

New Street Public Housing Renewal Program

Amendment C157 to the Bayside Planning Scheme

Traffic Engineering Evidence Statement to Social Housing Renewal Standing Advisory Committee

Date of Statement: 1 November 2017

Date of Inspection: 31 October 2017

Prepared for the Applicant: Department of Health and Human Services

Instructed By: Norton Rose Fulbright

Reference: G22495A4_Brighton

IN THE MATTER OF AMENDMENT C157 TO THE BAYSIDE PLANNING SCHEME RELATING TO THE NEW STREET PUBLIC HOUSING RENEWAL PROGRAM

STATEMENT TO THE ADVISORY COMMITTEE BY JASON LEE WALSH, TRAFFIC ENGINEER

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

STATEMENT TO THE ADVISORY COMMITTEE BY JASON LEE WALSH, TRAFFIC ENGINEER

Amendment C157 to the Bayside Planning Scheme

at

New Street Public Housing Renewal Program

Our Reference: G22495A4_Brighton

COPYRIGHT: The ideas and material contained in this document are the property of Traffix Group (Traffix Group Pty Ltd – ABN 32 100 481 570, Traffix Survey Pty Ltd – ABN 57 120 461 510, Traffix Design Pty Ltd – ABN 41 060 899 443). Use or copying of this document in whole or in part without the written permission of Traffix Group constitutes an infringement of copyright.

LIMITATION: This report has been prepared on behalf of and for the exclusive use of Traffix Group's client, and is subject to and issued in connection with the provisions of the agreement between Traffix Group and its client. Traffix Group accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Table of Contents

1	Introduction.....	3
2	History of Amendment.....	4
3	Amendment C157	5
3.1	Potential Development Yield	5
3.2	Car Parking	5
3.3	Access and Internal Road Network.....	5
3.4	Pedestrian and Bicycle Accessibility.....	6
4	Existing Conditions.....	7
4.1	Location.....	7
4.2	Subject Site and Use.....	7
4.3	Surrounding Land.....	8
5	Traffic Considerations.....	9
5.1	Road Network	9
5.2	Existing Traffic Volumes	11
5.3	Existing Intersection Operation	13
5.4	Crash Review.....	14
5.5	Traffic Generation	15
5.5.1	Private Housing	15
5.5.2	Public Housing.....	15
5.5.3	Total	16
5.6	Proposed Access Arrangements	16
5.7	Traffic Distribution	16
5.8	Projected Traffic Volumes.....	17
5.9	Traffic Impact	19
6	Car Parking Considerations.....	21
6.1	Proposed Parking Overlay.....	21
6.2	Adequacy of Proposed Car Parking Rates.....	21
6.2.1	Sustainable Modes of Transport.....	21
6.2.2	Anticipated Parking Demand	24
6.3	Proposed Parking Provisions.....	25
7	Bicycle Considerations.....	26
8	Development Plan Requirements	27
9	Conclusions.....	29

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

List of Figures

Figure 1: Design Framework Pedestrian & Bicycle Links.....	6
Figure 2: Locality Plan.....	7
Figure 3: Brighton Site Aerial.....	8
Figure 4: New St – View South at Rusden St	9
Figure 5: New St – View North	9
Figure 6: Rusden St – View North-East.....	10
Figure 7: Rusden St and New St intersection– View South	10
Figure 8: Ebden St – View South-East	10
Figure 9: Ebden St – View North-West.....	10
Figure 10: Airlie St – View South-West.....	11
Figure 11: Salisbury St – View South-West	11
Figure 12: Brickwood St – View South.....	11
Figure 13: Brickwood St – View North	11
Figure 14: Existing Peak Hour Traffic Volumes.....	12
Figure 15: Crash Review Area.....	14
Figure 16: Potential Development Yield Peak Hour Traffic Generation	18
Figure 17: Post Development Traffic Volumes at Rusden Street/Ebden Street	19
Figure 18: Bayside TravelSmart Map.....	22
Figure 19: PTV Transport Map – Bayside	23

List of Tables

Table 1: Existing Intersection Analysis	14
Table 2: VicRoads Crashstats Data – July 2012 – July 2017	15
Table 3: Proposed Intersection Analysis	19
Table 4: Proposed Parking Overlay Rates.....	21
Table 5: Public Transport Services in the Vicinity of the Subject Site	23

List of Appendices

Appendix A Qualifications

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

1 Introduction

I have been instructed by Norton Rose Fulbright on behalf of the Department of Health and Human Services to undertake a traffic engineering assessment of Amendment C157 to the Bayside Planning Scheme that proposes to amend the planning controls that apply to the Public Housing Estate at New Street, Brighton.

In the course of preparing this statement, I inspected the subject site on 31 October 2017, reviewed background material, and assessed the car parking and traffic impacts of the proposal.

My qualifications and experience to undertake the following assessment are set out in Appendix A.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

2 History of Amendment

The Amendment is informed by a Planning Report prepared by Message Consultants, a Design Framework prepared by Baumgart Clark Architects, and a traffic report prepared by my firm. The traffic report was prepared by members of my team, but I had limited involvement with the Amendment process.

The Amendment proposes to:

- Rezone the Estate from a General Residential Zone – Schedule 1 (GRZ1) to a Mixed Use Zone – Schedule 2.
- Apply a Development Plan Overlay – Schedule 3 to the Estate (DPO3).
- Remove the Design and Development Overlay – Schedule 2 (DDO2).
- Apply a Parking Overlay – Schedule 1 (PO1).
- Amend the Schedule to Clause 61.01 to make the Minister for Planning the responsible authority over the Estate.

The Amendment was placed on public exhibition between 11 September and 16 October 2017.

Submissions have been received, with a number raising concern with the proposed parking provisions and traffic. Of note, the traffic and parking concerns are summarised, in general, as follows:

- Issues with existing car parking and traffic as a result of existing high demands for on-street parking, particularly associated with school pick-ups and drop-offs on Brickwood Street.
- Existing operation of the road network has not been considered, including the operation of the intersection of Rusden Street / Ebdon Street.
- Concern with a new access to Rusden Street creating road safety issues and the impacts to the existing bus stop.
- The provision of reduced parking rates, and differing rates between private and public development.
- Concerns that pedestrian and cycle access through the site cannot be appropriately provided with podium parking.
- Congestion issues due to on-street parking usage and increased traffic generation, particularly on Airlie Road and Salisbury Street due to their existing widths.

A submission from Transport for Victoria (TfV) requested the inclusion of additional considerations to the Schedule to the Development Plan Overlay relating to public transport accessibility, and additional analysis to demonstrate the future access arrangements will not impact on public transport routes.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

3 Amendment C157

3.1 Potential Development Yield

The Design Framework estimates the Amendment could facilitate an overall development yield of 310 dwellings, comprising 140 social housing dwellings (to replace the existing 127), and 170 new private dwellings.

The Design Framework contemplates a mixture of residential apartments (within the buildings fronting the canal) and two-bedroom townhouse style / duplex dwellings along the north-eastern boundary.

The private dwellings are anticipated to comprise 58 x one-bedroom dwellings, 96 x two-bedroom dwellings and 16 x three-bedroom dwellings.

The public dwellings are anticipated to comprise 91 x one-bedroom dwellings, 42 x two-bedroom dwellings, and 7 x three-bedroom dwellings.

These numbers are indicative and have been prepared for the purposes of allowing a range of assessments, including car parking and traffic.

3.2 Car Parking

The Amendment proposes the introduction of Schedule 1 to the Parking Overlay to allow for the application of reduced rates for residential uses. The following applicable rates are proposed:

- Public housing – 0.6 spaces per dwelling.
- Private housing – 1 space per one-bedroom dwelling; 1 space per two-bedroom dwelling, and 1.6 spaces per three-bedroom dwelling.
- Visitor parking – 0.1 spaces per dwelling.

Parking is expected to be provided by two large ground level car parks underneath two respective podiums. All parking will therefore be undercover.

The overlay will apply to new dwellings, including the replacement social housing.

3.3 Access and Internal Road Network

The Design Framework and associated documentation contemplates retention and improvement of the existing access arrangements. Specifically, access will comprise:

- Retention of the existing access to Salisbury Street.
- Retention of the existing Airlie Street access.
- Retention of the existing Brickwood Street access.
- The addition of a fourth site access via Rusden Street.

Access to ground level parking is intended to be provided via the internal road connection.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

It is noted that the Schedule to the Development Plan Overlay does not specifically list the requirement to provide access locations as above.

3.4 Pedestrian and Bicycle Accessibility

The Design Framework illustrates a permeable pedestrian and bicycle network to connect to the existing pedestrian and bicycle infrastructure surrounding the site.

Pedestrian accessibility is proposed to be provided along the internal accessways, connecting with the three existing vehicle access points and the proposed fourth vehicle access point to Rusden Street.

The pedestrian and cycle connections at ground from Airlie Road and Salisbury Street will extend through to the canal abuttal.

The access arrangements and proposed internal accessibility network for pedestrians and vehicles is illustrated in Figure 1.



Figure 1: Design Framework Pedestrian & Bicycle Links

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

4 Existing Conditions

4.1 Location

The subject site is a thin rectangular shaped parcel of land running along the north-eastern boundary of Elster Canal from New Street / Rusden Street through to Brickwood Street in Brighton.

The location of the site, in the context of the surrounding area is shown in the locality plan at Figure 2.

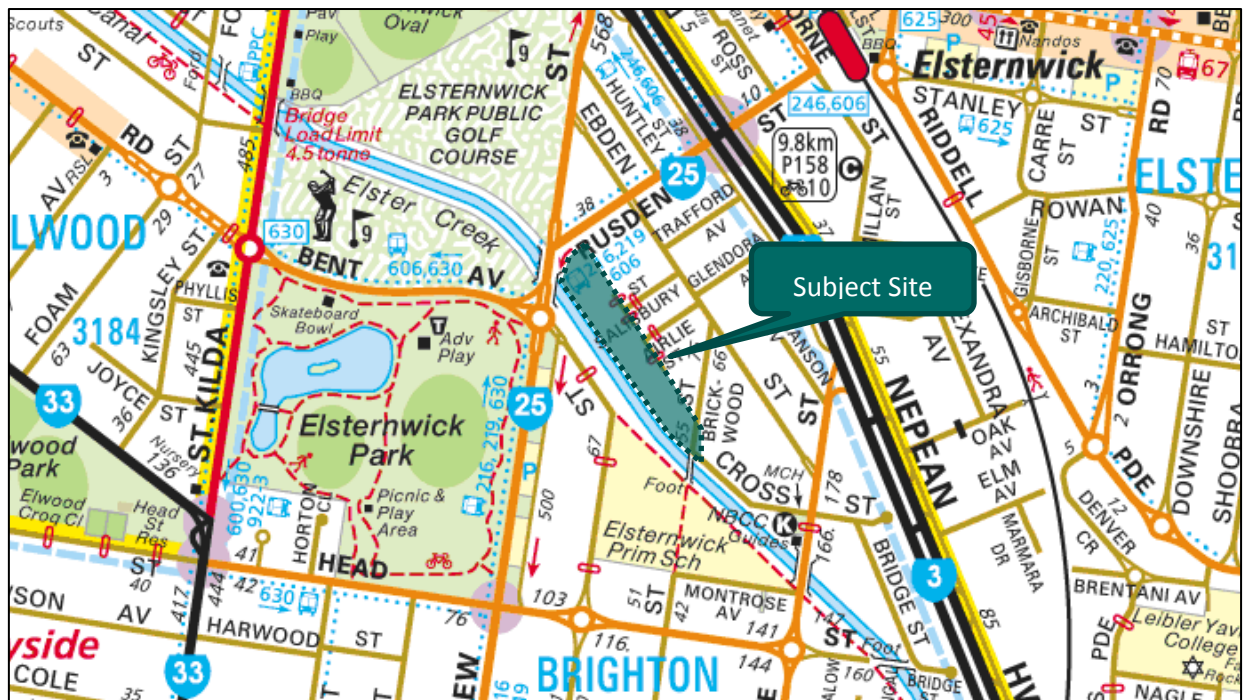


Figure 2: Locality Plan

Reproduced with Permission of Melway

4.2 Subject Site and Use

The subject site is irregular in shape and has abutments to residential development along its north-eastern boundary and small abutments to New Street / Rusden Street at the north-west, and to Brickwood Street to the south-east.

The site currently provides 127 residential dwellings.

Salisbury Street, Airlie Street and Brickwood Street provide vehicular access to the site. No through access is provided between each of the site's access points.

A total of 65 on-site parking spaces are currently provided on-site, being 27 spaces in the extension of Salisbury Street, 12 spaces in the extension of Airlie Street, 14 spaces accessed from Brickwood Street, and 12 parking spaces accessed directly from five crossovers to Brickwood Street along the south-eastern abuttal.

The existing on-site car parking equates to a provision of 0.51 spaces per dwelling.

An aerial photograph of the site is provided at Figure 3.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme



Figure 3: Brighton Site Aerial

4.3 Surrounding Land

The subject site is zoned as General Residential – Schedule 1, under the Bayside Planning Scheme. Nearby land uses in the vicinity of the site are generally residential in nature with Public Park and Recreation to the west and Public Education Use to the south. Significant nearby land uses include:

- Elsternwick Golf Course and Elsternwick Park are located to the west of the site.
- Elsternwick Primary School is approximately 70 metres south of the site (accessible via a footbridge over the Elster Canal).
- The Glen Huntly Road shopping strip is located approximately 400 metres north-east of the site.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

5 Traffic Considerations

5.1 Road Network

New Street is a major road under the control of Council, which runs from Nepean Highway in the north to Beach Road in the south. In the vicinity of the subject site, New Street provides for a single lane of through traffic in both directions and a wide shared kerbside parking and bicycle lane.

Between Rusden Street and Huntley Street (north of Rusden Street), New Street operates two-way, converting to one-way northbound operating toward Nepean Highway. The intersection of New Street / Rusden Street is prioritised for movements between New Street south and Rusden Street (north-east).

Views of New Street are provided at Figure 4 and Figure 5.



Figure 4: New St – View South at Rusden St



Figure 5: New St – View North

Rusden Street is a major road under the control of Council connecting Nepean Highway in the north and continuing as New Street from the site's north-western boundary. In the vicinity of the subject site, Rusden Street provides for a single lane of through traffic in both directions and a wide shared kerbside parking and bicycle lane. The posted speed limit on Rusden Street, north of the site, is 40km/h.

Views of Rusden Street are provided at Figure 6 and Figure 7.

Ebden Street is a local Council road operating in a north-west to south-east direction between New Street at the north-west and Cochrane Street at the south-east. Ebden Street typically provides for an approximately 11.3 metre pavement, allowing for simultaneous two-way traffic flow with unrestricted kerbside parallel parking on both sides.

Its intersection with Rusden Street is a Stop sign controlled intersection.

Views of Ebden Street are provided at Figure 8 and Figure 9.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme



Figure 6: Rusden St – View North-East



Figure 7: Rusden St and New St intersection– View South



Figure 8: Ebden St – View South-East



Figure 9: Ebden St – View North-West

Salisbury Street and **Airlie Street** are local access streets under the control of Council, running in a north-east to south-west direction from Ebden Street in the north and both continue into the site as private concrete driveways. Salisbury Street and Airlie Street provide for two-way traffic with parallel unrestricted parking along both kerbs.

Salisbury Street has a carriageway width of 7.3 metres, whilst Airlie Street has a carriageway width of approximately 9.0 metres.

These widths require opposing vehicles to give way to oncoming vehicles if vehicles are parked on both sides of the road. This is consistent with a typical local residential access street.

Figure 10 and Figure 11 show views of Airlie Street and Salisbury Street respectively.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme



Figure 10: Airlie St – View South-West



Figure 11: Salisbury St – View South-West

Brickwood Street is a local access street under the control of Council, running in a north-south direction. Brickwood Street provides a connection between Ebden Street in the north and continues as Cross Street in the south to connect with Cochrane Street. Near to the subject land, Brickwood Street provides for two-way simultaneous traffic with parallel parking along the both kerbs, set within an 11.0 metre pavement.

Figure 12 and Figure 13 illustrate views of Brickwood Street.



Figure 12: Brickwood St – View South



Figure 13: Brickwood St – View North

5.2 Existing Traffic Volumes

My firm collected peak hour traffic volumes for the site access point at Brickwood Street and the intersections of Airlie Street / Ebden Street, Salisbury Street / Ebden Street, Rusden Street / New Street, and New Street / Murphy Street / Bent Avenue on Thursday 8th June 2017.

This data was supplemented by VicRoads SCATS data from the intersection of Rusden Street and Nepean Highway, which identified that the peak periods for the wider network occurred 8:00-9:00am in the morning period, and 5:15pm-6:15pm in the afternoon period.

I note that concerns have been raised regarding the existing operation of the road network during the school peak hours and also the operation of the intersection of Ebden Street / Rusden Street.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

To supplement the data presented in the previous traffic report, my firm commissioned additional traffic surveys of the intersection of Rusden Street / Ebden Street on Tuesday 24th October 2017.

The peak hour traffic volumes for the network are provided in Figure 14.



Figure 14: Existing Peak Hour Traffic Volumes

It is noted that a comparison of volumes at the intersection of Rusden Street / Ebden Street between the early afternoon peak hour (at school times) and the recorded commuter peak hour shows that turning volumes into / out of Ebden Street are of a similar order, and importantly, through volumes on Rusden Street are lower during the early afternoon peak hour.

I am therefore comfortable that the adopted peak hours are appropriate.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Based on the recorded peak hour volumes, it is projected that:

- Airlie Street has a daily two-way volume of no more than 100 vehicle movements.
- Ebden Street has a daily two-way volume in the order of 1,350 vehicle movements.
- Salisbury Street has a daily volume two-way in the order of 150 vehicle movements.
- Brickwood Street currently carries in the order of 500 vehicle movements two-way per day.

5.3 Existing Intersection Operation

In order to understand the existing operation of the nearby intersections, SIDRA Analysis was undertaken for the AM and PM peak hours at the intersection of Rusden Street / Ebden Street.

The through volumes on Ebden Street and turning volumes to / from Airlie Street and Salisbury Street at each intersection with Ebden Street are of a very low order and do not warrant peak hour analyses.

SIDRA is a computer program originally developed by the Australian Road Research Board, which can be used to analyse the operation of intersections. SIDRA provides information about the capacity of an intersection in terms of a range of parameters, as described below:

Degree of Saturation (D.O.S.) is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement. Various values of degree of saturation and their rating are shown below.

Level of Service		Intersection Degree of Saturation	
		Unsignalised Intersection	Signalised Intersection
A	Excellent	≤ 0.60	≤ 0.60
B	Very Good	0.60 – 0.70	0.60 – 0.70
C	Good	0.70 – 0.80	0.70 – 0.90
D	Acceptable	0.80 – 0.90	0.90 – 0.95
E	Poor	0.90 – 1.00	0.95 – 1.00
F	Very Poor	≥ 1.0	≥ 1.0

The **95th Percentile Queue** represents the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour.

Average Delay (seconds) is the average delay time that can be expected for all vehicles making a particular movement in the peak hour.

The analysis assumes a single lane approach for each leg, however it was observed that vehicles on Rusden Street utilise the kerbside parking / bicycle lane as a pseudo deceleration / passing lane. The results of the existing analysis are summarised in Table 1, and identify this intersection operates in 'excellent' conditions with relatively manageable delays and queues from the side roads.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Table 1: Existing Intersection Analysis

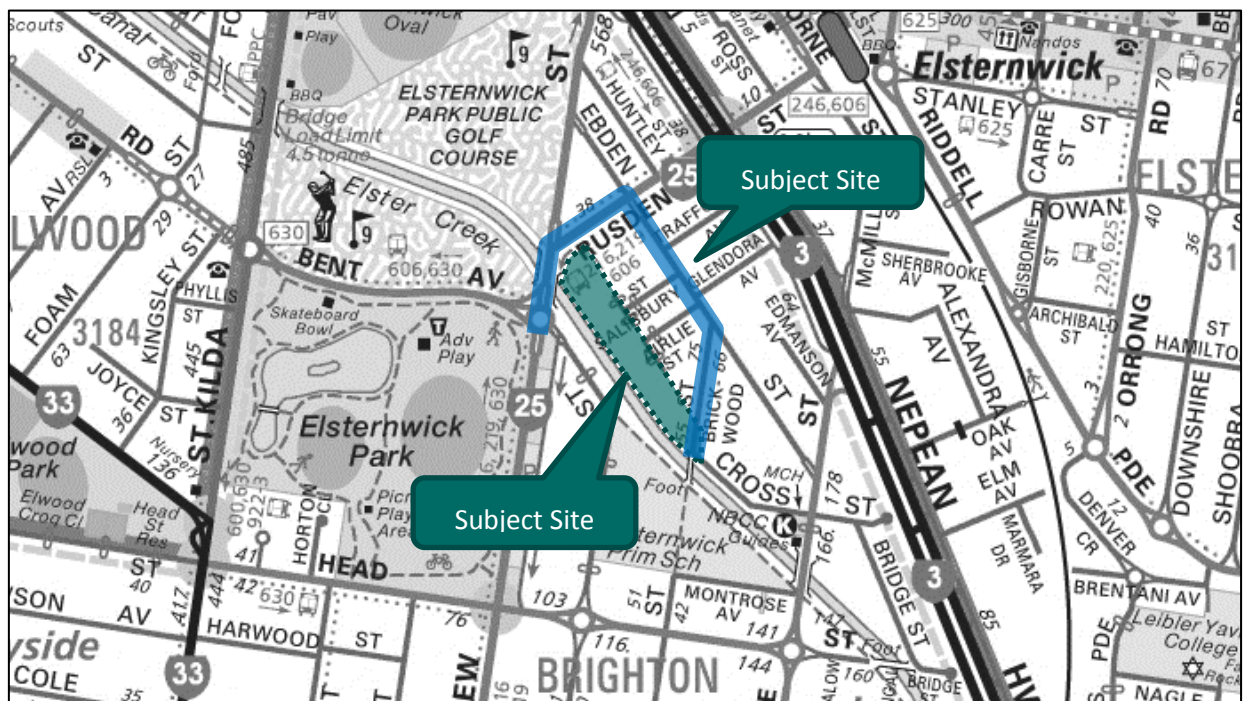
Approach	AM Peak			PM Peak		
	DoS	Av. Delay (s)	95% Queue (m)	DoS	Av. Delay (s)	95% Queue (m)
Ebden St (SE)	0.32	16	10	0.08	13	2
Rusden St (NE)	0.26	1	0	0.26	1	0
Ebden St (NW)	0.01	14	0	0.01	11	1
Rusden St (SW)	0.23	1	0	0.14	1	0

Observations of the subject intersection suggest that whilst some motorists on Ebden Street experience a level of delay when exiting onto Rusden Street, those delays and queues are relatively moderate and gaps in traffic along Rusden Street are sufficient to allow for traffic to enter and exit the nearby side roads in the peaks.

These conditions are considered to be consistent with a minor road which takes access to a more primary local road such as Rusden Street.

5.4 Crash Review

My firm has reviewed the VicRoads Crashstats database for the last five years of available data (July 2012 – July 2017) for the immediate road network as shown in Figure 15.



Reproduced with Permission of Melway

Figure 15: Crash Review Area

The recorded crashes are summarised within Table 2.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Table 2: VicRoads Crashstats Data – July 2012 – July 2017

Crash No.	Location (Direction)	Severity	Date (Day & Approx. Time)	Dca Code	Dca Description
T20130013693	Bent Av at New St (E)	Other	2/07/2013 (Tues 8am)	113	Right Near (Intersections Only)
T20140023336	Bent Av at New St (E)	Other	11/11/2014 (Tues 11am)	113	Right Near (Intersections Only)
T20160018380	Bent Av at New St (N)	Other	22/08/2016 (Mon 5pm)	131	Left Rear
T20150002348	New St at Rusden St (N)	Serious	3/02/2015 (Tues 12pm)	121	Right Through
T20130020556	New St at Rusden St (N)	Other	5/10/2013 (Sat 9am)	136	Right Turn Sideswipe
T20140006640	New St at Rusden St (N)	Other	31/03/2014 (Mon 9am)	137	Left Turn Sideswipe

Whilst it is noted that there are a number of crashes recorded at the intersections of Rusden Street / New Street and New Street / Bent Avenue, the majority were recorded at differing times and days and / or on different legs.

I am of the view that the recorded crashes do not represent existing crash trends or safety issues.

There were no crashes recorded on Ebdon Street.

5.5 Traffic Generation

5.5.1 Private Housing

The Amendment traffic report adopted a traffic generation of 5 vehicle movements per day per dwelling, inclusive of 0.5 vehicle movements per dwelling during peak hours.

In my view, adoption of a rate of 0.5 movements per dwelling is appropriate for this area. Application of this rate to the yield of 170 private dwellings realises a projected daily traffic generation of 850 movements, inclusive of 85 movements in peak hours.

5.5.2 Public Housing

I have adopted a different approach to the social housing traffic generation previously prepared by my firm. The Amendment proposes to replace the existing social housing dwellings (127 dwellings) and provide an additional 13 dwellings. In this regard, it is only the 13 dwellings that will generate additional traffic.

For the purposes of this assessment and because the number of additional dwellings is relatively small, I will simply adopt the private dwelling traffic generation rate. It is therefore expected that the 13 additional social housing dwellings will generate a total of 65 movements per day, inclusive of seven vehicle movements in peak hours.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

5.5.3 Total

The Amendment as a whole is projected to generate an additional 915 movements per day, inclusive of 92 movements in peak hours.

Assuming a typical AM peak traffic split of 20% arrivals and 80% departures, and a PM peak traffic split of 60% arrivals and 40% departures, it is projected the Amendment could generate an additional:

- AM PEAK: 18 arrivals and 74 departures
- PM PEAK: 55 arrivals and 37 departures

5.6 Proposed Access Arrangements

The access arrangements for the site will maintain the existing vehicle access points to Salisbury Street, Airlie Street and Brickwood Street. I am of the view that this is appropriate.

The Design Framework also contemplates a new access point to Rusden Street, at the north-east corner of the site. This will permit a further dissipation of traffic generated by development and will allow some of the additional traffic generated to be focussed on the primary Council road network.

In consideration of the bend in the road immediately west of the site, I am of the view that this access should be restricted to a left-in / left-out arrangement. This should be reinforced with physical restrictions, by way of a splitter island at the site access. The carriageway width through this bend is approximately 12.5 metres wide and would be sufficient to also accommodate a central median island in Rusden Street to physically prevent right turn movements into the site.

There is an existing substation abutting the site to the west on Rusden Street. The site has a width of approximately 12 metres between the substation and the eastern boundary. This would be sufficient to accommodate a two-way accessway, inclusive of a footpath / pedestrian connection to / from the site.

The existing bus stop would need to be relocated.

TfV has requested that the Schedule to the Development Plan Overlay be updated to effectively include consultation with PTV, and an analysis of the proposed access to Rusden Street. I am comfortable that this would appropriately allow for the bus stop relocation to be considered as part of the preparation of the Development Plan.

5.7 Traffic Distribution

The Design Framework shows parking spread throughout the site, and accordingly it is likely that traffic will be relatively evenly spread between the four access points.

It is likely that during the AM peak, there will generally be more vehicle movements travelling north toward the City via Nepean Highway.

The left-in / left-out turning restriction at Rusden Street would not preclude motorists from exiting the site via Rusden Street and then either using the roundabout to undertake a u-turn and access New Street, or alternatively turn right at New Street.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

During the PM peak, there will generally be more vehicle movements in a southerly direction (away from the city).

Motorists travelling southbound on Rusden Street can turn left into Ebden Street, providing access to the Salisbury / Brickwood / Airlie Street site access or alternatively can continue along Rusden Street and use the proposed Rusden Street site access.

Based on the preceding, the development could be expected to generate some 23 additional vehicle movements to any one access point in the peak hours.

I note that this is a relatively low level of traffic, representing less than one vehicle movement each 2.5 minutes in the peak hour.

The existing traffic volumes at Salisbury Street and Airlie Street identify an average of two-thirds of traffic being generated to / from the north-west direction.

For the purposes of this analysis, I will assume that two thirds of additional movements generated to Salisbury Street, Airlie Street and Brickwood Street could be expected to utilise the intersection of Rusden Street / Ebden Street, and therefore Ebden Street could be expected to experience an additional 46 vehicle movements in the peak hours.

5.8 Projected Traffic Volumes

Based on the above, and in consideration of the existing turning movements at the intersection of Rusden Street and Ebden Street, Figure 16 has been prepared to illustrate the additional traffic volumes that would arise from the potential development yield, and Figure 17 has been prepared to illustrate the projected post development traffic volumes at the intersection of Rusden Street and Ebden Street.



Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

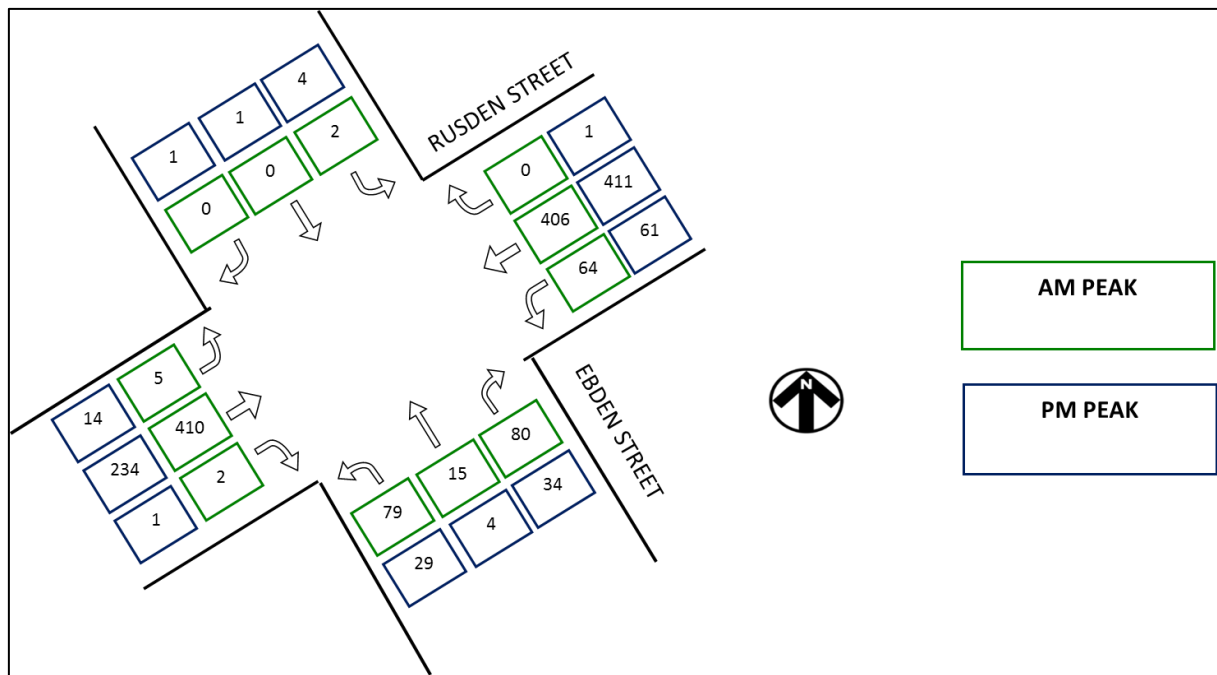


Figure 17: Post Development Traffic Volumes at Rusden Street/Ebden Street

5.9 Traffic Impact

A post development SIDRA Analysis has been undertaken for the intersection of Rusden Street / Ebden Street, with the results summarised in Table 3. The analysis indicates that the intersection will continue to operate under 'excellent' conditions.

Table 3: Proposed Intersection Analysis

Approach	AM Peak			PM Peak		
	DoS	Av. Delay (s)	95% Queue (m)	DoS	Av. Delay (s)	95% Queue (m)
Ebden St (SE)	0.41	17	14	0.13	13	3
Rusden St (NE)	0.26	1	0	0.27	1	0
Ebden St (NW)	0.01	14	0	0.01	11	0
Rusden St (SW)	0.23	0	0	0.14	1	0

The level of traffic generated to any one access point is considered to be relatively low and will have no material impact on the operation of the nearby intersections.

With regard to daily volumes, Salisbury Street, Airlie Street and Brickwood Street could experience in the order of an additional 230 vehicle movements per day.

Based on their existing cross-sections, the two-way volumes would remain within the indicative peak hour capacities for each respective road.

Ebden Street, at its northern extent, could experience some 460 additional vehicle movements. Given the width of Ebden Street, this would continue to be within the indicative two-way volume.

Amendment C157**New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme**

I am of the view that the level of traffic that will be distributed to the roundabout of Bent Avenue and New Street will be relatively low, and does not warrant investigation of this intersection.

Having regard to the preceding, I am of the view that the potential development yield can be accommodated by the existing road network.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

6 Car Parking Considerations

6.1 Proposed Parking Overlay

It is proposed to introduce a site-specific parking overlay. The objective of the parking overlay is to identify appropriate car parking rates for residential uses within the New Street Estate.

The proposed car parking rates are detailed in Table 4.

Table 4: Proposed Parking Overlay Rates

Use	Rate
Dwelling (Social Housing)	0.6 spaces to each dwelling for residents
Dwelling (Private Housing)	1 spaces to each 1-bedroom dwelling for residents
	1 space to each 2-bedroom dwelling for residents
	1.6 spaces to each 3-bedroom dwelling for residents
Dwelling (All)	0.1 spaces to each dwelling for visitors

Of note, the proposed Parking Overlay does not seek to reduce the parking requirement for one and two-bedroom private dwellings from the rates at Clause 52.06.

The overlay specifies a permit is required to reduce the minimum number of car parking spaces specified in the schedule.

6.2 Adequacy of Proposed Car Parking Rates

An assessment of the adequacy of the proposed car parking rates listed in the Schedule to the Parking Overlay follows.

6.2.1 Sustainable Modes of Transport

Figure 18 provides an excerpt of the TravelSmart map for the city of Bayside in the vicinity of the site. It illustrates the numerous alternative transport modes accessible to the site, including multiple public transport modes and bicycle and walking trails.

Pedestrian Accessibility

The site is well located to promote walking to everyday services.

The edge of the Glen Huntly Road, Elsternwick Activity Area is located 400 metres to the north-east. The activity centre provides access to supermarkets, food and drink premises and shopping.

Smaller retail areas are also accessible on Ormond Road approximately 600 metres to the west.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

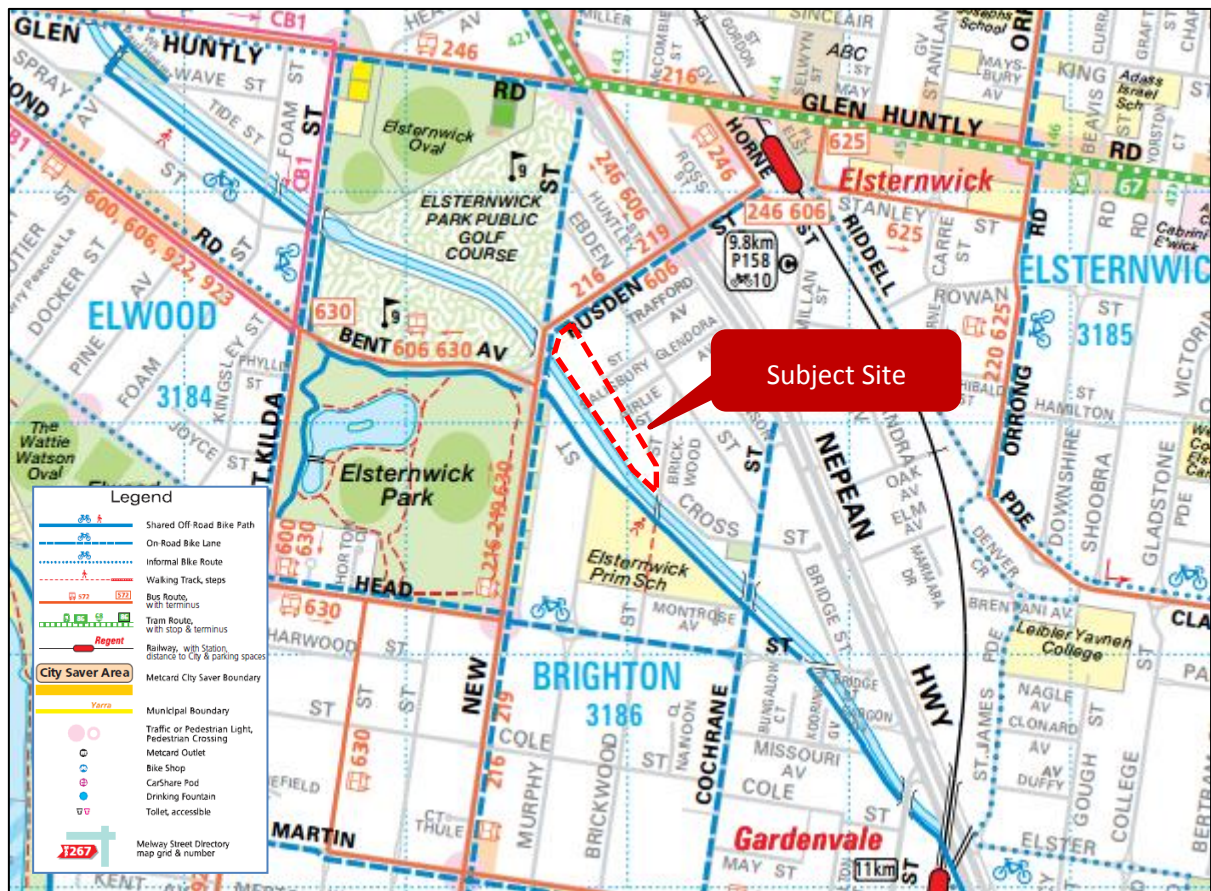


Figure 18: Bayside TravelSmart Map

Bicycle Accessibility

The site is also well serviced by the Principal Bicycle Network (PBN), with on-road and off-road bicycle paths directly linking the site with surrounding areas. The subject site is well serviced by bicycle infrastructure with formal and informal bicycle routes on many roads in the immediate vicinity of the subject site, including along the Elster Canal Path, New Street, Rusden Street, Head Street and Cochrane Street.

Public Transport

The site has very good accessibility to existing public transport modes.

Elsternwick station is accessible to the north, approximately a 600 metre walk from the site.

Bus routes 216, 219 and 606 operate along the site's western abuttal to New Street / Rusden Street.

Additional bus services and access to trams are accessible to the site from Elsternwick station and Glen Huntly Road as shown in Figure 19. Table 5 summarises the available services.



Table 5: Public Transport Services in the Vicinity of the Subject Site

Having regard to the alternative transport modes available to the site, I am of the view that this would support reduced parking demands, particularly for smaller dwellings.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

6.2.2 Anticipated Parking Demand

To understand car ownership data for both social and private housing, I have sourced the 2016 ABS Car Ownership Data for the suburb of Brighton and the municipality of Bayside. The data relates to all apartments / flats / units, whether they be 1 storey or multi-storey.

Public Housing Residents

For Public Housing, the data for Bayside records an average car ownership of 0.6 cars per flat, unit or apartment. Whilst the sample size for DHHS housing in Brighton is less than 100 dwellings, the average car ownership is also 0.6 cars per flat/unit or apartment.

These rates are consistent between the 2016 and 2011 ABS data and highlight that the parking requirements for dwellings set out under the Planning Scheme are greater than the ABS car ownership statistics in this locality.

Public housing demands for 1-bedroom, 2-bedroom and 3-bedroom dwellings are typically less than one vehicle per dwelling, and car parking is not required by a proportion of residents.

I also note that the existing public housing stock within the New Street estate has an effective on-site provision of approximately 0.51 spaces per dwelling. Accordingly, the provision of 0.6 spaces per dwelling will in fact provide a greater supply for this component than currently exists.

Based on the above analysis and in consideration of the accessibility to public transport and services, I am satisfied that it is appropriate to provide new social housing dwellings at a rate of 0.6 spaces per dwelling as proposed within the Parking Overlay.

Private Housing Residents

For private housing, I have used the Brighton and Bayside ABS 2016 car ownership data, and removed the social housing component. I note that the Schedule to the Parking Overlay seeks only to reduce the rate for three-bedroom dwellings.

The 2016 ABS Data indicates an average car ownership rate of 1.6 cars per dwelling for three-bedroom flats/apartments in Bayside. Of those, 42% owned only one or no vehicle. In Brighton, the car average ownership is slightly higher, at 1.7 vehicles per dwelling, with 41% of those owning one or no vehicle.

Based on the above analysis and in consideration of the accessibility to public transport and services, I am satisfied that it is appropriate to reduce the three-bedroom dwelling rate to 1.6 spaces per dwelling.

Residential Visitors

To estimate the projected residential visitor car parking demand, car parking surveys undertaken by Cardno at apartment developments located at 127 and 147 Beach Street in Beacon Cove have been sourced.

The surveys were conducted over a 42 hour period from 6:00am on Friday 19 November to midnight on Saturday 20 November, 2010. The surveys recorded a peak parking demand for 0.1 spaces per apartment of an evening and weekend, with a peak business hours demand of 0.06 spaces per apartment recorded.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Based on these surveys, I am comfortable that a requirement to provide 0.1 spaces per apartment for visitors is appropriate as proposed within the Parking Overlay.

6.3 Proposed Parking Provisions

Based on the preceding, and having particular regard to the proximity of the site to alternative transport modes and 2016 ABS car ownership data, it is considered that the provision of parking at reduced rates from those specified within Clause 52.06 would be appropriate for this site.

I am therefore of the view that the rates outlined within the proposed Schedule to the Parking Overlay are acceptable.

I note that the proposed schedule does not preclude the provision of parking in excess of the proposed rates.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

7 Bicycle Considerations

The statutory bicycle parking requirements for future development will be subject to the requirements of Clause 52.34 of the Planning Scheme.

The Scheme requires the provision of 1 bicycle space for each 5 dwellings for residents and 1 space for every 10 dwellings for visitors.

Given that the proposed Parking Overlay proposes reduced car parking rates from Clause 52.06, I am of the opinion that it is appropriate to require additional bicycle parking beyond the requirements of Clause 52.34. Specifically, I recommend that the bicycle requirements for residents be:

- 1 space for every dwelling without a car space + 1 space for every 5 dwellings with a car space.

The visitor bicycle provision can remain as required by Clause 52.34 and should be provided in an appropriately accessible location and proximate to the site entries.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

8 Development Plan Requirements

Proposed Schedule 3 to Clause 43.04 Development Plan Overlay sets out the requirements for the provision of a Development Plan for New Street, Brighton (the subject land).

With regard to traffic, the Development Plan must seek to:

- Prioritise pedestrian and bicycle access within the site.

The Development Plan must be accompanied by an Integrated Transport and Traffic Management Plan that addresses, but is not limited to, a number of items. Those I consider most relevant include:

- Estimated vehicle trip generation levels resulting from use and development within the site.
- Vehicle ingress and egress points and estimated levels of usage.
- The likely impacts of the proposed development on the arterial and local roads, and any mitigating works required such as off-site traffic management treatments.
- An indicative layout of internal roads that:
 - Recognises the primacy of pedestrian and bicycle access within the site.
 - Are of sufficient width to accommodate footpaths and street trees.
- The location of on-site parking for residents, visitors and workers (if applicable). The location of parking spaces should be situated at basement level or suitably concealed within buildings.
- Provision of a safe and accessible pedestrian and bicycle network within the site and connecting to the external network.
- Provision for secure bicycle storage for residents and workers (if applicable), end of trip facilities for workers (if applicable) and short term bicycle parking for visitors.
- The views of VicRoads and Bayside City Council.

TfV has also requested the inclusion of a number of additional considerations as follows:

- The proposed development should be responsive to existing public transport services and demonstrate regard to public transport so as to provide adequate alternative modes of travel for residents and visitors.
- Future traffic and transport analysis should demonstrate that no unreasonable delays to the bus network along Rusden Street / New Street will be caused by the proposed development.
- The new access proposed along Rusden Street / New Street should be subject to further analysis to ensure that all safety concerns are adequately addressed for pedestrians, cyclists and vehicles.

My evidence addresses the vehicle generation and impacts to the road network for the potential development yield. Nonetheless, at the time of preparation of the Development Plan, these items will be re-addressed within an Integrated Transport and Traffic Management Plan, and the view of VicRoads and Council will be sought.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

The Integrated Transport Plan also requires an indicative road layout, which I expect will include a cross section to demonstrate the above principles of providing primacy for pedestrians and cyclists, and having sufficient width to accommodate landscaping as required.

Council's view will be sought on the road network and cross section and proposed access designs.

TfV (or Public Transport Victoria) is required to be consulted with regard to the potential relocation of the bus stop as a matter of due process, and the conditions requested by TfV as part of the Development Plan are considered reasonable.

I am of the view that the requirement for the Integrated Transport and Traffic Management Plan will provide appropriate opportunity for the Responsible Authority to ensure that matters of traffic impacts are considered, and an appropriate internal road network is provided.

Amendment C157

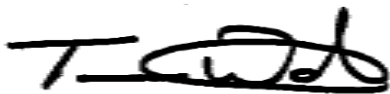
New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

9 Conclusions

Having undertaken a detailed traffic engineering assessment of Amendment C157 to the Bayside Planning Scheme, I am of the opinion that:

- a) The potential development yield and proposed parking provision could generate an additional 915 movements per day, inclusive of 92 movements in peak hours.
- b) The level of potential additional traffic can be accommodated by the proposed site access arrangements, with manageable impacts to the surrounding road network.
- c) An access to Rusden Street is acceptable, subject to the provision of physical left-in / left-out restrictions.
- d) The additional conditions required by TfV to address the bus stop relocation and Rusden Street access are considered acceptable to include into the Schedule to the Development Plan Overlay.
- e) The resident and visitor parking rates proposed within the Schedule to the Parking Overlay are justified by:
 - i) The site is located near to an Activity Centre and is well served by public transport and alternative transport modes.
 - ii) There is a demand for dwellings without resident parking in this locality, as evidenced by the 2016 ABS car ownership data.
- f) Bicycle parking should be provided in accordance with Clause 52.34, excepting that the residential tenant provision should include a single bicycle space for each dwelling that is not provided with a car space.
- g) There are no traffic engineering reasons that warrant abandonment of Amendment C157 to the Bayside Planning Scheme.

I have made all the inquiries that I believe are desirable and appropriate and there are no matters of significance I regard as relevant, which to the best of my knowledge, have been withheld from the Advisory Committee.



JASON LEE WALSH
DIRECTOR
TRAFFIX GROUP
1 NOVEMBER 2017

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Appendix A Qualifications

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Name

Jason Lee Walsh - Director, Traffix Group Pty Ltd

Address

Suite 8, 431 Burke Road

GLEN IRIS

VICTORIA 3146

Qualifications

My educational qualifications and membership of professional associations are as follows:-

- Bachelor of Civil Engineering, Monash University
- Bachelor of Science, Monash University
- Member, Victorian Planning & Environmental Law Association

Experience

I have approximately 20 years experience in Traffic Engineering including,

- 1995-2000 at Turnbull Fenner (now Traffix Group), including short term placements at the cities of Bayside and Whittlesea,
- 2000-2011 at Grogan Richards Pty Ltd (now Cardno),
- 2011-present at Traffix Group.

Areas of Expertise

- Car parking and Traffic.
- Traffic advice and assessment of land uses and development proposals to planning authorities, government agencies, corporations and developers (including major residential, retail, food and drink, commercial, industrial, institutional and mixed use projects).
- Preparation and presentation of evidence before VCAT and Panels.

Expertise to Prepare this Assessment

My experience and expertise over the past 20 years, including involvement with varied forms of developments, qualifies me to comment on the traffic implications of the proposed Amendment.

Instructions

I was instructed by Norton Rose Fulbright on behalf of Department of Health and Human Services to undertake a traffic engineering assessment and prepare an evidence statement for Amendment C157 to the Bayside Planning Scheme.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme

Facts, Matters and Assumptions Relied Upon

- Brief provided by Norton Rose Fulbright.
- Exhibited material.
- Design Framework prepared Baumgart Clark Architects.
- Site Renewal Traffic and Transport Assessment prepared by Traffix.
- Submissions.
- Bayside Planning Scheme.
- Site inspection.
- Relevant experience.

Documents Taken into Account

See above.

Identity of Persons Undertaking Work

Jason Walsh as per the evidence statement.

Carlo Morello (Senior Associate, Traffix Group) assisted with preparation of the evidence report.

Summary of Opinions

See Conclusions section of the evidence statement.

Amendment C157

New Street Public Housing Renewal Program: Amendment C157 to the Bayside Planning Scheme