmore Road, driving aggressively (by not letting the vehicle merge) or by simply not paying attention.

There may also potentially be visibility issues with vehicles turning from Newington Road. The street is flanked by two buildings which may be visual obstructions. Out of the three accidents, two involved the emerging vehicle turning right onto Enmore Road, cutting across two lanes of traffic. This can be dangerous especially during evening peak hour when it is dark and the two parking lanes on Enmore Road are travel lanes.

5.4.4 State Road Crashes

The following intersection crashes are located on State Roads:

- Stanmore Road / Liberty Street intersection - 24 crashes
- New Canterbury Road / Stanmore Road / Shaw Street / Crystal Street intersection - 14 crashes
- Stanmore Road / Enmore Road intersection - 12 crashes
- New Canterbury Road / Livingstone Road intersection - 12 crashes
- New Canterbury Road / Audley Street intersection - 12 crashes
- Stanmore Road / Albert Street intersection - 11 crashes
- Addison Road / Livingstone Road intersection - 6 crashes
- Livingstone Road / Oxford Street intersection - 6 crashes
- New Canterbury Road / Regent Street intersection - 4 crashes
- Stanmore Road / Merchant Street intersection - 4 crashes
- Stanmore Road / Marshall Street intersection - 3 crashes
- Stanmore Road / Alma Avenue intersection - 3 crashes
- Stanmore / Fotheringham Street intersection - 3 crashes

These roads will be subject to further investigation in the subsequent reports where necessary.

6. COMMUNITY ISSUES

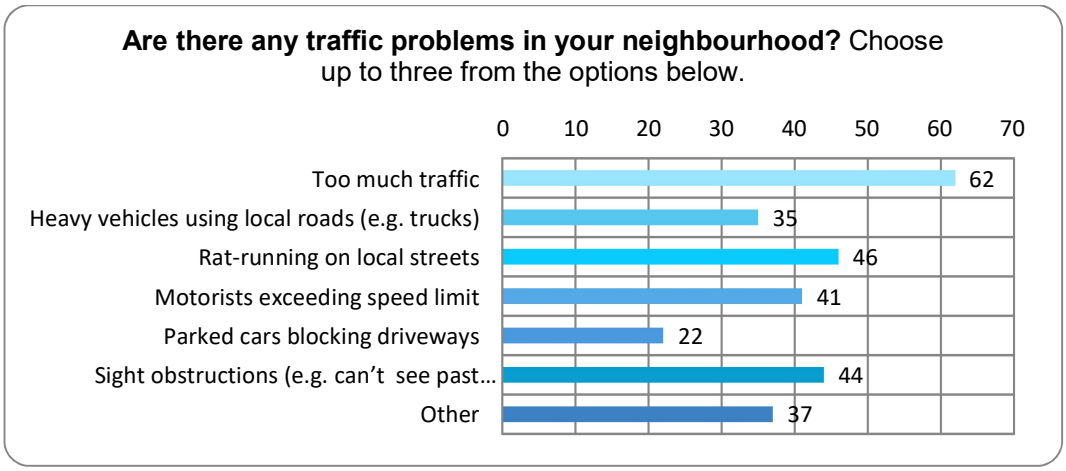
A short questionnaire was put on Council's web page at the commencement of the project. In total 112 persons responded from the study area, representing about 4-5% of the households in the study area (refer to **Appendix C** for a full list of street responses). The largest number of respondents were from:

- Addison Road – 13
- Fotheringham Street – 9
- North Street – 8
- Newington Road, William Street and Wemyss Street – 6 from each.

6.1 SUMMARY OF NEIGHBOURHOOD TRAFFIC PROBLEMS

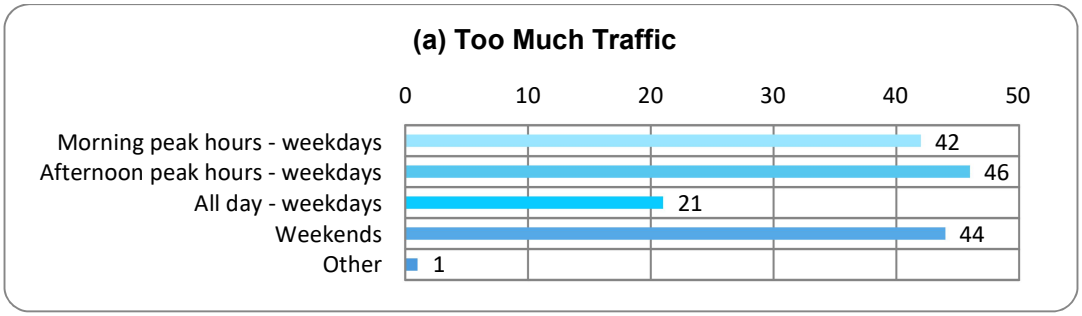
The table below indicates that the highest rated problem in the area is the volume of traffic.

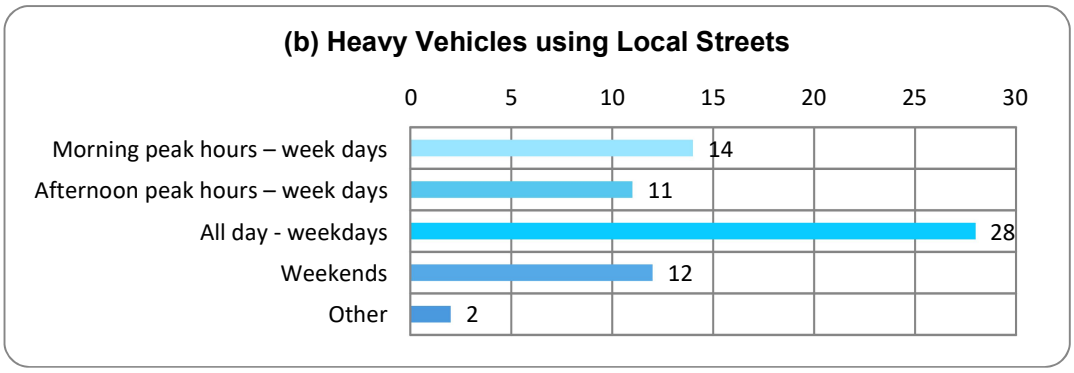
Figure 6.1 Overall Rating of Traffic Problems

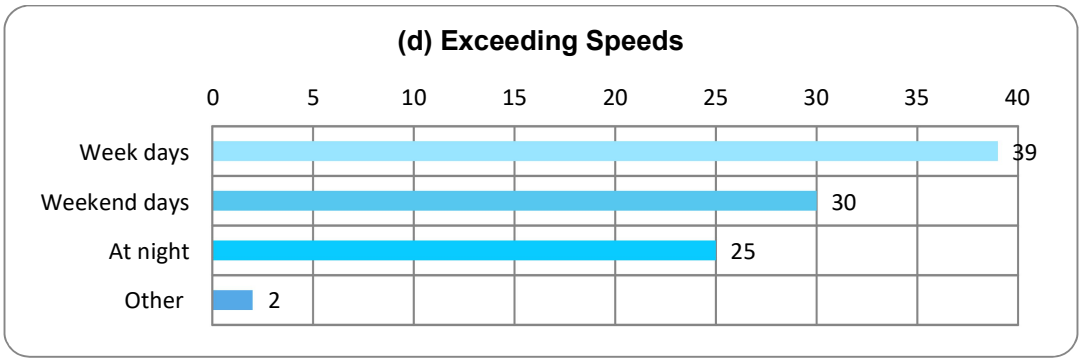


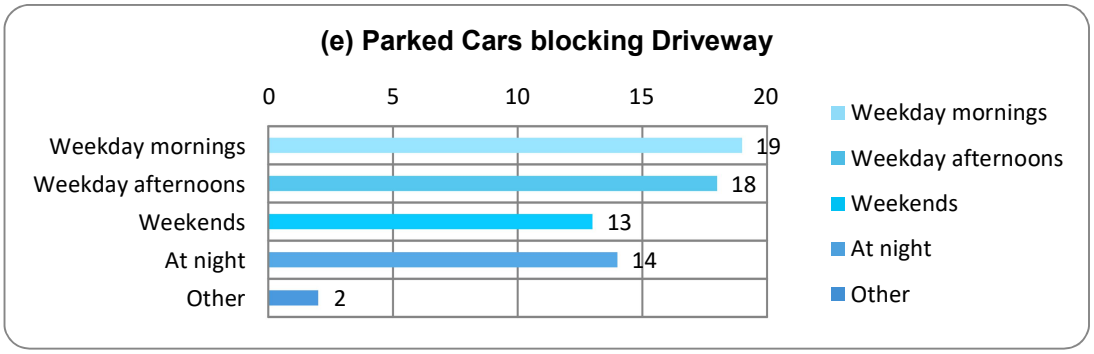
The figures below indicate that weekends are rated as highly as a problem time for traffic volume, indicating that this issue is not confined to the working week. However all other problems are rated more highly for the working week.

Figures 6.2 Time when Problems Occur









Parked cars are the source of the highest rated sight obstruction cause, and respondents rated this as a problem all the time.

Additionally, respondents indicated that traffic speeds and volumes affect their ability to walk around the neighbourhood – refer to **Appendix B** for detailed results.

A submission was received from Newington College raising two issues. A traffic issue along Stanmore Road was referred to the RMS, and the pickup zone request in Newington Road was referred to Council's traffic engineers for a response.

6.2 PROBLEMS IDENTIFIED IN SPECIFIC STREETS

An examination by problem by street is graphically illustrated in Map 5. The following table lists the issues and streets where these issues are most frequently mentioned. The highest level of concern is in:

- Addison Road has the highest level of concern for too much traffic, heavy vehicle use and exceeding the speed limit;
- Stanmore Road and Enmore Road also have a high level of concern for too much traffic;
- Newington Road has rat running and too much traffic concerns.

Table 6.1 Problems Rated most Highly by Street

	TOO MUCH TRAFFIC	RAT RUNNING	HEAVY VEHICLES	EXCEEDING SPEED LIMIT	PARKED CARS BLOCKING DRIVEWAY
Addison Road	16	1	19	10	2
Stanmore Road	15	3	5	2	0
Enmore Road	13	1	4	1	0
Newington Road	9	10	0	4	5
Tupper Street	9	9	1	0	3
Fotheringham Street	2	8	4	0	1
Fotheringham Lane	2	8	4	0	1
Albert Street	2	6	3	1	2

7. AUDITS OF EXISTING SITUATION

7.1 TRAFFIC MANAGEMENT DEVICES

The traffic management devices in the study area are generally of high quality and condition. Immediate attention is required for two speed humps, where there is visible damage to the device surface. The damage to the speed humps are most likely due to the wear and tear effect of pressure exerted by the tyres of passing vehicles. The locations and conditions of the previously mentioned devices are described in **Appendix C**). It is also possible that there may be underlying road integrity issues underneath the surface which in turn may cause structural damage to the above device.

Aside from the aforementioned speed humps, no other immediate repairs are required although there are visual indications of minor damage such as cracking on the surface for a few refuge islands. The cracks on the pedestrian island blocks are more likely due to vehicles collisions, as such it is paramount to closely monitor the condition of these refuges in case there is critical damage, which would render the device unsafe. It is noted that two refuge islands are designed to the superseded Standard.

7.2 ACTIVE TRANSPORT FACILITIES

Bicycle routes were audited based on the routes outlined in the Inner West Cycling Route Map on the Council website. Standard cycling facilities such as pavement markings, warning signage and directional signage were inspected on site to determine if the items exist, and if so the quality of such items. Despite the Inner West Cycling Route Map showing multiple cycling routes, there are limited signs to indicate to the public the existence of these nominated routes. Existing bicycle signage is outdated such as the blue and white bicycle sign which has been superseded for a number of years. The bicycle routes are currently missing W6-214 'Share the Road' signs, W6-7 & W8-23 bicycle warning signs, and directional/reassurance signs such as G2-203 fingerboard signage.

There is a high prevalence of bicycle pavement symbols (PS-2) along Newington Road and Addison Road between Livingstone Road and England Avenue, although there is a lower frequency of logos on Addison Road. There is also one bicycle logo on Bright Street near the intersection of Addison Road and one bicycle logo on Middleton Street near the intersection of Stanmore Road. No other routes are marked with PS-2 bicycle logos.

An audit of pedestrian routes was conducted simultaneously by examining the list of recommendations in Marrickville Pedestrian Access and Mobility Plan Review by Arup. However it is noted that only significant areas were audited, namely areas within 10 metres walking distance of bus stops, pedestrian refuges, raised crossings, roundabouts and traffic signals. Various issues are documented regarding the condition of the footpaths, such as cracked slabs, lifted footpath sections and broken utility pit covers which are a potential trip hazard. Poorly aligned pram ramps are also a safety issue which needs immediate attention, such as ramps facing towards an intersection. These items are documented in **Appendix E.** Aside from the previously mentioned items, pedestrian facilities in the study area are generally of good quality and comply with the relevant Standards.

7.3 SIGNAGE AND PAVEMENT MARKINGS

An audit of existing signage and pavement markings indicate a lack of appropriate signage as per the relevant Standards and Technical Directions. There is a distinct absence of pedestrian refuge island signage such as W6-1 / W6-3 and W8-25 'Refuge Island' warning signage and D4-1-2 unidirectional hazard marker along with missing pavement markings such as approach hatching.

A number of speed hump warning signs are also missing from a number of streets, namely W5-10 and W8-2 warning signs. The location and quantity of signs/pavement markings missing is detailed in **Appendix D.**

7.4 ON STREET PARKING

Illegal on-street parking was documented and analysed through video surveys on Tuesday the 5th of June 2018 from 3:30 p.m. to 5:00 p.m. and on Wednesday the 6th of June 2018 from 10:00 a.m. to 11:40 a.m.

The survey revealed a large number of cars parking illegally, 107 cases documented across both days as shown in **Appendix E**. The most common type of infringement was parking in a statutory 'No Parking' area. Other issues included parking in statutory 'No Stopping' areas, grass verges, on footpaths and across driveways although it is highly likely that the cars parked across driveways belong to the resident of the associated dwelling.

7.5 OFF STREET PARKING

There is a public off-street car park located on Chester Street near the intersection of Livingstone Road. There are 21 standard car parking spaces with 2P parking restrictions applying from 8:00 a.m. to 6:00 p.m. Monday to Sunday. There are no other public off-street car parking facilities within the study area.

8. ANALYSIS OF CRASHES AND INTERSECTION OPERATION

Crash locations were discussed in section 5.4, and identified four intersections on Regional and Council roads with higher crash occurrences and crash patterns. Three of these four intersections are signalised. Their operational performance was analysed using SIDRA modelling software in order to identify the current level of performance and whether the operational characteristics or phasing pattern could be contributing factors to safety issues refer to **Appendix F**).

8.1 ENMORE ROAD / LLEWELYN STREET INTERSECTION

This intersection has seven crashes. Crash type RUM code 21 (right through) occurred 3 times in this intersection, one of which involved a cyclist. This crash type occurs when a vehicle attempting to turn right (from Enmore Road into Llewellyn St) collides with an opposing vehicle traveling straight through the intersection. With the current traffic signal phasing, vehicles turning right have to "filter" through the opposing straight movement (that is there is no green arrow phase to protection the right hand turn). It is possible that one more accident, involving the same right hand turn with the vehicle turning right from Llewellyn Street, is also due to an attempt to complete the filtering right hand turn after the end of the green phase in Enmore Road.

SIDRA analysis of the intersection operation indicates good operation (Level of Service A).

Table 8.1 LOS Criteria for Intersections

		Level of service criteria for intersections	
Level of Service	Average Delay per Vehicle (secs/veh)	Traffi Signals, Roundabout	Give W
A	< 14	Good operation	Good c
B	15 to 28	Good with acceptable delays & spare capacity	Accept
C	29 to 42	Satisfactory	Satisfac

Table 8.2 Enmore Road/Llewelyn Street Intersection Level of Service

TCS	Approach	AM				PM			
		AVD, sec.	LOS	DS	Queue, m	AVD, sec.	LOS	DS	Queue, m
	Enmore Rd / Llewellyn St Existing								
1889	Enmore Rd (South)	4.6	A	0.49	34.3	5.4	A	0.41	31.6
	Llewellyn St	16.7	B	0.21	12.1	22.2	B	0.48	35.1
	Enmore Rd (North)	30.5	C	0.57	42.1	21.9	B	0.48	49.8
	All	**12.8**	**A**	**0.57**	**42.1**	**15.2**	**B**	**0.48**	**49.8**

8.2 ENMORE ROAD / ADDISON ROAD INTERSECTION

This intersection has five crashes. Similar to the Enmore Road / Llewelyn Street intersection, there were 3 instances of right through (RUM code 21) and a total of 4 incidents involving a turning movement. Both intersections are signalised with very similar lane setups, geometry and traffic signal phasing (with a filtering right hand turn). Consequently, the causes of accidents at this intersection are the same as at the Enmore Road / Llewelyn Street intersection.

The intersection currently operates at a Level of Service C in the morning and B in the afternoon. Longer delays occur on the northern approach to the intersection (Enmore Road), consistent with the type of the accidents (drivers choosing inappropriate gaps for their right hand turns due to longer waiting times).

Table 8.3 Enmore Road/Addison Road Intersection Level of Service

TCS	Approach	AM				PM			
		AVD, sec.	LOS	DS	Queue, m	AVD, sec.	LOS	DS	Queue, m
	Enmore Rd / Addison Rd Existing								
1884	Enmore Rd (South)	10.7	A	0.85	118.6	20.8	B	0.66	66.8
	Enmore Rd (North)	31.4	C	0.76	124.5	21.9	B	0.86	173.4
	Addison Rd (West)	41.0	C	0.85	189.1	39.5	C	0.85	107.1
	All	**37.6**	**C**	**0.85**	**189.1**	**25.8**	**B**	**0.86**	**173.4**

8.3 ADDISON ROAD / AGAR STREET / ILLAWARRA ROAD INTERSECTION

This intersection has four crashes, and has also had occurrences of right through (RUM code 21) crashes. One of the crashes is between a right hand turn movement from Addison Road (from the east) to Agar Street (to the north) and the opposing straight movement (eastbound) in Addison Road. This is a prohibited right turn, appropriately signposted. Further investigation from the traffic counts revealed 3 occurrences of illegal right hand turns within 7 hours of surveys. The survey results thus indicated a regular violation of the right turn ban.

The second RUM 21 crash was in the opposite direction and is attributed to the filtering right hand turn phasing arrangement (same as for the other two intersections described above). One crash involved vehicles travelling perpendicular to one another. This crash is attributed to one of the drivers running on a red light and is unlikely to re-occur as a pattern.

The overall Level of Service of this intersection is good ("A" for both morning and afternoon commuter peak hours) with higher delays on Agar Street and Illawarra Road approaches due the priority given to Addison Road traffic.

Table 8.4 Addison Road/ Agar Street/ Illawarra Road Intersection Level of Service

TCS	Approach	AM				PM			
		AVD, sec.	LOS	DS	Queue, m	AVD, sec.	LOS	DS	Queue, m
1087	**Addison Rd / Agar St / Illawarra Rd Existing**								
	Illawarra Rd	43.3	D	0.38	30.8	46.0	D	0.45	31.5
	Addison Rd (East)	5.7	A	0.19	30.4	6.2	A	0.47	83.5
	Agar St (North)	38.7	C	0.10	9.9	41.8	C	0.19	17.3
	Addison Rd (West)	6.8	A	0.38	61.6	8.4	A	0.47	56.3
	All	**14.1**	**A**	**0.38**	**61.6**	**14.0**	**A**	**0.47**	**83.5**

8.4 ENMORE ROAD / NEWINGTON ROAD INTERSECTION

The three crashes at this intersection involved three different types of crashes, but all involved a vehicle turning from Newington Road colliding with a vehicle travelling through the intersection. SIDRA modelling indicated high delays for vehicles in Newington Road, which are likely to cause the drivers to choose shorter unsafe gaps in Enmore Road traffic. This situation is compounded by restricted visibility due to a bus stop with frequent services, located on Enmore Road immediately to the south of Newington Road. Newington Road is also flanked by two buildings which may be visual obstructions.

Table 8.5 Enmore Road/ Newington Road Intersection Level of Service

Enmore Rd / Newington Rd Existing								
Enmore Rd (South)	0.0	A	0.24	0	0.0	A	0.22	0.0
Enmore Rd (North)	0.0	A	0.16	0	0.0	A	0.34	0.0
Newington Rd	11.4	A	0.20	5.1	37.0	C	0.34	9.2
All	**19.1**	**B**	**0.24**	**5.1**	**37.0**	**C**	**0.34**	**9.2**

9. CONSULTATION

9.1 COMMUNITY WORKSHOPS

Two community workshops were held in the Petersham Administrative Centre, one during the day, and the other at night, after a mail out by Council to residents in the study area. Attendance at the workshops was very low as follows:

- 3 from William Street
- 1 from Middle Street
- 1 from John Street
- 1 property owner in Chester Street
- 2 from Tupper Street

During the discussion periods, the following issues were raised:

- Tupper Street -
    - should be one way due to the narrowness of the street and the amount of traffic;
    - deep drains at Newington Road intersection causing congestion and occasional fall into drains of cars
    - hard to make a turn into /out of Newington Road / Tupper Street due to narrowness of intersection and cars parked at intersection
    - at Stanmore Road cars parked close to intersection making a left turn in difficult.
- Shaw Street – narrow road with a lot of traffic.

As a result of the issues raised, site inspections were undertaken and crash data, traffic volumes and speeds were reviewed for Shaw Street, Tupper Street / Newington Road and Tupper / Stanmore Road. The outcomes from these analyses is:

- Shaw Street is a regional road with a 3 tonne load limit. Volumes are acceptable for this classification of road (10,774 vehicle per day in 2015). Traffic speeds are within acceptable limits (85th speed was 54km/h in 2014 south of Oxford Street). In a 5 year period 5 crashes occurred, all were at intersections or approaching intersections. No action is recommended at present, however an annual review of crashes is recommended, with a view to intersection management in the future if recorded crashes indicate an increase in crashes at any location.
- There are no documented crashes at the intersection of Tupper Street/Stanmore Road involving vehicles which may be turning left into Tupper Street, and as a result of possible delayed entry due to congestion in Tupper Street resulting in rear end crashes. No action is recommended at present.
- The Tupper Street / Newington Road intersection has no documented crashes, however the tight configuration and poor sight distances due to parked cars creates a local congestion point. This together with the deep gutters either side of Tupper Street warrant an improved management of this intersection. (refer to Figure 9.1 overleaf for photos of the site).

Figure 9.1 Intersection of Newington Road / Tupper Street

	Tupper Street at Newington Road creates a local congestion point. Cars exiting must give way to Newington Road vehicles. Due to the cars parked close to the intersection, the deep gutters, and parked cars on Newington Road, a right hand turn into Newington Road from Tupper Street when a Newington Road vehicle is trying to make a left turn into Tupper Street.
	The same intersection free of cars. Note the car parked opposite the intersection and the deep gutter which cars must avoid.

9.2 COUNCIL WEB SURVEY

Council sent out a letter to residents affected by additional proposed traffic management devices which would be required to establish a 40km/hour speed zone. The letter directed residents to the workshops and the web survey which was accessible from the 6th August - 3 September 2018. The questions targeted resident opinions on establishing a 40km/h speed zone in the study area in all streets excluding Shaw Street, Addison Road and Enmore Road which would remain 50km/h.

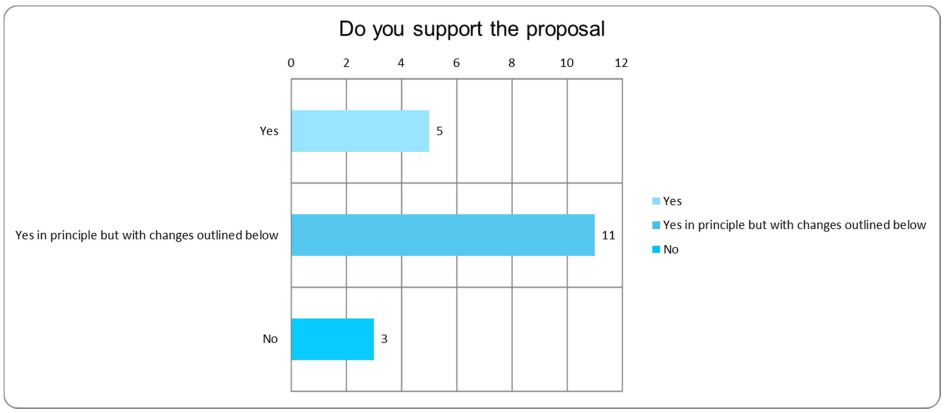
A total of 19 responses were received as follows:

- Newington Road - 2
- Stanmore Road - 2
- Outside area - 2
- Wemyss Street
- Tupper Street
- Albert St
- North St
- Illawarra Road
- Mary St
- Fotheringham
- North Street
- Jeffrey Street
- England Avenue

- Marshall Street
- John St

The majority supported the proposal with some changes.

Figure 9.2 Overall Support for 40km/hour Proposal



The respondents who answered YES also had the following comments:

- It would be at if the NSW police could also get behind this and station officers on streets like Albert where drivers go at great speed all the time.
- I am a property owner in the Newington precinct. This actions to reduce dangerous speed and make the area more amenable for residents is commended.
- I totally agree that roads should have a 40km/h speed limit. In fact, I consider that a 40km/h limit in the whole LGA would be ideal - to make the LGA safer and calmer. There are so many cars driving too fast - and there are no police around to issue anyone with fines.
- I think that this is a great plan.
- I cycle through this area every day on my way to work. Making it safer for cyclists and pedestrians would be great - these roads are narrow and the danger of car doors opening into you as you're riding is very real. Making it a 40km/hr zone would hopefully calm motorists who get angry at cyclists riding in the centre of the lane in order to get out of the car door death lane.

The 11 respondents who indicated YES with changes had a range of comments which are presented in **Appendix G**. The most relevant issue raised was in relation to Marshall Street. A watching brief may be necessary in Marshall Street, which presently has a low 85th percentile speed (36.4km/h) and an acceptable traffic volume (1,307 vpd) for a local residential street. It was pointed out that as there are no humps proposed in Marshall Street, the scheme could direct traffic to this street.

The respondents who answered NO also had the following comments:

- I just disagree with the general use of speed humps in the nominated area for controlling traffic. Other international cities do not have this proliferation in their suburban streets and still are capable of controlling speed.
- I own a property on John St. With cars parked on the road, there is only space for 1 car to drive at a time. I have never seen any cars speeding on the road. I do not believe it is

necessary to put speed humps on John St.

9.3 TRAFFIC COMMITTEE REVIEW AND RECOMMENDATIONS

Council's Local Traffic Committee reviewed the Draft Report version 2 in December 2018, and based on the technical data and community consultations, some recommendations were changed. Resolutions in relation to the public exhibition were:

- Adopt the recommended 50km/h scheme which includes the installation of 3 mid-block thresholds
- Include the change of priority at Tupper Street and Newington Road.
- Regarding the 40km/h scheme, the RMS advised that they will not support a trial of 40km/h signs-only treatment option. However Council wishes to retain the 40km/h scheme treatments as an option to be considered next time the Newington LATM is reviewed.
- As the Addison Road bicycle path project remains undecided at this time, the kerb extensions along Addison Road will have to remain as an option to be further explored in conjunction with the public domain works planned for this area.
- Enmore Road/Newington Road intersection involving the relocation of bus stops may be a contentious issue for affected residents, option 1 which recommends a Stop sign instead of the existing Give Way sign is supported.
- Tupper Street/Newington Road intersection – change in priority and removal of speed hump is recommended, together with No Parking 7am-7pm Mon-Fri as an option.
- Enmore/Llewellyn Street & Enmore Road/Addison Road protected right turn lanes both will need to be referred to the RMS for safety improvements at these locations.
- The pedestrian refuge island between Denby and Philpott Streets has already been submitted to the RMS for 2019/2020 state and federal government funding.
- Enmore Road kerb extensions south of Newington Road – there is existing 'No Parking 7-9am Mon-Fri' on west side and No Parking 4-6pm Mon-Fri on the east side along Enmore Road. As kerb extension would reduce traffic capacity from 2 lanes to 1 lane in each direction during the peak hour, this option is not supported.

10. RECOMMENDED ACTIONS

The brief states that:

> *The LATM should meet broadly with the management principles outlined in the Marrickville Integrated Transport Strategy (2007). Of most importance, is that through the analysis of the data available, that recommendations are developed with addressing local transport issues and moving toward sustainable transport that is, reducing car use and increasing use of public transport, walking and cycling.*

10.1 EXISTING LATM AND ACTIVE TRANSPORT UPGRADE ACTIONS

A number of outstanding actions are required as a result of the audit of the existing LATM, bicycle and pedestrian facilities and on street parking infringements. Due to the extensive nature of the works, the issues and actions required are documented in **Appendix D**, grouped by relevance and also indicating the exact location of the specified works. Some of the identified issues can be defrayed to some extent by implementation of a 40kn/h speed limit.

10.1.1 Pedestrian Facilities

Improving the existing pedestrian environment along Addison Road can be achieved in the first instance by implementing the outstanding PAMP recommendations and recommendations from this audit which address bus stop areas and pedestrian crossing points.

10.1.2 Bicycle Facilities

The bicycle network in the study area should be designed to the following Bicycle Planning Principles for mixed traffic cycling facilities:

- Signage
  - W6-7 & W8-23 on side roads approaching intersection
  - G8-14 every 150 metres
- Lane lines
  - Solid edge lines to delineate traffic lane where width 12m+
  - No edge lines where width <12m
  - Centre line
- Logos
  - PS-2 in Shared Lane before and after every intersection

A rough estimate of the works required would be the following:

- 44 x W6-214 'Share the Road' signs
- 31 x W6-7 & W8-23 bicycle warning signs
- 6 x G2-203 intersection fingerboard signage
- 14 x PS-2 bicycle pavement logos

The implementation of a 40km/h speed environment will assist the safety of cyclists. With the 40km/h speed limit implementation, the local bike routes may not be required, as all streets will be safer to cycle, and the works proposed on local routes may be redundant.

10.1.3 On Street Parking

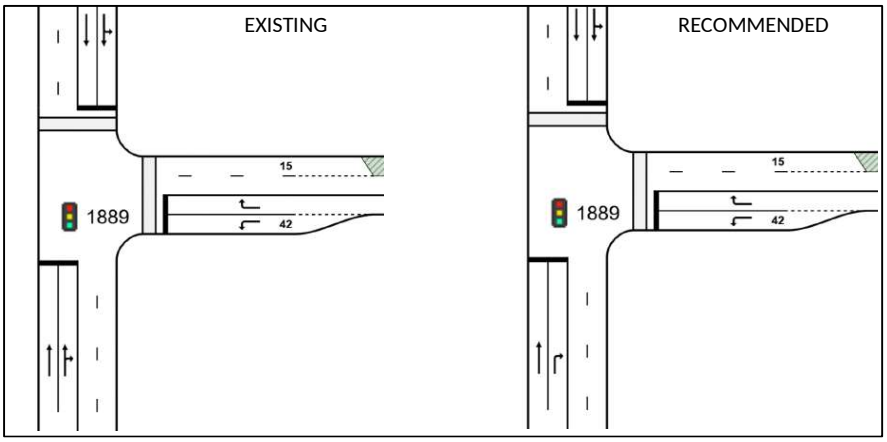
On street parking non- compliance is extensive (refer to **Appendix E**), but crash data do not reflect problems with this. With the lowering of the speed limit to 40km/h requiring cars to travel slower in the study area, existing visibility problems caused by parking infringements at intersections could be lowered by slower approach speeds. At this stage, extensive enforcement in local streets is not recommended.

10.2 INTERSECTION TREATMENTS

10.2.1 Enmore Road / Llewelyn Street Intersection

It is recommended that the second lane on the southern approach to the intersection, currently shared by right turn and through movements, be designated to right turns only, as shown below.

Figure 10.1 Enmore Road / Llewelyn Street Recommendation



This will allow introduction of a protected right hand turn from the southern approach, eliminating the safety issue with the filtering right turn. In addition, the existing morning “No Parking” restrictions on the eastern side of Enmore Road between Addison Road and Llewellyn Street will need to be extended to cover the afternoon peak hours (4 p.m. to 6 p.m.).

SIDRA analysis of the recommended arrangements shows minor increases of average delays overall and no change of Levels of Service of the intersection operation, compared with the existing situation. Refer to a **Table 8.1** and to **Appendix F** for further details of SIDRA analysis.

This recommendation should be referred to the RMS for safety improvements at this location.

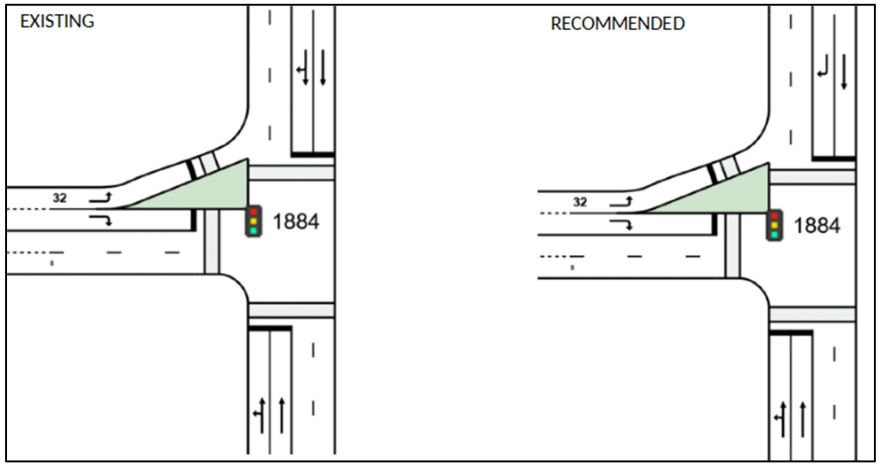
Table 10.1 Enmore Road/Llewelyn Street Intersection Level of Service Comparisons

TCS	Approach	AM				PM			
		AVD, sec.	LOS	DS	Queue, m	AVD, sec.	LOS	DS	Queue, m
	Enmore Rd / Llewellyn St Existing								
1889	Enmore Rd (South)	4.6	A	0.49	34.3	5.4	A	0.41	31.6
	Llewellyn St	16.7	B	0.21	12.1	22.2	B	0.48	35.1
	Enmore Rd (North)	30.5	C	0.57	42.1	21.9	B	0.48	49.8
	All	**12.8**	**A**	**0.57**	**42.1**	**15.2**	**B**	**0.48**	**49.8**
	Enmore Rd / Llewellyn St Proposed								
1889	Enmore Rd (South)	7.5	A	0.43	46.3	10.6	A	0.44	39.2
	Llewellyn St	18.1	B	0.21	14.1	22.7	B	0.44	37.3
	Enmore Rd (North)	26.1	B	0.43	37.3	16.7	B	0.44	45.8
	All	**13.6**	**A**	**0.44**	**46.3**	**16.7**	**B**	**0.44**	**45.8**

10.2.2 Enmore Road / Addison Road Intersection

It is recommended that the second lane on the northern approach to the intersection, currently shared by right turn and through movements, be designated to right turns only, as shown below.

Figure 10.2 Enmore Road / Addison Road Recommendation



This will allow introduction of a protected right hand turn from the northern approach, eliminating the safety issue with the filtering right turn.

SIDRA analysis of the recommended arrangements shows an improvement of the overall Level of Service of the intersection operation in the morning and a slight deterioration (within acceptable limits) in the afternoon, compared with the existing situation. Refer to a Table overleaf and to **Appendix F** for further details of SIDRA analysis.

This recommendation should be referred to the RMS for safety improvements at this location.

Table 10.2 Enmore Road/Addison Road Intersection Level of Service Comparisons

TCS	Approach	AM				PM			
		AVD, sec.	LOS	DS	Queue, m	AVD, sec.	LOS	DS	Queue, m
	Enmore Rd / Addison Rd Existing								
1884	Enmore Rd (South)	10.7	A	0.85	118.6	20.8	B	0.66	66.8
	Enmore Rd (North)	31.4	C	0.76	124.5	21.9	B	0.86	173.4
	Addison Rd (West)	41.0	C	0.85	189.1	39.5	C	0.85	107.1
	All	**37.6**	**C**	**0.85**	**189.1**	**25.8**	**B**	**0.86**	**173.4**
	Addison Rd / Enmore Rd Proposed								
1884	Enmore Rd (South)	37.9	C	0.82	112.4	35.8	C	0.84	95.7
	Enmore Rd (North)	21.0	B	0.81	73.3	22.1	B	0.80	106.3
	Addison Rd (West)	41.1	C	0.84	189.1	35.5	C	0.82	102.1
	All	**33.2**	**C**	**0.84**	**189.1**	**30.0**	**C**	**0.84**	**106.3**

10.2.3 Addison Road / Agar Street / Illawarra Road Intersection

To address the issue with illegal right hand turns, it is recommended that the non-compliance be referred to NSW Police for enforcement in the first instance, with the possibility of installation of a camera to capture violations.

To address the issue of unsafe filtering right hand turns, it is recommended that traffic signal phasing could be adjusted by introduction of a lagging right hand turn phase for the eastern approach to the intersection. SIDRA analysis of the recommended arrangements shows minor increases of average delays overall and triggering change of Levels of Service from A to B (remaining at a "good" level), compared with the existing situation. Refer to a Table below and to **Appendix F** for further details of SIDRA analysis. This recommendation should be referred to the RMS for safety improvements at this location.

Table 10.3 Addison Road / Agar Street / Illawarra Road Intersection Level of Service Comparisons

TCS	Approach	AM				PM			
		AVD, sec.	LOS	DS	Queue, m	AVD, sec.	LOS	DS	Queue, m
1087	**Addison Rd / Agar St / Illawarra Rd Existing**								
	Illawarra Rd	43.3	D	0.38	30.8	46.0	D	0.45	31.5
	Addison Rd (East)	5.7	A	0.19	30.4	6.2	A	0.47	83.5
	Agar St (North)	38.7	C	0.10	9.9	41.8	C	0.19	17.3
	Addison Rd (West)	6.8	A	0.38	61.6	8.4	A	0.47	56.3
	All	**14.1**	**A**	**0.38**	**61.6**	**14.0**	**A**	**0.47**	**83.5**
1087	**Addison Rd / Agar St / Illawarra Rd Proposed**								
	Illawarra Rd	46.6	D	0.46	32.2	49.5	D	0.56	33.0
	Addison Rd (East)	29.5	C	0.45	71.2	10.6	A	0.56	109.7
	Agar St (North)	41.8	C	0.12	10.4	45.2	D	0.56	18.2
	Addison Rd (West)	6.7	A	0.36	0.359	8.2	A	0.38	56.1
	All	**21.4**	**B**	**0.46**	**0.463**	**16.7**	**B**	**0.56**	**109.7**

10.2.4 Enmore Road / Newington Road Intersection

Three options were proposed to address the safety of left and right hand turns from Newington Road, the preferred option of the Local Traffic Committee is:

- **Option1**: replace the “Give Way” sign with a “Stop” sign. This measure is likely to provide a slight improvement.

10.2.5 Tupper Street / Newington Road Intersection

Two options were proposed to address the visibility and safety of this intersection. The recommendation is a change of priority to Tupper Street with Stop signs on Newington Road and the removal of the speed hump west of the intersection in Newington Road (refer to **Figure 10.3** below).

An option is also suggested:

- prohibition of parking opposite Tupper Street in Newington Road from 7am-7pm on weekdays.

Figure 10.3 Tupper Street/ Newington Road Recommendation

10.3 TREATMENTS TO MAINTAIN 50KM/H

The area has a range of implemented traffic management, both for vehicle speed control and road safety. The implementation of the devices has been monitored over the years and traffic volume/speed data as well as the crash data reflects the effectiveness of this traffic management in maintaining the 50km/h speed limit. Three of the surveyed roads are non-compliant, these are Addison Road, Enmore Road and Bright Street. It is noted that there were no recorded roads with volume non-compliance.

In order to uphold the existing 50km/h speed limit, the following are recommended (refer to **Map 8a** and **Appendix H** for detailed drawings):

- Bright Street – two thresholds to address the speed non-compliance,
- Albert Street, near the intersection with James Street – a raised threshold to contain speed at a potential pedestrian crossing point to the children's playground, which is the only playground in the study area,
- A new pedestrian refuge between Denby and Philpott Streets to address the free flow of vehicles between the two signals – this has been submitted to the RMS for 2019/2020 state and federal government funding.

10.4 FUTURE TREATMENTS TO ESTABLISH A 40KM/H SPEED ZONE

The brief states that the LATM should consider:

> *Increasing the lengths (time and distance) of paths through the local street network, to reduce their connectivity between points on the arterial road network and direct local traffic onto those streets most able to accommodate it.*

There is an opportunity to address this issue by lowering the speed limit throughout the local streets from 50km/h to 40km/h. Many of these streets have 85th percentile speeds well below 50km/h (refer to **Maps 7a and 7b** which document the traffic speeds and volumes in the area). Devices were proposed on those streets where 40km/h may not be achievable without physical speed constraint. This would increase active transport safety and amenity while constraining motor vehicle speeds.

However in order to uphold a 40km/h speed limit, the following devices would be required in addition to the 50km/h treatments; **Map 8b** conceptually locates the devices which would be required:

- Albert Street – 3 raised thresholds,
- Audley Street – one speed hump,:
- England Avenue –2 raised thresholds,
- John Street - 2 speed humps,
- Middleton Street - 2 speed humps,
- North Street - 2 raised thresholds,
- William Street - 2 raised thresholds,
- On entry from the Regional and State roads – thirty 40km/h speed signs.

Since the RMS must approve a change to 40km/h, their agreement would be required, as well as detailed consultation with residents.

10.5 ADDISON ROAD AND OTHER RECOMMENDATIONS

10.5.1 Addison Road

In the community survey, this road had the greatest number of identified problems – specifically speed and road safety. The issues and constraints are:

- The local bus route is located on this road.
- An east-west bike route is presently being considered on this road.
- There are a large number of pedestrian crossing needs associated with the bus stops, schools, parks, Farmer's Market and shops.
- Cars travel over the 50km/h speed limit.

An upgrade of all the pedestrian refuges (some of which do not comply with contemporary standard) is an important step to upgrade road safety particularly for pedestrians and cyclists by:

- Forcing cars to travel slower through a tighter profile at pedestrian facilities.
- Preventing obstructive car parking at the facilities.
- Upgrading crossing facilities with correctly placed ramps.
- Increasing pedestrian visibility to drivers and vice-versa.

Subsequently, a recommendation has been made for kerb extensions at 6 pedestrian refuges to increase pedestrian crossing safety by physically decreasing the travel lane for cars (design examples in **Appendix I**),

However as the Addison Road bicycle path project along Addison Road has not been finalized, the kerb extensions are an important future option to be further explored in conjunction with the public domain works planned for this area.

10.5.2 Cyprus Club Redevelopment

Advantage should be taken of the Cyprus Club re-development, to create 10km/h Shared Zones in any new lane ways proposed between Alma Avenue and Tupper Street. This will ensure that they operate as access to the development in an environment which contains speed and at the same time creates a pedestrian link which presently does not exist.

MAPS

1 Road Hierarchy & 3 Tonne Load Limits

2 Traffic Management Infrastructure

3 Bicycle Routes

4 Bus Routes and Stops

5 Community Survey Responses

6 Traffic Volumes and Speeds – Regional Roads

7a Traffic Volumes and Speeds – Local Roads - 50km/h Speed Zone

7b Traffic Volumes and Speeds – Local Roads – 40km/h Speed Zone

8a Proposed 50km/h LATM & Road Safety Treatments

8b Deferred 40km/h LATM Treatments

APPENDICES

A	**RMS Crashes 2011-2016 Locations and Rum Codes**
B	**2018 Council Web Community Survey**
C	**LATM, Bicycle and Pedestrian Facilities Audit**
D	**Signage and Pavement Markings Audit**
E	**Illegal Parking Audit**
F	**SIDRA and Crash Analysis**
G	**Community Web Survey Comments**
H	**Proposed 50km/h LATM Treatment Drawings and Costed Works**
I	**Deferred Addison Road Pedestrian Crossing Upgrades**