Traffix Group

Traffic Impact Assessment

Proposed Development Plan

42-80 Manuka Road, Berwick

Prepared for
Veris

March 2026

G27725R-01J

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1. Introduction

Traffix Group has been engaged by Veris to prepare a traffic impact assessment report for the Development Plan at 42-80 Manuka Road, Berwick.

This report (G27725R-01J) responds to the requirements under DPO24 of the Casey Planning Scheme for the preparation of a traffic impact assessment and is based on the Veris Urban Structure Plan Version K (16.12.2025) which is attached at Appendix A of this report.

2. DPO24

DPO24 of the Casey Planning Scheme covers land to the east side of Manuka Road, north of Allan Street. It requires a development plan to be prepared that includes a number of requirements, including a traffic impact assessment which must include the following items:

- *A detailed assessment of the expected traffic generation and traffic impacts associated with the development on the internal and external road network and any recommended works or measures within and external to the site,*
- *An internal road layout and external road access,*
- *Any recommendations of an independent traffic safety audit,*
- *Details of road widths to ensure that all streets are designed to allow for service and emergency vehicles to appropriately manoeuvre,*
- *Typical cross sections of internal roads indicating provision for pedestrians, tree planting and car parking,*
- *An internal perimeter road along the northern and eastern boundaries, and an internal loop along the western boundary with appropriate reserves for landscaping,*
- *A cross section of the perimeter road to allow for appropriate parallel or indented parking adjacent to the public open space,*
- *The intersection treatment at Manuka Road, having regard to access to the school and community facilities on the western side of Manuka Road,*
- *The intersection treatment at Allan Street/Manuka Road,*
- *The upgrade of Allan Street to urban standards, to the satisfaction of the responsible authority,*
- *The location of all pedestrian crossings on Manuka Road and Allan Street,*
- *The proposed internal cycle and pedestrian path network and connection to the Casey Trail Network (shared user path and equestrian trails), including public access through the site, and*
- *Identification of visitor car parking within the proposed street network.*

3. Existing Conditions

3.1. Development Plan Area

The development plan area is located on the east side of Manuka Road, north of Allan Street. The development plan area consists of four (4) parcels of land that are largely used for farming with the exception of 'Clover Cottage' (former restaurant). The eastern boundary of the development plan area abuts the Melbourne Water Pipe Track.

A locality plan and aerial photograph of the development plan area are provided at Figure 1 and Figure 2 below.

Key uses surrounding the development plan area include Berwick Secondary College and Edwin Flack Reserve with the remaining land uses primarily consisting of residential dwellings.

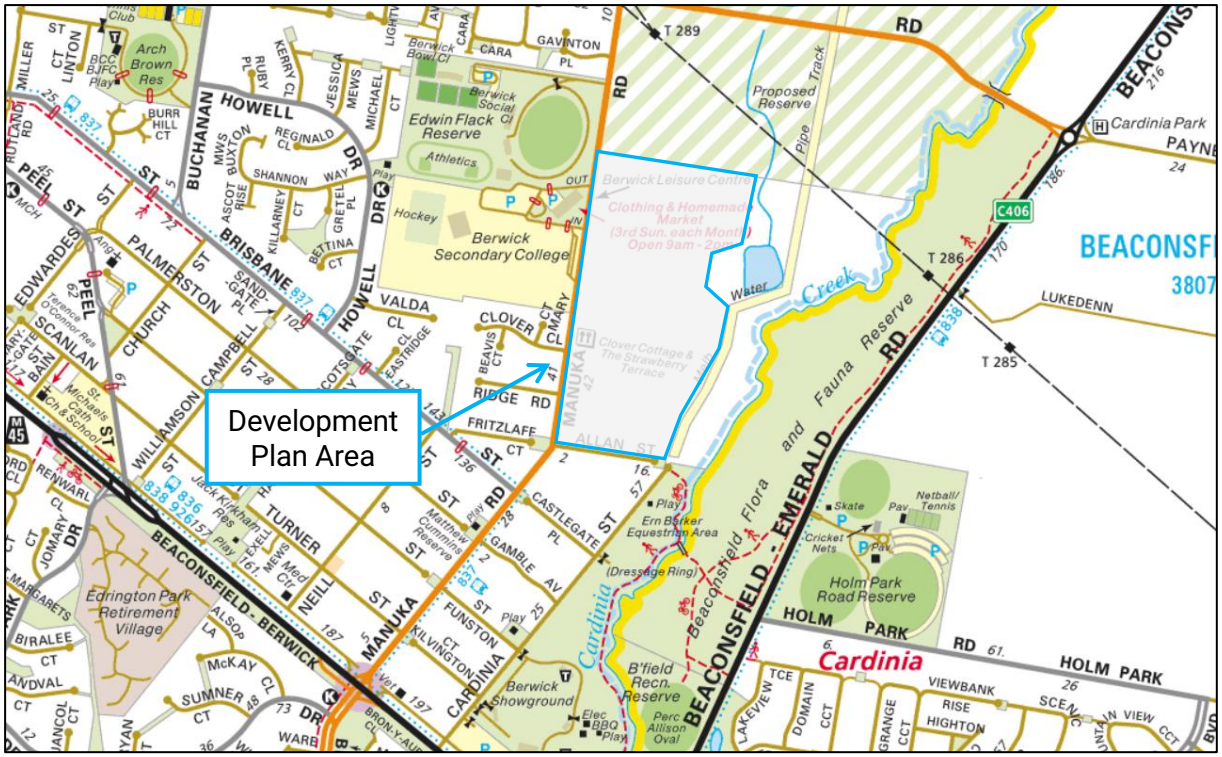


Figure 1: Locality Plan

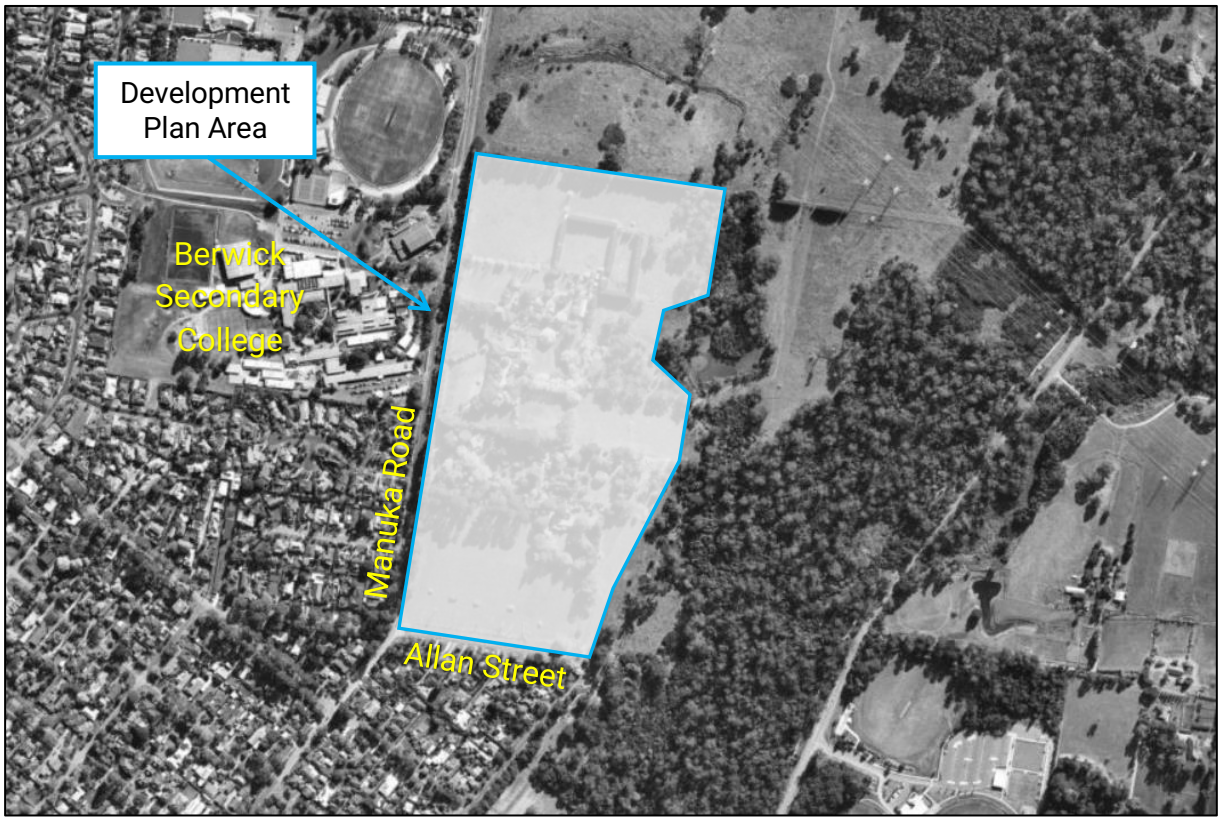


Figure 2: Aerial Photograph

3.2. Road Network

Manuka Road is classified as a 'Trunk Collector' road under the Casey Public Road Register and generally extends north-south from Princes Highway in the south to Inglis Road in the north. In the vicinity of the development plan area Manuka Road provides for a lane of traffic in each direction with a carriageway width of approximately 10m in the vicinity of Allan Street (kerb and channel both sides of the road) and approximately 6m in the vicinity of the Berwick Secondary College (plus gravel verges).

The road reserve width in the vicinity of the development plan area is approximately 20m wide. Manuka Road has a 60km/h speed limit in the vicinity of the development plan area with a reduction to 40km/h during school periods adjacent to the northern boundary of the development plan area.

Allan Street is classified as a 'Local' road under the Casey Public Roads Register and extends east-west from Manuka Road to a dead end in the east. In the vicinity of the development plan area Allan Street provides an unconstructed road (gravel) with a carriageway width of approximately 6m. The road reserve width in the vicinity of the development plan area is approximately 30m wide. Allan Street is subject to the default urban speed limit of 50km/h.

Photographs of the road network surrounding the development plan area are provide in Figure 3 to Figure 6.

Figure 3: Manuka Road - View North

Figure 4: Manuka Road - View South

Figure 5: Allan Street - View West

Figure 6: Allan Street - View East

3.3. Traffic Volumes

Traffic counts were undertaken in February 2026, noting that since the original version of this report was prepared (with surveys previously undertaken in June 2021), there have been no changes to existing land uses within the DPO area or the surrounding locality. Additionally, the total number of dwellings/residential lots now proposed is lower than that associated with the earlier development plan.

3.3.1. Peak Hour Traffic Volumes

Turning movement counts were undertaken at the intersection of Manuka Road and Allan Street and the intersections of Manuka Road and the school entrance and exit. These counts were conducted on Tuesday, 24th February 2026 from 7:00am-9:00am and 3:00pm-6:00pm, and on Saturday, 21st February 2026 from 11:00am to 2:00pm.

The results of the turning movement counts are detailed at Figure 7 and Figure 8 below.

The peak hours are as follows:

- AM peak hour - 8:00am-9:00am,
- PM peak hour - 3:00pm-4:00pm, and
- Saturday peak hour – 11:45am to 12:45pm.

A full copy of the turning movement count results is provided at Appendix B.

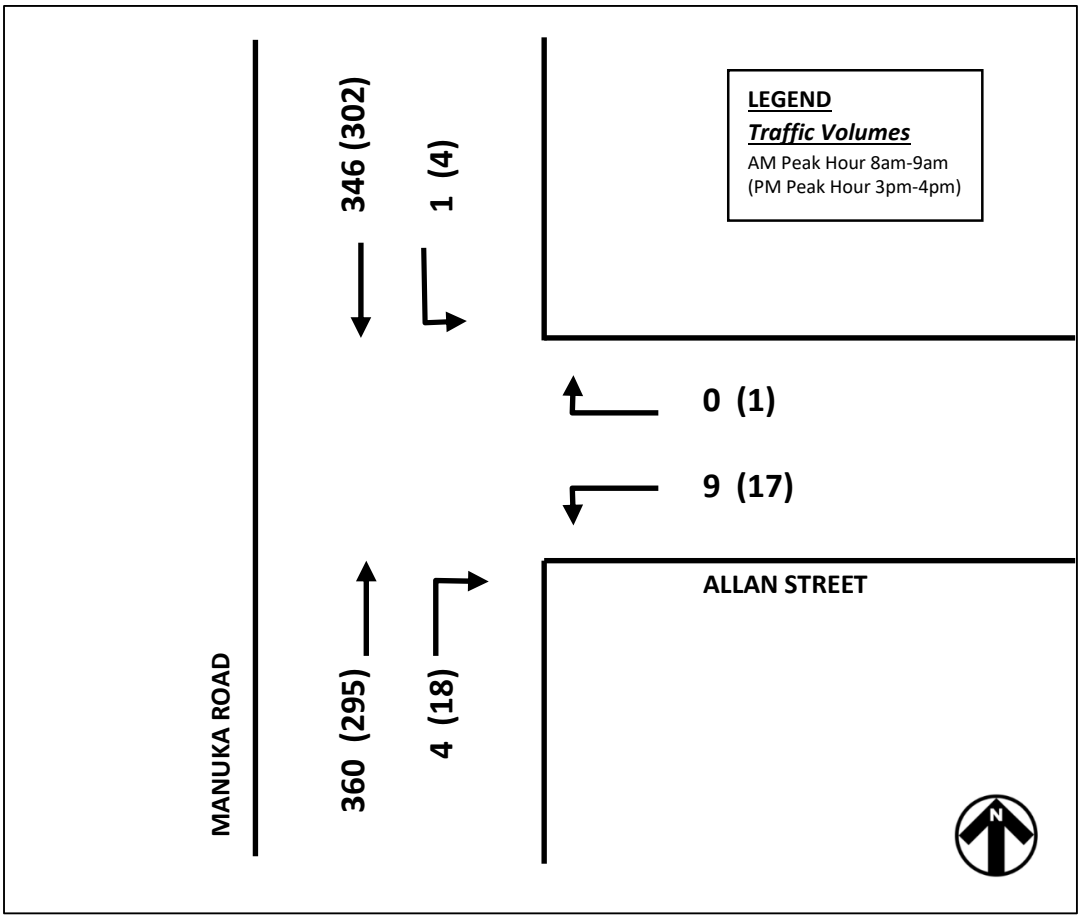


Figure 7: Manuka Road / Allan Street – Existing (Weekday)

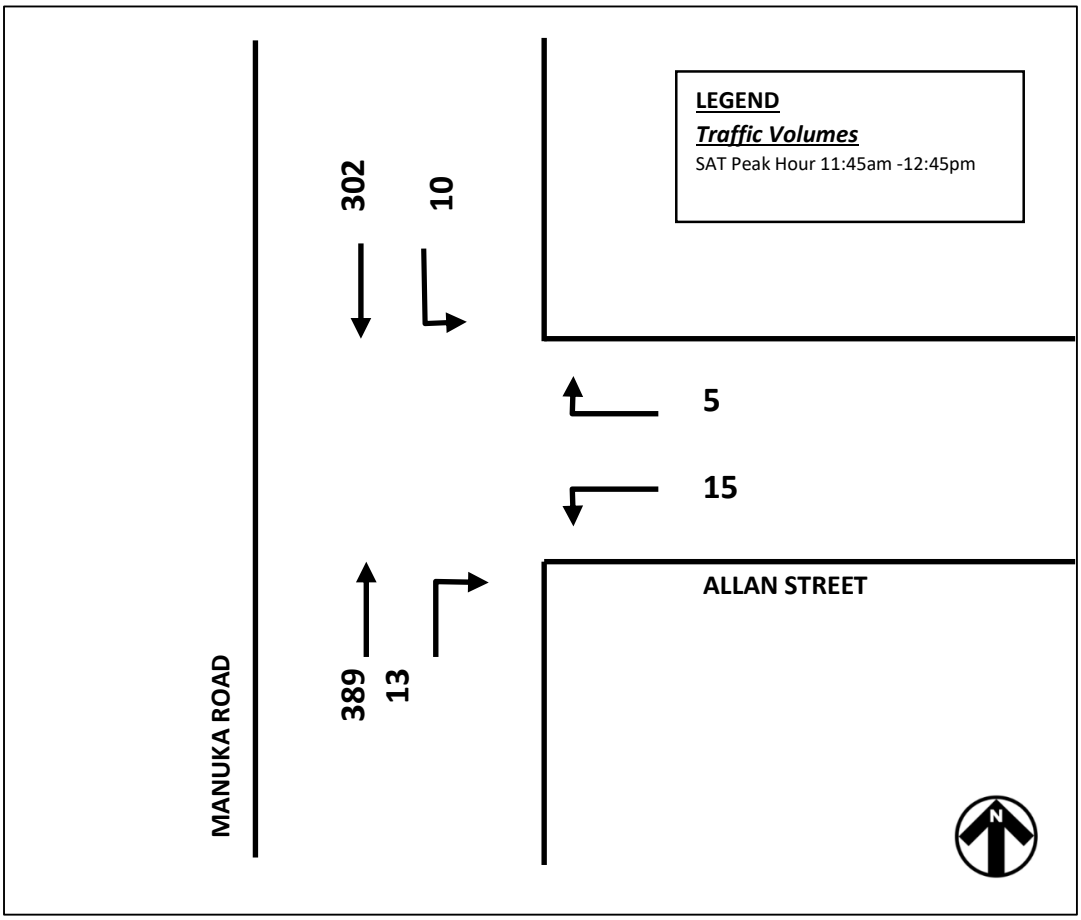


Figure 8: Manuka Road / Allan Street – Existing (Saturday)

3.3.2. Daily Traffic Volumes

Seven-day automatic traffic counts were undertaken on Manuka Road and Allan Street in the vicinity of the development plan area.

The counts were conducted between 21st February and 28th February 2026. Table 1 below summarises the key traffic volumes recorded from the automatic tube count, while a full summary of the results is provided in Appendix C.

Table 1: Automatic Tube Counts (February 2026)

Location	24 Hour Weekday Average Volumes			AM Peak Hour Weekday Average			PM Peak Hour Weekday Average		
	N/E	S/W	Total	N/E	S/W	Total	N/E	S/W	Total
Manuka Road North of Clover Lane	1,646	1,473	3,119	341	275	616	222	224	446
Allan Street East of Manuka Road	103	91	194	6	11	17	15	10	25

3.4. Public Transport

The development plan area is serviced by a public bus route which operates in close proximity to the site (as shown in the public transport map at Figure 9) as follows:

- **Bus Route 837** provides a service between Berwick Station and Beaconsfield East via Brisbane Street and Beaconsfield Plaza Shopping Centre. Route 837 operates on Brisbane Street 400 metres to the south of the development plan area.

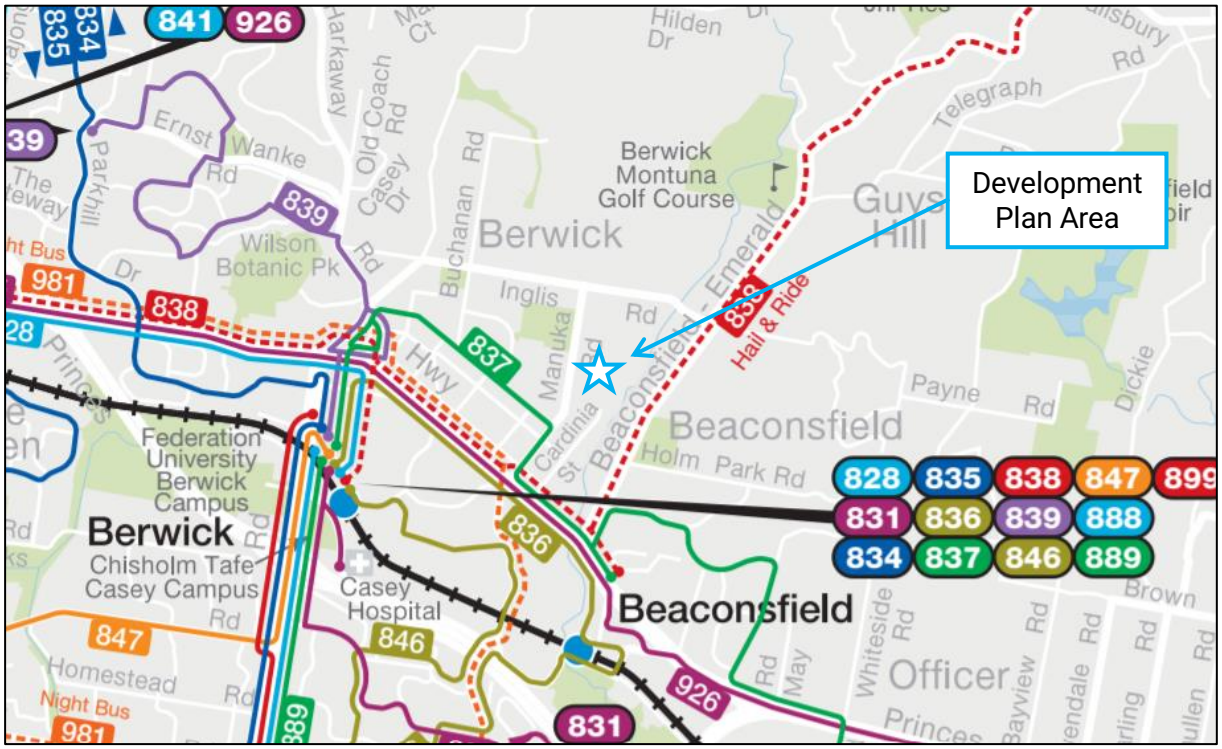


Figure 9: Public Transport Map

4. Development Plan

The development plan area is shown in Figure 10.

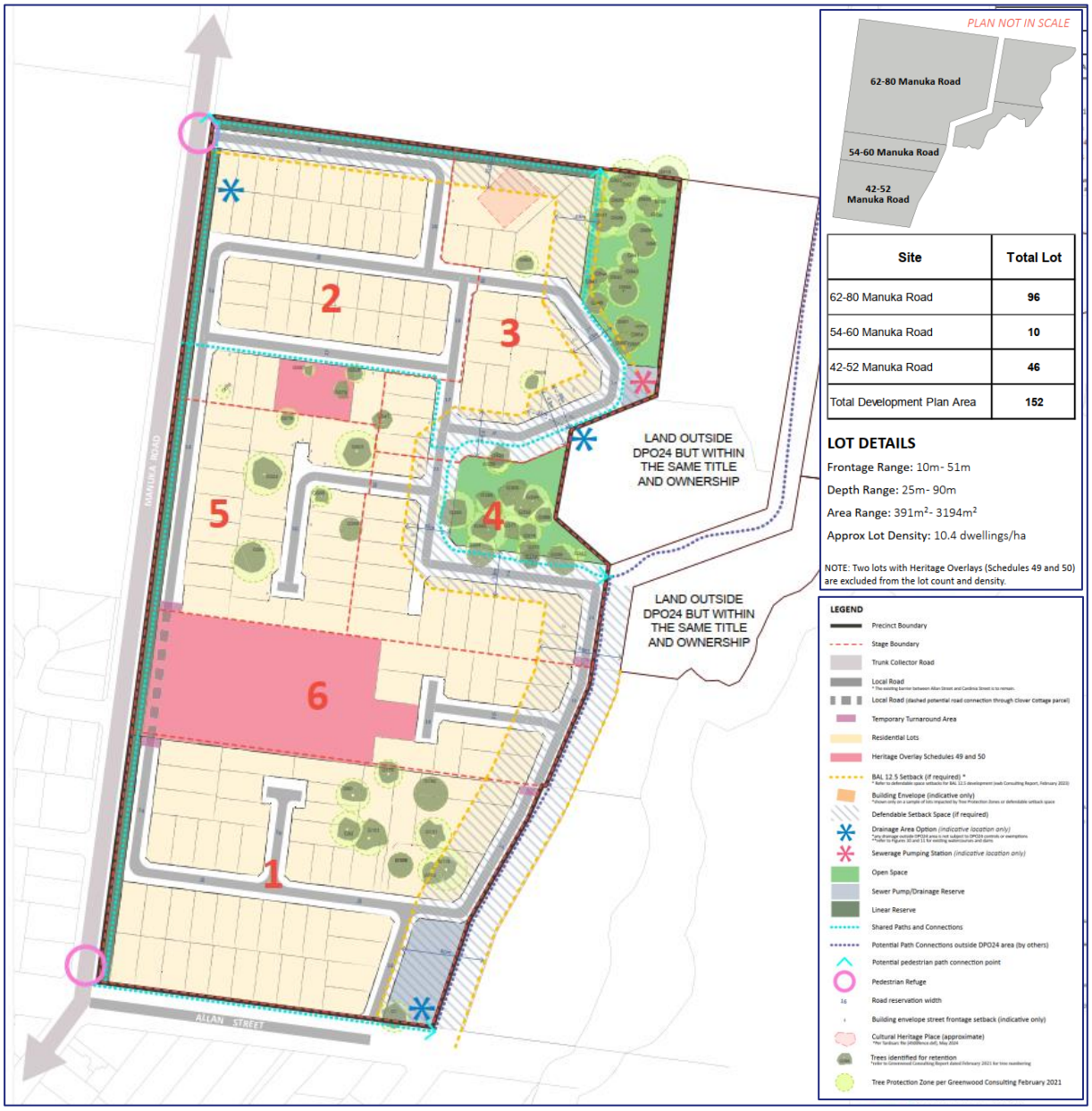


Figure 10: Development Plan

DPO24 will comprise of residential uses and future residential uses over four (4) separate parcels of land within the development area.

The Development Plan includes the following key traffic engineering features:

- Access point to Allan Street,
- Access point to Manuka Road, and
- Internal roads within the site.

5. External Traffic Considerations

5.1. Traffic Generation

The following traffic generation rates have been adopted for the purposes of this assessment based on recent growth area planning of residential subdivisions:

- Conventional residential lots: 8 vte/day
  0.8 vte/h during commuter peak hours

Based on the proposal to provide a total of 152 standard lots, this represents a daily traffic generation of 1,216 trips with approximately 122 trips in each of the AM and PM peak hour periods. To remain conservative, the same level of traffic generation has been adopted for the Saturday peak hour.

The breakdown between each parcel is shown in Table 2 below.

Table 2: Traffic Generation

Section	Number of Lots	Daily Trip Generation	Peak Hour Volumes
North Precinct	96 lots	768 vte/day	77 vte/h
South Precinct	46 lots	368 vte/day	37 vte/h
'Clover Cottage'	10 lots	80 vte/day	8 vte/h
Total	**152 lots**	**1,216 vte/day**	**122 vte/h**

5.2. Traffic Distribution

Based on the location of the development plan area as well as access to the surrounding suburbs and external road network, the distribution of generated traffic to and from the site has been assumed as follows:

- Northbound – 25% of trips, and
- Southbound – 75% of trips.

Directional splits of 20% in / 80% out during the AM peak, 70% in / 30% out in the PM peak and 50% in / 50% out for the Saturday peak have been adopted.

It should be noted that ultimately there will be connector roads joining together all four (4) parcels of land. The complete traffic generation and distribution is presented at Appendix D.

It is acknowledged that the peak hour for the proposed development is likely to occur between 5pm-6pm (commuter peak periods). However, the dominant peak hour for the local intersection generally occurs between 3pm-4pm. Therefore, in order to be conservative, the vehicle volumes generated by the site have been added to the existing peak hours for the existing peak hours along the network.

5.3. Design Traffic Volumes

5.3.1. Background Traffic

For the purposes of this assessment, a growth rate of 2% per annum has been adopted for Manuka Road and applied for a period of 10 years to calculate the design background traffic volumes (equal to a growth of 1.22 times existing traffic volumes conservatively assuming compound growth). No growth has been applied to Allan Street, as this will be accounted for via the traffic generated by the development plan. The projected AM and PM peak hour turning movement volumes at the site of the proposed northern access point and the intersection of Manuka Road / Allan Street are presented in Figure 11 and Figure 12 respectively.

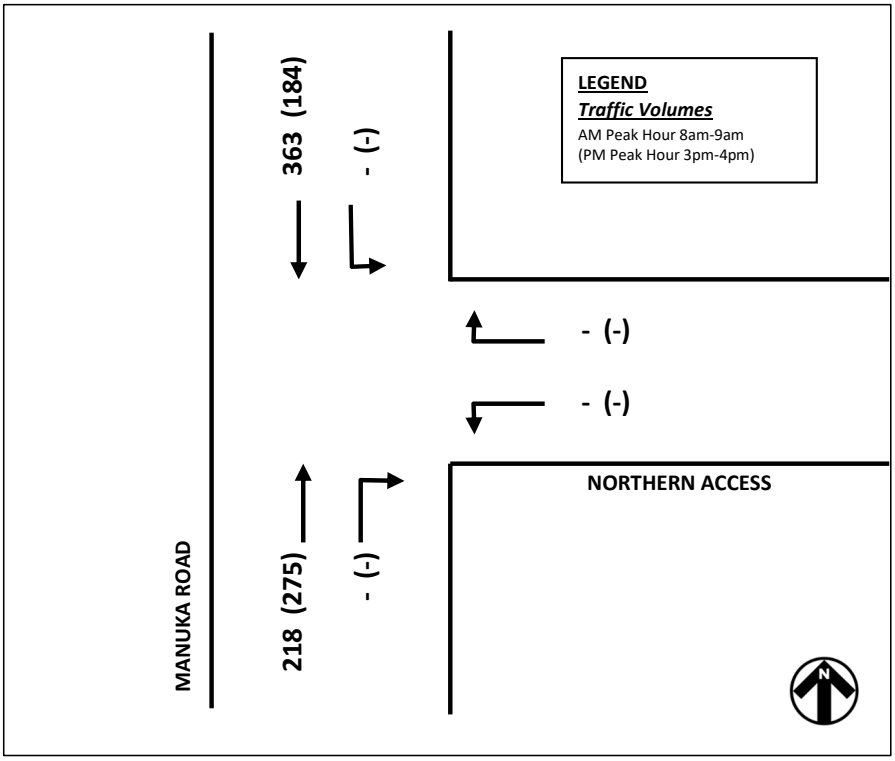


Figure 11: Manuka Road / Northern Access - Background Traffic

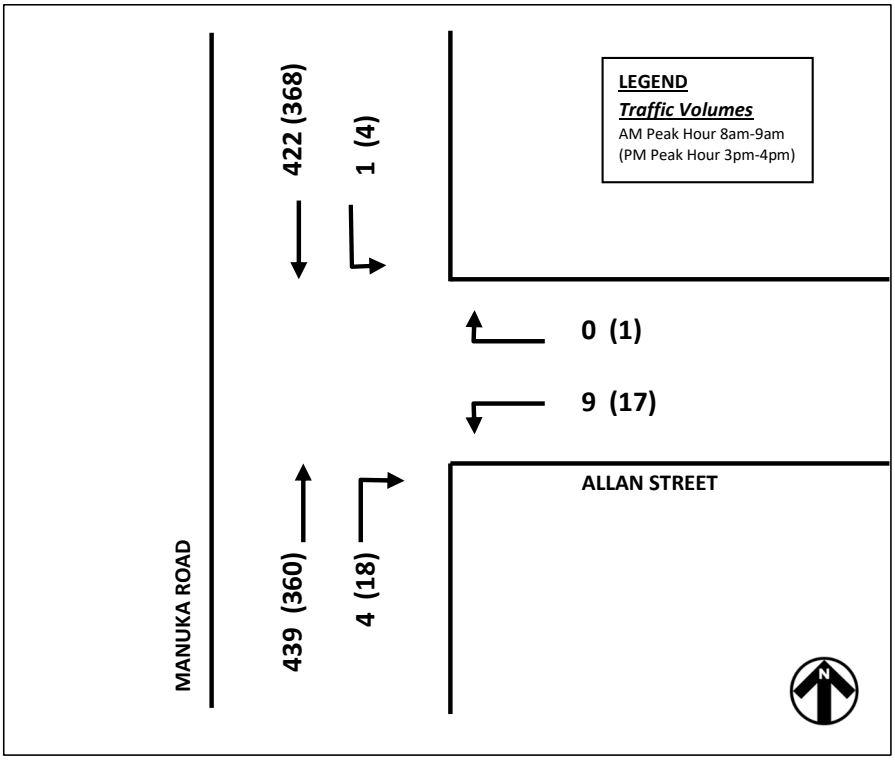


Figure 12: Manuka Road / Allan Street - Background Traffic

5.3.2. Development Traffic

The traffic generated by the development, based on the previously detailed trip generations and travel distributions is presented in Figure 13 and Figure 14 for the intersection of the proposed northern access point / Manuka Road and the intersection of Manuka Road / Allan Street for the AM and PM hours respectively.

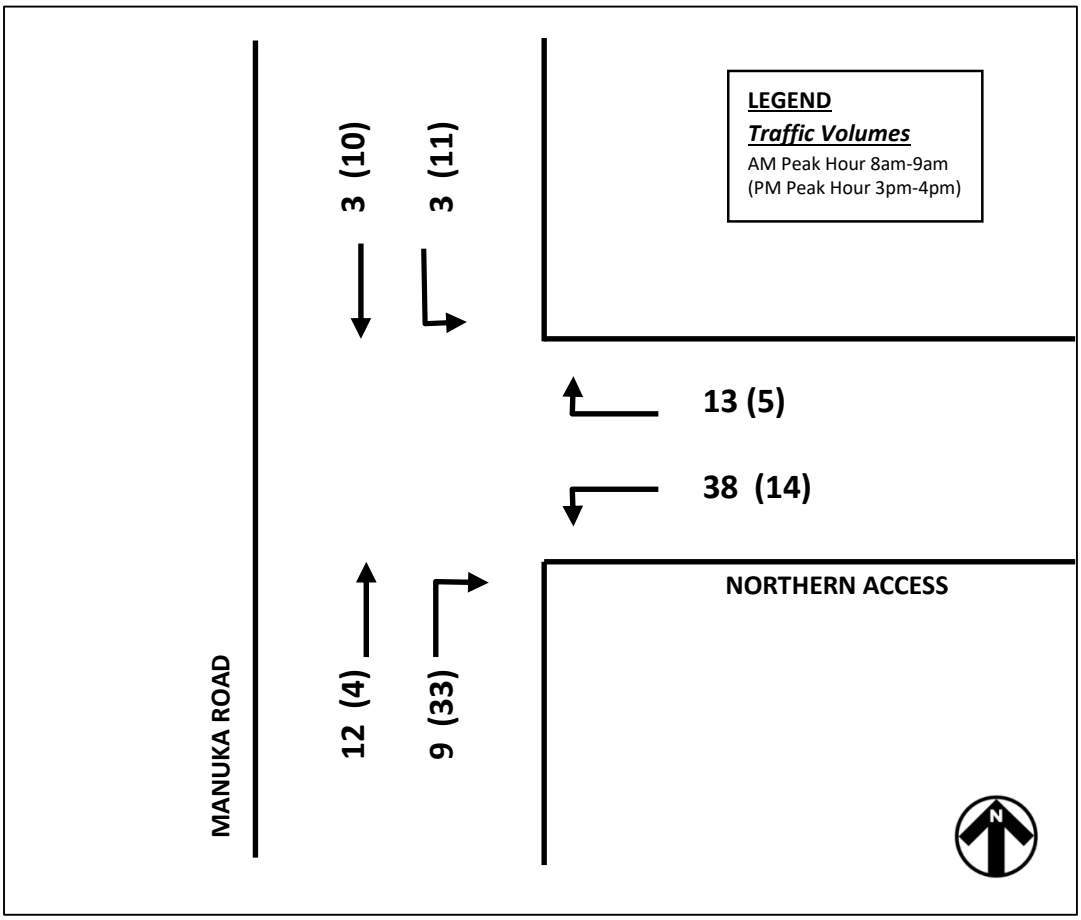


Figure 13: Development Volumes - Manuka Road / Northern Access

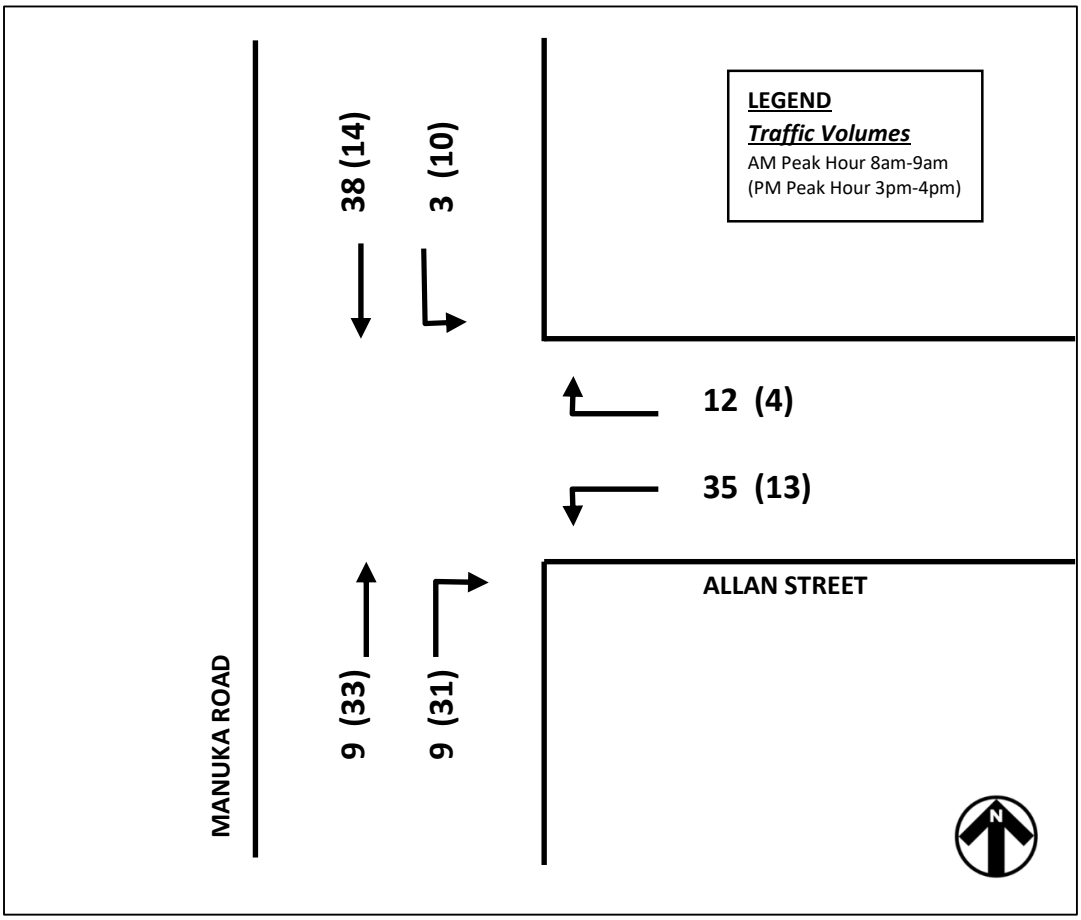


Figure 14: Development Volumes - Manuka Road / Allan Street

5.3.3. Design Traffic Volumes

The design traffic volumes, as a result of the sum of the background and development volumes for the are produced by adding the background traffic volumes to the development traffic volumes, as shown in the figures below.

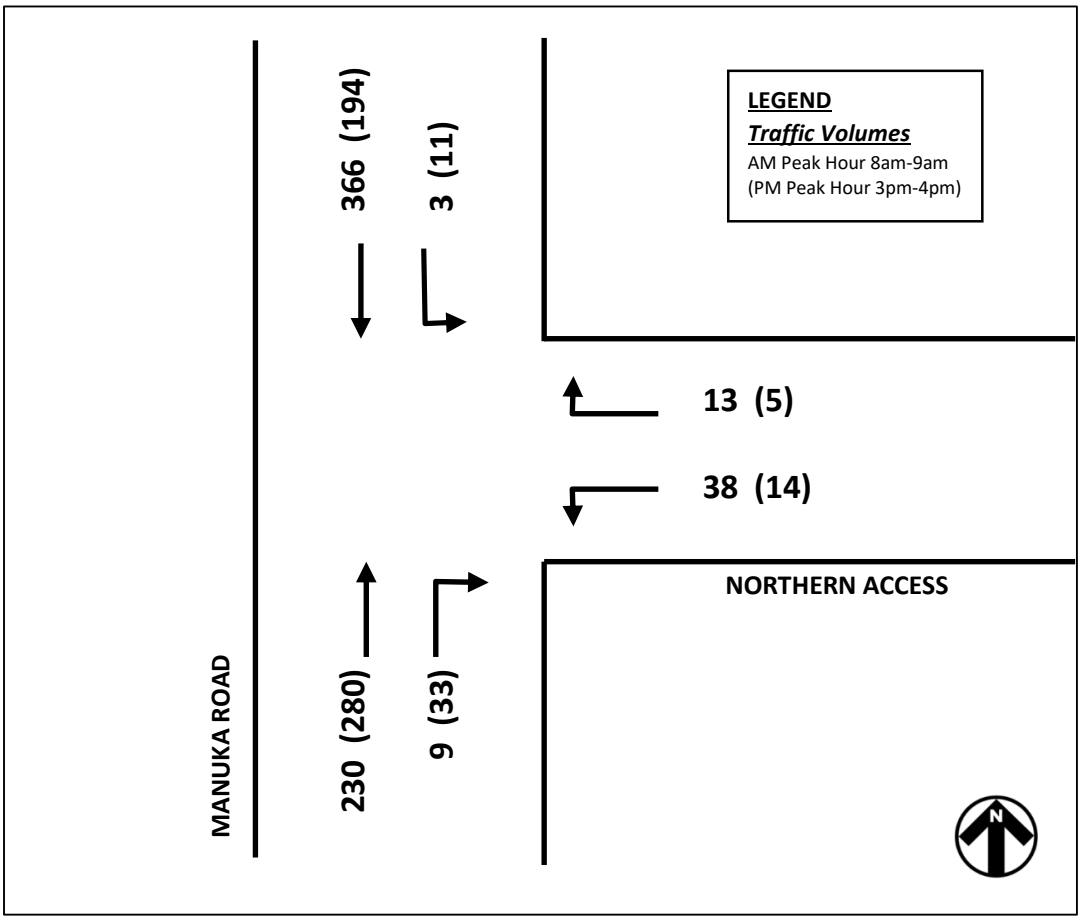


Figure 15: Design Volumes - Manuka Road / Northern Access

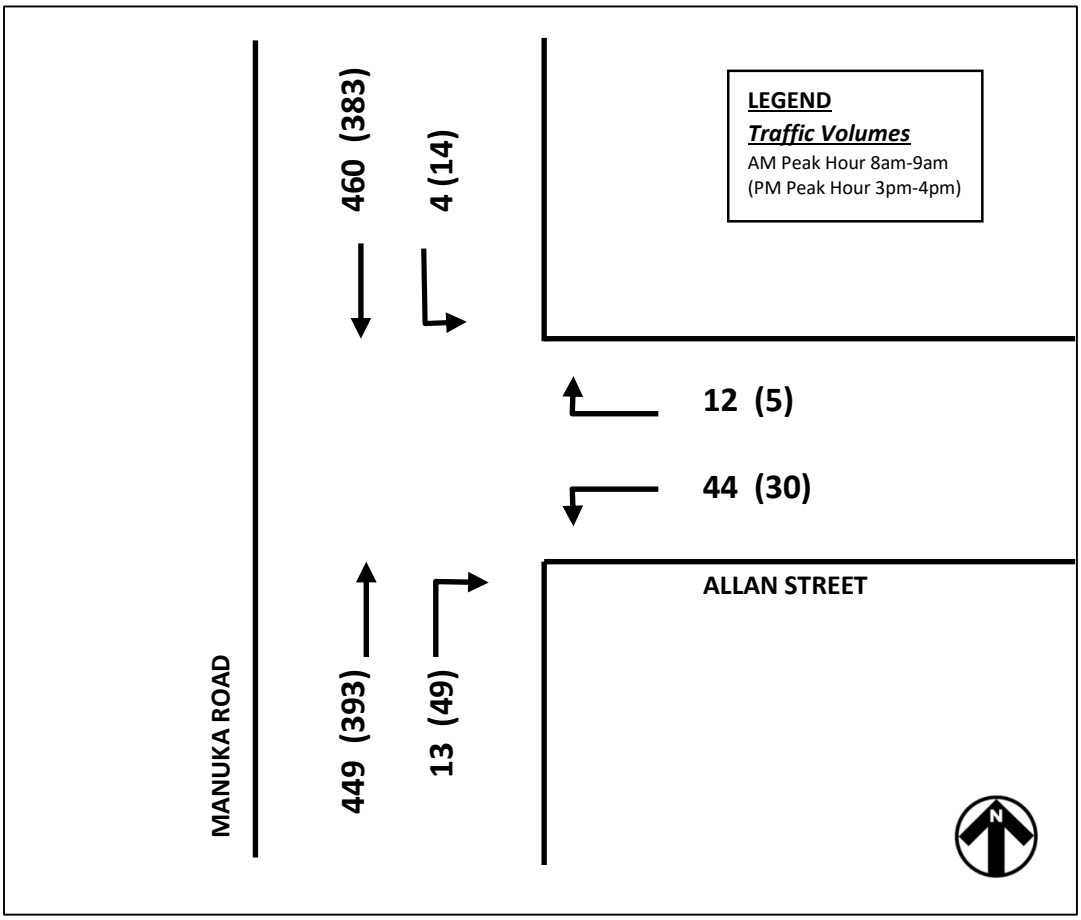


Figure 16: Design Volumes - Manuka Road / Allan Street

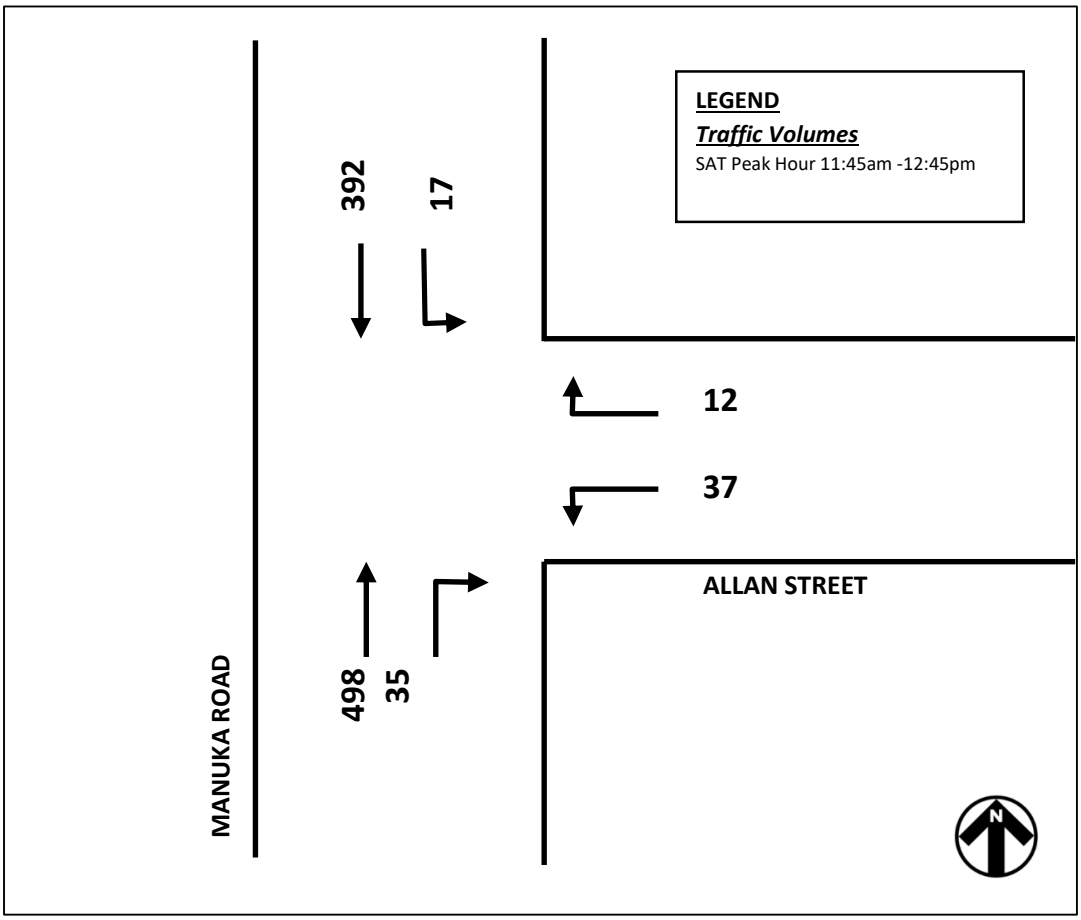


Figure 17: Design Volumes - Manuka Road / Allan Street (Saturday)

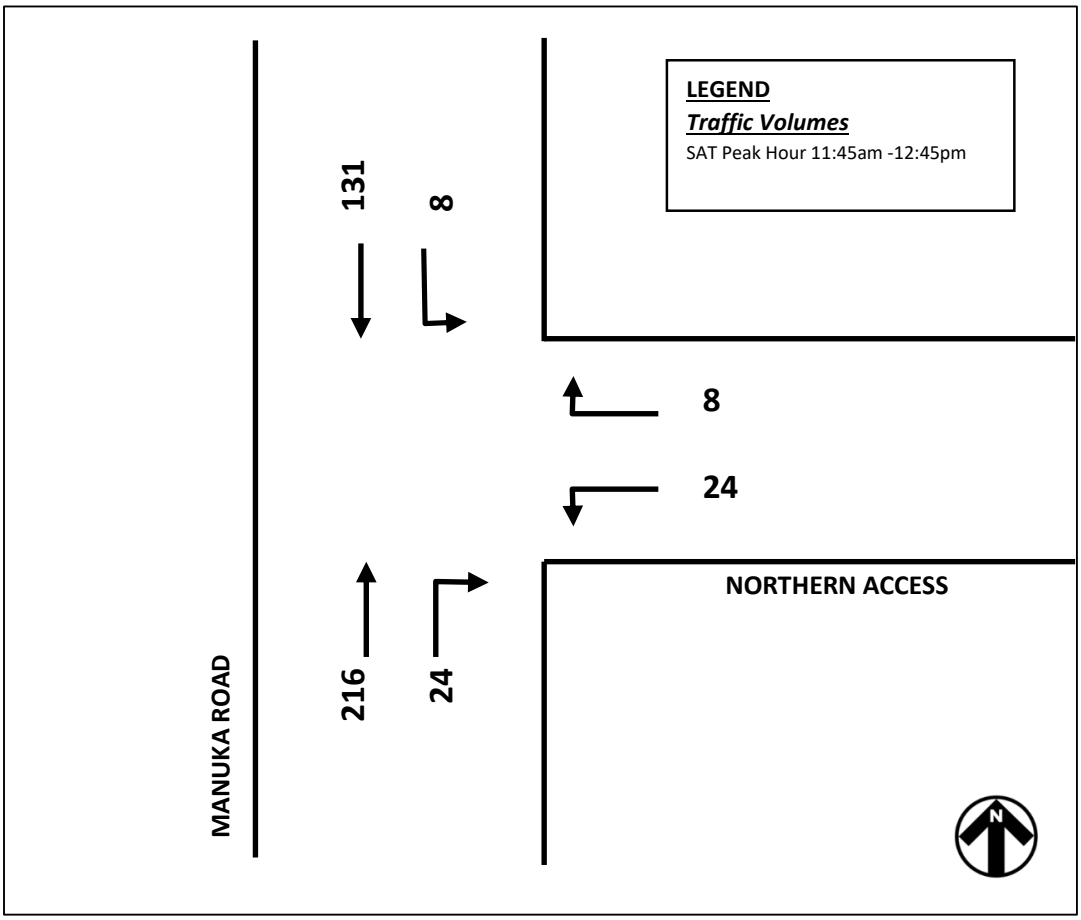


Figure 18: Design Volumes - Manuka Road / Northern Access (Saturday)

5.4. Intersection Type

Guide to Traffic Management Part 6 Intersections, Interchanges and Crossings (Austroads, 2020) ("GTM Part 6") provides guidance as to the selection of intersection types. Of relevance, Figure 3.25(c) in AGTM Part 6 provides a graph for selecting turn treatments on roads with a design speed of less than 70km/h. Figure 3.25(c) is shown below in Figure 19.

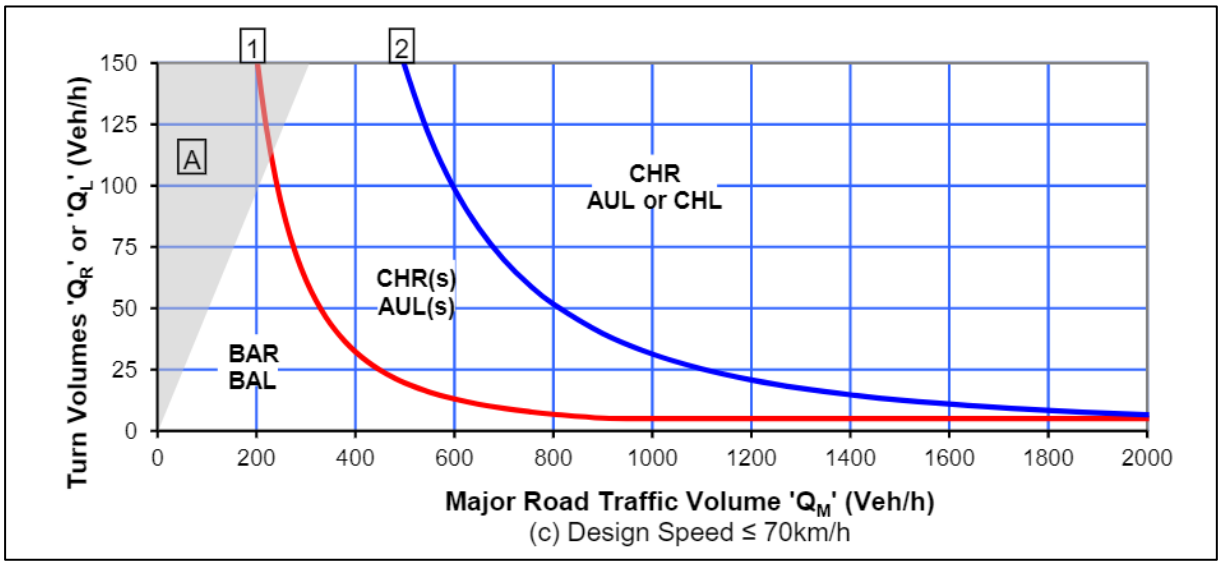


Figure 19: Warrants for Turn Lane Treatments on Major Roads at Unsignalised Intersections

The types of intersections are described as follows:

- BAL: Basic left turn
- AUL(S): Auxiliary left turn (short)
- AUL or CHL: Auxiliary left turn or channelised left turn
- BAR: Basic right turn
- CHR(S): Channelised right turn (short)
- CHR: Channelised right turn

It is noted that Commentary C9.2 states:

The warrants are based on the construction of intersections on new roads (i.e., Greenfield sites). Therefore, their most appropriate application is to the selection of turn types for intersections on new roads. However, the warrants may also be used:

- *as a reference for the construction of new intersections on existing roads*
- *as a reference for intervention levels when upgrading existing intersection turn treatments*
- *although not intended for direct application to accesses and driveways, they may be used as a reference for such.*

On this basis, Figure 3.25(c) is therefore to be used as a reference for intervention levels when upgrading existing intersection turn treatments.

To determine the type of intersection required in the future and responsibility for its upgrade, an assessment is first made of the type of intersection required as a result of existing traffic volumes, followed by an assessment of the type of intersection required for the assumed growth in traffic volumes and thirdly an assessment of the type of intersection required for the design traffic volumes (i.e., following completion of the development). The proposed development is then responsible for any upgrading of the intersection type compared to the background intersection type.

5.4.1. Existing Traffic Volumes

Table 3 below shows the results of applying the existing traffic volumes to Figure 3.25 in AGTM Part 6.

Table 3: Existing Traffic Volumes – Intersection Types

Time Period	Allan Street		Northern Access	
	Left Turn	Right Turn	Left Turn	Right Turn
AM Peak	BAL	BAR	N/A	N/A
PM Peak	BAL	CHR(S)	N/A	N/A

5.4.2. Background Traffic Volumes

Table 4 below shows the results of applying the background traffic volumes to Figure 3.25 in AGTM Part 6.

Table 4: Background Traffic Volumes – Intersection Types

Time Period	Allan Street		Northern Access	
	Left Turn	Right Turn	Left Turn	Right Turn
AM Peak	BAL	BAR	N/A	N/A
PM Peak	BAL	CHR(S)	N/A	N/A

5.4.3. Design Traffic Volumes

Table 5 below shows the results of applying the design traffic volumes to Figure 3.25(c) in AGTM Part 6.

Table 5: Design Traffic Volumes – Intersection Types

Time Period	Allan Street		Northern Access	
	Left Turn	Right Turn	Left Turn	Right Turn
AM Peak	BAL	CHR(S)	BAL	BAR
PM Peak	BAL	CHR(S)	BAL	CHR(S)

5.4.4. Upgrades Required Due to Proposed Development

A comparison of Table 3, Table 4 and Table 5 shows the turning lane treatments required as a result of the development are as follows:

- Allan Street Left Turn: No Change
  Right Turn: CHR (S)
- Northern Access Left Turn: BAL
  Right Turn CHR (S)

5.5. Intersection Capacity Analysis

SIDRA 9 has been used to assess the intersection capacities of the two (2) intersections with Manuka Road for the design traffic volumes. SIDRA provides information about the capacity of an intersection (or access connections in this case) in terms of a range of parameters, described as follows:

Degree of Saturation (DoS) is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement.

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 results of the SIDRA assessment on the intersections of Manuka Road with Allan Street and the Northern Access Street are provided below. It should be noted that CHR(S) right turns have been provided on the south approach of each of the intersections as per the previous sections.

Table 6: SIDRA Result Summary - Design Volumes

Approach	AM Peak			PM Peak			Sat Peak		
	DOS	Delay (s)	Queue (m)	DOS	Delay (s)	Queue (m)	DOS	Delay (s)	Queue (m)
Manuka Road / Allan Street									
South	0.24	0.3	0.4	0.21	0.8	1.3	0.27	0.5	0.9
East	0.09	9.2	2.2	0.04	7.9	1.1	0.08	9.3	1.9
North	0.25	0.1	0	0.22	0.3	0	0.22	0.3	0.0
Total	**0.25**	**0.7**	**2.2**	**0.22**	**0.8**	**1.3**	**0.27**	**0.9**	**1.9**
Manuka Road / Northern Access Street									
South	0.12	0.3	0.2	0.15	0.7	0.7	0.12	0.6	0.5
East	0.06	7.8	1.6	0.02	6.9	0.5	0.03	6.4	0.8
North	0.20	0.1	0.0	0.11	0.3	0	0.8	0.3	0.0
Total	**0.20**	**0.8**	**1.6**	**0.15**	**0.8**	**0.7**	**0.12**	**1.0**	**0.8**

This analysis shows that all intersections will operate at a low degree of saturation with minimal delays and queues, based on the conservative assumption that up to 152 lots could be ultimately provided on the site. Storage for one car is required in the proposed right turn lanes on Manuka Road into Allan Street and the Northern Access Street.

Detailed SIDRA outputs are provided at Appendix E.

5.6. Intersection Designs

Proposed intersection layouts have been developed to incorporate the recommended channelised right turn (CHR(S)) and BAL turning lane treatments specified in Section 5.4 at Manuka Road / Allan Street and Manuka Road / Northern Access.

A basic diagram of a channelised right turn is provided below in Figure 20.

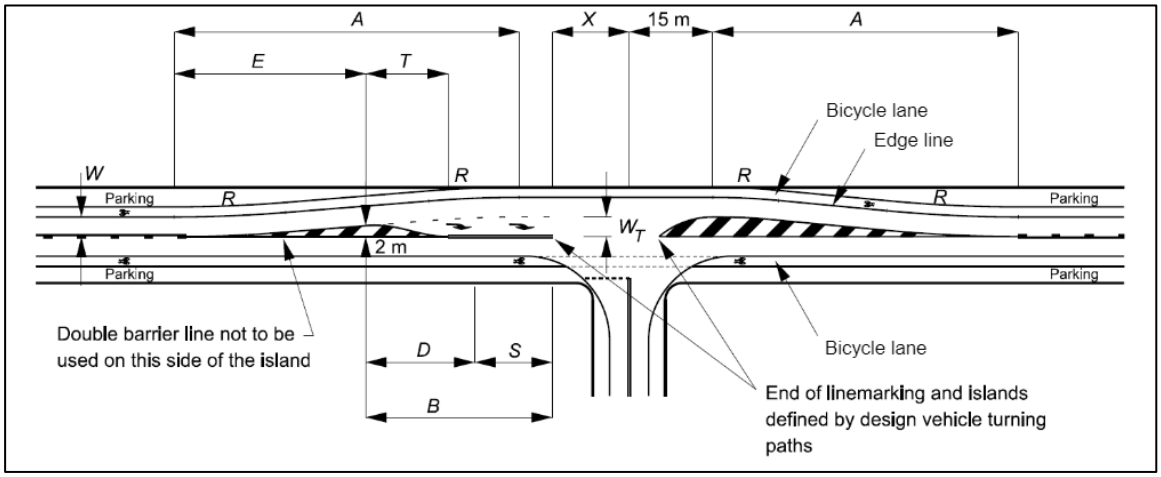


Figure 20: Urban Channelised Right Turn Example

Based on the site constraints, we note that the widening of Manuka Road is most likely required to accommodate the turn lanes.

The dimension of the channelised right turn was assessed against the requirements outlined in Figure 7.7 of Austroads Guide to Road Design Part 4A for a 60km/h speed zone and a turn lane width of 3.0m.

Concept layouts for the proposed intersection layouts are attached at Appendix F.

6. Internal Road Network

6.1. Road Hierarchy

The internal road network of a residential subdivision on the development plan area is subject to Clause 56 of the Casey Planning Scheme. Typically, the internal roads of a subdivision are broadly defined under the 'Access Street' provision in the Planning Scheme.

Given the total daily traffic generated within the proposed development area, all roads are anticipated to carry less than 2,000 vehicles per day and as such, a road hierarchy has been established as shown in Figure 21 below with cross sections detailed in the next section.

Figure 21: Proposed Road Hierarchy

The westernmost internal road has the potential to extend north-south through the Clover Cottage estate. In the event that this occurs, the existing direct access from Clover Cottage to Manuka Road would need to be considered (by others).

Allan Street (to the west of the site access up to Manuka Road) is being proposed to be upgraded as an 'Access Street' which is considered appropriate given the low vehicle volumes.

Other lower order access streets would likely be provided as part of the future establishment of a detailed subdivision layout.

6.2. Road Cross-Sections

All roads within the development plan area would be subject to the provision of Clause 56 of the Planning Scheme and the guidelines presented in the MPA Engineering Design and Construction Manual.

All streets within a residential subdivision will be 'Access Streets' which are recommended to have dimensions as follows:

- Access Street
  - 16m wide road reservation (14m wide if adjacent to reserve)
  - 7.3m wide carriageway (parking both sides)
  - 1.5m footpaths on both sides of the road
- Access Street (shared path)
  - 17m wide road reservation
  - 7.3m wide carriageway (parking both sides)
  - 1.5m footpath on one side of the road
  - 2.5m shared user path on one side of the road

The park interface streets along the eastern boundary of the site have a road reserve between 23-26m with a 7.9m carriageway and a 1.5m footpath and 2.5m shared path on either side of the carriageway. These cross sections accord with the requirements of the relevant Bushfire Attack Level, which requires a greater building setback in these instances.

6.2.1. Allan Street

As part of the proposed development, the section of Allan Street from Manuka Road to the site access is proposed to be upgraded to a more formalised cross section. Given that the overall road reservation along Allan Street is approximately 30m, the proposed cross section is as follows:

- 30m road reservation
  - 12m existing verge on the south side
  - 7.3m carriageway from the southern edge of the existing carriageway location
  - 8.2m verge
  - 2.5m shared user path.

This cross-section is illustrated on an aerial image as shown below.

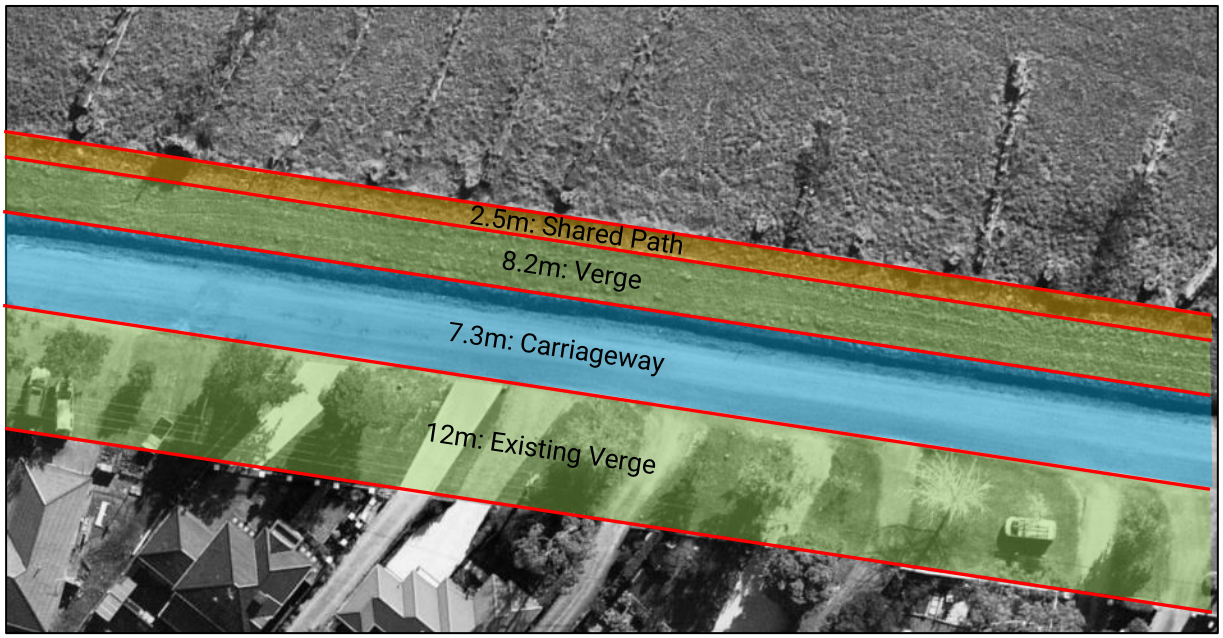


Figure 22: Proposed Allan Street Cross Section

Turnaround provision in the form of 'side turning' bays or court bowls should be provided for any discontinuous street with facilities that meet the requirements of the VPA *'Engineering Design and Construction Manual for Subdivision in Growth Areas'*. It is noted that the eastern terminus of Allan Street is currently a court bowl.

6.3. Waste Collection and Service Vehicles

The 'Access Street' roads outlined above provide a 7.3m wide carriageway width which will allow for Council waste collection vehicles as well as other service vehicles to manoeuvre past vehicles parked on both sides of the road.

6.4. Walking and Cycling

The City of Casey 'Paths and Trails Strategy' outlines a number of proposed shared paths in the vicinity of the development area that connect to existing paths to the south, as shown on the map below.

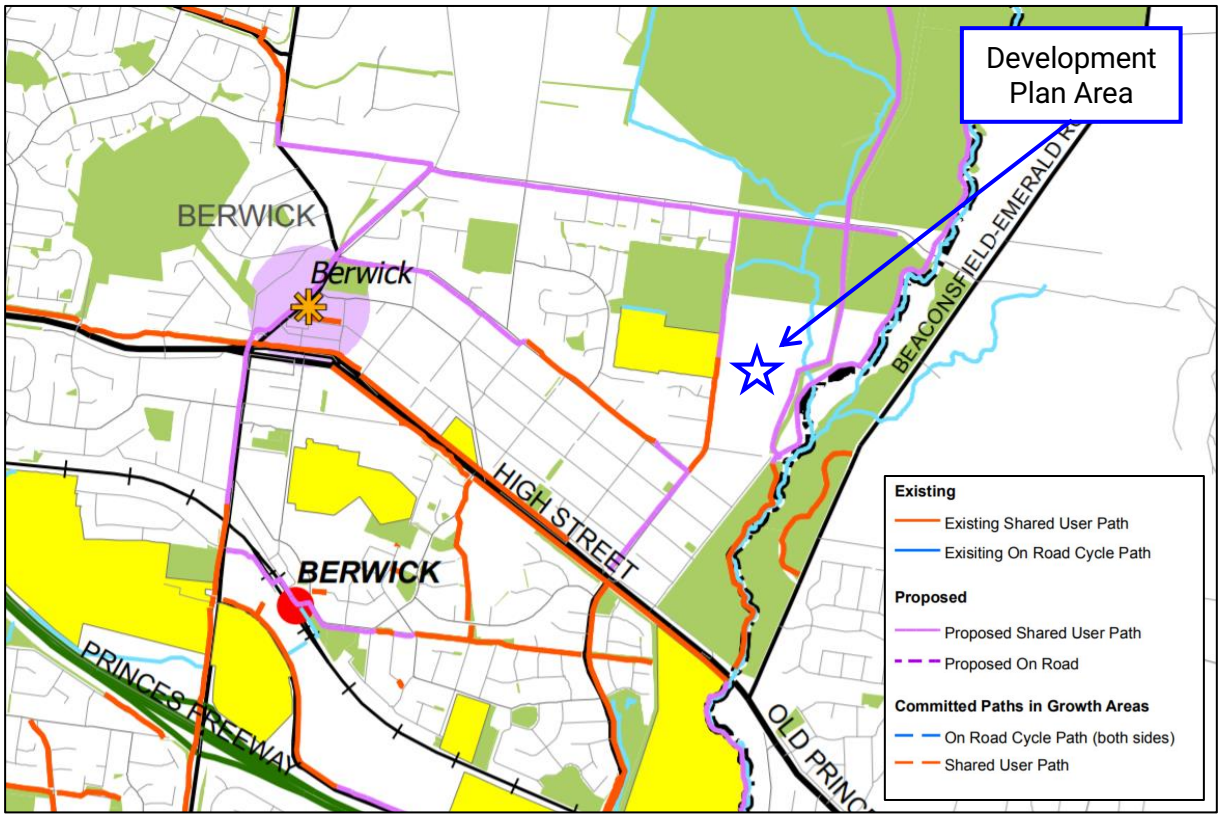


Figure 23: City of Casey 'Parks and Trails Strategy' - Trail Network North

The Development Plan at Figure 9 shows shared user paths installed along the Manuka Road frontage of the development plan area, through the development plan area, and along the pipe track to the east of the development plan area.

All roads will include footpaths on the dwelling side within the development area.

This provides the proposed estate with a high level of connectivity for walking and cycling. Where shared paths are not proposed, cyclists will share the road carriageway in a manner that is typical with such roads.

As per Section 6.2.1, a shared user path is proposed along the north side of Allan Street.

7. Other DPO24 Requirements

7.1. Pedestrian Crossings on Manuka Road and Allan Street

It is not proposed to construct any pedestrian crossings on Manuka Road or Allan Street as the pedestrian demands are unlikely to satisfy any relevant warrants for crossing facilities, however the intersection layouts at Manuka Road / Allan Street and Manuka Road / Northern Access Street incorporate pedestrian refuges to facilitate pedestrian access across Manuka Road and are demonstrated in the concept plans attached at Appendix F.

7.2. Identification of Visitor Parking

It is expected that parking will be provided in line with Clause 52.06 so that adequate resident provision is provided off-street (typically in a garage space and/or driveway space) with the visitor parking being provided on-street.

As discussed above, the adopted road cross sections permit on-street parking and as such it is not considered necessary to specifically identify visitor parking.

8. DPO24 Response Summary

The following table provides a response to the specific traffic engineering requirements outlined in DPO24.

DPO24	Response	Location
A detailed assessment of the expected traffic generation and traffic impacts associated with the development on the internal and external road network and any recommended works or measures within and external to the site.	Detailed traffic generation and distribution has been undertaken on the entirety of the development plan area and intersection treatments have been recommended.	Section 5.1- Section 5.5 & Appendix D.
An internal road layout and external road access.	The internal road layout and external road access have been reviewed against the requirements of the Planning Scheme and the VPA Engineering Design and Construction Manual for Subdivision in Growth Areas.	Section 6.1
Any recommendations of an independent traffic safety audit.	To be undertaken following further detailed design of the intersections.	
Details of road widths to ensure that all streets are designed to allow for service and emergency vehicles to appropriately manoeuvre.	Appropriate road widths have been detailed and reviewed against the requirements of service and emergency vehicles.	Section 6.2 & Section 6.3
Typical cross sections of internal roads indicating provision for pedestrians, tree planting and car parking.	Cross sections have been specified for each of the relevant road types within the development plan area.	Section 6.2
An internal perimeter road along the northern and eastern boundaries, and an internal loop along the western boundary with appropriate reserves for landscaping.	Has been shown on the Development Plan and reviewed within this traffic impact assessment report.	Section 6.1 & Section 6.2
A cross section of the perimeter road to allow for appropriate parallel or indented parking adjacent to the public open space.	Cross sections have been specified for each of the relevant road types within the development plan area.	Section 6.2

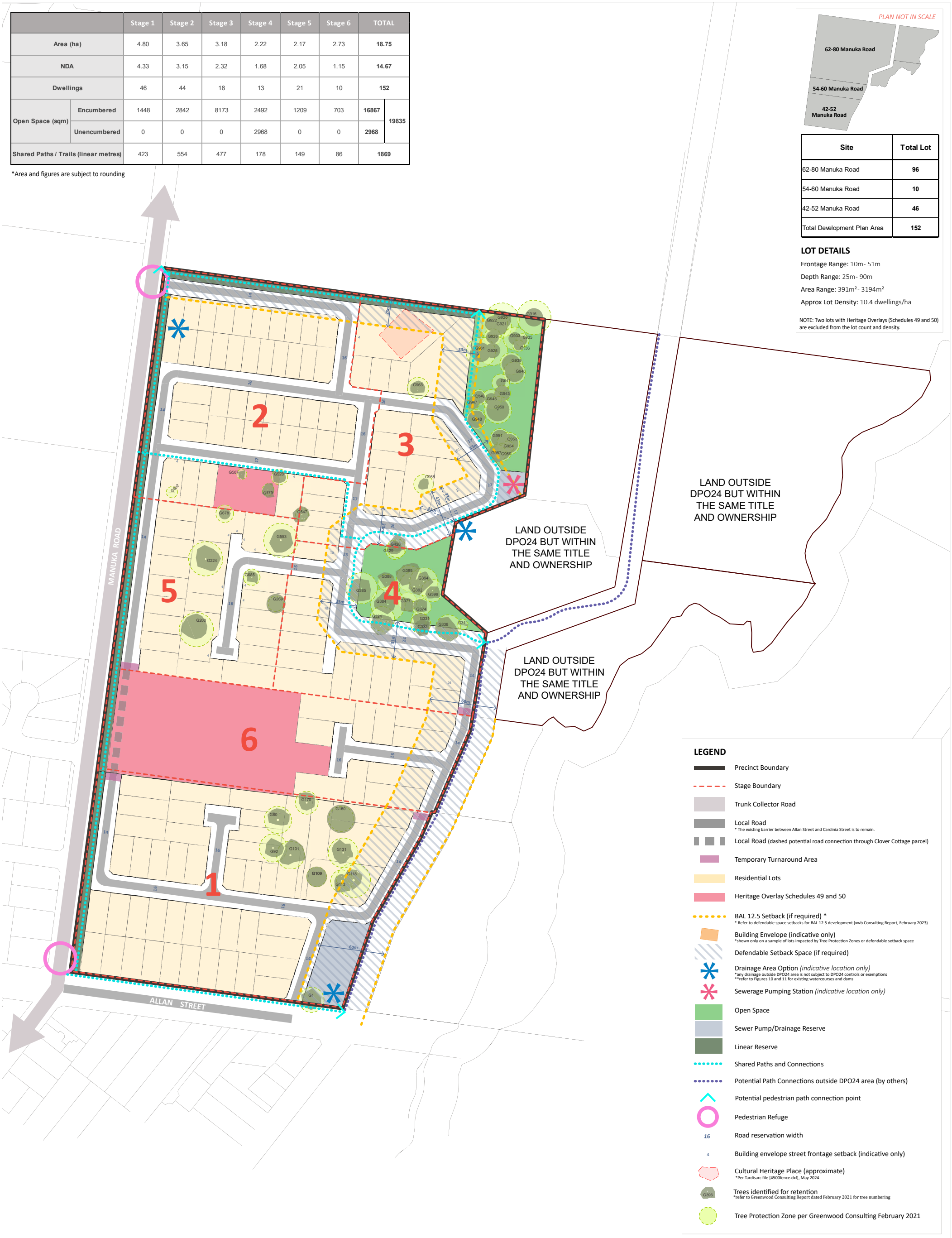
DPO24	Response	Location
The intersection treatment at Manuka Road, having regard to access to the school and community facilities on the western side of Manuka Road.	An assessment has been undertaken on the required intersection treatments based on the ultimate site build out with Concept Plan developed showing these treatments.	Section 5.6 & Appendix E
The intersection treatment at Allan Street/Manuka Road.		Section 5.6 & Appendix E
The upgrade of Allan Street to urban standards, to the satisfaction of the responsible authority.	The proposed Allan Street cross section has been detailed and reviewed in this report.	Section 6.1 and 6.2.1
The location of all pedestrian crossings on Manuka Road and Allan Street.	No pedestrian crossings are proposed however the intersection treatments can cater for the provision of pedestrian refuges on the northern side of the intersection.	Section 7.1
The proposed internal cycle and pedestrian path network and connection to the Casey Trail Network (shared user path and equestrian trails), including public access through the site.	Has been discussed and reviewed.	Section 6.4
Identification of visitor car parking within the proposed street network.	Has been discussed and reviewed.	Section 7.2

Appendix A

Development Plan

		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	TOTAL	
Area (ha)		4.80	3.65	3.18	2.22	2.17	2.73	**18.75**	
NDA		4.33	3.15	2.32	1.68	2.05	1.15	**14.67**	
Dwellings		46	44	18	13	21	10	**152**	
Open Space (sqm)	Encumbered	1448	2842	8173	2492	1209	703	**16867**	**19835**
	Unencumbered	0	0	0	2968	0	0	**2968**	
Shared Paths / Trails (linear metres)		423	554	477	178	149	86	**1869**	

*Area and figures are subject to rounding



Site	Total Lot
62-80 Manuka Road	**96**
54-60 Manuka Road	**10**
42-52 Manuka Road	**46**
Total Development Plan Area	**152**

LOT DETAILS

Frontage Range: 10m- 51m

Depth Range: 25m- 90m

Area Range: 391m²- 3194m²

Approx Lot Density: 10.4 dwellings/ha

NOTE: Two lots with Heritage Overlays (Schedules 49 and 50) are excluded from the lot count and density.

Development Plan

42 - 80 Manuka Road | Berwick
328131 | 328131UDYM | Version M | 19.03.26

1:3,000@ A3

N

Note: Plan to be read in conjunction with text of Development Plan.
This is an indicative plan only based on the Planning Zones/Overlays. This plan and areas shown are subject to survey and rounding. Tree data per Veris survey "3110545.dwg", May 2024 and other sources.
The current property boundaries are based on DCMB data and are subject to survey realignment.

Damon Land Pty Ltd

veris

Appendix B

Turning Movement Counts

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au

Intersection of Manuka Rd and Allan St, Berwick

GPS -38.034881, 145.365067

Date:	Tue 24/02/26
Weather:	Fine
Suburban:	Berwick
Customer:	Traffix

North:	Manuka Rd
East:	Allan St
South:	Manuka Rd
West:	N/A

Survey Period	AM:	7:00 AM-9:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	3:00 PM-4:00 PM

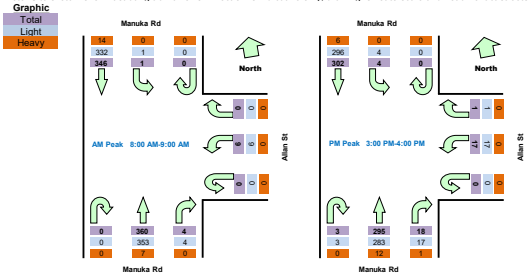
All Vehicles

Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	9	0	0	0	2	0	3	11	163	
7:15	7:30	0	15	0	0	0	1	0	1	12	235	
7:30	7:45	0	17	0	0	0	2	0	2	23	345	
7:45	8:00	0	34	0	0	0	1	0	1	29	556	
8:00	8:15	0	42	0	0	0	4	0	1	50	720	Peak
8:15	8:30	0	76	0	0	0	0	0	1	62		
8:30	8:45	0	113	1	0	0	0	0	1	140		
8:45	9:00	0	115	0	0	0	5	0	1	108		
15:00	15:15	0	23	1	0	0	2	0	3	81	640	Peak
15:15	15:30	0	94	0	0	1	7	1	8	94	598	
15:30	15:45	0	108	3	0	0	7	2	5	68	446	
15:45	16:00	0	77	0	0	0	1	0	2	52	317	
16:00	16:15	0	30	0	0	0	1	0	1	36	278	
16:15	16:30	0	27	0	0	1	1	0	1	23	300	
16:30	16:45	0	33	0	0	0	3	0	1	27	310	
16:45	17:00	0	26	0	0	0	0	1	1	65	321	
17:00	17:15	0	36	0	0	1	1	0	4	48	302	
17:15	17:30	0	25	0	0	0	0	0	0	38		
17:30	17:45	0	36	0	0	0	1	0	0	38		
17:45	18:00	0	28	0	0	0	0	0	1	45		

Peak Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	346	1	0	0	9	0	4	360	720
15:00	16:00	0	302	4	0	1	17	3	18	295	640

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic
Total
Light
Heavy



Light Vehicles

Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	9	0	0	0	2	0	2	11
7:15	7:30	0	15	0	0	0	1	0	1	12
7:30	7:45	0	16	0	0	0	2	0	2	23
7:45	8:00	0	33	0	0	0	1	0	1	29
8:00	8:15	0	41	0	0	0	4	0	1	49
8:15	8:30	0	73	0	0	0	0	0	1	61
8:30	8:45	0	106	1	0	0	0	0	1	137
8:45	9:00	0	112	0	0	0	5	0	1	106
15:00	15:15	0	22	1	0	0	2	0	3	81
15:15	15:30	0	93	0	0	1	7	1	8	87
15:30	15:45	0	107	3	0	0	7	2	4	66
15:45	16:00	0	74	0	0	0	1	0	2	49
16:00	16:15	0	30	0	0	0	1	0	1	35
16:15	16:30	0	26	0	0	1	1	0	1	23
16:30	16:45	0	32	0	0	0	3	0	1	26
16:45	17:00	0	26	0	0	0	0	1	1	65
17:00	17:15	0	36	0	0	1	1	0	4	48
17:15	17:30	0	24	0	0	0	0	0	0	38
17:30	17:45	0	36	0	0	0	1	0	0	38
17:45	18:00	0	28	0	0	0	0	0	1	45

Peak Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	332	1	0	0	9	0	4	353	699
15:00	16:00	0	296	4	0	1	17	3	17	283	621

Heavy Vehicles

Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	0	0	0	0	0	0	1	0
7:15	7:30	0	0	0	0	0	0	0	0	0
7:30	7:45	0	1	0	0	0	0	0	0	0
7:45	8:00	0	1	0	0	0	0	0	0	0
8:00	8:15	0	1	0	0	0	0	0	0	1
8:15	8:30	0	3	0	0	0	0	0	0	1
8:30	8:45	0	7	0	0	0	0	0	0	3
8:45	9:00	0	3	0	0	0	0	0	0	2
15:00	15:15	0	1	0	0	0	0	0	0	0
15:15	15:30	0	1	0	0	0	0	0	0	7
15:30	15:45	0	1	0	0	0	0	0	1	2
15:45	16:00	0	3	0	0	0	0	0	0	3
16:00	16:15	0	0	0	0	0	0	0	0	1
16:15	16:30	0	1	0	0	0	0	0	0	0
16:30	16:45	0	1	0	0	0	0	0	0	1
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	1	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	14	0	0	0	0	0	0	7	21
15:00	16:00	0	6	0	0	0	0	0	1	12	19

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au

Intersection of School Entrance and Manuka Rd, Berwick

GPS	-38.030735, 145.365857
Date:	Tue 24/02/26
Weather:	Fine
Suburban:	Berwick
Customer:	Traffix

North:	Manuka Rd
East:	N/A
South:	Manuka Rd
West:	School Entrance

Survey Period	AM:	7:00 AM-9:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	3:00 PM-4:00 PM

All Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entra			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	1	6	0	6	2	0	0	0	119	
7:15	7:30	0	1	5	0	6	2	0	0	0	180	
7:30	7:45	0	3	12	0	5	10	0	0	0	311	
7:45	8:00	0	13	29	0	7	10	0	1	0	525	
8:00	8:15	0	13	36	0	12	15	0	0	0	708	Peak
8:15	8:30	0	30	73	0	14	28	0	0	0		
8:30	8:45	0	53	122	0	8	61	0	0	0		
8:45	9:00	0	58	122	0	21	42	0	0	0		
15:00	15:15	0	25	21	0	27	39	0	0	0	502	Peak
15:15	15:30	1	23	47	0	15	25	0	0	0	460	
15:30	15:45	0	14	75	1	14	20	0	0	0	389	
15:45	16:00	0	5	87	0	26	37	0	0	0	308	
16:00	16:15	0	2	29	0	32	7	0	0	0	234	
16:15	16:30	0	0	25	0	12	3	0	0	0	246	
16:30	16:45	0	0	23	0	16	3	0	0	1	266	
16:45	17:00	0	5	27	0	31	18	0	0	0	285	
17:00	17:15	0	6	33	0	31	12	0	0	0	266	
17:15	17:30	0	2	24	0	28	5	0	0	1		
17:30	17:45	0	2	31	0	24	5	0	0	0		
17:45	18:00	0	10	22	0	18	12	0	0	0		

Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entra			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	154	353	0	55	146	0	0	0	708
15:00	16:00	1	67	230	1	82	121	0	0	0	502

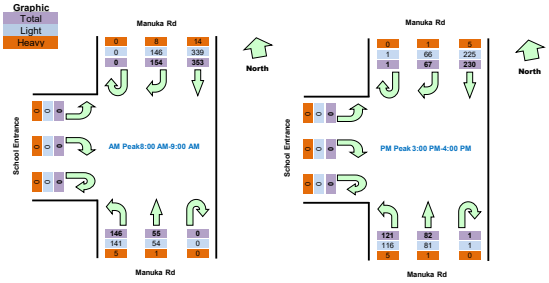
Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total

Light

Heavy



Light Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entra		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	1	6	0	6	2	0	0	0
7:15	7:30	0	1	5	0	6	2	0	0	0
7:30	7:45	0	3	11	0	5	10	0	0	0
7:45	8:00	0	13	28	0	6	10	0	1	0
8:00	8:15	0	11	35	0	11	15	0	0	0
8:15	8:30	0	29	71	0	14	27	0	0	0
8:30	8:45	0	49	114	0	8	59	0	0	0
8:45	9:00	0	57	119	0	21	40	0	0	0
15:00	15:15	0	25	20	0	27	39	0	0	0
15:15	15:30	1	23	47	0	15	23	0	0	0
15:30	15:45	0	13	74	1	14	18	0	0	0
15:45	16:00	0	5	84	0	25	36	0	0	0
16:00	16:15	0	2	29	0	32	6	0	0	0
16:15	16:30	0	0	24	0	12	3	0	0	0
16:30	16:45	0	0	23	0	15	3	0	0	1
16:45	17:00	0	5	27	0	31	18	0	0	0
17:00	17:15	0	6	33	0	31	12	0	0	0
17:15	17:30	0	2	23	0	28	5	0	0	1
17:30	17:45	0	2	31	0	24	5	0	0	0
17:45	18:00	0	10	22	0	18	12	0	0	0

Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entra			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	146	339	0	54	141	0	0	0	680
15:00	16:00	1	66	225	1	81	116	0	0	0	490

Heavy Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entra		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	0	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0	0
7:30	7:45	0	0	1	0	0	0	0	0	0
7:45	8:00	0	0	1	0	1	0	0	0	0
8:00	8:15	0	2	1	0	1	0	0	0	0
8:15	8:30	0	1	2	0	0	1	0	0	0
8:30	8:45	0	4	8	0	0	2	0	0	0
8:45	9:00	0	1	3	0	0	2	0	0	0
15:00	15:15	0	0	1	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	2	0	0	0
15:30	15:45	0	1	1	0	0	2	0	0	0
15:45	16:00	0	0	3	0	1	1	0	0	0
16:00	16:15	0	0	0	0	0	1	0	0	0
16:15	16:30	0	0	1	0	0	0	0	0	0
16:30	16:45	0	0	0	0	1	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	1	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entra			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	8	14	0	1	5	0	0	0	28
15:00	16:00	0	1	5	0	1	5	0	0	0	12

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of School Exit and Manuka Rd, Berwick

GPS *-38.029869, 145.366034*

Date:	Tue 24/02/26
Weather:	Fine
Suburban:	Berwick
Customer:	Traffix

North:	Manuka Rd
East:	N/A
South:	Manuka Rd
West:	School Exit

Survey Period
Traffic Peak

All Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
7:00	7:15	0	0	6	0	6	0	0	1
7:15	7:30	0	0	5	0	6	0	0	1
7:30	7:45	0	1	10	0	5	0	0	5
7:45	8:00	0	2	34	0	7	0	0	8
8:00	8:15	0	0	38	0	12	0	0	11
8:15	8:30	0	4	64	0	14	0	0	39
8:30	8:45	0	5	93	0	5	3	0	82
8:45	9:00	0	3	93	0	20	1	0	87
15:00	15:15	0	3	38	0	23	4	0	8
15:15	15:30	0	2	35	0	15	1	0	36
15:30	15:45	0	3	26	0	11	3	0	63
15:45	16:00	0	0	45	0	25	1	0	47
16:00	16:15	0	1	17	0	32	0	0	14
16:15	16:30	0	0	19	0	12	0	0	6
16:30	16:45	0	0	8	0	17	0	0	15
16:45	17:00	0	1	26	0	30	1	0	6
17:00	17:15	0	1	29	0	31	0	0	10
17:15	17:30	0	1	21	0	29	0	0	5
17:30	17:45	0	0	24	0	24	0	0	9
17:45	18:00	0	0	24	0	18	0	0	8

Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
8:00	9:00	0	12	288	0	51	4	0	219
15:00	16:00	0	8	144	0	74	9	0	154

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an

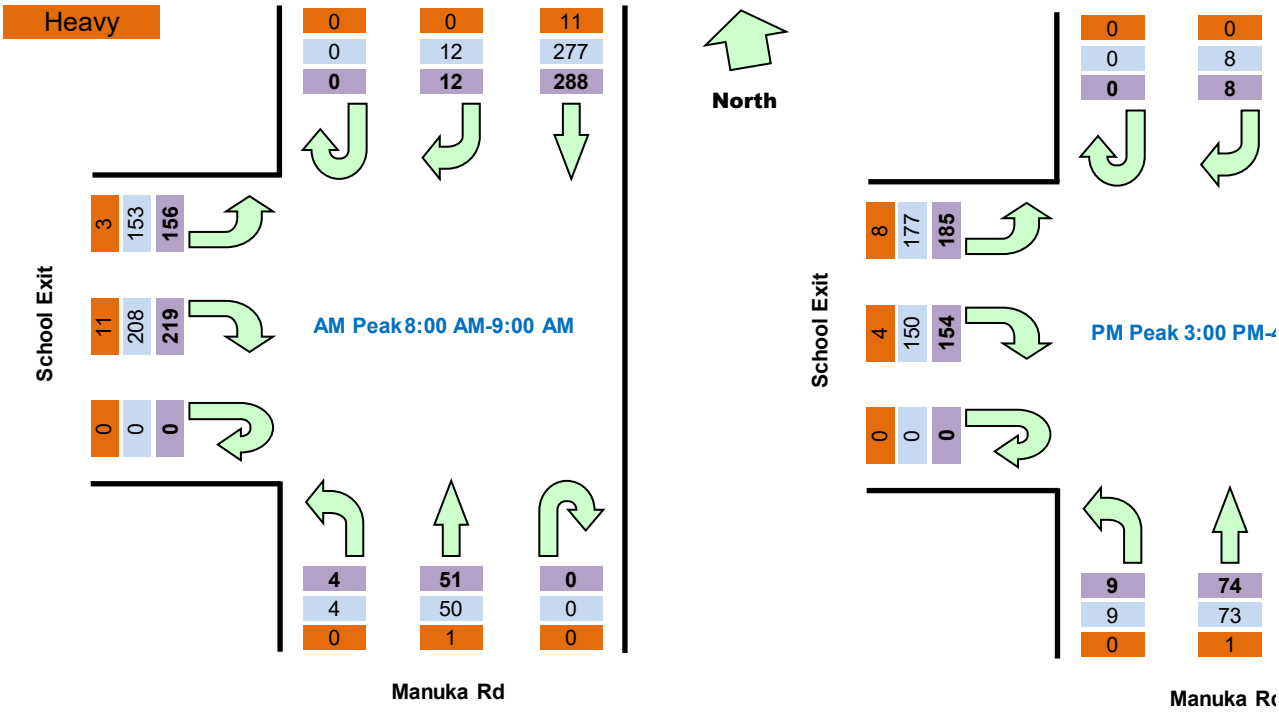
Graphic

Total

Light

Manuka Rd

Manuka Rd



Light Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
7:00	7:15	0	0	6	0	6	0	0	1
7:15	7:30	0	0	5	0	6	0	0	1
7:30	7:45	0	1	9	0	5	0	0	5
7:45	8:00	0	2	33	0	6	0	0	8
8:00	8:15	0	0	35	0	11	0	0	11
8:15	8:30	0	4	63	0	14	0	0	37
8:30	8:45	0	5	87	0	5	3	0	76
8:45	9:00	0	3	92	0	20	1	0	84
15:00	15:15	0	3	37	0	23	4	0	8
15:15	15:30	0	2	35	0	15	1	0	36
15:30	15:45	0	3	26	0	11	3	0	61
15:45	16:00	0	0	44	0	24	1	0	45
16:00	16:15	0	1	17	0	32	0	0	14
16:15	16:30	0	0	18	0	12	0	0	6
16:30	16:45	0	0	8	0	16	0	0	15
16:45	17:00	0	1	26	0	30	1	0	6
17:00	17:15	0	1	29	0	31	0	0	10
17:15	17:30	0	1	20	0	29	0	0	5
17:30	17:45	0	0	24	0	24	0	0	9
17:45	18:00	0	0	24	0	18	0	0	8

Peak Time	North Approach Manuka Rd	South Approach Manuka Rd	West Approach Sc

Period Start	Period End	U	R	SB	U	NB	L	U	R
8:00	9:00	0	12	277	0	50	4	0	208
15:00	16:00	0	8	142	0	73	9	0	150

Heavy Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
7:00	7:15	0	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0
7:30	7:45	0	0	1	0	0	0	0	0
7:45	8:00	0	0	1	0	1	0	0	0
8:00	8:15	0	0	3	0	1	0	0	0
8:15	8:30	0	0	1	0	0	0	0	2
8:30	8:45	0	0	6	0	0	0	0	6
8:45	9:00	0	0	1	0	0	0	0	3
15:00	15:15	0	0	1	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	2
15:45	16:00	0	0	1	0	1	0	0	2
16:00	16:15	0	0	0	0	0	0	0	0
16:15	16:30	0	0	1	0	0	0	0	0
16:30	16:45	0	0	0	0	1	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0
17:15	17:30	0	0	1	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0

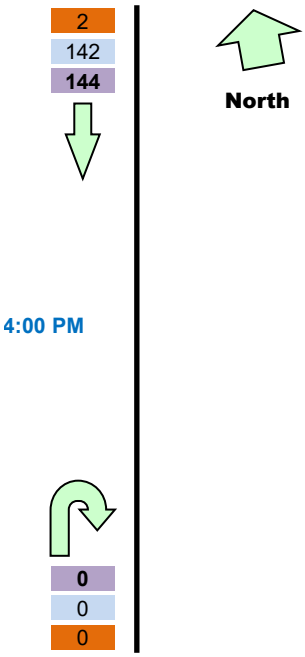
Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
8:00	9:00	0	0	11	0	1	0	0	11
15:00	16:00	0	0	2	0	1	0	0	4

AM:	7:00 AM-9:00 AM
PM:	3:00 PM-6:00 PM
AM:	8:00 AM-9:00 AM
PM:	3:00 PM-4:00 PM

hool Exit	Hourly Total	
L	Hour	Peak
1	114	
1	170	
6	297	
9	520	
9	730	Peak
19		
62		
66		
3	574	Peak
65	567	
79	458	
38	322	
8	237	
8	246	
9	263	
7	275	
10	258	
6		
4		
4		

hool Exit	Peak
L	total
156	730
185	574

exact streets configuration.



d

hool Exit
L
1
1
6
9
7
19
62
65
3
65
75
34
8
8
9
7
10
6
4
4

hool Exit	Peak

L	total
153	704
177	559

hool Exit
L
0
0
0
0
2
0
0
1
0
0
4
4
0
0
0
0
0
0
0
0

hool Exit	Peak
L	total
3	26
8	15

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Manuka Rd and Allan St, Berwick

GPS	-38.034881, 145.365067
Date:	Sat 21/02/26
Weather:	Fine
Suburban:	Berwick
Customer:	Traffix

North:	Manuka Rd
East:	Allan St
South:	Manuka Rd
West:	N/A

Survey Period	AM:	11:00 AM-12:00 PM
	PM:	12:00 PM-2:00 PM
Traffic Peak	AM:	11:45 AM-12:45 PM
	PM:	12:00 PM-1:00 PM

All Vehicles

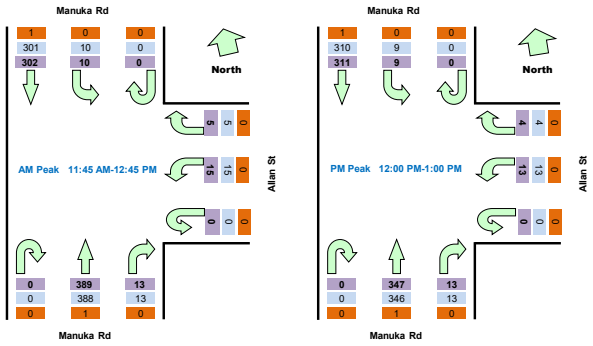
Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
11:00	11:15	0	67	0	1	0	3	0	3	46	425	
11:15	11:30	0	41	1	0	1	2	0	1	49	494	
11:30	11:45	0	18	2	0	2	2	1	5	60	660	
11:45	12:00	0	32	1	0	2	2	0	1	82	734	Peak
12:00	12:15	0	60	4	0	0	4	0	2	119	697	Peak
12:15	12:30	0	108	2	0	3	6	0	7	135	594	
12:30	12:45	0	102	3	0	0	3	0	3	53	389	
12:45	13:00	0	41	0	0	1	0	0	1	40	286	
13:00	13:15	0	44	1	0	0	2	0	1	38	269	
13:15	13:30	0	14	0	0	0	1	0	1	40		
13:30	13:45	0	32	0	0	0	2	0	1	26		
13:45	14:00	0	18	1	0	2	1	0	2	42		

Peak Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
11:45	12:45	0	302	10	0	5	15	0	13	389	734
12:00	13:00	0	311	9	0	4	13	0	13	347	697

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
11:00	11:15	0	67	0	1	0	3	0	3	46
11:15	11:30	0	41	1	0	1	2	0	1	49
11:30	11:45	0	18	2	0	2	2	1	5	60
11:45	12:00	0	32	1	0	2	2	0	1	82
12:00	12:15	0	60	4	0	0	4	0	2	119
12:15	12:30	0	107	2	0	3	6	0	7	134
12:30	12:45	0	102	3	0	0	3	0	3	53
12:45	13:00	0	41	0	0	1	0	0	1	40
13:00	13:15	0	44	1	0	0	2	0	1	38
13:15	13:30	0	14	0	0	0	1	0	1	40
13:30	13:45	0	32	0	0	0	2	0	1	26
13:45	14:00	0	18	1	0	2	1	0	2	42

Peak Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
11:45	12:45	0	301	10	0	5	15	0	13	388	732
12:00	13:00	0	310	9	0	4	13	0	13	346	695

Heavy Vehicles

Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
11:00	11:15	0	0	0	0	0	0	0	0	0
11:15	11:30	0	0	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0	0	0
12:15	12:30	0	1	0	0	0	0	0	0	1
12:30	12:45	0	0	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0	0	0
13:30	13:45	0	0	0	0	0	0	0	0	0
13:45	14:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Manuka Rd			East Approach Allan St			South Approach Manuka Rd			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
11:45	12:45	0	1	0	0	0	0	0	0	1	2
12:00	13:00	0	1	0	0	0	0	0	0	1	2

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of School Entrance and Manuka Rd, Berwick

GPS -38.030735, 145.365857

Date:	Sat 21/02/26
Weather:	Fine
Suburban:	Berwick
Customer:	Traffix

North:	Manuka Rd
East:	N/A
South:	Manuka Rd
West:	School Entrance

Survey Period	AM:	11:00 AM-12:00 PM
	PM:	12:00 PM-2:00 PM
Traffic Peak	AM:	11:00 AM-12:00 PM
	PM:	12:00 PM-1:00 PM

All Vehicles

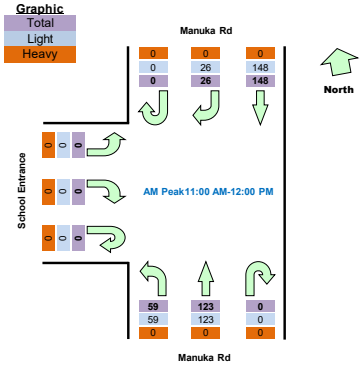
Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entran			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
11:00	11:15	0	1	61	0	36	9	0	0	0	356	Peak
11:15	11:30	0	6	44	0	29	10	0	0	0		
11:30	11:45	0	5	13	0	31	23	0	0	0		
11:45	12:00	0	14	30	0	27	17	0	0	0		
12:00	12:15	0	12	56	0	25	40	0	0	0	558	Peak
12:15	12:30	0	17	63	1	50	45	0	0	0	510	
12:30	12:45	0	7	94	0	50	21	0	0	1	381	
12:45	13:00	0	3	38	0	24	9	0	1	1	257	
13:00	13:15	0	1	43	0	26	15	0	0	0	245	
13:15	13:30	0	3	11	0	26	7	0	0	0		
13:30	13:45	0	0	30	0	16	3	0	0	0		
13:45	14:00	0	0	26	0	26	10	0	2	0		

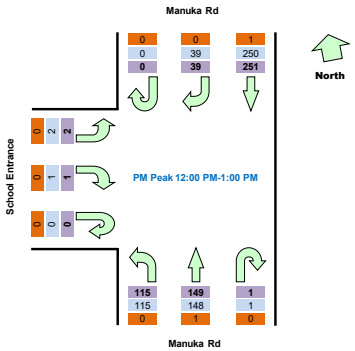
Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entran			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
11:00	12:00	0	26	148	0	123	59	0	0	0	356
12:00	13:00	0	39	251	1	149	115	0	1	2	558

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy





Light Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entran		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
11:00	11:15	0	1	61	0	36	9	0	0	0
11:15	11:30	0	6	44	0	29	10	0	0	0
11:30	11:45	0	5	13	0	31	23	0	0	0
11:45	12:00	0	14	30	0	27	17	0	0	0
12:00	12:15	0	12	56	0	25	40	0	0	0
12:15	12:30	0	17	62	1	49	45	0	0	0
12:30	12:45	0	7	94	0	50	21	0	0	1
12:45	13:00	0	3	38	0	24	9	0	1	1
13:00	13:15	0	1	43	0	26	15	0	0	0
13:15	13:30	0	3	11	0	26	7	0	0	0
13:30	13:45	0	0	30	0	16	3	0	0	0
13:45	14:00	0	0	26	0	26	10	0	2	0

Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entran			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
11:00	12:00	0	26	148	0	123	59	0	0	0	356
12:00	13:00	0	39	250	1	148	115	0	1	2	556

Heavy Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entran		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
11:00	11:15	0	0	0	0	0	0	0	0	0
11:15	11:30	0	0	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0	0	0
12:15	12:30	0	0	1	0	1	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0	0	0
13:30	13:45	0	0	0	0	0	0	0	0	0
13:45	14:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach School Entran			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
11:00	12:00	0	0	0	0	0	0	0	0	0	0
12:00	13:00	0	0	1	0	1	0	0	0	0	2

TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of School Exit and Manuka Rd, Berwick

GPS *-38.029869, 145.366034*

Date:	Sat 21/02/26
Weather:	Fine
Suburban:	Berwick
Customer:	Traffix

North:	Manuka Rd
East:	N/A
South:	Manuka Rd
West:	School Exit

Survey Period
Traffic Peak

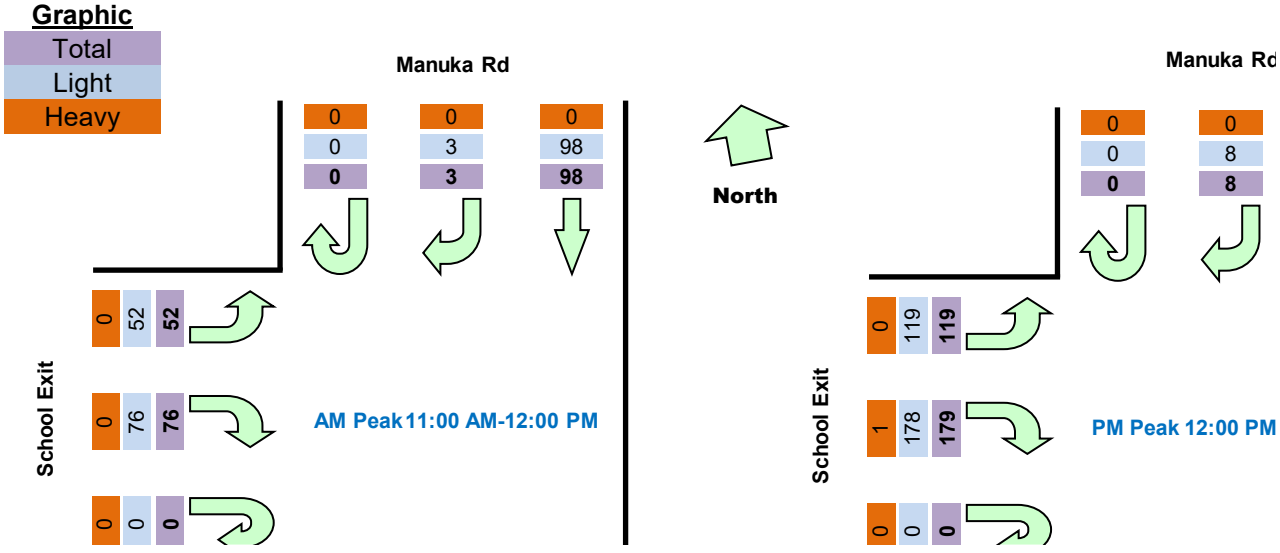
All Vehicles

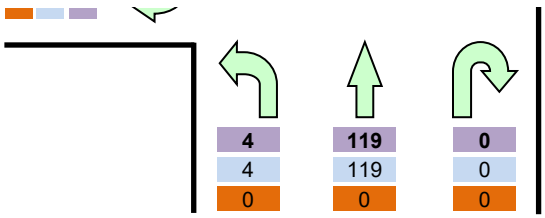
Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
11:00	11:15	0	1	21	0	36	0	0	41
11:15	11:30	0	0	27	0	28	1	0	23
11:30	11:45	0	1	16	0	29	2	0	2
11:45	12:00	0	1	34	0	26	1	0	10
12:00	12:15	0	4	25	0	23	2	0	43
12:15	12:30	0	0	23	0	48	2	0	57
12:30	12:45	0	2	43	0	50	1	0	58
12:45	13:00	0	2	20	0	24	1	0	21
13:00	13:15	0	1	21	0	25	1	0	23
13:15	13:30	0	0	11	0	23	3	0	3
13:30	13:45	0	0	7	0	16	0	0	23
13:45	14:00	0	1	19	0	26	0	0	7

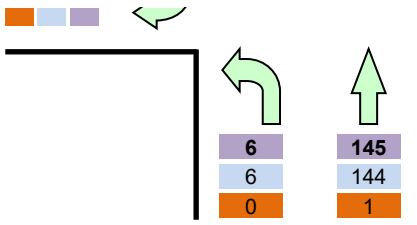
Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
11:00	12:00	0	3	98	0	119	4	0	76
12:00	13:00	0	8	111	0	145	6	0	179

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an

Graphic







Light Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
11:00	11:15	0	1	21	0	36	0	0	41
11:15	11:30	0	0	27	0	28	1	0	23
11:30	11:45	0	1	16	0	29	2	0	2
11:45	12:00	0	1	34	0	26	1	0	10
12:00	12:15	0	4	25	0	23	2	0	43
12:15	12:30	0	0	23	0	47	2	0	56
12:30	12:45	0	2	43	0	50	1	0	58
12:45	13:00	0	2	20	0	24	1	0	21
13:00	13:15	0	1	21	0	25	1	0	23
13:15	13:30	0	0	11	0	23	3	0	3
13:30	13:45	0	0	7	0	16	0	0	23
13:45	14:00	0	1	19	0	26	0	0	7

Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
11:00	12:00	0	3	98	0	119	4	0	76
12:00	13:00	0	8	111	0	144	6	0	178

Heavy Vehicles

Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
11:00	11:15	0	0	0	0	0	0	0	0
11:15	11:30	0	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	1	0	0	1
12:30	12:45	0	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0	0
13:30	13:45	0	0	0	0	0	0	0	0

13:45	14:00	0	0	0	0	0	0	0	0

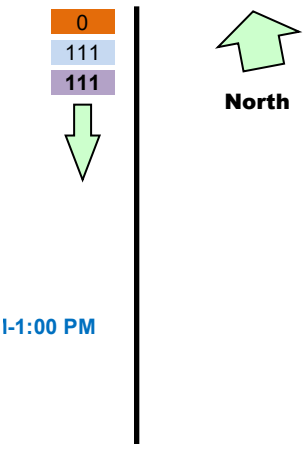
Peak Time		North Approach Manuka Rd			South Approach Manuka Rd			West Approach Sc	
Period Start	Period End	U	R	SB	U	NB	L	U	R
11:00	12:00	0	0	0	0	0	0	0	0
12:00	13:00	0	0	0	0	1	0	0	1

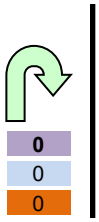
AM:	11:00 AM-12:00 PM
PM:	12:00 PM-2:00 PM
AM:	11:00 AM-12:00 PM
PM:	12:00 PM-1:00 PM

hool Exit	Hourly Total	
L	Hour	Peak
18	352	Peak
29		
3		
2		
17	568	Peak
45	534	
43	402	
14	255	
9	228	
3		
4		
2		

hool Exit	Peak
L	total
52	352
119	568

exact streets configuration.





d

hool Exit
L
18
29
3
2
17
45
43
14
9
3
4
2

hool Exit	Peak
L	total
52	352
119	566

hool Exit
L
0
0
0
0
0
0
0
0
0
0
0

0

hool Exit	Peak
L	total
0	0
0	2

Appendix C

Automatic Traffic Counts

TRANS TRAFFIC SURVEY

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T. 1300 82 88 82 - F. 1300 83 88 83 - E. traffic@trafficsurvey.com.au - W. www.trafficsurvey.com.au

AUTOMATIC COUNT SUMMARY

Street Name :	Manuka Rd	**Location :**	North of Clover Ln
Suburb :	Berwick	**Start Date :**	00:00 Sat 21/February/2026
Machine ID:	E491S7RW	**Finish Date :**	00:00 Sat 28/February/2026
Site ID:	26662	**Speed Zone :**	60 km/h, 40 km/h School Timed
Prepared By :	Vo Son Binh	**Email:**	binh@trafficsurvey.com.au

GPS information	Lat 38° 1' 55.79 South Long 145° 21' 55.59 East		Direction of Travel	
			Both directions	**Northbound**	**Southbound**
Traffic Volume :		Weekdays Average	3,119	1,646	1,473
(Vehicles/Day)		7 Day Average	2,992	1,590	1,402
Weekday	**AM**	08:00	616	341	275
Peak hour starts	**PM**	15:00	446	222	224
Speeds :		85th Percentile	56.0	53.9	58.1
(Km/Hr)		Average	50.1	47.8	52.5
Classification % :		Light Vehicles up to 5.5m	96.8%	97.1%	96.4%

Location

GPS Information	Load Google Map (internet required)
(Latitude, Longitude)	-38.032165, 145.365441

Speed Data	Speed Graph	Speed Bin
Volume Data	Volume Graph	Classification

QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

TRANS TRAFFIC SURVEY

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Site Manuka Rd

Direction Both directions

Back to Site Summary Page

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	23/02/2026	24/02/2026	25/02/2026	26/02/2026	27/02/2026	21/02/2026	22/02/2026	Total	Average	Total	Average	Total	Average
AM Peak	08:00	08:00	08:00	08:00	08:00	08:00	10:00	N/A	08:00	N/A	08:00	N/A	10:00
PM Peak	15:00	15:00	15:00	15:00	15:00	12:00	12:00	N/A	15:00	N/A	15:00	N/A	12:00
00:00	4	1	2	5	7	21	11	51	7	19	4	32	16
01:00	2	3	1	0	2	13	5	26	4	8	2	18	9
02:00	0	1	0	2	2	4	3	12	2	5	1	7	4
03:00	6	2	1	2	3	1	2	17	2	14	3	3	2
04:00	2	1	4	5	5	3	0	20	3	17	3	3	2
05:00	10	7	9	10	9	0	2	47	7	45	9	2	1
06:00	35	38	35	37	35	15	14	209	30	180	36	29	15
07:00	100	121	153	108	86	150	41	759	108	568	114	191	96
08:00	667	629	603	572	612	511	70	3664	523	3083	617	581	291
09:00	163	201	163	164	164	409	141	1405	201	855	171	550	275
10:00	105	91	88	93	121	436	150	1084	155	498	100	586	293
11:00	95	101	97	127	133	361	140	1054	151	553	111	501	251
12:00	84	109	95	96	117	604	184	1289	184	501	100	788	394
13:00	88	102	193	91	156	231	103	964	138	630	126	334	167
14:00	113	137	160	155	186	175	123	1049	150	751	150	298	149
15:00	468	459	390	482	437	172	98	2506	358	2236	447	270	135
16:00	306	247	252	326	266	167	114	1678	240	1397	279	281	141
17:00	351	250	233	448	196	146	95	1719	246	1478	296	241	121
18:00	201	200	219	409	135	194	68	1426	204	1164	233	262	131
19:00	136	115	129	265	91	90	53	879	126	736	147	143	72
20:00	71	55	67	233	67	61	25	579	83	493	99	86	43
21:00	96	40	45	91	20	94	18	404	58	292	58	112	56
22:00	19	6	32	11	19	32	9	128	18	87	17	41	21
23:00	3	3	5	12	20	22	7	72	10	43	9	29	15
Total	3125	2919	2976	3744	2889	3912	1476	21041	3006	15653	3131	5388	2694
% Heavy	3.78%	3.32%	3.86%	3.10%	4.98%	1.74%	1.83%	3.26%		3.77%		1.76%	

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AUTOMATIC COUNT SUMMARY

Street Name :	Manuka Rd	**Location :**	North of Clover Ln
Suburb :	Berwick	**Start Date :**	00:00 Sat 28/February/2026
Machine ID:	MD12RWSA	**Finish Date :**	00:00 Sat 07/March/2026
Site ID:	26662	**Speed Zone :**	60 km/h, 40 km/h School Timed
Prepared By :	Vo Son Binh	**Email:**	binh@trafficsurvey.com.au

GPS information		Lat 38° 1' 55.79 South Long 145° 21' 55.59 East	Direction of Travel		
			Both directions	**Northbound**	**Southbound**
Traffic Volume :		Weekdays Average	0	0	0
(Vehicles/Day)		7 Day Average	712	393	319
Weekday	**AM**	00:00	0	0	0
Peak hour starts	**PM**	12:00	0	0	0
Speeds :		85th Percentile	56.7	54.4	58.6
(Km/Hr)		Average	50.0	47.3	52.4
Classification % :		Light Vehicles up to 5.5m	98.7%	98.7%	98.8%

Location

GPS Information	Load Google Map (internet required)
(Latitude, Longitude)	-38.032165, 145.365441

Speed Data	Speed Graph	Speed Bin
Volume Data	Volume Graph	Classification

QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

TRANS TRAFFIC SURVEY

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Site Manuka Rd

Direction Both directions

Back to Site Summary Page

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	2/03/2026	3/03/2026	4/03/2026	5/03/2026	6/03/2026	28/02/2026	1/03/2026	Total	Average	Total	Average	Total	Average
AM Peak	00:00	00:00	00:00	00:00	00:00	08:00	09:00	N/A	09:00	N/A	00:00	N/A	09:00
PM Peak	12:00	12:00	12:00	12:00	12:00	12:00	12:00	N/A	12:00	N/A	12:00	N/A	12:00
00:00	0	0	0	0	0	21	20	41	6	0	0	41	21
01:00	0	0	0	0	0	13	5	18	3	0	0	18	9
02:00	0	0	0	0	0	4	7	11	2	0	0	11	6
03:00	0	0	0	0	0	1	3	4	1	0	0	4	2
04:00	0	0	0	0	0	3	1	4	1	0	0	4	2
05:00	0	0	0	0	0	0	5	5	1	0	0	5	3
06:00	0	0	0	0	0	15	10	25	4	0	0	25	13
07:00	0	0	0	0	0	150	40	190	27	0	0	190	95
08:00	0	0	0	0	0	511	92	603	86	0	0	603	302
09:00	0	0	0	0	0	409	201	610	87	0	0	610	305
10:00	0	0	0	0	0	427	179	606	87	0	0	606	303
11:00	0	0	0	0	0	348	155	503	72	0	0	503	252
12:00	0	0	0	0	0	576	193	769	110	0	0	769	385
13:00	0	0	0	0	0	217	86	303	43	0	0	303	152
14:00	0	0	0	0	0	165	91	256	37	0	0	256	128
15:00	0	0	0	0	0	154	80	234	33	0	0	234	117
16:00	0	0	0	0	0	103	98	201	29	0	0	201	101
17:00	0	0	0	0	0	106	78	184	26	0	0	184	92
18:00	0	0	0	0	0	98	49	147	21	0	0	147	74
19:00	0	0	0	0	0	86	34	120	17	0	0	120	60
20:00	0	0	0	0	0	42	28	70	10	0	0	70	35
21:00	0	0	0	0	0	37	18	55	8	0	0	55	28
22:00	0	0	0	0	0	26	7	33	5	0	0	33	17
23:00	0	0	0	0	0	19	5	24	3	0	0	24	12
Total	**0**	**0**	**0**	**0**	**0**	**3531**	**1485**	**5016**	**717**	**0**	**0**	**5016**	**2508**
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**1.25%**	**1.48%**	**1.32%**		**#DIV/0!**		**1.32%**	

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AUTOMATIC COUNT SUMMARY

Street Name :	Allan St	**Location :**	East of Manuka Rd
Suburb :	Berwick	**Start Date :**	00:00 Sat 21/February/2026
Machine ID:	MD00QXA4	**Finish Date :**	00:00 Sat 28/February/2026
Site ID:	26663	**Speed Zone :**	50 km/h
Prepared By :	Vo Son Binh	**Email:**	binh@trafficsurvey.com.au

GPS information		Lat 38° 2' 5.88 South Long 145° 21' 55.22 East	Direction of Travel		
			Both directions	**Westbound**	**Eastbound**
Traffic Volume :		Weekdays Average	194	91	103
(Vehicles/Day)		7 Day Average	195	94	101
Weekday	**AM**	08:00	17	11	6
Peak hour start	**PM**	15:00	25	10	15
Speeds :		85th Percentile	19.5	18.0	21.1
(Km/Hr)		Average	17.8	16.6	19.0
Classification % :		Light Vehicles up to 5.5m	92.6%	92.6%	93.4%

Location

GPS Information Load Google Map (internet required)

(Latitude, Longitude) -38.034966, 145.365338

Speed Data | Speed Graph | Speed Bin
Volume Data | Volume Graph | Classification

QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

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Site Allan St

Direction Both directions

Back to Site Summary Page

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	23/02/2026	24/02/2026	25/02/2026	26/02/2026	27/02/2026	21/02/2026	22/02/2026	Total	Average	Total	Average	Total	Average
AM Peak	08:00	11:00	08:00	08:00	08:00	11:00	09:00	N/A	11:00	N/A	08:00	N/A	11:00
PM Peak	15:00	15:00	16:00	15:00	16:00	12:00	12:00	N/A	15:00	N/A	15:00	N/A	12:00
00:00	0	1	0	1	0	8	0	10	1	2	0	8	4
01:00	0	0	0	0	0	1	3	4	1	0	0	4	2
02:00	0	2	0	0	0	0	0	2	0	2	0	0	0
03:00	0	0	0	0	1	0	0	1	0	1	0	0	0
04:00	0	0	1	1	1	0	0	3	0	3	1	0	0
05:00	8	2	1	1	0	2	0	14	2	12	2	2	1
06:00	5	6	6	4	4	1	2	28	4	25	5	3	2
07:00	9	13	11	7	11	4	5	60	9	51	10	9	5
08:00	26	14	16	19	14	7	9	105	15	89	18	16	8
09:00	12	14	13	10	11	17	16	93	13	60	12	33	17
10:00	12	12	13	16	14	26	12	105	15	67	13	38	19
11:00	11	21	12	11	13	30	16	114	16	68	14	46	23
12:00	4	7	16	14	18	39	21	119	17	59	12	60	30
13:00	8	13	6	20	19	15	12	93	13	66	13	27	14
14:00	6	15	11	25	14	23	15	109	16	71	14	38	19
15:00	19	40	21	28	23	8	8	147	21	131	26	16	8
16:00	15	10	24	16	24	11	12	112	16	89	18	23	12
17:00	14	8	20	23	21	16	2	104	15	86	17	18	9
18:00	8	13	15	9	12	12	7	76	11	57	11	19	10
19:00	9	6	4	6	8	15	3	51	7	33	7	18	9
20:00	0	5	6	8	2	7	2	30	4	21	4	9	5
21:00	0	0	0	0	2	22	0	24	3	2	0	22	11
22:00	0	2	0	4	0	3	0	9	1	6	1	3	2
23:00	0	1	0	0	1	2	0	4	1	2	0	2	1
Total	166	205	196	223	213	269	145	1417	202	1003	201	414	207
% Heavy	5.42%	12.20%	8.16%	8.97%	7.04%	4.09%	6.90%	7.48%		8.47%		5.07%	

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AUTOMATIC COUNT SUMMARY

Street Name :	Allan St	**Location :**	East of Manuka Rd
Suburb :	Berwick	**Start Date :**	00:00 Sat 28/February/2026
Machine ID:	MD12RWSA	**Finish Date :**	00:00 Sat 07/March/2026
Site ID:	26663	**Speed Zone :**	50 km/h
Prepared By :	Vo Son Binh	**Email:**	binh@trafficsurvey.com.au

GPS information		Lat 38° 2' 5.88 South Long 145° 21' 55.22 East	Direction of Travel		
			Both directions	**Westbound**	**Eastbound**
Traffic Volume :		Weekdays Average	0	0	0
(Vehicles/Day)		7 Day Average	45	23	22
Weekday	**AM**	00:00	0	0	0
Peak hour start	**PM**	12:00	0	0	0
Speeds :		85th Percentile	19.6	17.8	22.2
(Km/Hr)		Average	17.4	16.1	19.5
Classification % :		Light Vehicles up to 5.5m	92.2%	91.7%	92.3%

Location

GPS Information	Load Google Map (internet required)
(Latitude, Longitude)	-38.034966, 145.365338

Speed Data	Speed Graph	Speed Bin
Volume Data	Volume Graph	Classification

QUALITY ASSURED COMPANY BY ISO 9001:2015
OH&S SYSTEM CERTIFIED TO ISO 4801:2001
ENVIRONMENT MANAGEMENT SYSTEM CERTIFIED TO ISO14001:2015

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Site Allan St

Direction Both directions

Back to Site Summary Page

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
Date	2/03/2026	3/03/2026	4/03/2026	5/03/2026	6/03/2026	28/02/2026	1/03/2026	Total	Average	Total	Average	Total	Average
AM Peak	00:00	00:00	00:00	00:00	00:00	10:00	09:00	N/A	10:00	N/A	00:00	N/A	10:00
PM Peak	12:00	12:00	12:00	12:00	12:00	12:00	12:00	N/A	12:00	N/A	12:00	N/A	12:00
00:00	0	0	0	0	0	8	0	8	1	0	0	8	4
01:00	0	0	0	0	0	1	0	1	0	0	0	1	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	2	0	2	0	0	0	2	1
06:00	0	0	0	0	0	1	0	1	0	0	0	1	1
07:00	0	0	0	0	0	4	4	8	1	0	0	8	4
08:00	0	0	0	0	0	7	10	17	2	0	0	17	9
09:00	0	0	0	0	0	17	22	39	6	0	0	39	20
10:00	0	0	0	0	0	26	17	43	6	0	0	43	22
11:00	0	0	0	0	0	18	21	39	6	0	0	39	20
12:00	0	0	0	0	0	21	25	46	7	0	0	46	23
13:00	0	0	0	0	0	10	19	29	4	0	0	29	15
14:00	0	0	0	0	0	13	6	19	3	0	0	19	10
15:00	0	0	0	0	0	13	5	18	3	0	0	18	9
16:00	0	0	0	0	0	12	10	22	3	0	0	22	11
17:00	0	0	0	0	0	15	9	24	3	0	0	24	12
18:00	0	0	0	0	0	8	6	14	2	0	0	14	7
19:00	0	0	0	0	0	6	6	12	2	0	0	12	6
20:00	0	0	0	0	0	3	1	4	1	0	0	4	2
21:00	0	0	0	0	0	4	0	4	1	0	0	4	2
22:00	0	0	0	0	0	4	1	5	1	0	0	5	3
23:00	0	0	0	0	0	1	0	1	0	0	0	1	1
Total	**0**	**0**	**0**	**0**	**0**	**194**	**162**	**356**	**51**	**0**	**0**	**356**	**178**
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**9.28%**	**6.17%**	**7.87%**		**#DIV/0!**		**7.87%**	

Appendix D

Traffic Generation and Distribution

42-80 Manuka Road, Berwick
Proposed Residential Subdivision
Traffic Generation and Distribution
Our Ref: GRP27725

Traffix Group

Parcel	No. of Lots	Trip Generation (veh/day)	Peak Hour %	Peak Hour Volumes (v/h)	Daily Trip Generation (v/d)
Tulloch (North)	96	8	10%	77	768
Brown (South)	46	8	10%	37	368
'Clover Cottage'	10	8	10%	8	80

Site Access	Peak Hour	Daily
Northern Access	63	630.4
Allan Access	59	585.6

Parcel	North	South
Tulloch	80%	20%
Brown	0%	100%
Clover	20%	80%

Peak Period Splits	AM	PM
In	20%	70%
Out	80%	30%

General Traffic Direction	Percentage
To/From North	25%
To/From South	75%

Manuka Road / Northern Access	AM Peak	PM Peak
Left in	3	11
Right in	9	33
Left Out	38	14
Right out	13	5
TOTAL:	**63**	**63**

Manuka Road / Allan Street	AM Peak	PM Peak
Left in	3	10
Right in	9	31
Left Out	35	13
Right out	12	4
TOTAL:	**59**	**59**

Appendix E

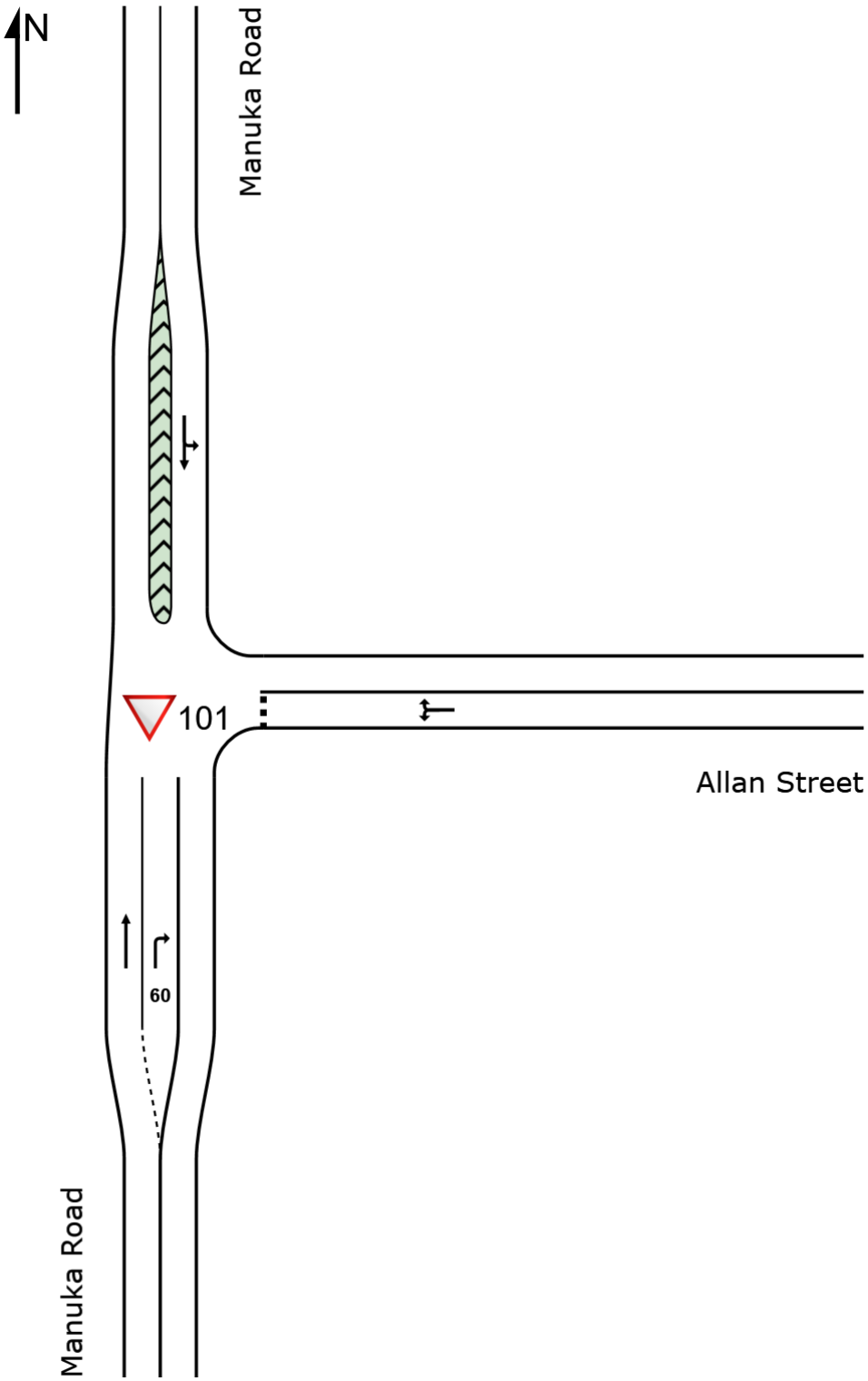
Detailed SIDRA Outputs

SITE LAYOUT

Site: 101 [Manuka Road / Allan Street - AM Peak (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.

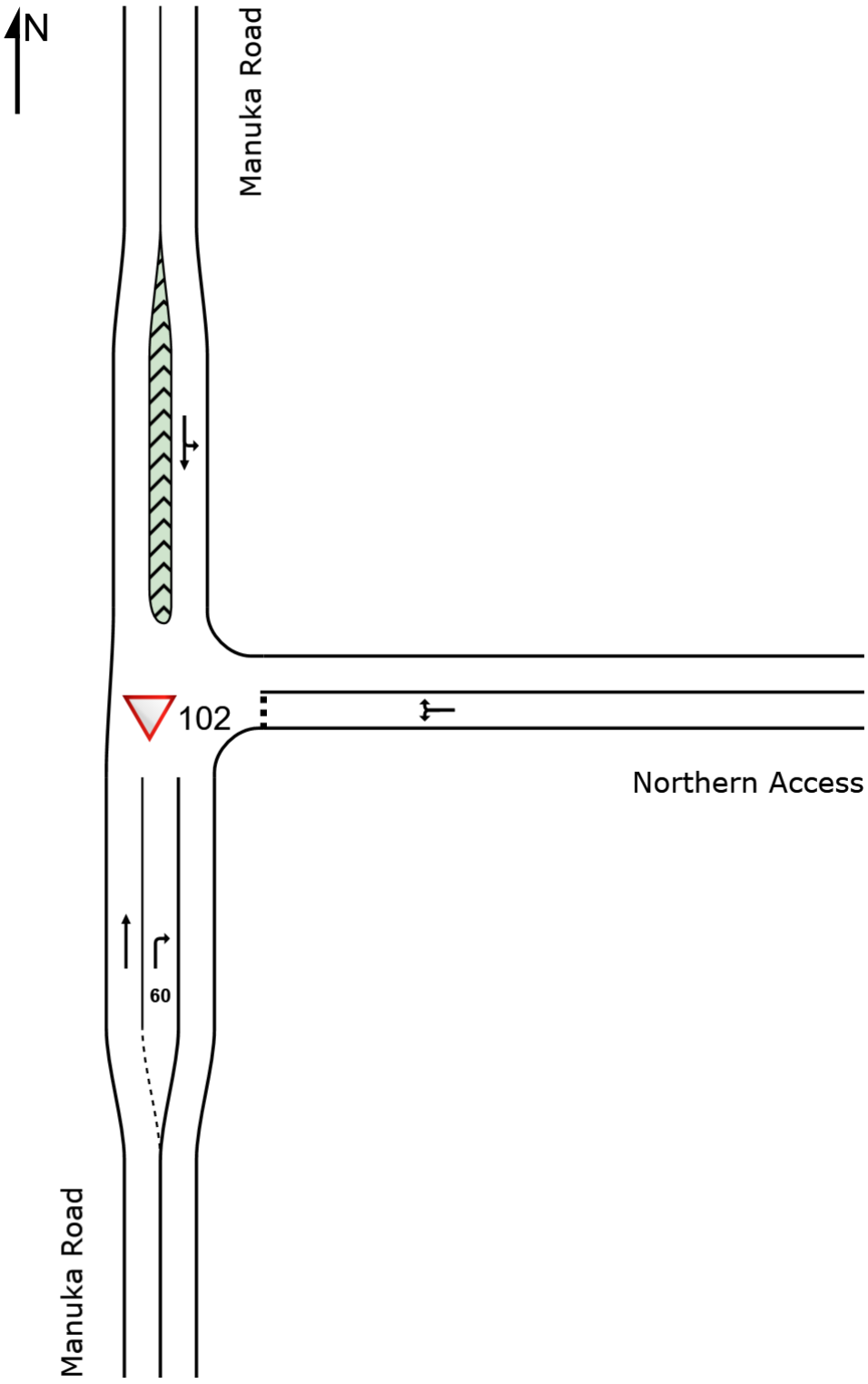


SITE LAYOUT

Site: 102 [Manuka Road / Northern Access - AM Peak (Site Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [Manuka Road / Allan Street - AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Manuka Road															
2	T1	All MCs	473	0.0	473	0.0	0.242	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	14	0.0	14	0.0	0.012	7.2	LOS A	0.1	0.4	0.48	0.62	0.48	51.4
Approach			486	0.0	486	0.0	0.242	0.3	NA	0.1	0.4	0.01	0.02	0.01	59.6
East: Allan Street															
4	L2	All MCs	46	0.0	46	0.0	0.085	7.4	LOS A	0.3	2.2	0.56	0.74	0.56	50.2
6	R2	All MCs	13	0.0	13	0.0	0.085	15.9	LOS C	0.3	2.2	0.56	0.74	0.56	50.0
Approach			59	0.0	59	0.0	0.085	9.2	LOS A	0.3	2.2	0.56	0.74	0.56	50.2
North: Manuka Road															
7	L2	All MCs	4	0.0	4	0.0	0.251	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.3
8	T1	All MCs	484	0.0	484	0.0	0.251	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			488	0.0	488	0.0	0.251	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles			1034	0.0	1034	0.0	0.251	0.7	NA	0.3	2.2	0.04	0.05	0.04	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Manuka Road / Allan Street - PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Manuka Road															
2	T1	All MCs	414	0.0	414	0.0	0.212	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	52	0.0	52	0.0	0.043	6.9	LOS A	0.2	1.3	0.45	0.64	0.45	51.4
Approach			465	0.0	465	0.0	0.212	0.8	NA	0.2	1.3	0.05	0.07	0.05	58.8
East: Allan Street															
4	L2	All MCs	32	0.0	32	0.0	0.042	7.0	LOS A	0.2	1.1	0.48	0.65	0.48	51.1
6	R2	All MCs	5	0.0	5	0.0	0.042	13.6	LOS B	0.2	1.1	0.48	0.65	0.48	51.0
Approach			37	0.0	37	0.0	0.042	7.9	LOS A	0.2	1.1	0.48	0.65	0.48	51.1
North: Manuka Road															
7	L2	All MCs	15	0.0	15	0.0	0.215	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.2
8	T1	All MCs	403	0.0	403	0.0	0.215	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			418	0.0	418	0.0	0.215	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			920	0.0	920	0.0	0.215	0.8	NA	0.2	1.3	0.04	0.07	0.04	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Manuka Road / Allan Street - SAT (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Manuka Road															
2	T1	All MCs	524	0.0	524	0.0	0.269	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	37	0.0	37	0.0	0.031	7.0	LOS A	0.1	0.9	0.46	0.63	0.46	51.4
Approach			561	0.0	561	0.0	0.269	0.5	NA	0.1	0.9	0.03	0.04	0.03	59.2
East: Allan Street															
4	L2	All MCs	39	0.0	39	0.0	0.075	7.0	LOS A	0.3	1.9	0.55	0.71	0.55	50.2
6	R2	All MCs	13	0.0	13	0.0	0.075	16.2	LOS C	0.3	1.9	0.55	0.71	0.55	50.0
Approach			52	0.0	52	0.0	0.075	9.3	LOS A	0.3	1.9	0.55	0.71	0.55	50.1
North: Manuka Road															
7	L2	All MCs	18	0.0	18	0.0	0.221	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.2
8	T1	All MCs	413	0.0	413	0.0	0.221	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			431	0.0	431	0.0	0.221	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			1043	0.0	1043	0.0	0.269	0.9	NA	0.3	1.9	0.04	0.07	0.04	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Manuka Road / Northern Access - AM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Manuka Road															
2	T1	All MCs	242	0.0	242	0.0	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	9	0.0	9	0.0	0.008	6.7	LOS A	0.0	0.2	0.43	0.58	0.43	51.5
Approach			252	0.0	252	0.0	0.124	0.3	NA	0.0	0.2	0.02	0.02	0.02	59.6
East: Northern Access															
4	L2	All MCs	40	0.0	40	0.0	0.061	6.9	LOS A	0.2	1.6	0.47	0.66	0.47	51.2
6	R2	All MCs	14	0.0	14	0.0	0.061	10.5	LOS B	0.2	1.6	0.47	0.66	0.47	51.0
Approach			54	0.0	54	0.0	0.061	7.8	LOS A	0.2	1.6	0.47	0.66	0.47	51.2
North: Manuka Road															
7	L2	All MCs	3	0.0	3	0.0	0.199	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
8	T1	All MCs	385	0.0	385	0.0	0.199	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			388	0.0	388	0.0	0.199	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles			694	0.0	694	0.0	0.199	0.8	NA	0.2	1.6	0.04	0.06	0.04	59.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Manuka Road / Northern Access - PM Peak (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Manuka Road															
2	T1	All MCs	295	0.0	295	0.0	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	35	0.0	35	0.0	0.023	6.1	LOS A	0.1	0.7	0.31	0.57	0.31	51.8
Approach			329	0.0	329	0.0	0.151	0.7	NA	0.1	0.7	0.03	0.06	0.03	59.0
East: Northern Access															
4	L2	All MCs	15	0.0	15	0.0	0.019	6.1	LOS A	0.1	0.5	0.35	0.57	0.35	51.8
6	R2	All MCs	5	0.0	5	0.0	0.019	9.1	LOS A	0.1	0.5	0.35	0.57	0.35	51.7
Approach			20	0.0	20	0.0	0.019	6.9	LOS A	0.1	0.5	0.35	0.57	0.35	51.8
North: Manuka Road															
7	L2	All MCs	12	0.0	12	0.0	0.111	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.2
8	T1	All MCs	204	0.0	204	0.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach			216	0.0	216	0.0	0.111	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehicles			565	0.0	565	0.0	0.151	0.8	NA	0.1	0.7	0.03	0.07	0.03	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
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Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Manuka Road / Northern Access - SAT (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Manuka Road															
2	T1	All MCs	227	0.0	227	0.0	0.117	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	25	0.0	25	0.0	0.016	5.9	LOS A	0.1	0.5	0.25	0.55	0.25	52.0
Approach			253	0.0	253	0.0	0.117	0.6	NA	0.1	0.5	0.02	0.06	0.02	59.0
East: Northern Access															
4	L2	All MCs	25	0.0	25	0.0	0.028	5.9	LOS A	0.1	0.8	0.28	0.55	0.28	52.1
6	R2	All MCs	8	0.0	8	0.0	0.028	7.9	LOS A	0.1	0.8	0.28	0.55	0.28	51.9
Approach			34	0.0	34	0.0	0.028	6.4	LOS A	0.1	0.8	0.28	0.55	0.28	52.0
North: Manuka Road															
7	L2	All MCs	8	0.0	8	0.0	0.075	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.2
8	T1	All MCs	138	0.0	138	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach			146	0.0	146	0.0	0.075	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehicles			433	0.0	433	0.0	0.117	1.0	NA	0.1	0.8	0.04	0.09	0.04	58.6

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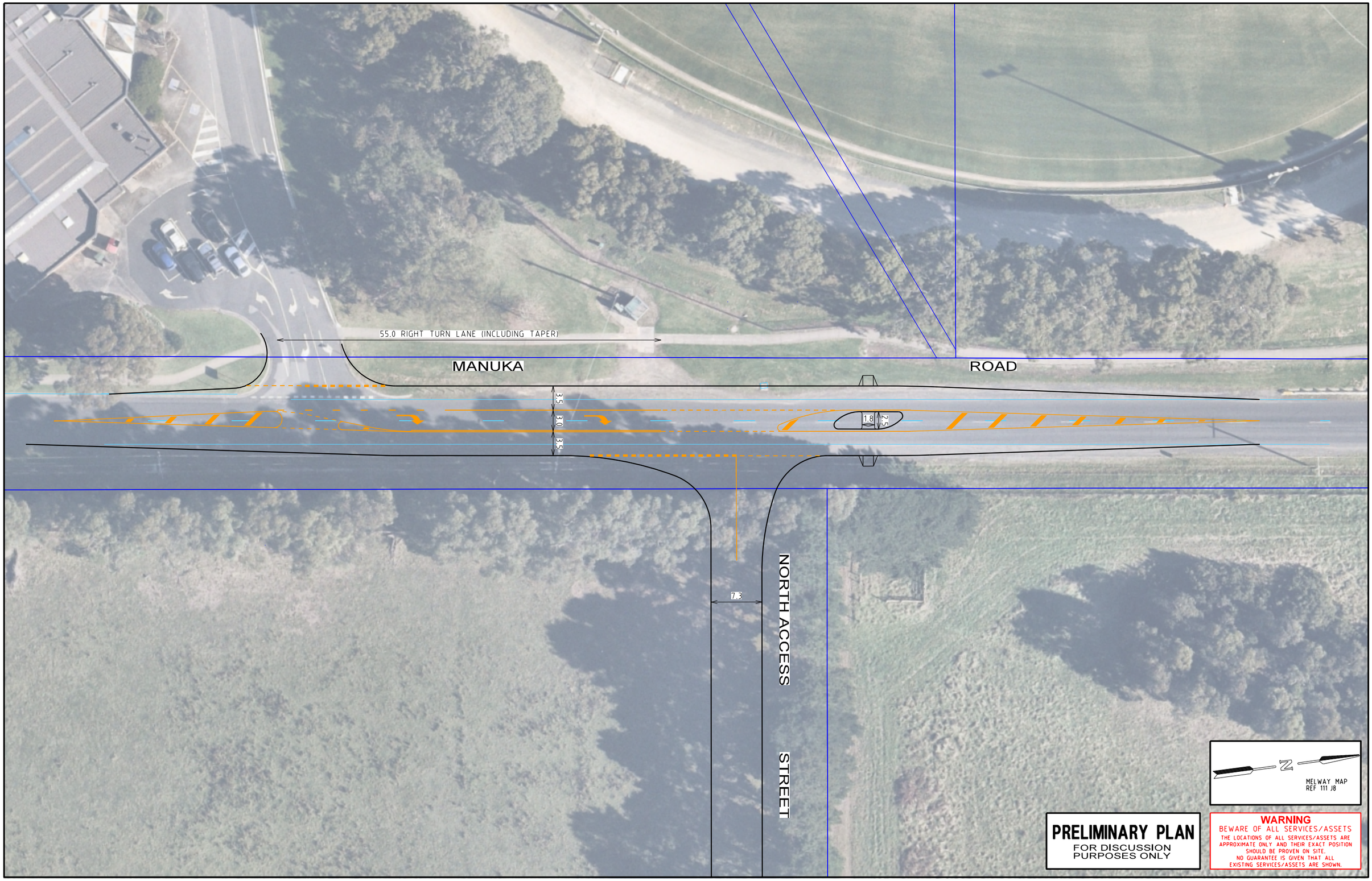
Appendix F

Concept Design Intersection Layouts



MELWAY MAP
REF 111 J8

PRELIMINARY PLAN
FOR DISCUSSION
PURPOSES ONLY

WARNING
BEWARE OF ALL SERVICES/ASSETS
THE LOCATIONS OF ALL SERVICES/ASSETS ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE.
NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES/ASSETS ARE SHOWN.

ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	30 JUL 2021
B	UPDATED DEVELOPMENT PLAN	24 MAR 2022

GENERAL NOTES
1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE: NEARMAP APR 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MANUKA ROAD - MAIN ROAD (SPEED ZONE 60km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4:2009

DESIGNED
A MONTGOMERIE 30 JUL 2021

CHECKED/APPROVED
W DE WAARD 30 JUL 2021

FILE NAME
G27725-01-00.dgn

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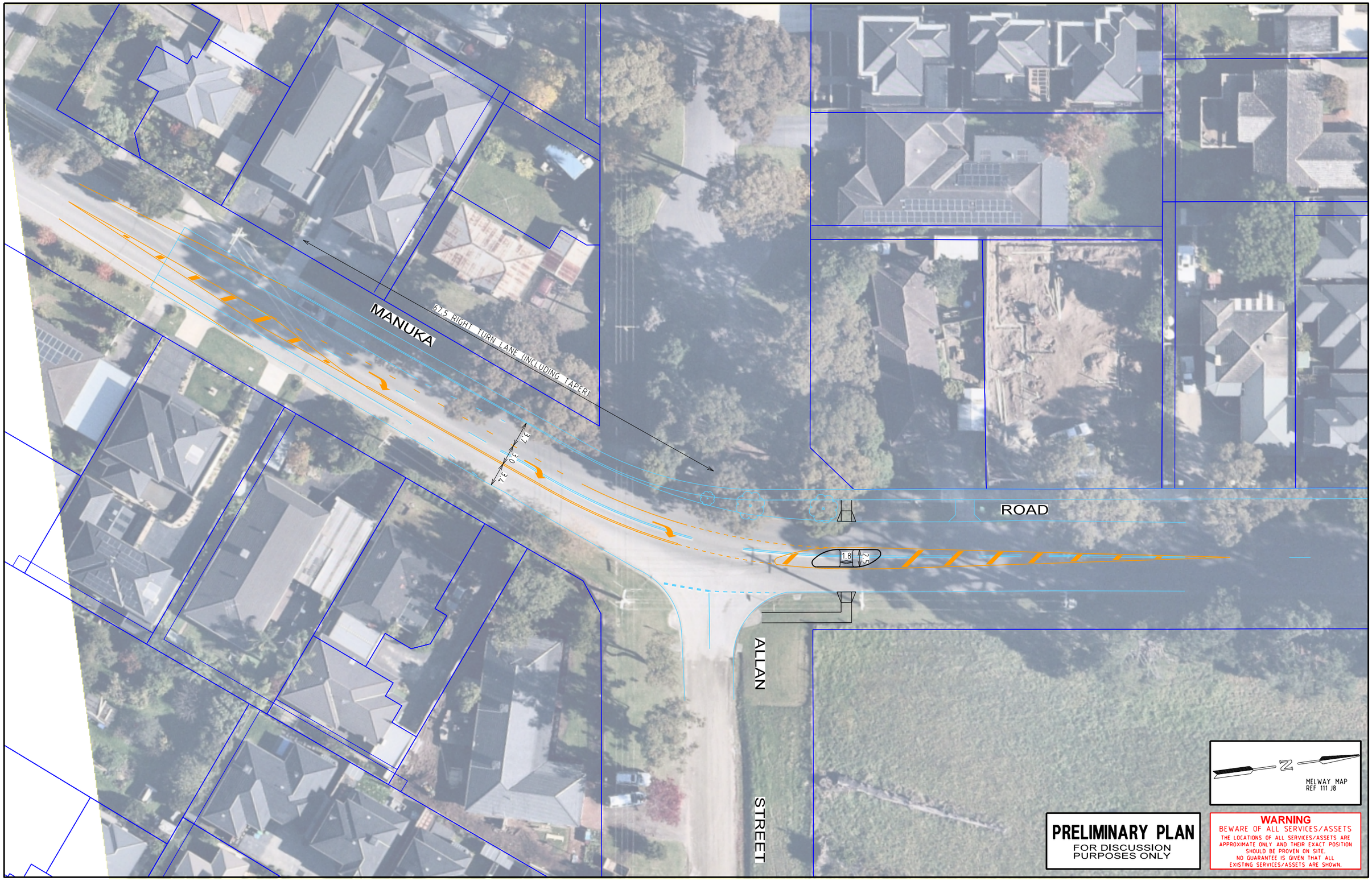
MANUKA ROAD, BERWICK
RIGHT TURN LANE TREATMENT
CASEY CITY COUNCIL
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 1 OF 2
DWG No. G27725-01-01



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MANUKA ROAD / ALLAN STREET, BERWICK
RIGHT TURN LANE TREATMENT
CASEY CITY COUNCIL
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 2 OF 2
DWG No. G27725-01-02