

35-39 Regent Street, Mount Waverley

Transport Impact Assessment



15449TIA001D-F.docx 10 August 2016



onemilegrid

ABN: 79 168 115 679

(03) 9939 8250 1/59 Keele Street COLLINGWOOD, VIC 3066 www.onemilegrid.com.au

DOCUMENT INFORMATION

Prepared For	Godfrey Spowers Pty Ltd		
File Name	15449TIA001D-F.docx	Report Date	10 August 2016
Prepared By	James Dear	Authorised By	Jamie Spratt
Signature	Jung	Signature	Sport

© One Mile Grid Pty Ltd. This document has been prepared by **one**mile**grid** for the sole use and benefit of the client as per the terms of engagement. It may not be modified or altered, copied, reproduced, sold or transferred in whole or in part in any format to any person other than by agreement. **one**mile**grid** does not assume responsibility or liability to any third party arising out of use or misuse of this document.



1 EXECUTIVE SUMMARY

It is proposed to redevelop the site at 35-39 Regent Street, Mount Waverley and construct an aged-care facility accommodating 126 lodging rooms.

The facility will be provided with two access points to Regent Street, with the southernmost connecting to a pick-up/drop-off area, staff parking and loading areas, and the northernmost providing access to visitor parking facilities.

The design of the site access, car parking and loading areas all accord with the Planning Scheme and Australian Standard requirements and are considered appropriate for the intended use.

The proposed provision of staff and visitor bicycle parking exceeds the requirements of the Planning Scheme, with shower and change facilities also provided on-site.

The provision of 38 car parking spaces on-site satisfied the minimum requirements of the Monash Planning Scheme and should comfortably satisfy parking demands generated by the use.

By virtue of the operation of aged care facilities, traffic movements to and from the site are expected to be low, with no greater than 25 movements generated during each of the road network peak hours. This level of traffic will be readily accommodated without impacting upon Regent Street and the wider road network,



CONTENTS

1	EXECUTIVE SUMMARY	3
2	Introduction	
3	EXISTING CONDITIONS	
3.1	Site Location	
3.2	Planning Zones	
3.3	Road Network	
3.3.1	Regent Street	8
3.3.2	Waverley Road	9
3.4	SmartRoads Road User Hierarchy Maps	10
3.5	Sustainable Transport	10
3.6	Traffic Volumes	11
3.7	Intersection Analysis	11
4	DEVELOPMENT PROPOSAL	13
4.1	General	13
4.2	Car Parking & Vehicular Access	13
4.3	Waste Collection & Loading	13
4.4	Bicycle Parking	13
5	DESIGN CONSIDERATIONS	14
5.1	General	14
5.2	Design Standard 1 – Accessways	14
5.3	Design Standard 2 – Car Parking Spaces	15
5.4	Design Standard 3 – Gradients	15
5.5	Waste Collection	15
5.6	Bicycle Parking	15
6	BICYCLE PARKING CONSIDERATIONS	16
7	CAR PARKING CONSIDERATIONS	17
7.1	Statutory Car Parking Requirements	17
7.2	Proposed Car Parking Provision	17
7.3	Accessible Car Parking	17
8	TRAFFIC CONSIDERATIONS	18
8.1	Traffic Generation	18
8.2	Traffic Distribution	19
8.3	Traffic Impact	19
9	CONCLUSIONS	21
TABLES		
Table 1	Public Transport Provision	10
Table 2	SIDRA Intersection Parameters	
Table 3	Waverley Road / Regent Street – AM Peak Hour	
Table 4	Waverley Road / Regent Street – PM Peak Hour	
Table 5	Clause 52.06-8 Design Assessment – Design Standard 1	
Table 6	Clause 52.34 – Bicycle Parking Requirements	
Table 7	Clause 52.34 – Bicycle Facility Requirements	
Table 8	Clause 52.06 – Car Parking Requirements	
Table 9	Aged Care Traffic Generation	
Table 10	Aged-Care Traffic Distribution	
Table 11:	Traffic Generation	
Table 12	Waverley Road / Regent Street – AM Peak Hour	
Table 13	Waverley Road / Regent Street – PM Peak Hour	



FIGURES

APPENDIX A	SWEPT PATH DIAGRAMS	22
A PPENDICE	S	
Figure 9	Development-Generated Traffic Volumes	19
Figure 8	Waverley Road / Regent Street Turning Movements	11
Figure 7	Public Transport Provision	
Figure 6	Intersection of Waverly Road and Regent Street	9
Figure 5	Waverley Road	9
Figure 4	Regent Street, looking south	8
Figure 3	Planning Scheme Zones	7
Figure 2	Subject Site Aerial View	7
Figure 1	Site Location	



2 Introduction

onemile**grid** has been requested by Godfrey Spowers Pty Ltd to undertake a Transport Impact Assessment of the proposed aged care development at 35-39 Regent Street, Mount Waverley.

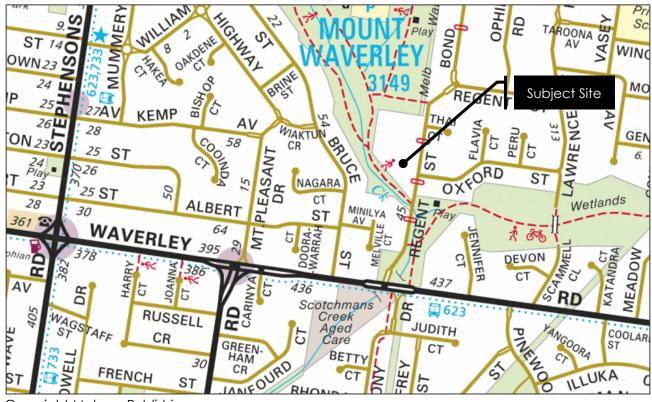
As part of this assessment the subject site has been inspected with due consideration of the development proposal, traffic data has been sourced and relevant background reports have been reviewed.

3 EXISTING CONDITIONS

3.1 Site Location

The subject site is located on the western side of Regent Street between Oxford Street and Thai Court, as shown in Figure 1. The site is irregular in shape with a frontage to Regent Street of approximately 65 metres along the eastern boundary and a depth of approximately 100 metres along its northern boundary and approximately 52 metres along its southern boundary.

Figure 1 Site Location



Copyright Melway Publishing

The site is currently occupied by two residential dwellings with each provided a single crossover connecting to Regent Street.

Land use in the vicinity of the site is mixed with residential and public park and recreation.

An aerial view of the existing site conditions is provided in Figure 2 overleaf.



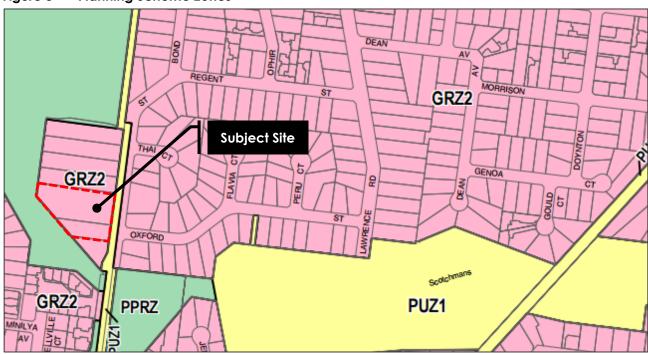
Figure 2 Subject Site Aerial View



3.2 Planning Zones

It is shown in Figure 2 that the site is located within the General Residential Zone (GRZ), for which permitted uses are listed at Clause 32.08 of the Planning Scheme.

Figure 3 Planning Scheme Zones





3.3 Road Network

3.3.1 Regent Street

Regent Street is a local road generally aligned north-south, running between Waverly Road and Lawrence Road in Mount Waverley. Regent Street provides a single traffic lane in each direction adjacent to the site and unrestricted kerbside parking is provided on both sides of the road.

There are three speed humps located on Regent Street beginning approximately 150 metres north of Waverley Road and placed approximately 100 metres apart.

A view of the Regent Street cross-section is provided in Figure 4 below.

Figure 4 Regent Street, looking south



The default 50km/h speed limit applies to Regent Street in the vicinity of the site.



3.3.2 **Waverley Road**

Waverley Road is an arterial road generally aligned east-west, running between Dandenong Road in Malvern East, and Jells Road in Wheelers Hill. Waverley Road provides a dual traffic lane in each direction separated by a median at the intersection of Regent Street. Kerbside parking is not permitted on either side of the road.

Waverley Road is designated a Road Zone 1, under the control and management of VicRoads.

The cross-section of Waverley Road is shown in Figure 5 below.





An aerial view of the Waverley Road / Regent Street intersection is shown in Figure 6.

Intersection of Waverly Road and Regent Street Figure 6



A 60km/h speed limit applies to Waverly Road in the vicinity of the site.



3.4 SmartRoads Road User Hierarchy Maps

In mid-2011, VicRoads developed the SmartRoads Road User Hierarchy Maps which aims to 'manage competing interests for limited road space by giving priority use of the road to different transport modes at particular times of the day.'

The SmartRoads map for Monash indicates that Waverly Road is a Traffic Route.

3.5 Sustainable Transport

It is shown that the site has good public transport accessibility, with multiple transport routes servicing the vicinity of the site, including the SmartBus route 703. SmartBus routes provide high frequency services and high speed services, with bus priority measures along the route, and real time information at bus stops.

The public transport provision in the vicinity of the site is shown in Figure 7 and detailed in Table 1.



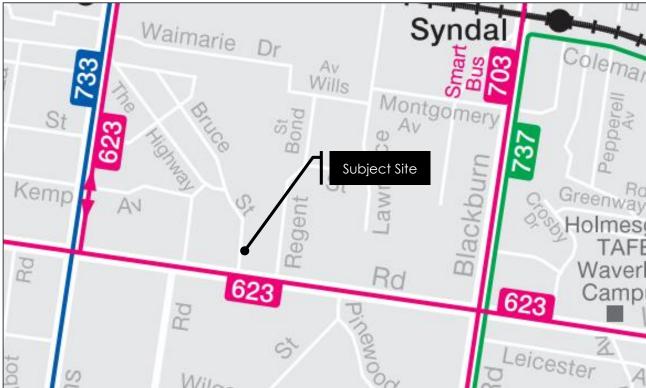


Table 1 Public Transport Provision

Mode	Route No	Route Description	Nearest Stop/Station
Bus	623	Glen Waverley - St Kilda via Mount Waverley, Chadstone, Carnegie	Waverly Rd/ Regent St
	703	Middle Brighton - Blackburn via Bentleigh, Clayton, Monash University (SMARTBUS Service)	Blackburn Rd/ Waverly Rd
	733	Oakleigh - Box Hill via Clayton, Monash University, Mt Waverley	Stephensons Rd/ Albert St
	737	Croydon - Monash University via Boronia, Knox City Shopping Centre, Glen Waverley	Blackburn Rd/ Waverly Rd

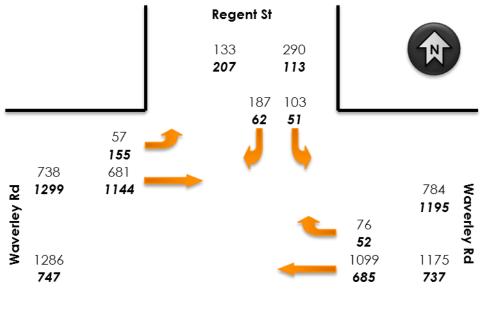


3.6 Traffic Volumes

In order to establish existing traffic conditions in the vicinity of the site, **one**mile**grid** commissioned turning movement counts at the intersection of Regent Street and Waverley Road on Wednesday 3rd February 2016 from 6:00AM-9:30AM and 3:00PM-6:30PM.

The peak hour results of the traffic counts are presented in Figure 8 below.





AM Peak: 8:00am - 9:00am

PM Peak:

4:30pm - 5:30pm

From the above counts, we can estimate that Regent Street carries in the order of 3,700 vehicles per day whilst Waverley Road carries approximately 20,000 vehicles per day.

3.7 Intersection Analysis

To assess the operation of the intersection the surveyed traffic volumes have been input into SIDRA Intersection, a traffic modelling software package.

The SIDRA Intersection software package has been developed to provide information on the capacity of an intersection with regard to a number of parameters. Those parameters considered relevant are, Degree of Saturation (DoS), 95th Percentile Queue, and Average Delay as described below.



Table 2 SIDRA Intersection Parameters

Parameter	Description					
	The DoS represents the ratio of the traffic volume making a particular movement compared to the maximum capacity for that particular movement. The value of the DoS has a corresponding rating depending on the ratio as shown below.					
	Degree of Saturation	Rating				
	Up to 0.60	Excellent				
	0.61 – 0.70	Very Good				
Degree of	0.71 – 0.80	Good				
Saturation (DoS)	0.81 – 0.90	Fair				
	0.91 – 1.00	Poor				
	Above 1.00	Very Poor				
	It is noted that whilst the range of 0.91 – 1.00 is rated as 'poor', it is acceptable for critical movements at an intersection to be operating within this range during high peak periods, reflecting actual conditions in a significant number of suburban signalised intersections.					
Average Delay (seconds)	Average delay is the time delay that can be expected for all vehicles undertaking a particular movement in seconds.					
95th Percentile (95%ile) Queue	95%ile queue represents the maximum queue length in metres that can be expected in 95% of observed queue lengths in the peak hour					

The results of the analyses are provided in Table 3 and Table 4 below.

Table 3 Waverley Road / Regent Street – AM Peak Hour

Approach	Movement	D.o.S.	Avg Delay (sec)	Queue (m)
Waverley Road (East)	Right	0.126	10.0	3.6
	Through	0.306	0	0
Regent Street	Left	0.642	20.2	48
	Right	0.642	37.6*	48
Waverley Road (West)	Left	0.207	5.6	0
	Through	0.207	0	0

^{*}Note – Includes delays from waiting within the median for right -turn

Table 4 Waverley Road / Regent Street – PM Peak Hour

Approach	Movement	D.o.S.	Avg Delay (sec)	Queue (m)
Waverley Road (East)	Right	0.203	19.8	5.2
	Through	0.191	0	0
Regent Street	Left	0.421	12.3	14.2
	Right	0.421	35.4	14.2
Waverley Road (West)	Left	0.364	5.6	0
	Through	0.364	0	0

As shown above the intersection is operating under very good conditions during the morning peak and excellent conditions during the afternoon peak hours with minimal queues and delays experienced by motorists.



4 DEVELOPMENT PROPOSAL

4.1 General

Based on the plans prepared by Spowers, it is proposed to demolish the existing buildings on-site and construct an aged-care facility accommodating 126 lodging rooms.

4.2 Car Parking & Vehicular Access

Two accesses will service the site from Regent Street.

The site's primary access will be a two-way crossover located adjacent to the southern boundary providing access to a porte-cochere and pick-up/drop-off area and an undercroft parking area (lower car park) accommodating staff parking, waste collection, and loading activity.

A second crossover at the northern end of the site will provide access into a visitor car parking area (upper car park).

The redundant crossovers will be removed and reinstated with kerb and channel.

A total of 38 car parking spaces are to be provided for the use, inclusive of 18 car spaces (one of which is accessible) within the lower car park, 19 spaces within the upper car park and one short-term drop off space adjacent to the building entrance.

4.3 Waste Collection & Loading

Waste collection is proposed to be undertaken by a private contractor, with collection occurring within the lower car park in a dedicated service access dock. Waste vehicles will enter and exit the site in a forwards direction.

4.4 Bicycle Parking

A bicycle parking area is proposed within the lower car park, sufficient to 26 wall-mounted spaces.



5 Design Considerations

5.1 General

onemile**grid** have undertaken an assessment of the car parking layout and access for the proposed development with due consideration of the Design Standards detailed with Clause 52.06-8 of the Planning Scheme. A review of those relevant Design Standards is provided in the following section.

5.2 Design Standard 1 – Accessways

A summary of the assessment for Design Standard 1 is provided in Table 5.

Table 5 Clause 52.06-8 Design Assessment – Design Standard 1

Requirement	Comments
Be at least 3 metres wide	Satisfied – minimum width of 5.8 metres
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide	Satisfied
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre	Satisfied
Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres	Satisfied
If the accessway serves four or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction	Satisfied
Provide a passing area at the entrance at least 5 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Road Zone	N/a – does not connect to a road zone, regardless accessway is two-way at each crossover
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.	Satisfied – any planting or fencing within the sight triangle will be less than 900mm height
If an accessway to four or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the road carriageway.	Satisfied

Swept path diagrams have been prepared, attached within Appendix A, to demonstrate access to and from the site with the appropriate design vehicles.

The swept paths demonstrate two-way access along the main accessway with a B85 and B99 design vehicle (85th and 99.8th percentile length passenger vehicle) as well as access with a Bariatric ambulance.



the bariatric ambulance will have only one-way access around each corner of the ramp towards the lower car park. Given this will occur relatively infrequently it is considered to be adequate.

5.3 Design Standard 2 – Car Parking Spaces

All car spaces on-site are proposed with a minimum width of 2.6 metres, length of 4.9 metres and are accessed from aisles of no less than 6.4 metres.

Spaces adjacent to walls have been suitably widened in accordance with Design Standard 2 of the Planning Scheme. Dead-end parking aisle have also been extended beyond the last space to facilitate ingress and egress manoeuvres.

Noting that the dead-end aisle within the upper car park is longer than six spaces, a turning bay has been provided at the end to ensure that if all car spaces are full a vehicle may still exit in a forwards direction.

5.4 Design Standard 3 – Gradients

The access ramp grades from the southern crossover have been designed in accordance with the requirements of AS2890.2, the design code for commercial vehicles, and provides grade transitions of no more than 1:12 for four metres and a maximum grade of 1:6.5 (measured along the internal radius).

These grades also satisfy the requirements of Design Standard 3 of the Planning Scheme, providing a shallower approach to the property boundary than the five metre 1:10 requirement.

The balance of grades on the lower level are no greater than 1:8.

Parking on the upper level is proposed at 1:20 parallel to the parking aisle, which satisfies the Australian Standard requirements.

5.5 Waste Collection

A bin storage area is located adjacent to the service access dock within the lower level staff car park. A private contractor will be engaged to collect both waste and recyclables.

Refer to the Waste Management Plan for further information.

5.6 Bicycle Parking

It is proposed to provide vertically mounted and staggered bicycle racks within a storage area on the lower level of the development accommodating 26 bicycles.

The individual bicycle racks are separated by 450mm, which provides a separation of 900mm between bicycles at the same level, in excess of the Planning Scheme requirements, and in accordance with typical advice from Bicycle Network Victoria.

The bicycle spaces are accessed via a 1.5m aisle, which also accords with the Planning Scheme and Australian Standard requirements.



6 BICYCLE PARKING CONSIDERATIONS

The bicycle parking requirements for the subject site are identified in Clause 52.34 of the Monash Planning Scheme. No rate is listed within the clause for 'residential aged-care facility', however the rate for 'nursing home' has been adopted. The relevant requirements are shown below.

Table 6 Clause 52.34 – Bicycle Parking Requirements

Component	No/Area	Requirement	Total
Nursing Home	126 beds	1 space per 7 beds for employees	18
		1 space per 60 beds for visitors	2
Total			20

Furthermore, where 5 or more employee bicycle spaces are provided, employee facilities are required in accordance with Clause 52.34 of the Monash Planning Scheme, as identified below.

Table 7 Clause 52.34 – Bicycle Facility Requirements

Facility	Employee Bicycle Spaces	Requirement	Total
Showers	18 spaces	1 shower for the first 5 employee bicycle spaces; plus 1 to each 10 employee bicycle spaces thereafter	2

Showers must have access to a communal change room, or combined shower and change room

From the above, it can be determined that the development needs to provide 20 bicycle parking spaces on-site, inclusive of 18 for staff and two for visitors, with at least two shower and change room facilities for staff.

A bicycle storage room is proposed to accommodate 26 bicycle parking spaces and thus will satisfy the Planning Scheme requirements.

Staff change room facilities are proposed adjacent to the bike store.



7 CAR PARKING CONSIDERATIONS

7.1 Statutory Car Parking Requirements

The car parking requirements for the subject site are identified in Clause 52.06 of the Monash Planning Scheme, which specifies the following requirements for the different components of the proposed development.

Table 8 Clause 52.06 – Car Parking Requirements

Use	No/Area	Rate	Car Parking Measure	Total
Residential aged care facility	126	0.3	to each lodging room	37
Total				

Based on the above calculations, a total of 37 parking spaces are required for the proposed development. As per the Planning Scheme guidelines, the parking requirement has been rounded down to the nearest whole number.

7.2 Proposed Car Parking Provision

It is proposed to provide a total of 38 car parking spaces to service the proposed development, which is in excess of the Planning Scheme requirements outlined above.

The provision of car parking is therefore considered to be appropriate to satisfy the parking demands generated by the development.

7.3 Accessible Car Parking

The Building Code of Australia (BCA) specifies the minimum requirements for provision of accessible car parking.

The proposed aged care development, classified as a Class 9C land-use, requires provision of one accessible car spaces for every 100 car parking spaces or part thereof. Noting the proposed provision of 38 car spaces on-site, the BCA requires at least one accessible car space on-site.

The provision of accessible parking thus satisfies the BCA requirements.



8 TRAFFIC CONSIDERATIONS

8.1 Traffic Generation

onemile**grid** and various other traffic consultants have undertaken a number of traffic generation surveys of aged care developments, summarised in Table 9.

Table 9 Aged Care Traffic Generation

		No	Traffic Generation (trips / bed)			
Location	Level of Care	No. Beds	Site Peak	Commuter Peak	Daily	
Broughtonlea, Surrey Hills	High Care, Low Care, Supported Residential	109	0.34	0.15 (a)(a)	2.14	
Regis Lake Park, Blackburn	High Care, Low Care, Respite Care, Dementia Care	202	0.39	0.15 (avg.)	2.32	
Canterbury Nursing Home, Canterbury			0.39	0.21		
Lorikeet Lodge, Frankston		106	0.40	0.14		
Newmans on the Park, Templestowe	High Care, Low Care	109	0.47	0.09	3.2	
47-49 Belgrave Road, Belgrave	High Care, Low Care	60	0.52	0.22		
Average			0.42	0.13	2.55	

It is noted that typically, the peak traffic generation of an aged care facility coincides with the staff changeover period, which generally occurs between approximately 2:00pm and 3:00pm. During the typical commuter peak period, traffic generation is typically considerably lower, as demonstrated above.

In order to provide a conservative assessment, traffic generation rates of 3 and 0.20 movements per bed will be adopted for daily and commuter peak hour periods respectively.

Based on traffic distribution patterns observed at similar aged-care facilities, summarised in Table 10, a summary of the traffic movements generated is provided in Table 11 below.

Table 10 Aged-Care Traffic Distribution

Peak Hour	Inbound	Outbound
AM Peak	70%	30%
PM Peak	25%	75%

Table 11: Traffic Generation

Period	Inbound	Outbound	Total
AM Peak	17	8	25
PM Peak	6	19	25
Daily	189	189	378

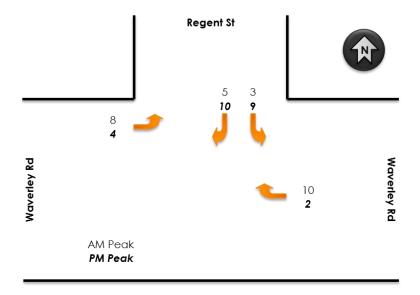


8.2 Traffic Distribution

All traffic to and from the site is assumed to enter Regent Street from its intersection with Waverley Road to the south and will be distributed between the east and west in agreement with the existing east/west distribution at Regent Street.

Based on this, the development-generated traffic volumes are illustrated in Figure 9.

Figure 9 Development-Generated Traffic Volumes



8.3 Traffic Impact

The above traffic volumes were superimposed onto existing traffic volumes at the Regent Street / Waverley Road intersection, and the intersection re-analysed to establish post-development intersection operation.

The result of the analyses are presented in Table 12 and Table 13 below.

Table 12 Waverley Road / Regent Street – AM Peak Hour

Approach	Movement	D.o.S.		Avg Delay (sec)		Queue (m)	
		Existing	Future	Existing	Future	Existing	Future
Waverley Road (East)	Right	0.126	0.144	10.0	10.2	3.6	4.1
	Through	0.306	0.306	0	0	0	0
Regent Street	Left	0.642	0.681	20.2	22.9	48	55
	Right	0.642	0.681	37.6*	40.9*	48	55
Waverley Road (West)	Left	0.207	0.209	5.6	5.6	0	0
	Through	0.207	0.209	0	0	0	0

^{*}Note – Includes delays from waiting within the median for right -turn



Table 13 Waverley Road / Regent Street – PM Peak Hour

Approach	Movement	D.o.S.		Avg Delay (sec)		Queue (m)	
		Existing	Future	Existing	Future	Existing	Future
Waverley Road (East)	Right	0.203	0.214	19.8	20.1	5.2	5.5
	Through	0.191	0.191	0	0	0	0
Regent Street	Left	0.421	0.494	12.3	14.1	14.2	18
	Right	0.421	0.494	35.4*	38.1*	14.2	18
Waverley Road (West)	Left	0.364	0.366	5.6	5.6	0	0
	Through	0.364	0.366	0	0	0	0

^{*}Note – Includes delays from waiting within the median for right -turn

As shown above the intersection is expected to continue operating under very good conditions during the morning peak and excellent conditions during the afternoon peak hours with minimal additional queues and delays experienced by motorists.

Thus, the development is this not expected to result in any significant traffic impacts on the surrounding road network.



9 CONCLUSIONS

It is proposed to redevelop the site at 35-39 Regent Street, Mount Waverley and construct an aged-care facility accommodating 126 lodging rooms.

Considering the analysis presented above, it is concluded that:

- > The car parking layouts and accesses have been designed generally in accordance with the requirements of the Planning Scheme and are considered appropriate for the use;
- > The proposed provision of staff and visitor bicycle parking exceeds the requirements of the Planning Scheme, and is therefore considered appropriate;
- > The proposed supply of car parking is appropriate for the proposed development and satisfied the Planning Scheme and Building Code requirements;
- > The proposed development is expected to have a negligible impact on the surrounding road network; and
- > There are no traffic engineering reasons which should preclude a permit from being issued.



Appendix A Swept Path Diagrams



