TRAFFIC AND PARKING IMPACT ASSESSMENT

Proposed Mixed-Use Development

124 New England Highway, Lochinvar

Prepared for: Hoover Group Pty Ltd

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1. INTRODUCTION

Motion Traffic Engineers was commissioned by Hoover Group Pty Ltd to undertake a traffic and parking impact assessment of a Proposed Mixed-Use Development at 124 New England Highway, Lochinvar. The proposal is a childcare centre and townhouses.

The site is a large housing property.

This traffic report presents an assessment of the anticipated transport implications of the proposed childcare centre, with the following considerations:

- Background and existing traffic and parking conditions of the proposed mixed-use development
- Assessment of the public transport network within the vicinity of the site
- Adequacy of car, bicycle and motorcycle parking provision
- The projected traffic generation of the proposed development
- The transport impact of the proposed development on the surrounding road network.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the development examined, and all relevant traffic and parking data collected and analysed.

2. BACKGROUND AND EXISTING CONDITIONS OF THE PROPOSED CHILDCARE CENTRE

2.1. Location and Land Use

The proposed mixed-use development is located at 124 New England Highway, Lochinvar. Vehicles access and egress is via New England Highway. The mixed-use development is in the small town of Lochinvar with a population of about 1,200. The childcare centre will assist parents in the town and the wider region to have geographically available childcare services. The townhouses provide a form of residential housing that may suit people not wanting a house, a rural lot but a smaller dwelling.

The immediate surroundings of the proposed mixed-use development are predominantly residential dwellings. Lochinvar Medical Centre and Lochinvar Public School is located on the eastern side of the proposed site. Holy Trinity Anglican Church is located to the northeast of the proposed site. The rear

Figures 1 and 2 show the location of the proposed mixed-use development site from aerial and street map perspective respectively. Figure 2 also shows the location of the surveyed intersections in relation to the site. Figure 3 shows a photography of the site frontage taken from New England Highway.

Figure 1: Location of the Proposed Mixed-use Development on Aerial

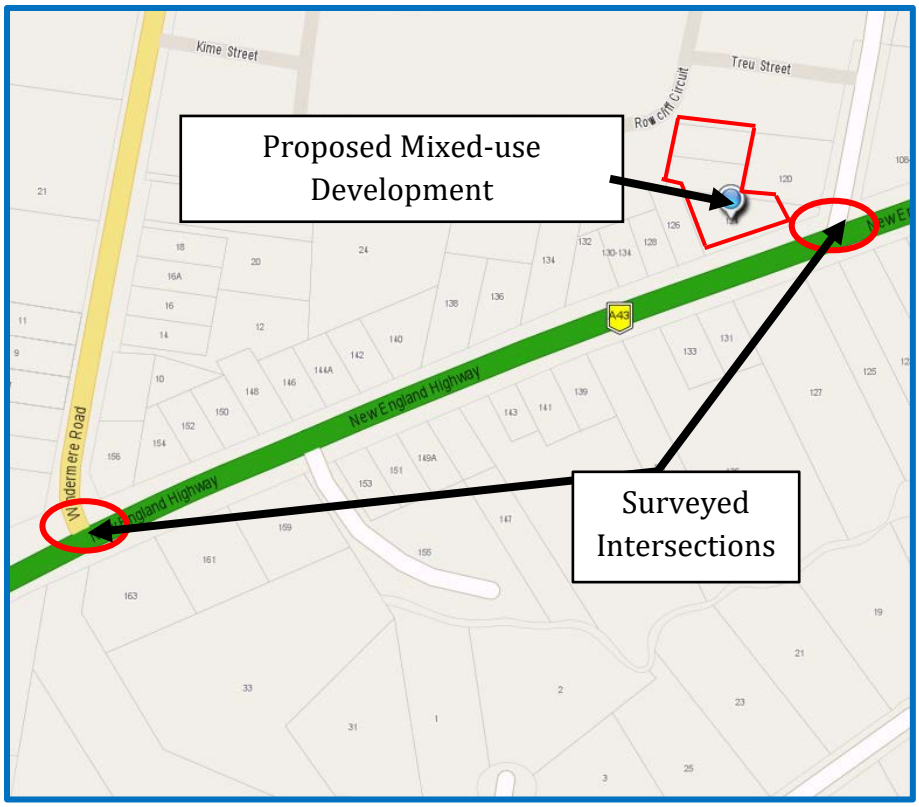

Figure 2: Location of the Proposed Mixed-use Development on Aerial

Figure 3: Photograph of the House

2.2. Road Network

This section discusses the road network adjacent to the childcare centre.

New England Highway is an arterial road (highway) arterial road but within Lochinvar is more of a town centre road with a lower speed limit of 60 km/hr. New England Highway outside of Lochinvar and other towns has a speed limit of 100/km/hr. A school speed zone is located as a consequence of Lochinvar Public School and other schools in Lochinvar. A wide marked parking lane is located adjacent within Lochinvar overall. It should be noted there is a sped camera near the intersection of New England Highway with Cantwell Road and Station Lane. Figure 4a shows a photograph of New England Highway.

Cantwell Road is a local road within Lochinvar with one lane of traffic each way and a sign posted speed limit of 50 km/hr, within Lochinvar but is subject to a school speed zone limit. A road shoulder is provided for emergency parking such as a car breakdown . Figure 4b shows a photograph of Cantwell Road.

Station Lane is a local road within Lochinvar also has one lane of traffic in each direction with a default speed limit of 50 km/hr, with time-unrestricted on-street parking allowed on both sides. Figure 4c shows a photograph of Station Lane.

Windermere Road is a local road within Lochinvar with one lane of traffic each way and a default speed limit of 50 km/hr. There is time-unrestricted on-street parking allowed on both sides. Figure 4d shows a photograph of Windermere Road.

Figure 4a: New England Highway: Looking West to the Intersection

Figure 4b: Cantwell Street Looking north from the Intersection

Figure 4c: Station lane Looking South from the Intersection

Figure 4d: Windermere Road Looking South to the Intersection

2.3.Public Transport

A nearest bus stop is located approximately 250 metres (walking distance) from the proposed mixed-use development on New England Highway, which is serviced by bus routes number 179 and 180.

Bus route 179 provides service from Maitland Station, Railway Street and ends at Lochinvar Public School. Figure 5 shows the public transport services near the development.

Overall, the site has good access to public transport to the nearby towns,

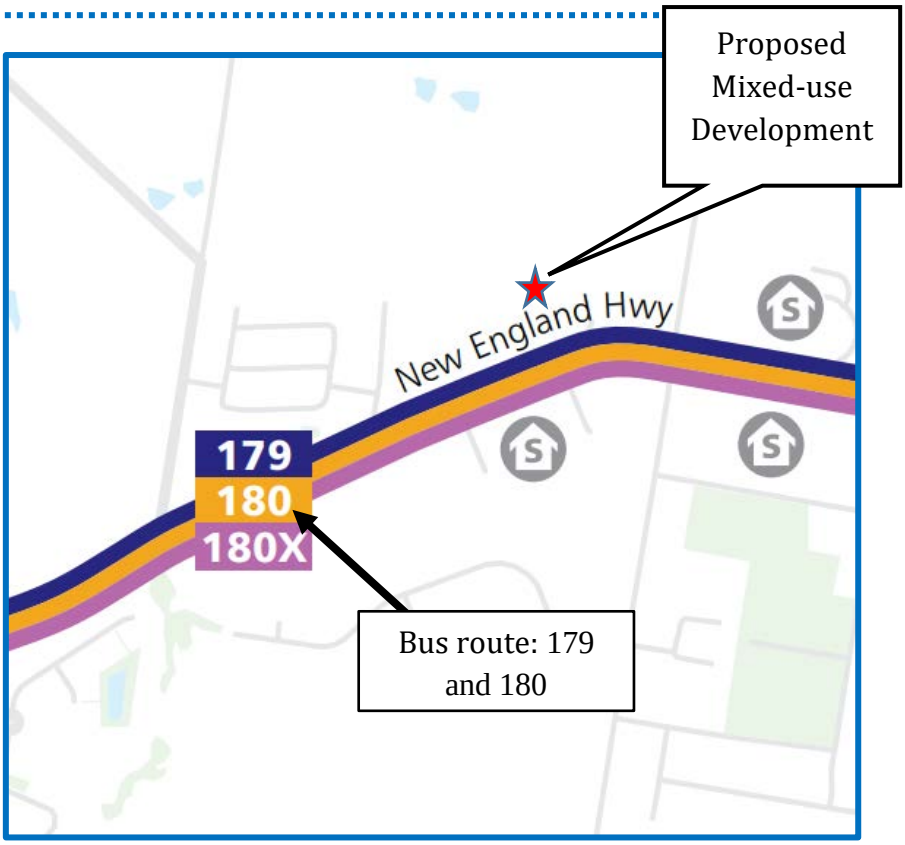

Figure 5: Location of the Proposed Childcare Centre in Relation to the Public Transport

2.4.Public Parking

A wide parking lane is located on New England Highway on both sides of the Highway. A driver needs to undertake minimal circulation to find a vacant car space.

2.5. Intersection Description

As part of the traffic impact assessment, the performance of three nearby intersections was surveyed and assessed:

- Priority Intersection of New England Highway with Cantwell Road and Station Lane
- Stop Intersection of New England Highway with Windermere Road

External traffic travelling to and from the childcare centre is likely to travel through these intersections mentioned above.

The priority intersection of New England Highway with Cantwell Road and Station Lane is a four-leg intersection. Drivers on the Cantwell Road and Station Lane need to give way to the vehicles on the New England Highway. The turn movements on Station Lane are left turns only. Figure 6a presents the layout of this intersection using SIDRA 9.1 (an industry standard intersection software) and Figure 6b represents the aerial view of the intersection. The number on the lane represents a short lane in metres.

The stop intersection of New England Highway with Windermere Road is a three-leg intersection Drivers on the Windermere Road need to give way to the vehicles on the New England Highway. Figure 6c presents the layout of this intersection using SIDRA 9.1 and Figure 6d represents the aerial view of the intersection.

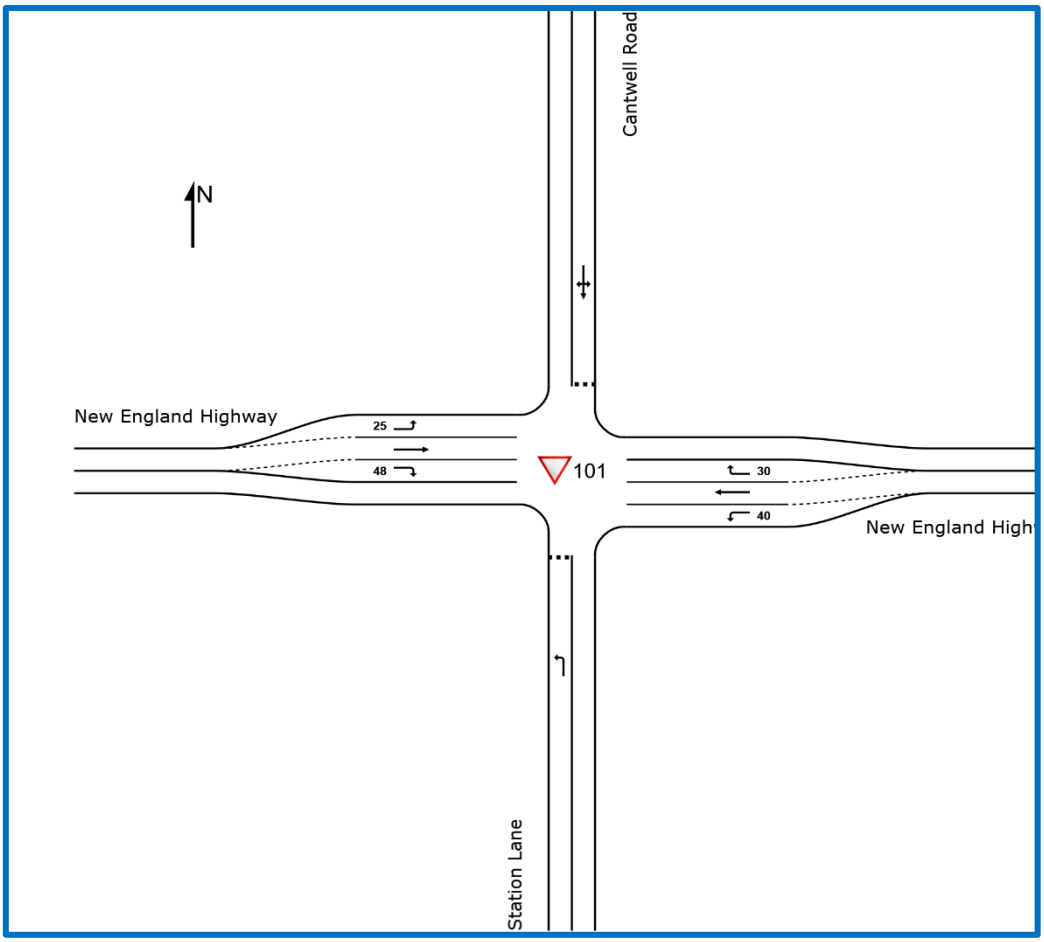

Figure 6a: Stop Intersection of New England Highway with Windermere Road (SIDRA)

Figure 6b: Priority Intersection of New England Highway with Cantwell Road and Station Lane aerial view

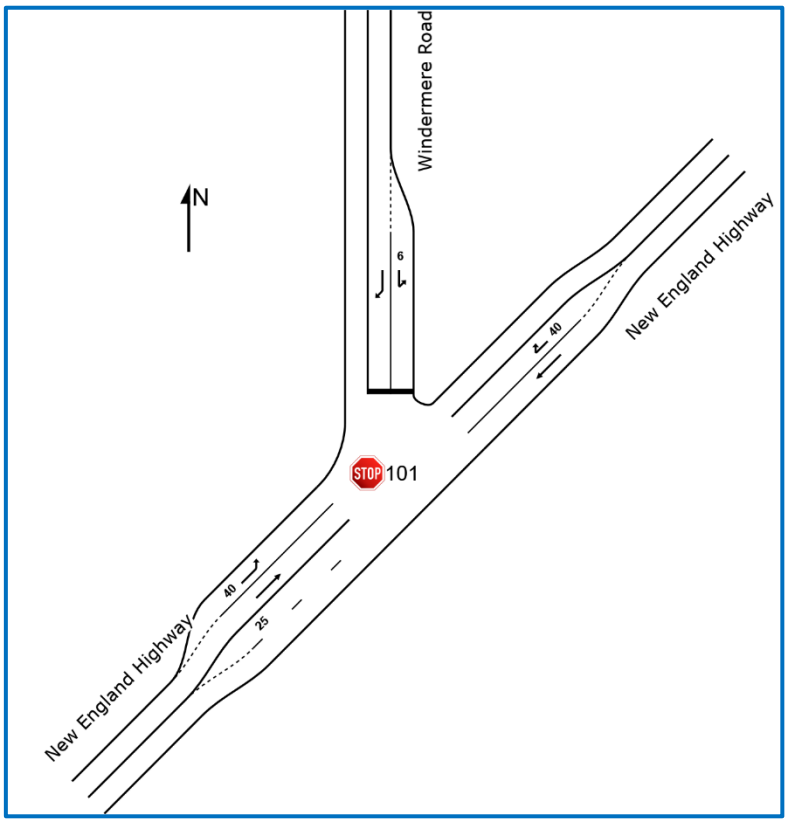

Figure 6c: Priority Intersection of New England Highway with Windermere Road (SIDRA)

Figure 6d: Stop Intersection of New England Highway with Windermere Road Aerial View

2.6. Existing Traffic Volumes

As part of the traffic assessment, traffic counts have been undertaken at the above-mentioned intersections and the AM and PM peak hours are identified accordingly. The AM peak hour is 7:45am to 8:45am. The PM peak hour is 4:30pm to 5:30pm. The traffic survey was undertaken in March 2025.

The following Figures present the traffic volumes in vehicles for the weekday peak hours. The bracketed numbers are trucks or buses. The un-bracketed are cars.

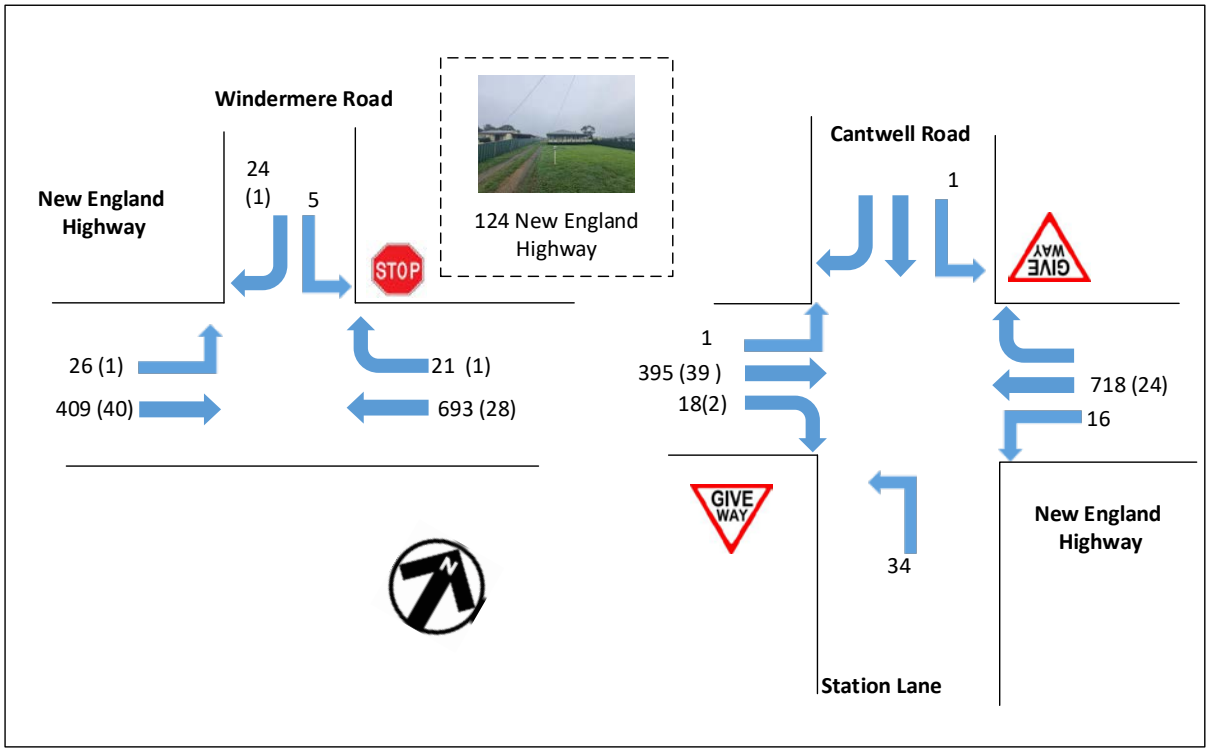

Figure 7a: Existing Weekday Traffic Volumes AM Peak Hour

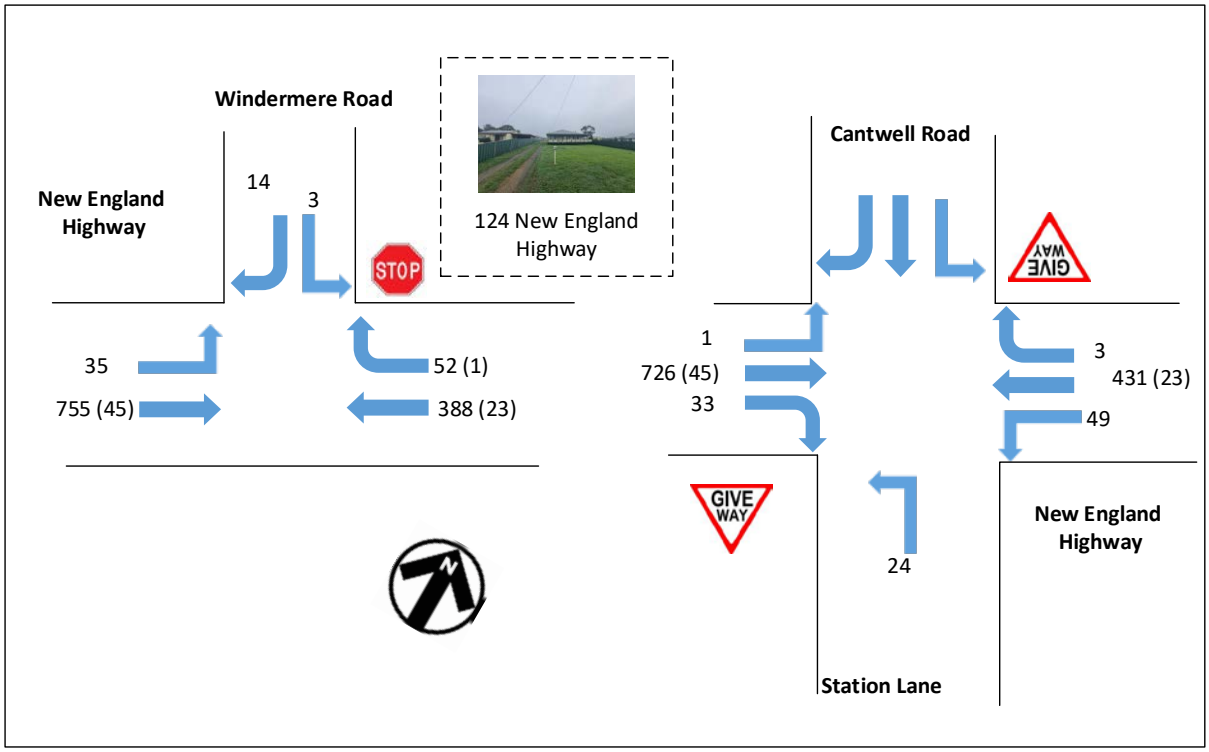

Figure 7b: Existing Weekday Traffic Volumes PM Peak Hour

2.7. Intersection Assessment with Existing Traffic

An intersection assessment has been undertaken for the:

- Priority Intersection of New England Highway with Cantwell Road and Station Lane
- Stop Intersection of New England Highway with Windermere Road

The existing intersection operating performance was assessed using the SIDRA software package (version 9.1) to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection. The SIDRA program provides Level of Service Criteria Tables for various intersection types. The key indicator of intersection performance is Level of Service, where results are placed on a continuum from 'A' to 'F', as shown in Table 1.

LoS	Traffic Signal / Roundabout	Give Way / Stop Sign / T-Junction control
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

Table 1: Intersection Level of Service

The Average Vehicle Delay (AVD) provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e. inner city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route). For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (sign control) the critical movement for level of service assessment should be that movement with the highest average delay.

LoS	Average Delay per Vehicles (seconds/vehicle)
A	Less than 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	>70

Table 2: Intersection Average Delay (AVD)

The degree of saturation (DS) is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals both queue length and delay increase rapidly as DS approaches 1. It is usual to attempt to keep DS to less than 0.9. Degrees of Saturation in the order of 0.7 generally represent satisfactory intersection operation. When DS exceed 0.9 queues can be anticipated. The results of the intersection analysis are as follows

Intersection/ Performance criteria	AM Peak Hour Existing	PM Peak Hour Existing
New England Highway with Cantwell Road and Station Lane		
LoS	N/A (Worst *LoS*: F)	N/A (Worst *LoS*: F)
AVD	0.7	0.8
DS	0.409	0.431
New England Highway with Windermere Road		
LoS	N/A(Worst *LoS*: F)	N/A(Worst *LoS*: F)
AVD	1.7	1.4
DS	0.399	0.448

Table 3: Existing Intersection Performances

Traffic from Cantwell Road has a poor LoS turning right, left or through. However, the traffic volumes form Cantwell Rod are very low. The right turn from Windemere Road has a poor LoS into New England Highway.

As presented in Table 3, all these intersections are operating overall at acceptable level of services. Overall, there is spare capacity to accommodate the additional traffic. The full intersection results are presented in Appendix A.

2.8.Conclusion of Existing Conditions

The proposed mixed-use development is located in an area where there are a reasonable number of vacant car spaces on New England Highway. The nearby intersections perform well to accommodate additional traffic.

The site has good access to bus public transport.

3.PROPOSED MIXED-USE DEVELOPMENT

A description of the development for which approval is now sought features the following elements:

- Construction of new childcare centre
- Construction of new townhouse

3.1. Childcare Centre

The Proposed Childcare Centre will accommodate the following number of children and staff:

- Number of children: 73

The Proposed Townhouse will accommodate the following number of residents

- Six townhouses

3.2.Parking

Car parking is provided on ground level with vehicle access and egress via the driveway that runs off New England Highway.

- 18 car spaces for the childcare centres
- 6 car garages for the townhouses

The proposed childcare centre is physically separate from the residential townhouses.

A full scaled plan of the proposed mixed-use development is provided as part of the Development Application.

4. PARKING REQUIREMENTS

4.1.Car Parking

The *Maitland Development Control Plan 2011* refers to the *General Requirements* for the minimum car parking requirement as follow:

Childcare Centre

- 1 space per children in attendance or part thereof

Townhouse

- 1 space for each one or two-bedroom dwelling or 2 spaces for each dwelling containing more than two bedrooms

Table 4 below presents the minimum car parking requirement for the proposed childcare based on the car parking rates listed above.

	Number of people	Car Parking Rate	Car Spaces Required	Car Spaces Provided
Children	73	1 space per 4 staff	18.3	18
Total	73	**Total**	18	

Table 4: Summary of DCP Car Parking Requirements

Table 5 below presents the minimum car parking requirement for the proposed townhouse on the car parking rates listed above.

	Number of units	Car Parking Rate	Car Spaces Required	Car Spaces Provided
Units	6	1 space for each one-or two-bedroom dwelling or 2 spaces for each dwelling containing more than two bedrooms	10	10
		Total	10	

Table 5: Summary of DCP Car Parking Requirements

The proposed mixed-use development complies with Council's car parking requirements.

4.1 Childcare Centre Traffic Management Plan

A traffic management plan will be implemented to encourage staff to use public bus services, car share, cycle or walk.

4.2 Childcare Centre Staff Parking Demand

Staff arrivals and departures are staged/staggered to ensure that the staff-student ratio is maintained with all staff on site in the core 9am to 5pm hour with peak staff car parking demand in the core period and does not coincide with the main drop off and pick up periods. The site also has sufficient car spaces for both parents and staff.

5. TRAFFIC GENERATION AND IMPACT

5.1.Proposed Traffic Generation

The *NSW RTA Guide to Traffic Impact Assessment 2024* outlines the trip generation rates for a Childcare Centre and townhouses as follows.

Childcare Centre

- 0.9 trips per child for the AM peak hour
- 0.8 trips per child for the PM peak hour

Town Houses (low density housing)

- 0.8.4 trips per child for the AM peak hour
- 0.84 trips per child for the PM peak hour

The application of the above-mentioned rates to the proposed mixed-use development results the peak hour trip generation presented in Table 5a below:

Peak Hour	Land Use	Number of People	Trip Generation Rate	Trip Generated
AM	Childcare Centre	73	0.9	66
PM			0.84	62
AM	Townhouse	10	0.83	9
PM			0.84	9

Table 6: Trips generated by the proposed mixed-use development in weekday peak hours

The proposed mixed-use development is a moderate-high trip generator.

5.2.Trip Distribution

The proposed childcare centre is a moderate trip generator in both AM and PM peak hours

The predicted Childcare trips are distributed to the road network assuming 50 percent origin trips 50 percent destination trips for the AM peak hour and 50 percent origin trips 50 percent destination

trips for the PM peak hour and the predicted Townhouse trips are distributed to the road network assuming 90 percent origin trips 10 percent destination trips for the AM peak hour and 10 percent origin trips 90 percent destination trips for the PM peak hour, the existing trips are subtracted from the childcare trips to obtain the development trips generation, which results the following trips:

Childcare Centre			
Peak Hour	Origin	Destination	Total
AM	33	33	66
PM	31	31	62
	Townhouse		
Peak Hour	Origin	Destination	Total
AM	8	1	9
PM	1	8	9
Tootal			
Peak Hour	**Origin**	**Destination**	**Total**
AM	41	34	75
PM	32	39	71

Table 7: Net trip distribution

The proposed mixed-use development is a moderate-high trip generator.

5.3. Existing with Mixed-use development traffic

The additional childcare centre trips are assigned onto the local traffic network. The following figures present the future traffic volume with the development trips (in red for origin trips and blue for destination trips) for the weekday AM and PM peak hours.

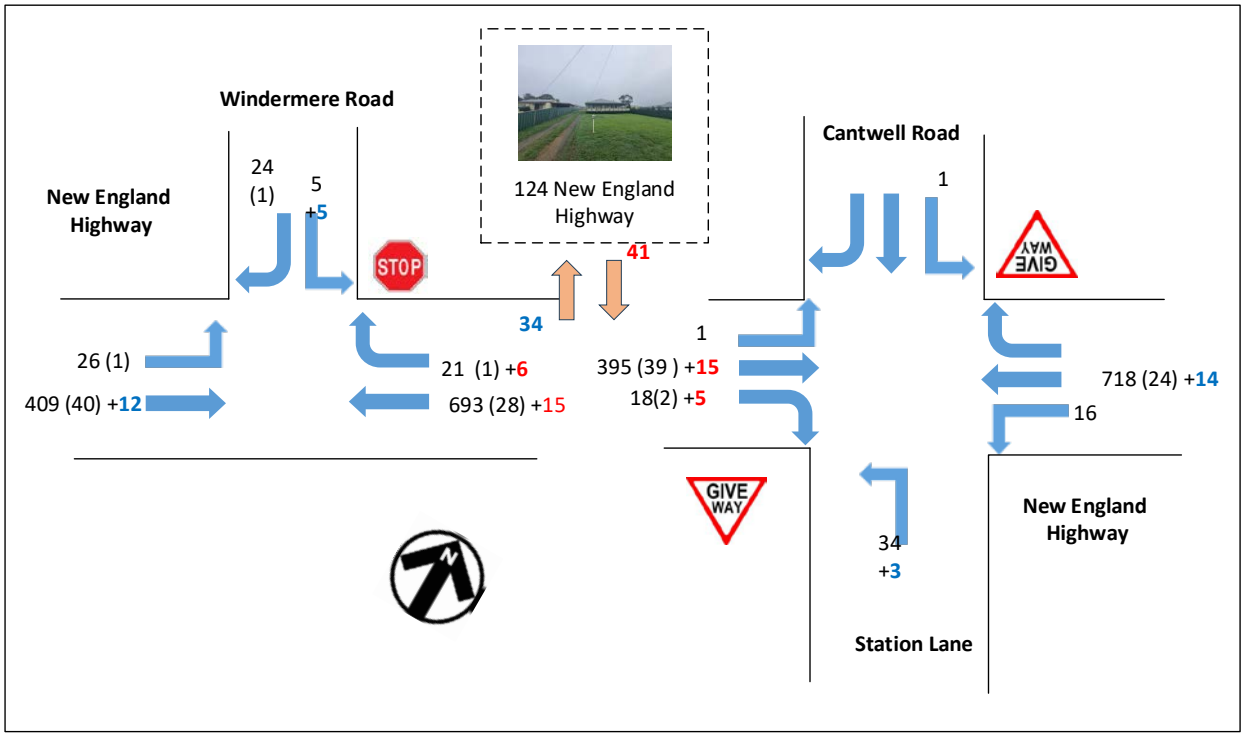

Figure 8a: Existing Weekday Traffic Volumes with mixed-use development traffic AM Peak Hour

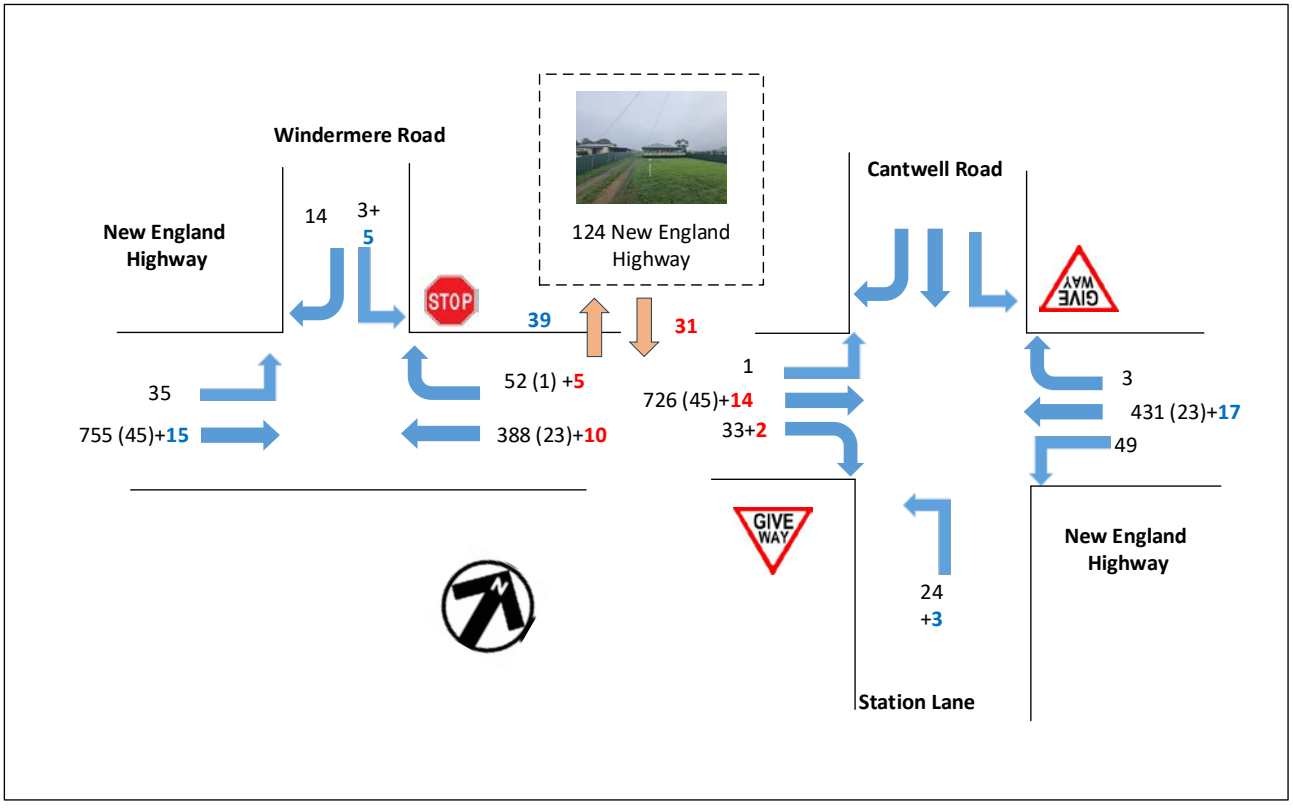

Figure 8b: Existing Weekday Traffic Volumes with mixed-use development traffic PM Peak Hour

5.4. Traffic Impact

This section assesses the following intersections for the existing traffic with the mixed-use development traffic. The results of the intersection assessment are as follows:

Intersection/ Performance criteria	Performance with Existing Traffic		Projected Performance with Existing and mixed-use development traffic	
	AM Peak Hour Existing	PM Peak Hour Existing	AM Peak Hour Projected	PM Peak Hour Projected
New England Highway with Cantwell Road and Station Lane *LoS* *AVD* *DS*	N/A (Worst *LoS*: F) 0.7 0.409	N/A (Worst *LoS*: F) 0.8 0.431	N/A (Worst *LoS*: F) 0.8 0.417	N/A (Worst *LoS*: F) 0.8 0.44
New England Highway with Windermere Road *LoS* *AVD* *DS*	N/A(Worst *LoS*: F) 1.7 0.399	N/A(Worst *LoS*: F) 1.4 0.448	N/A(Worst *LoS*: F) 1.9 0.407	N/A(Worst *LoS*: F) 1.6 0.456

Table 6: Projected intersection performance with mixed-use development traffic

As presented in Table 6 above, the additional trips generated by the proposed childcare have minimum impact on the intersection performances in AM peak hours. The LoS, VAD and DS of each intersection are not significantly affected by the addition of the mixed-use development traffic.

The traffic impacts of the proposed mixed-use development are therefore considered acceptable.

The full SIDRA results are presented in Appendix B for the future conditions with the mixed-use development traffic.

6. CONCLUSIONS

This traffic impact assessment reports relates to a proposed mixed-use development at *124 New England Highway, Lochinvar*. Based on the analysis and discussions presented in this report, the following conclusions are made:

- The proposed mixed-use development is in a residential area with good access to local public transport service and there are a reasonable number of vacant car spaces on a weekday along on New England Highway.
- The nearby assessed intersections perform well with spare capacity for the existing traffic conditions
- The car parking requirements outlined in the *Maitland Development Control Plan 2011* has been used for this assessment. The proposed mixed-use development complies with Council's car parking requirements
- The proposed mixed-use development is expected to generate a low number of additional trips in AM peak hours.
- According to the intersection assessment, the additional trips can be accommodated in the nearby intersections without significantly affecting the performance of any turn movement, approach arm or the overall intersection. The traffic impacts of the proposed development are therefore considered acceptable.

There are no traffic engineering reasons why a development consent for the proposed mixed-use development *in Lochinvar* should be refused.

APPENDIX A

INTERSECTION ASSESSMENT FOR EXISTING TRAFFIC

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: Station Lane															
1	L2	All MCs	36	0.0	36	0.0	0.074	9.2	LOS A	0.2	1.7	0.66	0.81	0.66	36.0
Approach			36	0.0	36	0.0	0.074	9.2	LOS A	0.2	1.7	0.66	0.81	0.66	36.0
East: New England Highway															
4	L2	All MCs	17	0.0	17	0.0	0.009	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	38.1
5	T1	All MCs	781	3.2	781	3.2	0.409	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
6	R2	All MCs	1	0.0	1	0.0	0.001	5.4	LOS A	0.0	0.0	0.45	0.51	0.45	37.2
Approach			799	3.2	799	3.2	0.409	0.3	NA	0.0	0.0	0.00	0.01	0.00	39.8
North: Cantwell Road															
7	L2	All MCs	1	0.0	1	0.0	0.042	5.4	LOS A	0.1	0.8	0.89	0.94	0.89	26.5
8	T1	All MCs	1	0.0	1	0.0	0.042	55.5	LOS F	0.1	0.8	0.89	0.94	0.89	26.6
9	R2	All MCs	1	0.0	1	0.0	0.042	76.1	LOS F	0.1	0.8	0.89	0.94	0.89	26.5
Approach			3	0.0	3	0.0	0.042	45.7	LOS E	0.1	0.8	0.89	0.94	0.89	26.5
West: New England Highway															
10	L2	All MCs	1	0.0	1	0.0	0.001	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	38.1
11	T1	All MCs	419	9.8	419	9.8	0.229	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
12	R2	All MCs	21	10.0	21	10.0	0.048	10.4	LOS B	0.2	1.2	0.67	0.83	0.67	35.4
Approach			441	9.8	441	9.8	0.229	0.6	NA	0.2	1.2	0.03	0.04	0.03	39.7
All Vehicles			1279	5.3	1279	5.3	0.409	0.7	NA	0.2	1.7	0.03	0.05	0.03	39.6

Table A1: Weekday Priority Intersection of New England Highway with Cantwell Road and Station Lane AM Peak Hour

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
NorthEast: New England Highway															
25	T1	All MCs	759	3.9	759	3.9	0.399	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
26b	R3	All MCs	23	4.5	23	4.5	0.030	8.1	LOS A	0.1	0.8	0.51	0.69	0.51	43.8
Approach			782	3.9	782	3.9	0.399	0.4	NA	0.1	0.8	0.01	0.02	0.01	59.1
North: Windermere Road															
7b	L3	All MCs	5	0.0	5	0.0	0.008	11.3	LOS B	0.0	0.2	0.49	0.86	0.49	45.7
9a	R1	All MCs	26	4.0	26	4.0	0.346	65.5	LOS F	1.0	7.2	0.94	1.05	1.09	28.0
Approach			32	3.3	32	3.3	0.346	56.5	LOS F	1.0	7.2	0.87	1.02	0.99	30.0
SouthWest: New England Highway															
30a	L1	All MCs	28	3.7	28	3.7	0.015	4.1	LOS A	0.0	0.0	0.00	0.52	0.00	46.1
31	T1	All MCs	473	8.9	473	8.9	0.256	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			501	8.6	501	8.6	0.256	0.3	NA	0.0	0.0	0.00	0.03	0.00	58.9
All Vehicles			1315	5.7	1315	5.7	0.399	1.7	NA	1.0	7.2	0.03	0.05	0.03	57.7

Table A2: Weekday Stop Intersection of New England Highway with Windermere Road AM Peak Hour

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: Station Lane															
1	L2	All MCs	25	0.0	25	0.0	0.032	7.0	LOS A	0.1	0.8	0.47	0.65	0.47	44.6
Approach			25	0.0	25	0.0	0.032	7.0	LOS A	0.1	0.8	0.47	0.65	0.47	44.6
East: New England Highway															
4	L2	All MCs	52	0.0	52	0.0	0.028	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	478	5.1	478	5.1	0.253	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	3	0.0	3	0.0	0.007	10.4	LOS B	0.0	0.2	0.67	0.73	0.67	42.6
Approach			533	4.5	533	4.5	0.253	0.6	NA	0.0	0.2	0.00	0.06	0.00	58.0
North: Cantwell Road															
7	L2	All MCs	1	0.0	1	0.0	0.059	10.6	LOS B	0.2	1.1	0.94	0.97	0.94	26.3
8	T1	All MCs	1	0.0	1	0.0	0.059	80.8	LOS F	0.2	1.1	0.94	0.97	0.94	26.4
9	R2	All MCs	1	0.0	1	0.0	0.059	101.6	LOS F	0.2	1.1	0.94	0.97	0.94	26.3
Approach			3	0.0	3	0.0	0.059	64.3	LOS F	0.2	1.1	0.94	0.97	0.94	26.3
West: New England Highway															
10	L2	All MCs	1	0.0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
11	T1	All MCs	811	5.8	811	5.8	0.431	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
12	R2	All MCs	35	0.0	35	0.0	0.044	7.3	LOS A	0.2	1.1	0.51	0.69	0.51	44.2
Approach			846	5.6	846	5.6	0.431	0.5	NA	0.2	1.1	0.02	0.03	0.02	58.8
All Vehicles			1407	5.1	1407	5.1	0.431	0.8	NA	0.2	1.1	0.02	0.05	0.02	58.0

Table A3: Weekday Priority Intersection of New England Highway with Cantwell Road and Station Lane AM Peak Hour

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
NorthEast: New England Highway															
25	T1	All MCs	433	5.6	433	5.6	0.230	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
26b	R3	All MCs	56	1.9	56	1.9	0.132	12.9	LOS B	0.4	3.2	0.73	0.89	0.73	41.4
Approach			488	5.2	488	5.2	0.230	1.5	NA	0.4	3.2	0.08	0.10	0.08	57.0
North: Windermere Road															
7b	L3	All MCs	3	0.0	3	0.0	0.010	17.1	LOS C	0.0	0.2	0.73	0.93	0.73	42.9
9a	R1	All MCs	15	0.0	15	0.0	0.207	61.6	LOS F	0.6	4.3	0.94	1.02	0.99	28.6
Approach			18	0.0	18	0.0	0.207	53.7	LOS F	0.6	4.3	0.91	1.01	0.94	30.4
SouthWest: New England Highway															
30a	L1	All MCs	37	0.0	37	0.0	0.019	4.1	LOS A	0.0	0.0	0.00	0.52	0.00	46.2
31	T1	All MCs	842	5.6	842	5.6	0.448	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			879	5.4	879	5.4	0.448	0.3	NA	0.0	0.0	0.00	0.02	0.00	58.9
All Vehicles			1385	5.2	1385	5.2	0.448	1.4	NA	0.6	4.3	0.04	0.06	0.04	57.5

Table A4: Weekday Stop Intersection of New England Highway with Windermere Road AM Peak Hour

APPENDIX B

INTERSECTION ASSESSMENT FOR EXISTING WITH MIXED-USE DEVELOPMENT TRAFFIC

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: Station Lane															
1	L2	All MCs	39	0.0	39	0.0	0.083	9.4	LOS A	0.3	1.9	0.67	0.82	0.67	35.9
Approach			39	0.0	39	0.0	0.083	9.4	LOS A	0.3	1.9	0.67	0.82	0.67	35.9
East: New England Highway															
4	L2	All MCs	17	0.0	17	0.0	0.009	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	38.1
5	T1	All MCs	796	3.2	796	3.2	0.417	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	39.8
6	R2	All MCs	1	0.0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.48	0.52	0.48	37.1
Approach			814	3.1	814	3.1	0.417	0.3	NA	0.0	0.0	0.00	0.01	0.00	39.8
North: Cantwell Road															
7	L2	All MCs	1	0.0	1	0.0	0.051	5.7	LOS A	0.1	0.9	0.91	0.95	0.91	24.8
8	T1	All MCs	1	0.0	1	0.0	0.051	66.5	LOS F	0.1	0.9	0.91	0.95	0.91	24.8
9	R2	All MCs	1	0.0	1	0.0	0.051	93.4	LOS F	0.1	0.9	0.91	0.95	0.91	24.8
Approach			3	0.0	3	0.0	0.051	55.2	LOS F	0.1	0.9	0.91	0.95	0.91	24.8
West: New England Highway															
10	L2	All MCs	1	0.0	1	0.0	0.001	3.4	LOS A	0.0	0.0	0.00	0.45	0.00	38.1
11	T1	All MCs	473	8.7	473	8.7	0.256	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	39.9
12	R2	All MCs	26	8.0	26	8.0	0.060	10.5	LOS B	0.2	1.5	0.68	0.84	0.68	35.4
Approach			500	8.6	500	8.6	0.256	0.7	NA	0.2	1.5	0.04	0.05	0.04	39.6
All Vehicles			1356	5.0	1356	5.0	0.417	0.8	NA	0.3	1.9	0.03	0.05	0.03	39.6

Table B1: Weekday Priority Intersection of New England Highway with Cantwell Road and Station Lane with mixed-use development traffic AM Peak Hour

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
NorthEast: New England Highway															
25	T1	All MCs	775	3.8	775	3.8	0.407	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
26b	R3	All MCs	29	3.6	29	3.6	0.038	8.2	LOS A	0.1	1.0	0.51	0.70	0.51	43.8
Approach			804	3.8	804	3.8	0.407	0.4	NA	0.1	1.0	0.02	0.03	0.02	58.9
North: Windermere Road															
7b	L3	All MCs	11	0.0	11	0.0	0.016	11.4	LOS B	0.1	0.4	0.50	0.89	0.50	45.6
9a	R1	All MCs	26	4.0	26	4.0	0.380	72.6	LOS F	1.1	7.9	0.95	1.06	1.11	26.6
Approach			37	2.9	37	2.9	0.380	55.1	LOS F	1.1	7.9	0.82	1.01	0.94	30.2
SouthWest: New England Highway															
30a	L1	All MCs	28	3.7	28	3.7	0.015	4.1	LOS A	0.0	0.0	0.00	0.52	0.00	46.1
31	T1	All MCs	485	8.7	485	8.7	0.263	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			514	8.4	514	8.4	0.263	0.3	NA	0.0	0.0	0.00	0.03	0.00	58.9
All Vehicles			1355	5.5	1355	5.5	0.407	1.9	NA	1.1	7.9	0.03	0.05	0.04	57.4

Table B2: Weekday Stop Intersection of New England Highway with Windermere Road with mixed-use development traffic AM Peak Hour

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: Station Lane															
1	L2	All MCs	28	0.0	28	0.0	0.037	7.1	LOS A	0.1	0.9	0.48	0.66	0.48	44.5
Approach			28	0.0	28	0.0	0.037	7.1	LOS A	0.1	0.9	0.48	0.66	0.48	44.5
East: New England Highway															
4	L2	All MCs	52	0.0	52	0.0	0.028	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
5	T1	All MCs	496	4.9	496	4.9	0.262	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	3	0.0	3	0.0	0.007	10.7	LOS B	0.0	0.2	0.68	0.74	0.68	42.5
Approach			551	4.4	551	4.4	0.262	0.6	NA	0.0	0.2	0.00	0.05	0.00	58.1
North: Cantwell Road															
7	L2	All MCs	1	0.0	1	0.0	0.066	10.8	LOS B	0.2	1.2	0.95	0.97	0.95	25.0
8	T1	All MCs	1	0.0	1	0.0	0.066	89.3	LOS F	0.2	1.2	0.95	0.97	0.95	25.1
9	R2	All MCs	1	0.0	1	0.0	0.066	113.9	LOS F	0.2	1.2	0.95	0.97	0.95	25.0
Approach			3	0.0	3	0.0	0.066	71.4	LOS F	0.2	1.2	0.95	0.97	0.95	25.0
West: New England Highway															
10	L2	All MCs	1	0.0	1	0.0	0.001	4.6	LOS A	0.0	0.0	0.00	0.53	0.00	46.0
11	T1	All MCs	826	5.7	826	5.7	0.440	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
12	R2	All MCs	37	0.0	37	0.0	0.048	7.4	LOS A	0.2	1.2	0.52	0.70	0.52	44.1
Approach			864	5.5	864	5.5	0.440	0.5	NA	0.2	1.2	0.02	0.03	0.02	58.8
All Vehicles			1446	4.9	1446	4.9	0.440	0.8	NA	0.2	1.2	0.03	0.05	0.03	58.0

Table B3: Weekday Priority Intersection of New England Highway with Cantwell Road and Station Lane with mixed-use development traffic PM Peak Hour

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
NorthEast: New England Highway															
25	T1	All MCs	443	5.5	443	5.5	0.235	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
26b	R3	All MCs	61	1.7	61	1.7	0.149	13.3	LOS B	0.5	3.6	0.74	0.89	0.74	41.2
Approach			504	5.0	504	5.0	0.235	1.7	NA	0.5	3.6	0.09	0.11	0.09	56.8
North: Windermere Road															
7b	L3	All MCs	8	0.0	8	0.0	0.027	17.7	LOS C	0.1	0.6	0.74	1.00	0.74	42.6
9a	R1	All MCs	15	0.0	15	0.0	0.226	67.2	LOS F	0.7	4.6	0.95	1.03	1.00	27.4
Approach			23	0.0	23	0.0	0.226	49.2	LOS E	0.7	4.6	0.87	1.02	0.91	31.5
SouthWest: New England Highway															
30a	L1	All MCs	37	0.0	37	0.0	0.019	4.1	LOS A	0.0	0.0	0.00	0.52	0.00	46.2
31	T1	All MCs	858	5.5	858	5.5	0.456	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			895	5.3	895	5.3	0.456	0.3	NA	0.0	0.0	0.00	0.02	0.00	58.9
All Vehicles			1422	5.1	1422	5.1	0.456	1.6	NA	0.7	4.6	0.05	0.07	0.05	57.3

Table B4: Weekday Stop Intersection of New England Highway with Windermere Road with mixed-use development traffic PM Peak Hour