pitt&sherry

Launceston Techno Park Subdivision

Traffic Impact Assessment

Prepared for
Homes Tasmania

Client representative
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Date
15 June 2023

Rev02

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Revision History

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A	Traffic Impact Assessment	EGC	RLR	RSM	06/04/2023
00	Traffic Impact Assessment	EGC	RLR	RSM	21/04/2023
01	Traffic Impact Assessment	EGC	RLR	RSM	09/06/2023
02	Traffic Impact Assessment	EGC	RLR	RSM	15/06/2023

1. Introduction

A residential subdivision is proposed at Lot 2 Techno Park, Kings Meadows. The development proposes establishment of 109 residential house lots, along with new roads and paths on the site.

This Traffic Impact Assessment (TIA) considers the impacts to the greater road network as a result of the development.

The TIA has been prepared with reference to the Department of State Growth (State Growth) publication *Traffic Impact Assessment (TIA) Guidelines* and will address relevant parts of the *Tasmanian Interim Planning Scheme – Launceston.*

2. Existing conditions

2.1 Site location

The proposed development site is located in Kings Meadows, Launceston. The site is located approximately 5km southeast of the Launceston CBD.

The site has a land use classification as 31.0 Particular Purpose under the *Tasmanian Planning Scheme - Launceston*. The site is also subject to the Housing Land Supply Order to rezone to General Residential.

The site is currently vacant and rezoning is required for the land to be used for housing. Surrounding properties of the site have the uses 8.0 General Residential, 10.0 Low Density Residential, 28.0 Recreation and 29.0 Open Space.

The site is bordered to the east by Techno Park Drive. A site wraps around OneSchool and a Goodstart Early Learning Centre is located to the east along with other commercial developments. To the north and northwest there are general residential developments, to the southwest is the Youngtown Memorial Ground and to the south is open space and low density residential developments. The study area extends to include the connecting road network.

The location of the site in the local context is shown in Figure 1.

Figure 1: Site Location (Basemap source: https://maps.thelist.tas.gov.au)

2.2 Surrounding road network

2.2.1 Hobart Road

Hobart Road is a sub-arterial road connecting Wellington Street, Normanstone Road and Meredith Crescent to the north with the Midland Highway and Evandale Road to the south. It provides access to numerous residential and commercial properties. In the vicinity of the study area Hobart Road is a two-way two-lane sealed road with a posted speed limit of 60km/h.

Footpaths have been provided along both sides of the road as well as on-street parallel parking in some sections. Hobart Road services numerous Metro Tasmania bus routes, including routes 145, 146, 792, 794 and 796 and there are a number of bus stops along its length.

2.2.2 Techno Park Drive

Techno Park Drive is a local road connecting Quarantine Road with the Techno Park development. It provides access to several commercial, educational, and residential properties. It is a two-way two-lane sealed road with a default speed limit of 50km/h. Footpaths are provided along one side of the road.

2.2.3 Woolven Street

Woolven Street is a local road providing access to primarily residential properties and other local roads Keithleigh Street, Waroona Street, Wayne Place and Medina Street from Hobart Road. It is a two-way two-lane sealed road with a default speed limit of 50km/h.

Footpaths have been provided along both sides of the road as well as on-street parallel parking. Woolven Street forms part of the Metro Tasmania bus route 146 between Hobart Road and Waroona Street. There is a bus stop on Woolven Street between its intersections with Keithleigh Street and Waroona Street.

2.2.4 Quarantine Road

Quarantine Road is an arterial road connecting Hobart Road and Kings Meadows Link in the southwest with Penquite Road, Johnston Road and Glenwood Road in the northeast. It provides access to various residential and commercial properties and Carrile-Nunamina-Kings Meadows Memorial Cemetery, as well as local roads Techno Park Drive, Gilmont Close and Edinburgh Street. It is a two-way two-lane sealed road with a posted speed limit of 60km/h. Footpaths are provided along both sides of the road.

2.3 Surrounding intersections

The following intersections are located in the vicinity of the study area:

- Quarantine Road/ Techno Park Drive
- Hobart Road/ Woolven Street
- Hobart Road/ Kings Meadows Link (four-leg signalised intersection); and
- One School Access/ Techno Park Drive.

Traffic modelling of these intersections is detailed in this report.

2.4 Traffic volumes

Sydney Coordinated Adaptive Traffic System (SCATS) traffic data was collected from the Department of State Growth at the Hobart Road/Kings Meadow Link intersection. Based on this data, the peak hours on the surrounding road network were determined to be as follows:

- AM Peak Hour 8:00am-9:00am; and
- PM Peak Hour 4:00-5:00pm.

Traffic surveys were undertaken on 7 March 2023 during the AM and PM peak hours at the following intersections:

- Quarantine Road/ Techno Park Drive
- Hobart Road/ Woolven Street; and
- Hobart Road/ Kings Meadows Link.

In addition to this, traffic surveys were undertaken on 7 March 2023 during the AM and PM peak hours at the intersection of Techno Park Drive with the OneSchool access which is a proposed access point to the subdivision and likely to be the busiest access point from Techno Park Drive.

The existing traffic volumes are shown in Figure 2 and Figure 3.

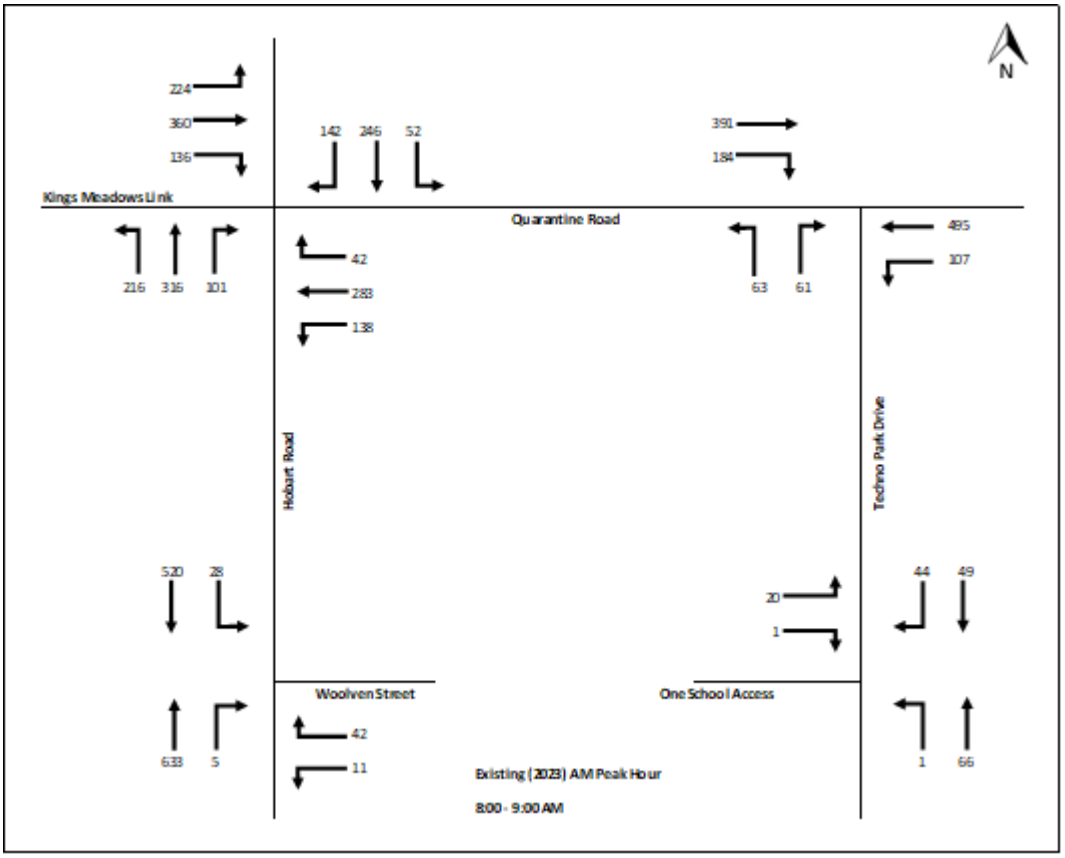

Figure 2: Traffic Volumes - Existing AM Peak Hour

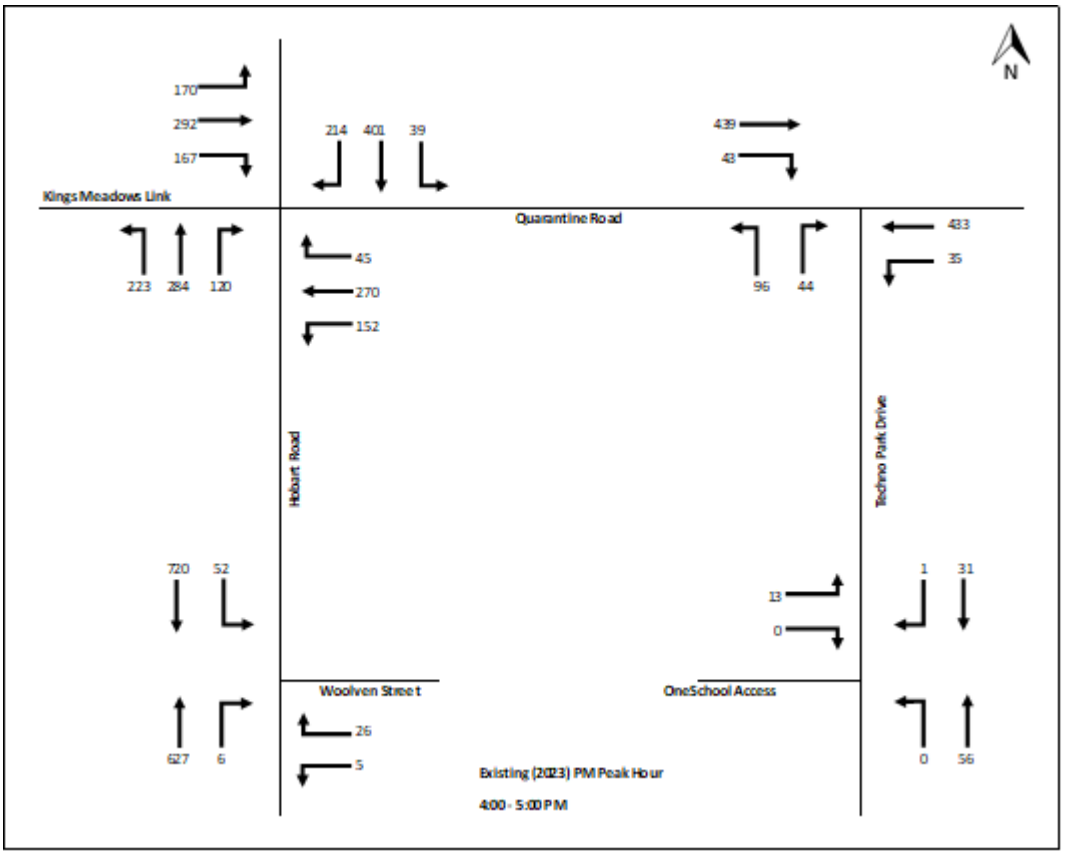

Figure 3: Traffic Volumes - Existing PM Peak Hour

2.5 Traffic modelling

2.5.1 Traffic modelling software

The operation of the intersections in the vicinity of the proposed development has been modelled using SIDRA Intersection 9.0 traffic modelling software. SIDRA Intersection rates the performance of the intersections based on the vehicle delay and the corresponding Level of Service (LOS). It is generally accepted that LOS D or better is an acceptable level of intersection operation. Table 1 shows the criteria that SIDRA INTERSECTION adopts in assessing the LOS.

Table 1: SIDRA INTERSECTION Level of Service (LOS) criteria

LOS	Delay per Vehicle (secs)		
	Signals	**Roundabout**	**Sign Control**
A	10 or less	10 or less	10 or less
B	10 to 20	10 to 20	10 to 15
C	20 to 35	20 to 35	15 to 25
D	35 to 55	35 to 50	25 to 35
E	55 to 80	50 to 70	35 to 50
F	Greater than 80	Greater than 70	Greater than 50

2.5.2 Traffic modelling intersection layouts

The geometry of the intersections used for SIDRA Intersection Traffic Models was developed with reference to aerial photography obtained from LISTmap and observations made during the site visit. The aerial photography combined with the site visit informed the number, width and length of trafficable lanes and speed limits.

2.6 Existing intersection performance

2.6.1 Quarantine Road/ Techno Park Drive Intersection

A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 2. Full results are presented in Appendix B.

Table 2: Quarantine Road/ Techno Park Drive 2023 operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Techno Park Drive	AM	0.13	10	B	3
East: Quarantine Road		0.28	1	A	0
West: Quarantine Road		0.33	4	A	17
All Vehicles		**0.33**	**3**	**A**	**17**

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Techno Park Drive	PM	0.13	9	A	3
East: Quarantine Road		0.24	1	A	0
West: Quarantine Road		0.22	1	A	4
All Vehicles		**0.24**	**2**	**A**	**4**

Based on the above, the intersection of Quarantine Road/ Techno Park Drive currently operates well with minimal queues and delays and a LOS A.

2.6.2 Hobart Road/ Woolven Street intersection

A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 3. Full results are presented in Appendix B.

Table 3: Hobart Road/ Woolven Street 2023 operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Hobart Road	AM	0.35	0	A	0
East: Woolven Street		0.46	45	E	12
North: Hobart Road		0.26	0	A	0
All Vehicles		**0.46**	**2**	**A**	**12**
South: Hobart Road	PM	0.35	0	B	0
East: Woolven Street		0.41	62	F	9
North: Hobart Road		0.36	1	A	0
All Vehicles		**0.41**	**2**	**A**	**9**

Based on the above, the intersection of Hobart Road/ Woolven Street currently operates well overall with a LOS C. The right turn from Woolven Street to Hobart Road operates at an unacceptable LOS E in the AM peak hour and LOS F in the PM peak hour.

During the PM peak hour traffic counts, pitt&sherry staff made the following observations at the Hobart Road/ Woolven Street Intersection:

- The two-way traffic volumes on Hobart Road are very high, which limits opportunities to turn onto Hobart Road from Woolven Street

- The signals to the north of Woolven Street, which create gaps in traffic, assist with vehicles turning left from Woolven Street onto Hobart Road and turning right from Hobart Road into Woolven Street
- To the south there are no signals, so vehicles arrive randomly and there are limited gaps in the traffic during the peak periods. For intersections, a large enough gap for a vehicle to safely turn into the road is the "gap acceptance". It was noted on site that there were few gaps in the northbound traffic at Hobart Road to give sufficient gap acceptance for vehicles turning right from Woolven Street
- Approximately one-third of vehicles turning right from Woolven Street into Hobart Road during the PM peak hour did so using unsuitable gaps, with one resulting in a near miss, several others resulted in instances of road rage. It is noted that there is an intersection cross traffic crash recorded at the intersection of Hobart Road/ Woolven Street
- Further to this, some vehicles would turn right into the Channelised Right Turn (CHR) lane, which is intended for vehicles turning right into Woolven Street and is not considered a safe manoeuvre
- Some vehicles chose to turn left from Woolven Street into Hobart Road and then complete a U-turn at a nearby T-junction as there were limited opportunities to turn right onto Hobart Road; and
- Even with these unsafe manoeuvres, delays of up to 70 seconds were experienced by drivers turning right from Woolven Street into Hobart Road, which is considered an unacceptable delay.

Based on the findings above, it is not considered suitable to have additional traffic turn right from Woolven Street onto Hobart Road.

2.6.3 Hobart Road/ Kings Meadows Link Intersection

A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 4. Full results are presented in Appendix B.

Table 4: Hobart Road/ Kings Meadows Link 2023 operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Hobart Road	AM	0.81	24	C	79
East: Kings Meadows Link		0.86	33	C	75
North: Hobart Road		0.83	27	C	37
West: Kings Meadows Link		0.80	32	C	64
All Vehicles		**0.86**	**29**	**C**	**79**
South: Hobart Road	PM	0.85	29	C	85
East: Kings Meadows Link		0.81	36	D	77
North: Hobart Road		0.80	3	C	74
West: Kings Meadows Link		0.76	3	C	51
All Vehicles		**0.85**	**32**	**C**	**85**

Based on the above, the intersection of Hobart Road/ Kings Meadows link currently operates well with minimal queues and delays and a LOS C.

2.6.4 Techno Park Drive access points

Techno Park Drive was observed on site to carry very low traffic volumes and minimal queues and delays in the vicinity of the site with operation consistent with LOS A.

2.7 Public transport

Public transport available in the study area comprises of bus services. Metro Tasmania operates route 145, 146, 792, 794 and 796 which have components of there routes in the study area. Collectively these routes service Launceston, Youngtown, Perth, Longford, Cressy and Evandale. The services Metro Tasmania supplies are shown in Figure 4.

Figure 4: Metro Tasmania Bus Routes in the Vicinity of the Site

In addition to the public services, Metro Tasmania also operates five school bus services that travel in the study area. These are as follows:

- Route 817 operates in the morning and services Kings Meadows High School, Norwood Primary School and Queechy High School
- Route 824 operates in the afternoon and services Norwood Primary School and Queechy High School
- Route 830 operates in the afternoon and services Youngtown Primary School
- Route 833 operates in the morning and services St Patrick's College and King's Meadows High School; and
- Route 848 operates in the afternoon and services St Patricks College.

2.8 Pedestrian and cycling iinfrastructure

Footpaths are provided along Techno Park Drive, the OneSchool access road, Woolven Street, Quarantine Road and Hobart Road. There are several informal walking trails through and on the outskirts of the site. There is no dedicated cycling infrastructure in the study area.

2.9 Crash history

The Department of State Growth has provided crash data relating to crashes in the area surrounding the site during the last 10 years. The data is summarised in Table 5 below.

Table 5: Crash history summary

Location	Crash Severity	Count	Prominent crash types
Midblock			
Hobart Road	Property Damage Only - 18 Minor - 1 Not known - 1	20	130 – Vehicles in same lane (9) 145 – Reversing (2)
Quarantine Road	Minor - 1 First Aid - 2 Property Damage Only - 11	14	149 – Other Manoeuvring (2) 160 – Parked (3) 169 – Other on Path (2) 189 – Other Curve (2)
Woolven Street	Property Damage Only - 1	1	
Kings Meadows Link	Property Damage Only - 4	4	139 – Other same directions (including vehicle rolling backwards) (3)
Intersections			
Hobart Road/ Woolven Street	First Aid - 1 Property Damage Only - 3	4	
Hobart Road/ Quarantine Road	Minor - 1 Property Damage Only - 5	6	130 – Vehicles in same lane (5)
Hobart Road/ Merino Street	Minor - 1 Property Damage Only - 4	5	113 – Right near (2)
Hobart Road/ Kings Meadows Link	Minor - 4 First Aid - 2 Property Damage Only - 13	19	110 – Cross Traffic (3) 130 – Vehicles in same lane/ rear end (5) 131 – Vehicles in same lane/ left rear (2) 132 – Vehicles in same lane/ right rear (2) 189 – Other curve (2)
Edinburgh Street/ Quarantine Road	Minor - 1 First Aid - 1 Property Damage Only - 1	3	110 – Cross Traffic (2)

3. Development proposal

3.1 Overview

The proposed development at Lot 2 Techno Park, Kings Meadows is a residential subdivision of 109 lots and four new access roads.

The proposed subdivision concept plan is shown in Figure 5 with original plans included in Appendix A.

Figure 5: Schematic Design of Proposed Subdivision

3.2 Vehicular access and internal layout

Internal to the proposed development, the road network is proposed to be comprised of four new roads, as shown in Figure 6. For the purpose of this assessment, these four new roads have been considered as Road 1, Road 2, Road 3, and Road 4.

Based on the findings discussed in Section 2.6.2 regarding congestion at the Hobart Road/ Woolven Street intersection. The Woolven Street access will be modified to provide entry into the site only (emergency vehicles will be able to exit the site from this location). The road geometry, signage and linemarking will be installed to discourage vehicles from exiting the subdivision onto Woolven Street. The traffic assessment in this report assumes only entry movements into the subdivision from Woolven Street.

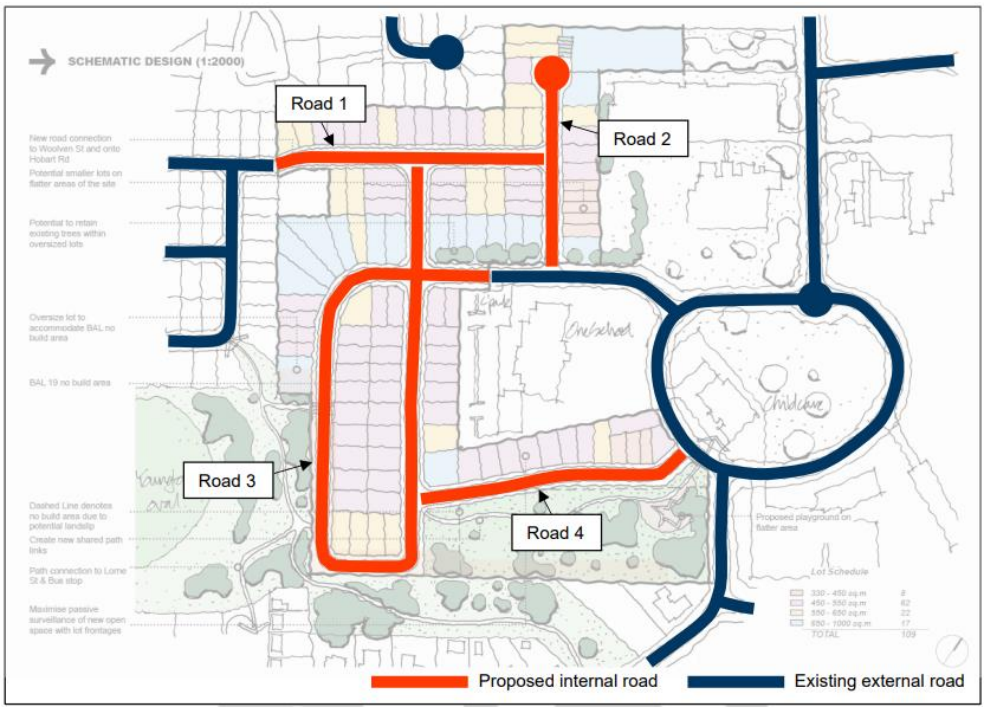

Figure 6: Proposed Internal Road Network

There are three access points proposed to the site from the existing local road network as follows:

- Eastern access from Woolven Street (and Hobart Road) to Road 1
- Western access from Techno Park Drive (and Quarantine Road) to the existing OneSchool access road; and
- Western access from Techno Park Drive (and Quarantine Road) to Road 4.

Road 2 is accessed from the existing OneSchool access road and Road 3 is internal to the subdivision and does not have direct access to the existing road network.

The current site access at Woolven Street terminates at its eastern end at a gated private property access. It is proposed that at its north-eastern end, the gate will be removed, and Woolven Street will continue as Road 1 into the development.

Footpaths are proposed on both sides of the internal roads, and there is a pedestrian crossing proposed on road 3 at the west of the site. This will connect with existing informal paths through the open space to the west and south of the site, to allow pedestrian and cyclists access to Medina Street, Lorne Street and Jinglers Drive. In the south-eastern corner of the site there is a proposed park containing a playground which will have a path running through it providing off-road pedestrian and cyclist access from the Road 3/ Road 4 intersection to Techno Park Drive, where a pedestrian crossing is proposed connecting the Goodstart Early Learning childcare centre with the development.

3.3 Road width assessment

The high level schematic designs show a road width of approximately 9m and a road reserve width of approximately 18m. This is consistent with the Local Government Association of Tasmania (LGAT) Standard Drawings which specify a minimum road width of 8.9m and a minimum road reserve width of 18m for a local through road.

3.4 Sight distance

Sight distances were observed by pitt&sherry staff at the proposed Road 4 access point to Techno Park Drive. The Safe Intersection Sight Distance (SISD) has been assessed in accordance with the *Austroads Guide to Road Design Part 4A*. The speed limit on Techno Park Drive is 50km/h resulting in a required sight distance of 97m.

The sight distance to the south-east of the access was measured as 110m and the sight distance to the north-west was measured as 120m. As such, the sight distances comply with the Austroads Guide requirement. Photos of the sight distance are shown in Figure 7 and Figure 8.

It was noted on site that vehicles exiting the Goodstart Early Learning Centre are obstructed by trees both from Techno Park Drive and from the proposed Road 4 due to their proximity to the exit driveway as shown in Figure 9.

Figure 7: Sight Distance from Road 4 to south-east

Figure 8: Sight Distance from Road 4 to north-west

Figure 9: Trees blocking sight distance at Goodstart Early Learning

3.5 Car parking

The Planning Scheme car parking space requirements for a residential development in the General Residential Zone (*extract from Table C2.1, Tasmanian Planning Scheme – Launceston*) are shown in the Table 6.

Table 6: Extract from Table C2.1 Parking Space Requirements

Use		**Parking Space Requirements**	
		Car	**Bicycle**
Residential	If a 2 or more bedroom dwelling in the General Residential Zone (including all rooms capable of being used as a bedroom)	2 spaces per dwelling	No requirement

If the development consists of entirely of dwellings with 2 or more bedrooms, each lot will be required to accommodate 2 off-street car park spaces. The concept plan provided indicates sufficient space to satisfy this requirement based on the size of the proposed lots.

4. Traffic Impact Assessment

4.1 Traffic Generation

Traffic Generation rates for the development have been based on the *Roads and Maritime Services Technical Direction TDT04/13.* The subdivision has 109 blocks of land which would accommodate general density residential developments. For general density, a low density traffic generation rate from the technical direction is suitable.

The expected traffic generation of the subdivision is shown in Table 7.

Table 7: Traffic Generation

Peak Hour	**Traffic Generation Rate**	**Traffic Generation**
AM	0.95 trips per dwelling	104
PM	0.99 trips per dwelling	109
Daily	10.7 trips per dwelling	1,166

4.1.1 Directional split of traffic

The directional split of the traffic (the ratio between inbound and outbound movements) adopted for this study was determined from the *ITE Trip Generation Manual.* The adopted directional split is as follows:

- AM Peak Hour 30% in/ 70% out; and
- PM Peak Hour 70% in/ 30% out.

4.1.2 Traffic distribution

The distribution of the traffic generated by the site is based on several factors including:

- The location of major traffic distribution roads around the site
- The location of traffic generating developments; and
- Existing traffic patterns.

Based on the above, the expected traffic distribution and assignment of movements to and from the proposed development is shown in Figure 10 and Figure 11.

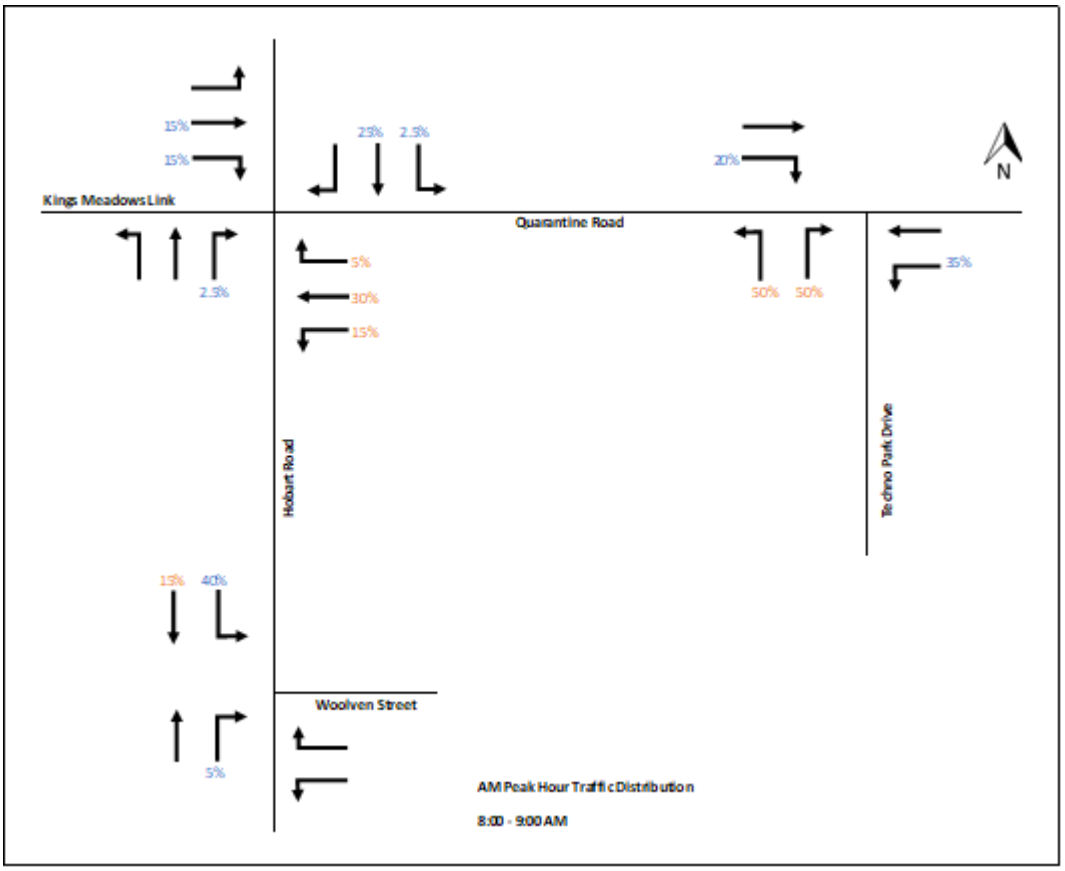

Figure 10: AM Peak Hour Traffic Distribution

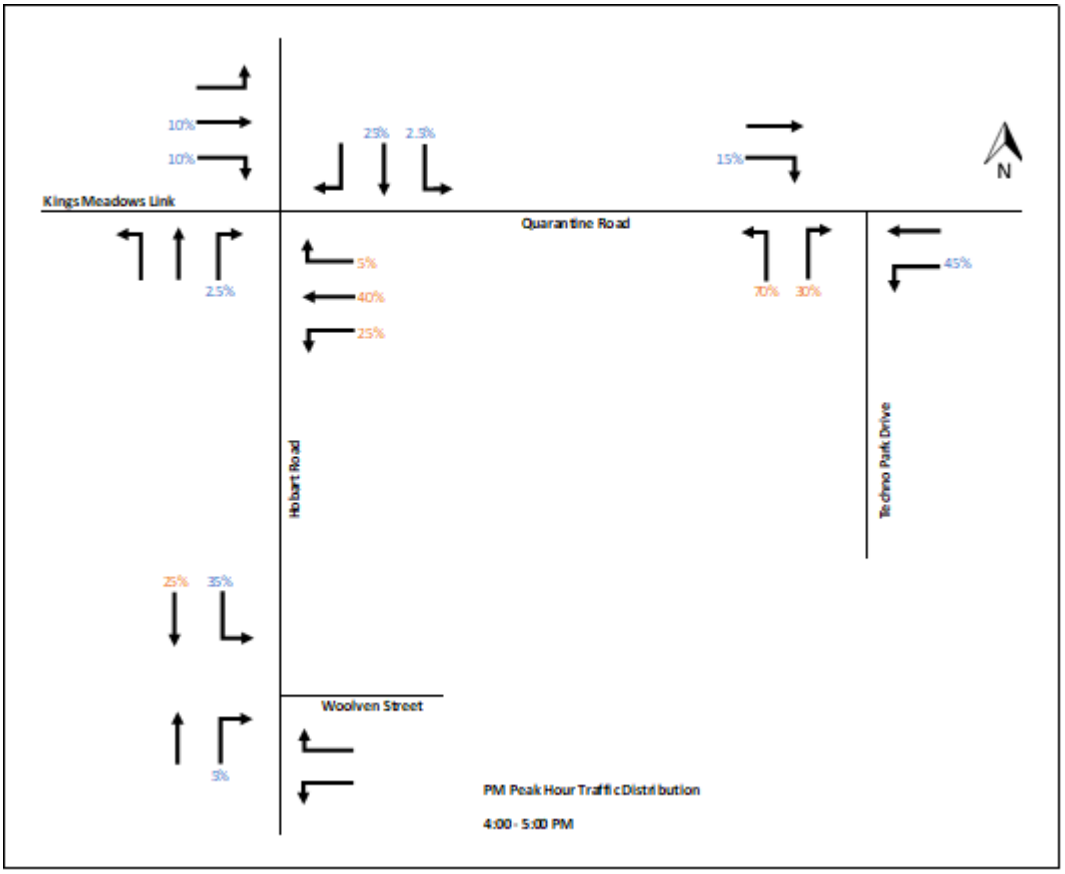

Figure 11: PM Peak Hour Traffic Distribution

4.1.3 Additional traffic summary

The expected traffic movements to and from the proposed development is shown in Figure 12 and Figure 13.

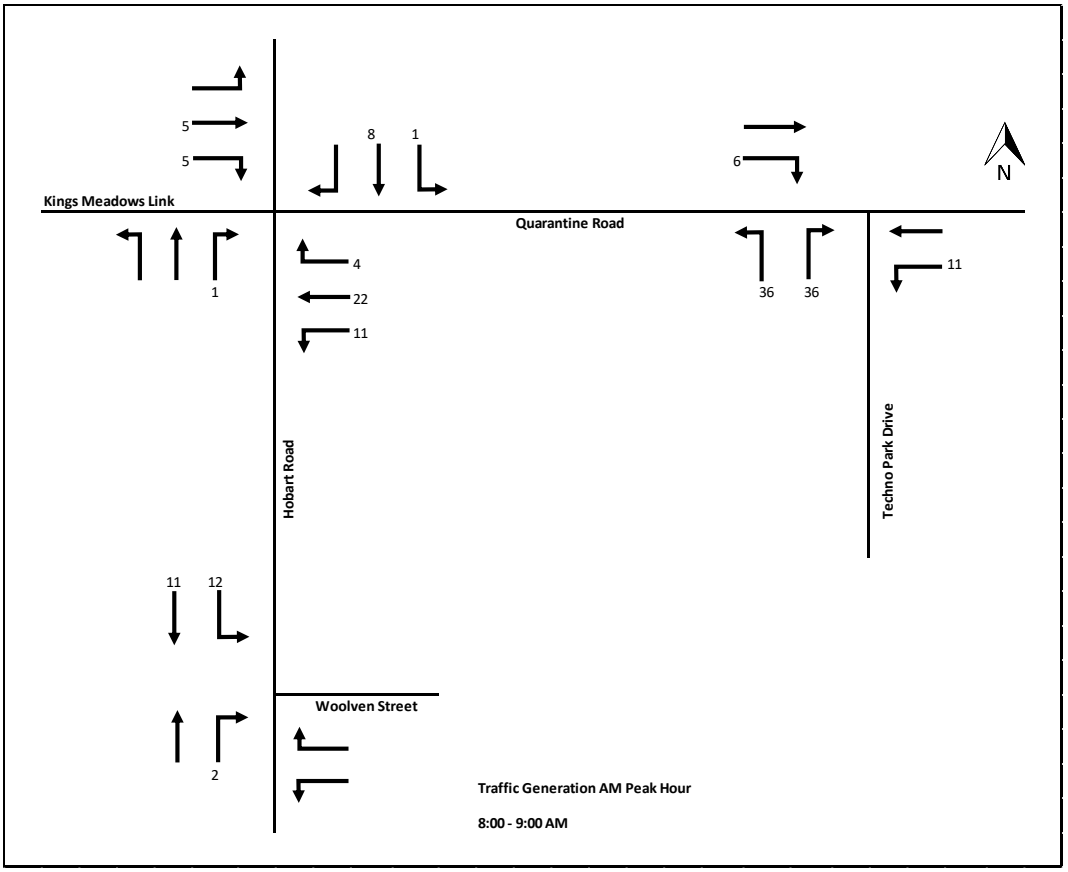

Figure 12: Traffic Generation – AM Peak Hour

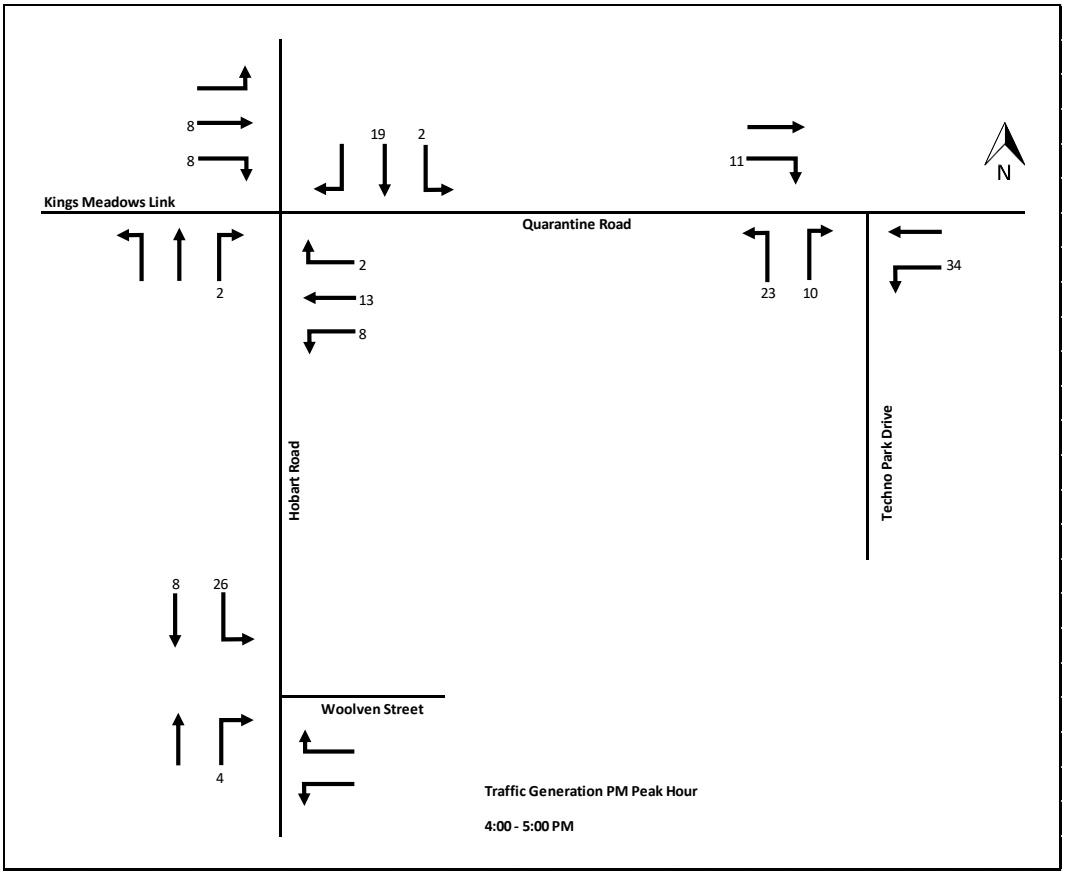

Figure 13: Traffic Generation - PM Peak Hour

4.2 Post development traffic volumes

Considering the expected traffic generation from the proposed subdivision, and the estimated distribution, the additional traffic on the local network during weekday AM and PM peak hours is shown in Figure 14 and Figure 15, respectively.

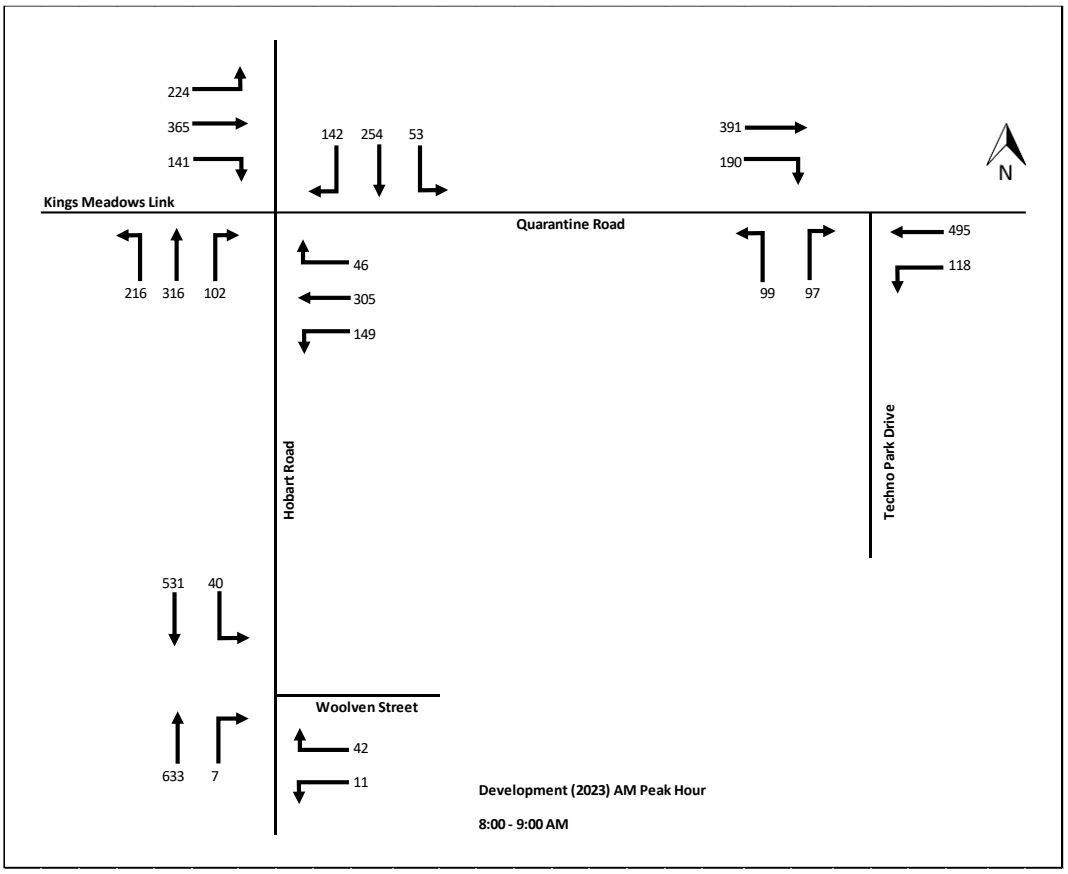

Figure 14: Post Development 2023 AM Peak Hour Volumes

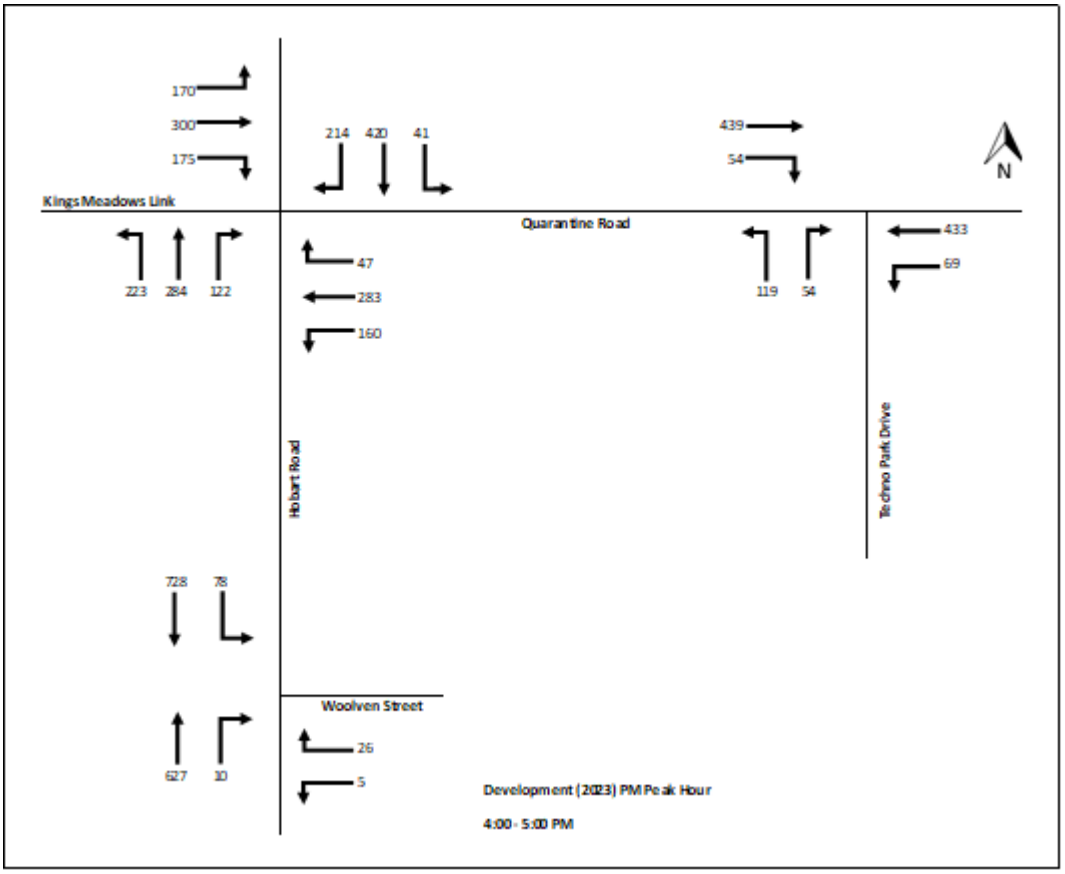

Figure 15: Post Development 2023 PM Peak Hour Volumes

4.3 Post development intersection performance

Applying the calculated traffic volumes to the SIDRA Intersection models of each intersection, an assessment of the impact the additional traffic generated by the proposed development will have on the local network.

4.3.1 Quarantine Road/ Techno Park Drive intersection

A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 8. Full results are presented in Appendix B.

Table 8: Quarantine Road/ Techno Park Drive post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Techno Park Drive	AM	0.22	11	B	1
East: Quarantine Road		0.28	1	A	0
West: Quarantine Road		0.33	5	A	17
All Vehicles		**0.33**	**4**	**A**	**17**

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Techno Park Drive	PM	0.16	9	A	4
East: Quarantine Road		0.24	1	A	0
West: Quarantine Road		0.23	2	A	5
All Vehicles		**0.24**	**2**	**A**	**5**

4.3.2 Hobart Road/ Woolven Street intersection

A summary of the SIDRA intersection results for degree of saturation, average delay, and 95th percentile queue is provided in Table 9. Full results are presented in Appendix B.

Table 9: Hobart Road/ Woolven Street post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Hobart Road	AM	0.36	0	A	0
East: Woolven Street		0.48	47	E	12
North: Hobart Road		0.27	1	A	0
All Vehicles		**0.48**	**2**	**A**	**12**
South: Hobart Road	PM	0.35	0	B	1
East: Woolven Street		0.44	68	F	10
North: Hobart Road		0.38	1	A	0
All Vehicles		**0.44**	**2**	**A**	**10**

4.3.3 Hobart Road/ Kings Meadows Link intersection

A summary of the SIDRA intersection results for degree of saturation, average delay, and 95th percentile queue is provided in Table 10. Full results are presented in Appendix B.

Table 10: Hobart Road/ Kings Meadows Link post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Hobart Road	AM	0.88	27	C	87
East: Kings Meadows Link		0.85	32	C	80
North: Hobart Road		0.83	28	C	38
West: Kings Meadows Link		0.83	31	C	62
All Vehicles		**0.88**	**29**	**C**	**87**
South: Hobart Road	PM	0.85	30	C	85
East: Kings Meadows Link		0.85	37	D	85
North: Hobart Road		0.80	31	C	76
West: Kings Meadows Link		0.80	32	C	52
All Vehicles		**0.85**	**32**	**C**	**85**

4.3.4 Techno Park Drive access points

Based on the volumes of traffic generated by the development compared with the existing traffic volumes. The access points to the site from Techno Park Drive are expected to continue to carry low traffic volumes and minimal queues and delays in the vicinity of the site with operation consistent with LOS A.

4.3.5 Traffic impact post development – Discussion

Based on the modelling results presented above, the development has a minor impact on the 2023 operation of the surrounding road network with all intersections expected to operate at a satisfactory LOS post development. The addition of movements into the development at Woolven Street only, result in negligible change to the overall operation of the Hobart Road/ Woolven Street intersection.

4.4 10-years post development (2033)

In order to represent future growth on the road network, compounding growth rates have been applied to the road network.

Techno Park Drive and Quarantine Road have recently had a 5% compounding growth rate per year due to growth. This has been reduced to a 2% growth rate for the future based on guidance from the City of Launceston. the remaining roads have had an historic 2% compounding growth rate per year which has been applied for future growth. No growth has been applied to the subdivision traffic as the subdivision is not expected to increase in size or density within 10 years post development.

The expected traffic volumes 10 years' post development on the local network during weekday AM and PM peak hours is shown in Figure 16 and Figure 17.

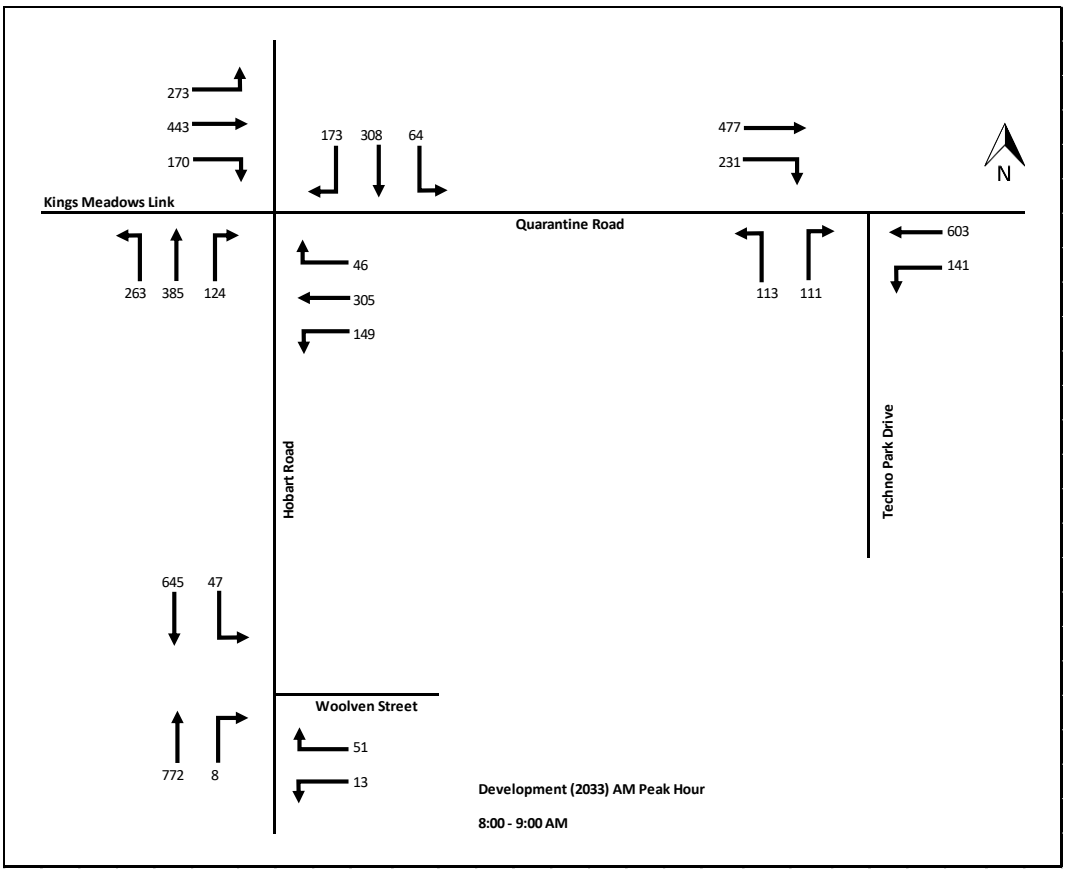

Figure 16: Post Development 2033 AM Peak Hour Volumes

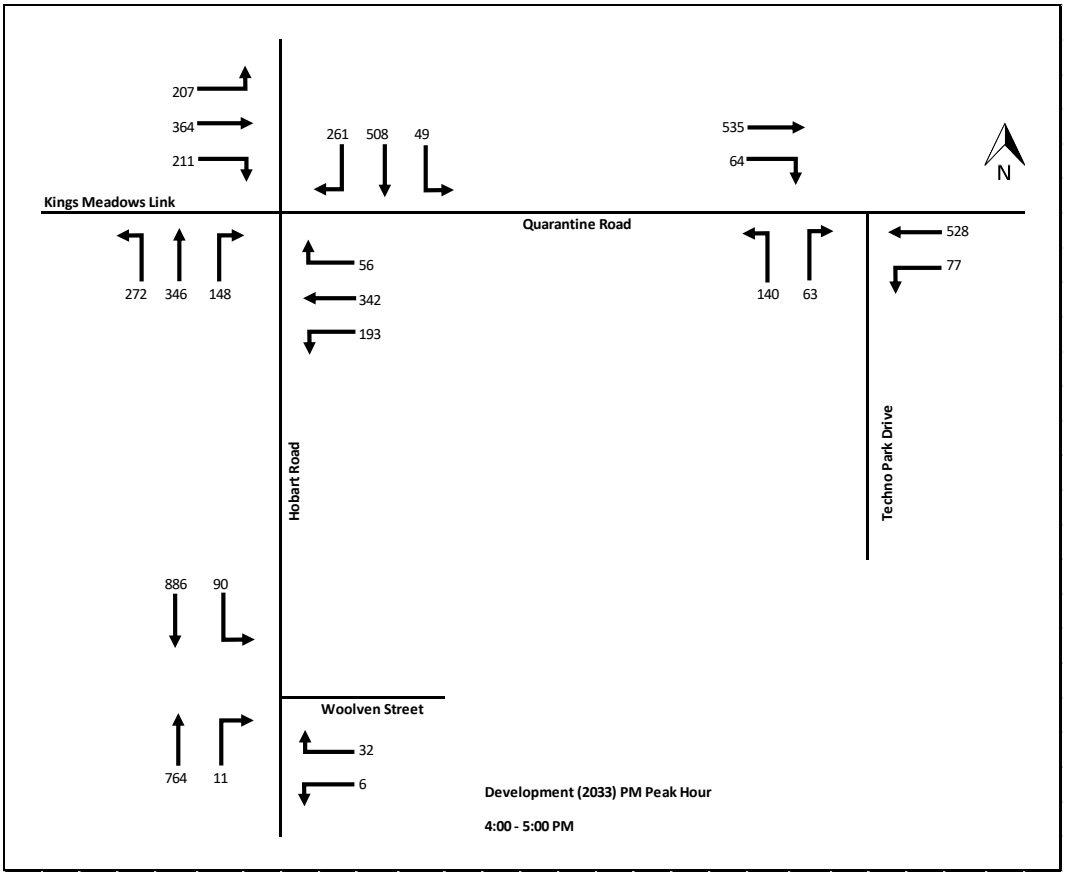

Figure 17: Post Development 2033 PM Peak Hour Volumes

4.4.1 Quarantine Road/ Techno Park Drive intersection

A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 11. Full results are presented in Appendix B.

Table 11: Quarantine Road/ Techno Park Drive 10-years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Techno Park Drive	AM	0.35	14	B	9
East: Quarantine Road		0.34	1	A	0
West: Quarantine Road		0.45	6	A	28
All Vehicles		0.45	5	A	28
South: Techno Park Drive	PM	0.21	10	B	6
East: Quarantine Road		0.29	1	A	0
West: Quarantine Road		0.28	2	A	8
All Vehicles		0.29	3	A	8

To determine the impact of the subdivision in 10 years compared with overall traffic growth, a summary of the SIDRA Intersection results without the development traffic is provided in Table 12. Full results are presented in Appendix B.

Table 12: Quarantine Road/ Techno Park Drive 10-years no development

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Techno Park Drive	AM	0.23	13	B	6
East: Quarantine Road		0.34	1	A	0
West: Quarantine Road		0.44	6	A	27
All Vehicles		0.44	4	A	27
South: Techno Park Drive	PM	0.18	10	B	5
East: Quarantine Road		0.29	1	A	0
West: Quarantine Road		0.27	2	A	6
All Vehicles		0.29	2	A	6

4.4.2 Hobart Road/ Woolven Street intersection

A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 13. Full results are presented in Appendix B.

Table 13: Hobart Road/ Woolven Street 10-years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Hobart Road	AM	0.43	0	B	0
East: Woolven Street		1.12	275	F	69
North: Hobart Road		0.32	1	A	0
All Vehicles		**1.12**	**12**	**A**	**69**
South: Hobart Road	PM	0.43	0	B	1
East: Woolven Street		1.22	431	F	62
North: Hobart Road		0.46	1	A	0
All Vehicles		**1.22**	**10**	**A**	**62**

The development generates relatively low traffic volumes to the Hobart Road/ Woolven Street intersection. The only major change in intersection operation from 2023 is at the Woolven Street approach which the development does not generate traffic at. As a result, it was not considered necessary to model the no development scenario as the impact is expected to be negligible.

4.4.3 Hobart Road/ Kings Meadows Link intersection

A summary of the SIDRA Intersection results for degree of saturation, average delay and 95th percentile queue is provided in Table 14. Full results are presented in Appendix B.

Table 14: Hobart Road/ Kings Meadows Link 10-years post-development operation

Leg	Peak Hour	Degree of Saturation	Average Delay (sec)	Level of Service	95th Percentile Queue
South: Hobart Road	AM	0.85	29	C	125
East: Kings Meadows Link		0.91	45	D	112
North: Hobart Road		0.90	33	C	63
West: Kings Meadows Link		0.89	39	D	100
All Vehicles		**0.91**	**36**	**D**	**125**
South: Hobart Road	PM	0.97	67	E	245
East: Kings Meadows Link		0.97	84	F	241
North: Hobart Road		0.99	62	E	190
West: Kings Meadows Link		0.98	65	E	152
All Vehicles		**0.99**	**68**	**E**	**245**

The development generates relatively low traffic volumes to the Hobart Road/ Kings Meadows Link intersection. As a result, it was not considered necessary to model the no development scenario as the impact is expected to be negligible.

4.4.4 Techno Park Drive access points

Based on the expected traffic growth on Techno Park Drive, the access points to the site from Techno Park Drive are expected to continue to carry low traffic volumes and minimal queues and delays 10 years post development in the vicinity of the site with operation consistent with LOS A.

4.4.5 Traffic impact 10-years post development – Discussion

In 2033 there is expected to be congestion experienced at each of the intersections. Based on the traffic modelling and traffic volumes, this is largely expected to be a result of the growth on the network from outside development given the comparatively low traffic generation of the proposed Techno Park subdivision.

Based on the SIDRA traffic modelling results, the intersection of Techno Park Drive with Quarantine Road would be expected to operate with minimal queues and delays on all approaches 10 years post development. The development traffic has little impact on the overall operation of the intersection compared with the anticipated traffic volumes in 10 years' time without the development traffic.

The addition of movements into the development at Woolven Street only, result in negligible change to the overall operation of the Hobart Road/ Woolven Street intersection.

5. Preferable road network upgrades

5.1 Potential connection at Lorne Street

City of Launceston traffic engineers have suggested the investigation of an additional road access point to the subdivision at Lorne Street at the south-west corner of the site. The connection would be through Council-owned land adjacent to Youngtown Oval. The proposed connection location is shown in Figure 18. Council traffic engineers have noted that approval would need to be sought from other departments in the Council to use the land. The connection has the following benefits from a traffic and transport perspective:

- The connection improves connectivity for local traffic in the area (i.e. it provides a more direct route for subdivision traffic entering and exiting to Hobart Road to the south and allows a shorter route for vehicles on Lorne Street and surrounds to access Quarantine Road and travel east)
- The connection would provide better access to the 146 bus route for residents at the southern end of the subdivision
- The connection is short and on relatively flat land
- There would be easier and quicker access for emergency services; and
- Council have noted that there would be better connectivity for garbage collection.

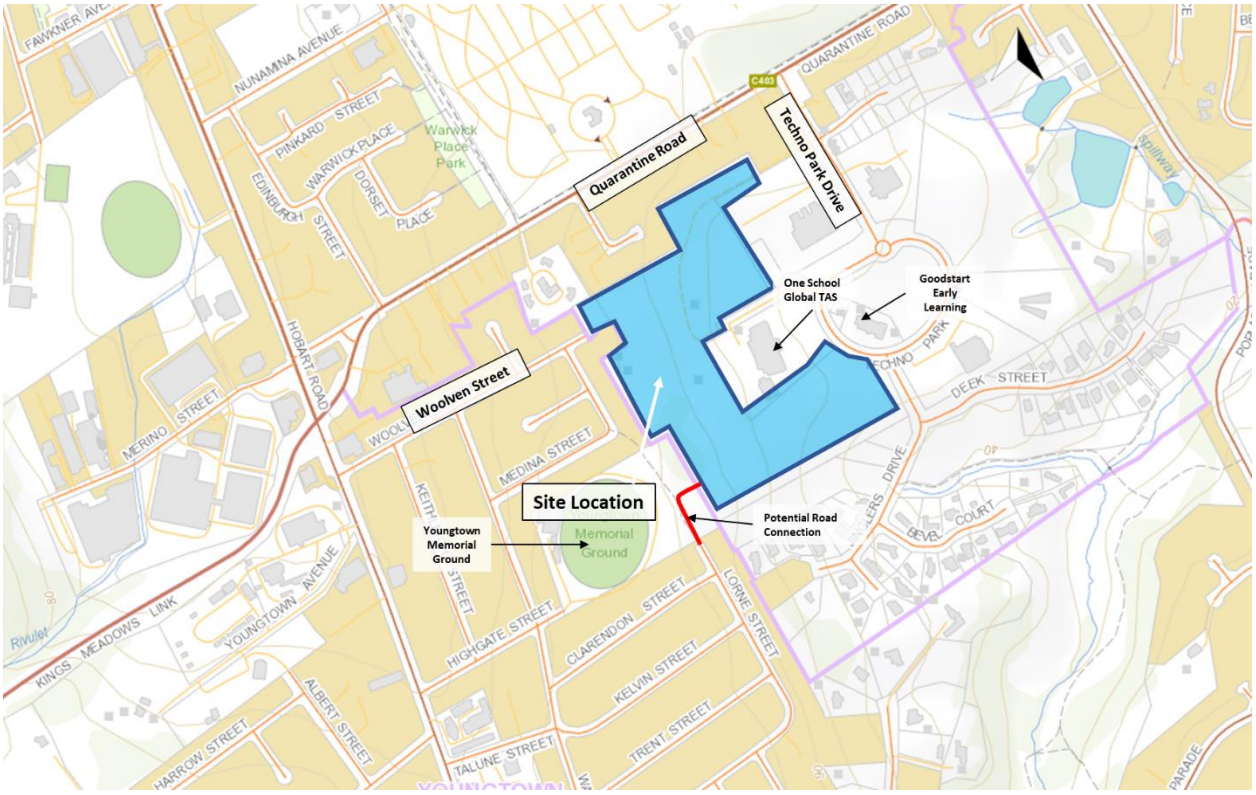

Figure 18: Lorne Street Connection Location

The road connection would be expected to be used by low traffic volumes. Should the connection be supported it would be recommended that traffic counts, observations and traffic modelling are undertaken at the following intersections:

- Hobart Road/ Highgate Street; and
- Hobart Road/ Talune Street.

5.2 Signalisation of Quarantine Road/ Techno Park Drive

Guidance has been taken from the *Austroads Guide to Road Design Part 6: Intersections, Interchanges and Crossings* to determine whether traffic control devices (i.e. traffic signals) could be warranted at this location. Traffic volume guidance is shown in Figure 19.

1. **Traffic volume:** Where the volume of traffic is the principal reason for providing a control device, traffic signals may be considered, subject to detailed analysis when the major road carries at least 600 veh/hour (two-way) and the minor road concurrently carries at least 200 veh/hour (highest approach volume) on one approach over any four hours of an average day[3][4].
2. **Continuous traffic:** Where traffic on the major road is sufficient to cause undue delay or hazard for traffic on a minor road, traffic signals may be considered when the major road carries at least 900 veh/hour (two-way) and the minor road concurrently carries at least 100 veh/hour (highest approach volume) on one approach, over any four hours of an average day. This warrant applies provided that the installation would not disrupt progressive traffic flow, and that no alternative and reasonably accessible signalised intersection is present on the major road[1][2].

Figure 19: Austroads - Volumes for Traffic Signals

As shown above there are two methods for calculating the need for traffic signals:

1. Traffic Volume (1TV) - i.e. higher minor road traffic volumes warrant a need for traffic signals; and
2. Continuous Traffic (2CT) – i.e. major road traffic volumes restrict movements from a minor road.

The existing and estimated 2033 traffic volumes with and without the development during peak hours are shown in Table 15.

This is considering a 2% compounding traffic growth for the 2033 volumes.

Table 15: Development Traffic Volumes Assessment for Signals

Assessment Year	Peak Hour	Road	Traffic Volume	
			No development	With development
2023	AM	Quarantine Road (Major)	886	886
		Techno Park Drive (Minor)	124	196
	PM	Quarantine Road (Major)	872	872
		Techno Park Drive (Minor)	140	172
2033	AM	Quarantine Road (Major)	1,080	1,080
		Techno Park Drive (Minor)	151	224
	PM	Quarantine Road (Major)	1,063	1,063
		Techno Park Drive (Minor)	171	203

Based on the above, the following observations can be made about the traffic volumes at the Quarantine Road/ Techno Park with a projection of 2% traffic growth per year on the road network:

- With no development
  - 2023 traffic volumes do not warrant signals as per the Austroads method
  - 2033 traffic volumes indicate signals could be required due to the 2CT warrants as peak hour traffic volumes exceed the major road traffic volume of 900vph by 20% and 18% in the AM peak hours respectively

- With subdivision development
    - 2023 traffic volumes do not warrant signals as per the Austroads method
    - 2033 traffic volumes indicate signals could be required due to the 2CT warrants as peak hour traffic volumes exceed the major road traffic volume of 900vph by 20% and 18% in the AM peak hours respectively; and
    - 2033 traffic volumes indicate that signals are unlikely to be required due to the 1TV warrants as peak hour traffic volumes exceed the minor road traffic volume by 12% and 2% in the AM peak hours respectively. Although the warrants are met in the 2 busiest hours, it is considered relatively unlikely that the warrants will be met for 2 more hours.

It is further noted, that if there is no background traffic growth to 2033 and the development adds the only traffic to the intersection, none of the warrants for signals would be met in any hour.

It is acknowledged that the Austroads method is general guidance to assist with determining when signals could be required. Using this method, in this case if signals were required it would be due to existing network traffic patterns and not likely to be as a result of the proposed Techno Park subdivision development.

City of Launceston have noted that signalisation of the Quarantine Road/ Techno Park Drive intersection may be required at some point in time due to exiting platooning and queuing on Quarantine Road which at times leads to delays for vehicles exiting Techno Park Drive.

SIDRA Traffic modelling undertaken for the Quarantine Road/ Techno Park Drive intersection, shown in Sections 2.6.1, 4.3.1 and 4.4.1 of this report, which considers traffic movements specific to this site, indicates that the intersection would be expected to operate with minimal queues and delays 10 years after the development of the subdivision.

Therefore, although some vehicles are experiencing longer delays exiting Techno Park Drive at times due to platooning and queues of vehicles on Quarantine Road, the average delay is considered acceptable.

6. Planning scheme assessment

The proposed development has been assessed against Use and development standards of C2.0 parking and Sustainable Transport Code and C3.0 Road and Railway Assets Code of the *Tasmanian Interim Planning Scheme – Launceston.*

6.1 C2.0 Parking and Sustainable Transport Code

6.1.1 Use Standards

C2.5.1 Car parking numbers	
Objective: That an appropriate level of car parking spaces are provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of on-site car parking spaces must be no less than the number specified in Table C2.1, excluding if: (a) The site is subject to a parking plan for the area adopted by council, in which case parking	**Complies with Acceptable Solution A1** The lot sizes are sufficient to provide off-street car parking spaces on each lot as specified in Table C2.1.

C2.5.1 Car parking numbers	
provision (spaces or cash-in-lieu) must be in accordance with that plan (b) The site is contained within a parking precinct plan and subject to clause c2.7 (c) The site is subject to clause c2.5.5; or (d) It relates to an intensification of an existing use or development or a change of use where: i. The number of on-site car parking spaces for the existing use or development specified in Table C2.1 is greater than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case no additional on-site car parking is required; or ii. The number of on-site car parking spaces for the existing use or development specified in Table C2.1 is less than the number of car parking spaces specified in Table C2.1 for the proposed use or development, in which case on-site car parking must be calculated as follows: N = A + (C- B) N = Number of on-site car parking spaces required A = Number of existing on site car parking spaces B = Number of on-site car parking spaces required for the existing use or development specified in Table C2.1 C = Number of on-site car parking spaces required for the proposed use or development specified in Table C2.1.	

C2.5.2 Bicycle parking numbers	
Objective: That an appropriate level of bicycle parking spaces are provided to meet the needs of the use.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 Bicycle parking spaces must: (a) Be provided on the site or within 50m of the site; and (b) Be no less than the number specified in table c2.1.	**Not Applicable**

C2.5.3 Motorcycle parking numbers
Objective: That the appropriate level of motorcycle parking is provided to meet the needs of the use.

C2.5.1 Car parking numbers	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 The number of on-site motorcycle parking spaces for all uses must: (a) Be no less than the number specified in Table C2.4; and (b) If an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained.	**Not Applicable**

C2.5.4 Loading bays	
Objective: That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1 A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy.	**Not Applicable**

6.2 C3.0 Roads and Railway Assets Code

6.2.1 Use Standards

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction	
Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.	
Acceptable Solution/ Performance Criteria	**Comment**
Acceptable Solution A1.1 For a category 1 road or a limited access road, vehicular traffic to and from the site will not require: (a) A new junction (b) A new vehicle crossing; or (c) A new level crossing.	**Satisfies Performance Criteria P1** The A1 criteria are addressed below. 1.1. Techno Park Drive is not a Category 1 or limited access road – Complies with Acceptable Solution A1. 1.2. The development proposes to create one new junction on Techno Park Drive. Written consent is required from the road authority (Launceston City Council). 1.3. No rail in the vicinity – Complies with Acceptable Solution A1. 1.4. The subdivision is expected to generate more than 40 vehicles per day and therefore does not comply with the A1 Acceptable Solution. The Performance Criteria P1 have been addressed.

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

Acceptable Solution A1.2

For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.

Acceptable Solution A1.3

For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority.

Acceptable Solution A1.4

Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than:

(a) The amounts in Table C3.1; or

(b) Allowed by a licence issued under Part IVA of the *Roads and Jetties Act 1935* in respect to a limited access road.

Acceptable Solution A1.5

Vehicular traffic must be able to enter and leave a major road in a forward direction.

Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:

Performance Criteria P1

(a) Any increase in traffic caused by the use

(b) The nature of the traffic generated by the use

(c) The nature of the road

(d) The speed limit and traffic flow of the road

(e) Any alternative access to a road

(f) The need for the use

(g) Any traffic impact assessment; and

(h) Any advice received from the rail or road authority.

1.5. The proposed access roads for the subdivision are two-way roads to allow vehicles to enter and leave the subdivision in a forward direction – Complies with Acceptable Solution A1.

Performance Criteria P1 Assessment:

(a) The proposed subdivision has the potential to generate up to 1,166 vehicle movements per day. Traffic modelling was completed at nearby intersections for the weekday AM and PM peak hours. The traffic modelling results indicate that the development is not expected to have a substantial impact to the safety and function of the surrounding road network

(b) The subdivision is expected to generate light vehicles and garbage trucks for weekly residential garbage collection. These vehicle types are consistent with what is currently present on the surrounding road network

(c) As discussed, traffic modelling results indicate that the development is not expected to have a noticeable impact to the safety and function of the surrounding road network. The intersections of the subdivision access roads to Techno Park Drive would be expected to operate efficiently as traffic volumes are expected to be low during peak periods

(d) The development will generate light vehicle traffic to Techno Park Drive which has a 50km/h speed limit and low traffic volumes which are suitable for vehicle access. Traffic will also be generated to Hobart Road and Quarantine Road using existing intersections with the traffic volume generated to be low compared with existing traffic on these roads

(e) The subdivision is proposed to have entry points from Quarantine Road and Woolven Street and an exit point to Quarantine Road (as Woolven Street is not suitable based on existing congestion and safety issues). A connection to Lorne Street at the south-west corner of the site is a possibility

(f) There is a substantial shortage of housing in Tasmania, this subdivision would provide much needed housing for the general market and for vulnerable people

(g) This Traffic Impact Assessment has been prepared for the proposed development and identifies that the proposed subdivision is not expected to have a substantial impact to the safety and function of the surrounding road network; and

(h) Launceston City Council own and maintain the local road network in the vicinity. They have indicated that they agree with the findings and recommendations for the use of Woolven Street to access the site only. Council have also indicated that there is preference for a secondary access point to the site (at Lorne Street) and upgrade of the Quarantine Road/ Techno Park Drive to signals.

7. Conclusion

The proposed subdivision at the Launceston Techno Park site has been assessed in accordance with the Department of State Growth's *Framework for Undertaking Traffic Impact Assessments*. The analysis and discussions presented in this report are summarised below.

- The additional traffic volumes expected to be generated by the subdivision is not expected to have a substantial impact to the safety and function of the surrounding road network
- The Traffic Impact Assessment has determined that delays at the Quarantine Road/ Techno Park Drive intersection are acceptable without upgrade of the intersection
- Due to existing traffic congestion at the Hobart Road/ Woolven Street intersection, it is proposed to allow entry only movements to the subdivision from Woolven Street
- Congestion is expected at Hobart Road in 10 years time due to growth on the network not associated with the proposed subdivision
- The proposed access points to the subdivision from Techno Park Drive are considered suitable
- The proposed site layout including road widths complies with the LGAT Standard Drawings and is considered suitable from a transport perspective
- There is sufficient space for parking within the proposed subdivision; and
- Road and access layouts are suitable for the development traffic and meet the requirements of the Planning Scheme; and
- Council have noted preference for a secondary access point (at Lorne Street).

Important information about your report

In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. The Report may only be used and relied on by the Client for the purpose set out in the Report. Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, is the responsibility of the Client or such third parties.

The services undertaken by pitt&sherry in connection with preparing the Report were limited to those specifically detailed in the report and are subject to the restrictions, limitations and exclusions set out in the Report. The Report's accuracy is limited to the time period and circumstances existing at the time the Report was prepared. The opinions, conclusions and any recommendations in the Report are based on conditions encountered and information reviewed at the date of preparation of the Report. pitt&sherry has no responsibility or obligation to update the Report to account for events or changes occurring after the date that the report was prepared. If such events or changes occurred after the date that the report was prepared render the Report inaccurate, in whole or in part, pitt&sherry accepts no responsibility, and disclaims any liability whatsoever for any injury, loss or damage suffered by anyone arising from or in connection with their use of, reliance upon, or decisions or actions based on the Report, in whole or in part, for whatever purpose.

Site Plans

Appendix A

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SCHEMATIC DESIGN (1:2000)

New road connection to Woolven St and onto Hobart Rd

Potential smaller lots on flatter areas of the site

Potential to retain existing trees within oversized lots

Oversize lot to accommodate BAL no build area

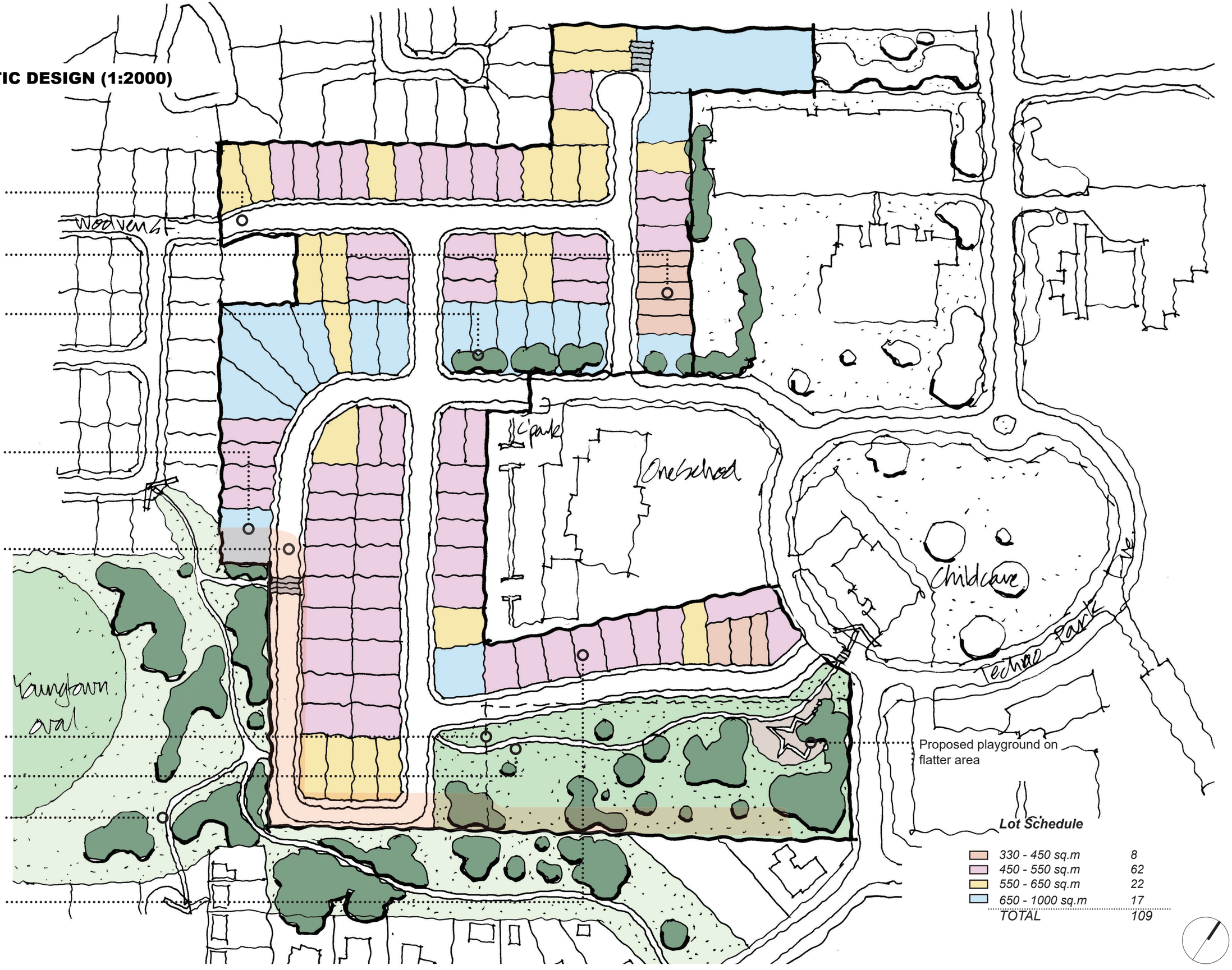
BAL 19 no build area

Dashed Line denotes no build area due to potential landslip

Create new shared path links

Path connection to Lorne St & Bus stop

Maximise passive surveillance of new open space with lot frontages



Lot Schedule

330 - 450 sq.m	8
450 - 550 sq.m	62
550 - 650 sq.m	22
650 - 1000 sq.m	17
TOTAL	109

SIDRA Modelling Results

Appendix B

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MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2023 Existing AM (Site Folder: Quarantine Road/ Techno Park Drive)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	63	2.0	66	2.0	0.091	8.6	LOS A	0.3	2.2	0.51	0.74	0.51	51.3
3	R2	61	2.0	64	2.0	0.134	12.0	LOS B	0.4	3.1	0.72	0.88	0.72	48.7
Approach		124	2.0	131	2.0	0.134	10.3	LOS B	0.4	3.1	0.61	0.81	0.61	50.0
East: Quarantine Road														
4	L2	107	2.0	113	2.0	0.062	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	495	5.0	521	5.0	0.276	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		602	4.5	634	4.5	0.276	1.1	NA	0.0	0.0	0.00	0.10	0.00	58.6
West: Quarantine Road														
11	T1	391	5.0	412	5.0	0.327	2.0	LOS A	2.3	16.5	0.32	0.22	0.38	56.9
12	R2	184	2.0	194	2.0	0.327	9.6	LOS A	2.3	16.5	0.60	0.41	0.71	52.7
Approach		575	4.0	605	4.0	0.327	4.4	NA	2.3	16.5	0.41	0.28	0.48	55.5
All Vehicles		1301	4.0	1369	4.0	0.327	3.4	NA	2.3	16.5	0.24	0.25	0.27	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2023 Existing PM (Site Folder: Quarantine Road/ Techno Park Drive)]

16:00-17:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	96	2.0	101	2.0	0.127	8.1	LOS A	0.5	3.2	0.48	0.73	0.48	51.6
3	R2	44	2.0	46	2.0	0.076	10.1	LOS B	0.3	1.8	0.63	0.85	0.63	50.0
Approach		140	2.0	147	2.0	0.127	8.7	LOS A	0.5	3.2	0.53	0.76	0.53	51.1
East: Quarantine Road														
4	L2	35	2.0	37	2.0	0.020	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	433	5.0	456	5.0	0.241	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		468	4.8	493	4.8	0.241	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
West: Quarantine Road														
11	T1	439	5.0	462	5.0	0.219	0.6	LOS A	0.5	3.8	0.13	0.06	0.13	59.0
12	R2	43	2.0	45	2.0	0.219	8.0	LOS A	0.5	3.8	0.18	0.08	0.18	56.6
Approach		482	4.7	507	4.7	0.219	1.3	NA	0.5	3.8	0.13	0.06	0.13	58.7
All Vehicles		1090	4.4	1147	4.4	0.241	1.9	NA	0.5	3.8	0.13	0.14	0.13	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2023 Development AM (Site Folder: Quarantine Road/ Techno Park Drive)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	99	2.0	104	2.0	0.144	8.7	LOS A	0.5	3.6	0.52	0.77	0.52	51.2
3	R2	97	2.0	102	2.0	0.216	12.7	LOS B	0.8	5.4	0.74	0.91	0.79	48.3
Approach		196	2.0	206	2.0	0.216	10.7	LOS B	0.8	5.4	0.63	0.84	0.65	49.7
East: Quarantine Road														
4	L2	118	2.0	124	2.0	0.068	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	495	5.0	521	5.0	0.276	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		613	4.4	645	4.4	0.276	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.5
West: Quarantine Road														
11	T1	391	5.0	412	5.0	0.334	2.1	LOS A	2.4	17.2	0.32	0.23	0.38	56.8
12	R2	190	2.0	200	2.0	0.334	9.7	LOS A	2.4	17.2	0.61	0.43	0.74	52.6
Approach		581	4.0	612	4.0	0.334	4.6	NA	2.4	17.2	0.41	0.29	0.50	55.4
All Vehicles		1390	3.9	1463	3.9	0.334	3.9	NA	2.4	17.2	0.26	0.29	0.30	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2023 Development PM (Site Folder: Quarantine Road/ Techno Park Drive)]

16:00-17:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	119	2.0	125	2.0	0.158	8.2	LOS A	0.6	4.1	0.49	0.74	0.49	51.6
3	R2	54	2.0	57	2.0	0.097	10.3	LOS B	0.3	2.3	0.64	0.85	0.64	49.8
Approach		173	2.0	182	2.0	0.158	8.9	LOS A	0.6	4.1	0.54	0.77	0.54	51.0
East: Quarantine Road														
4	L2	69	2.0	73	2.0	0.040	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	433	5.0	456	5.0	0.241	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		502	4.6	528	4.6	0.241	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.9
West: Quarantine Road														
11	T1	439	5.0	462	5.0	0.229	0.7	LOS A	0.7	5.0	0.16	0.07	0.16	58.7
12	R2	54	2.0	57	2.0	0.229	8.3	LOS A	0.7	5.0	0.23	0.10	0.23	56.3
Approach		493	4.7	519	4.7	0.229	1.6	NA	0.7	5.0	0.17	0.07	0.17	58.4
All Vehicles		1168	4.2	1229	4.2	0.241	2.3	NA	0.7	5.0	0.15	0.18	0.15	57.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2033 Development AM (Site Folder: Quarantine Road/ Techno Park Drive - 2% Growth)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	113	2.0	119	2.0	0.196	10.0	LOS A	0.7	4.9	0.59	0.83	0.59	50.3
3	R2	111	2.0	117	2.0	0.351	18.0	LOS C	1.3	9.2	0.85	0.99	1.05	45.1
Approach		224	2.0	236	2.0	0.351	14.0	LOS B	1.3	9.2	0.72	0.91	0.82	47.6
East: Quarantine Road														
4	L2	141	2.0	148	2.0	0.081	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	603	5.0	635	5.0	0.336	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		744	4.4	783	4.4	0.336	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.5
West: Quarantine Road														
11	T1	477	5.0	502	5.0	0.450	3.2	LOS A	3.9	28.3	0.35	0.24	0.51	56.0
12	R2	231	2.0	243	2.0	0.450	12.2	LOS B	3.9	28.3	0.74	0.52	1.08	50.6
Approach		708	4.0	745	4.0	0.450	6.1	NA	3.9	28.3	0.47	0.33	0.70	54.1
All Vehicles		1676	3.9	1764	3.9	0.450	5.0	NA	3.9	28.3	0.30	0.31	0.40	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2033 Development PM (Site Folder: Quarantine Road/ Techno Park Drive - 2% Growth)]

16:00-17:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	140	2.0	147	2.0	0.214	9.2	LOS A	0.8	5.5	0.55	0.81	0.55	50.8
3	R2	63	2.0	66	2.0	0.148	12.6	LOS B	0.5	3.5	0.74	0.89	0.74	48.3
Approach		203	2.0	214	2.0	0.214	10.3	LOS B	0.8	5.5	0.61	0.84	0.61	50.0
East: Quarantine Road														
4	L2	77	2.0	81	2.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	528	5.0	556	5.0	0.294	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		605	4.6	637	4.6	0.294	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.9
West: Quarantine Road														
11	T1	535	5.0	563	5.0	0.284	1.1	LOS A	1.1	7.8	0.19	0.07	0.21	58.4
12	R2	64	2.0	67	2.0	0.284	9.5	LOS A	1.1	7.8	0.27	0.10	0.29	55.9
Approach		599	4.7	631	4.7	0.284	2.0	NA	1.1	7.8	0.19	0.08	0.22	58.1
All Vehicles		1407	4.3	1481	4.3	0.294	2.7	NA	1.1	7.8	0.17	0.18	0.18	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2033 No Development AM (Site Folder: Quarantine Road/ Techno Park Drive - 2% Growth)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	77	2.0	81	2.0	0.133	9.8	LOS A	0.5	3.2	0.58	0.82	0.58	50.4
3	R2	74	2.0	78	2.0	0.230	16.3	LOS C	0.8	5.5	0.82	0.95	0.90	46.1
Approach		151	2.0	159	2.0	0.230	13.0	LOS B	0.8	5.5	0.70	0.88	0.73	48.2
East: Quarantine Road														
4	L2	130	2.0	137	2.0	0.075	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	603	5.0	635	5.0	0.336	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		733	4.5	772	4.5	0.336	1.1	NA	0.0	0.0	0.00	0.10	0.00	58.6
West: Quarantine Road														
11	T1	477	5.0	502	5.0	0.439	3.1	LOS A	3.8	27.3	0.35	0.24	0.51	56.1
12	R2	224	2.0	236	2.0	0.439	12.0	LOS B	3.8	27.3	0.72	0.50	1.05	50.9
Approach		701	4.0	738	4.0	0.439	5.9	NA	3.8	27.3	0.47	0.32	0.68	54.3
All Vehicles		1585	4.0	1668	4.0	0.439	4.4	NA	3.8	27.3	0.27	0.27	0.37	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Quarantine Road/ Techno Park Drive - 2033 No Development PM (Site Folder: Quarantine Road/ Techno Park Drive - 2% Growth)]

16:00-17:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Techno Park Drive														
1	L2	117	2.0	123	2.0	0.179	9.1	LOS A	0.6	4.5	0.54	0.81	0.54	50.9
3	R2	54	2.0	57	2.0	0.122	12.2	LOS B	0.4	2.8	0.73	0.89	0.73	48.6
Approach		171	2.0	180	2.0	0.179	10.1	LOS B	0.6	4.5	0.60	0.83	0.60	50.1
East: Quarantine Road														
4	L2	43	2.0	45	2.0	0.025	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	528	5.0	556	5.0	0.294	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		571	4.8	601	4.8	0.294	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
West: Quarantine Road														
11	T1	535	5.0	563	5.0	0.272	0.9	LOS A	0.8	5.9	0.15	0.06	0.16	58.7
12	R2	52	2.0	55	2.0	0.272	9.2	LOS A	0.8	5.9	0.21	0.08	0.23	56.3
Approach		587	4.7	618	4.7	0.272	1.6	NA	0.8	5.9	0.16	0.06	0.17	58.5
All Vehicles		1329	4.4	1399	4.4	0.294	2.2	NA	0.8	5.9	0.15	0.15	0.15	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Woolven Street - 2023 Existing AM (Site Folder: Hobart Road/ Woolven Street)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
2	T1	633	5.0	666	5.0	0.354	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	5	2.0	5	2.0	0.008	8.7	LOS A	0.0	0.2	0.50	0.64	0.50	50.7
Approach		638	5.0	672	5.0	0.354	0.2	NA	0.0	0.2	0.00	0.01	0.00	59.7
East: Woolven Street														
4	L2	11	2.0	12	2.0	0.458	17.8	LOS C	1.6	11.6	0.90	1.03	1.19	34.0
6	R2	42	2.0	44	2.0	0.458	51.7	LOS F	1.6	11.6	0.90	1.03	1.19	33.9
Approach		53	2.0	56	2.0	0.458	44.7	LOS E	1.6	11.6	0.90	1.03	1.19	33.9
North: Hobart Road														
7	L2	28	2.0	29	2.0	0.051	5.6	LOS A	0.0	0.0	0.00	0.18	0.00	56.7
8	T1	520	5.0	547	5.0	0.255	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach		548	4.8	577	4.8	0.255	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehicles		1239	4.8	1304	4.8	0.458	2.2	NA	1.6	11.6	0.04	0.06	0.05	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Woolven Street - 2023 Existing PM (Site Folder: Hobart Road/ Woolven Street)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
2	T1	627	5.0	660	5.0	0.352	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	6	2.0	6	2.0	0.013	11.1	LOS B	0.0	0.3	0.60	0.73	0.60	49.0
Approach		633	5.0	666	5.0	0.352	0.2	NA	0.0	0.3	0.01	0.01	0.01	59.6
East: Woolven Street														
4	L2	5	2.0	5	2.0	0.409	22.3	LOS C	1.3	9.2	0.94	1.02	1.14	29.3
6	R2	26	2.0	27	2.0	0.409	69.5	LOS F	1.3	9.2	0.94	1.02	1.14	29.2
Approach		31	2.0	33	2.0	0.409	61.9	LOS F	1.3	9.2	0.94	1.02	1.14	29.3
North: Hobart Road														
7	L2	52	2.0	55	2.0	0.072	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	56.2
8	T1	720	5.0	758	5.0	0.359	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		772	4.8	813	4.8	0.359	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		1436	4.8	1512	4.8	0.409	1.7	NA	1.3	9.2	0.02	0.05	0.03	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Woolven Street - 2023 Development AM (Site Folder: Hobart Road/ Woolven Street)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
2	T1	633	5.0	666	5.0	0.355	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	7	2.0	7	2.0	0.012	8.9	LOS A	0.0	0.3	0.51	0.66	0.51	50.5
Approach		640	5.0	674	5.0	0.355	0.2	NA	0.0	0.3	0.01	0.01	0.01	59.7
East: Woolven Street														
4	L2	11	2.0	12	2.0	0.475	18.9	LOS C	1.7	12.1	0.90	1.04	1.21	33.3
6	R2	42	2.0	44	2.0	0.475	54.2	LOS F	1.7	12.1	0.90	1.04	1.21	33.2
Approach		53	2.0	56	2.0	0.475	46.9	LOS E	1.7	12.1	0.90	1.04	1.21	33.3
North: Hobart Road														
7	L2	40	2.0	42	2.0	0.053	5.6	LOS A	0.0	0.0	0.00	0.25	0.00	56.1
8	T1	531	5.0	559	5.0	0.266	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach		571	4.8	601	4.8	0.266	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.4
All Vehicles		1264	4.8	1331	4.8	0.475	2.3	NA	1.7	12.1	0.04	0.07	0.05	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Woolven Street - 2023 Development PM (Site Folder: Hobart Road/ Woolven Street)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
2	T1	627	5.0	660	5.0	0.352	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	10	2.0	11	2.0	0.023	11.6	LOS B	0.1	0.6	0.62	0.77	0.62	48.7
Approach		637	5.0	671	5.0	0.352	0.3	NA	0.1	0.6	0.01	0.01	0.01	59.6
East: Woolven Street														
4	L2	5	2.0	5	2.0	0.441	25.2	LOS D	1.4	10.0	0.94	1.03	1.16	27.9
6	R2	26	2.0	27	2.0	0.441	76.5	LOS F	1.4	10.0	0.94	1.03	1.16	27.8
Approach		31	2.0	33	2.0	0.441	68.2	LOS F	1.4	10.0	0.94	1.03	1.16	27.8
North: Hobart Road														
7	L2	78	2.0	82	2.0	0.075	5.6	LOS A	0.0	0.0	0.00	0.35	0.00	55.3
8	T1	728	5.0	766	5.0	0.375	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
Approach		806	4.7	848	4.7	0.375	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
All Vehicles		1474	4.8	1552	4.8	0.441	1.9	NA	1.4	10.0	0.02	0.06	0.03	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Woolven Street - 2033 Development AM (Site Folder: Hobart Road/ Woolven Street)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
2	T1	772	5.0	813	5.0	0.433	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	8	2.0	8	2.0	0.016	10.1	LOS B	0.1	0.4	0.56	0.71	0.56	49.7
Approach		780	5.0	821	5.0	0.433	0.3	NA	0.1	0.4	0.01	0.01	0.01	59.6
East: Woolven Street														
4	L2	13	2.0	14	2.0	1.119	222.9	LOS F	9.7	69.3	1.00	1.69	3.82	10.6
6	R2	51	2.0	54	2.0	1.119	288.2	LOS F	9.7	69.3	1.00	1.69	3.82	10.6
Approach		64	2.0	67	2.0	1.119	274.9	LOS F	9.7	69.3	1.00	1.69	3.82	10.6
North: Hobart Road														
7	L2	47	2.0	49	2.0	0.064	5.6	LOS A	0.0	0.0	0.00	0.24	0.00	56.2
8	T1	645	5.0	679	5.0	0.322	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach		692	4.8	728	4.8	0.322	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
All Vehicles		1536	4.8	1617	4.8	1.119	11.8	NA	9.7	69.3	0.04	0.09	0.16	49.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Woolven Street - 2033 Development PM (Site Folder: Hobart Road/ Woolven Street)]

08:00-09:00
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
2	T1	764	5.0	804	5.0	0.430	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	11	2.0	12	2.0	0.034	14.7	LOS B	0.1	0.8	0.72	0.87	0.72	46.8
Approach		775	5.0	816	5.0	0.430	0.4	NA	0.1	0.8	0.01	0.01	0.01	59.5
East: Woolven Street														
4	L2	6	2.0	6	2.0	1.219	349.0	LOS F	8.7	61.7	1.00	1.51	3.26	7.1
6	R2	32	2.0	34	2.0	1.219	445.8	LOS F	8.7	61.7	1.00	1.51	3.26	7.1
Approach		38	2.0	40	2.0	1.219	430.5	LOS F	8.7	61.7	1.00	1.51	3.26	7.1
North: Hobart Road														
7	L2	90	2.0	95	2.0	0.091	5.6	LOS A	0.0	0.0	0.00	0.33	0.00	55.4
8	T1	886	5.0	933	5.0	0.455	0.2	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
Approach		976	4.7	1027	4.7	0.455	0.7	NA	0.0	0.0	0.00	0.05	0.00	59.0
All Vehicles		1789	4.8	1883	4.8	1.219	9.7	NA	8.7	61.7	0.03	0.07	0.07	51.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site 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: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Kings Meadows Link - 2023 Existing AM (Site Folder: Hobart Road/ Kings Meadows Link)]

08:00-09:00
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
1	L2	216	5.0	227	5.0	0.215	11.3	LOS B	2.6	19.3	0.52	0.69	0.52	50.5
2	T1	316	5.0	333	5.0	*0.813	29.5	LOS C	10.7	78.5	1.00	0.99	1.27	40.5
3	R2	101	5.0	106	5.0	0.593	36.3	LOS D	3.3	24.0	1.00	0.81	1.09	37.0
Approach		633	5.0	666	5.0	0.813	24.4	LOS C	10.7	78.5	0.83	0.86	0.98	42.8
East: Kings Meadows Link														
4	L2	138	5.0	145	5.0	0.442	31.0	LOS C	4.0	29.0	0.93	0.79	0.93	39.3
5	T1	283	5.0	298	5.0	*0.860	33.7	LOS C	10.3	75.1	1.00	1.04	1.43	38.7
6	R2	42	5.0	44	5.0	0.247	34.5	LOS C	1.3	9.4	0.96	0.73	0.96	37.9
Approach		463	5.0	487	5.0	0.860	33.0	LOS C	10.3	75.1	0.98	0.94	1.24	38.8
North: Hobart Road														
7	L2	52	5.0	55	5.0	0.050	9.6	LOS A	0.5	3.5	0.41	0.64	0.41	51.6
8	T1	246	5.0	259	5.0	0.453	22.6	LOS C	4.9	35.8	0.90	0.72	0.90	43.9
9	R2	142	5.0	149	5.0	*0.834	41.0	LOS D	5.1	37.3	1.00	0.97	1.49	35.4
Approach		440	5.0	463	5.0	0.834	27.0	LOS C	5.1	37.3	0.87	0.79	1.03	41.5
West: Kings Meadows Link														
10	L2	224	5.0	236	5.0	0.717	33.4	LOS C	7.2	52.3	0.99	0.88	1.14	38.0
11	T1	360	5.0	379	5.0	0.791	28.4	LOS C	8.8	63.9	0.97	0.89	1.16	41.1
12	R2	136	5.0	143	5.0	*0.798	39.7	LOS D	4.8	34.8	1.00	0.94	1.39	35.8
Approach		720	5.0	758	5.0	0.798	32.1	LOS C	8.8	63.9	0.98	0.90	1.20	39.0
All Vehicles		2256	5.0	2375	5.0	0.860	29.1	LOS C	10.7	78.5	0.92	0.87	1.11	40.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Hobart Road												
P1	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	191.4	217.2	1.13
East: Kings Meadows Link												
P2	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.0	220.5	1.14

North: Hobart Road												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	191.4	217.2	1.13
West: Kings Meadows Link												
P4	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	196.5	223.8	1.14
All Pedestrians		200	211	24.4	LOS C	0.1	0.1	0.90	0.90	193.3	219.7	1.14

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Kings Meadows Link - 2023 Existing PM (Site Folder: Hobart Road/ Kings Meadows Link)]

16:00-17:00
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
1	L2	223	5.0	235	5.0	0.227	12.5	LOS B	3.3	24.1	0.52	0.69	0.52	49.8
2	T1	284	5.0	299	5.0	*0.852	37.5	LOS D	11.7	85.4	1.00	1.02	1.35	37.2
3	R2	120	5.0	126	5.0	0.616	40.1	LOS D	4.5	32.5	1.00	0.82	1.07	35.6
Approach		627	5.0	660	5.0	0.852	29.1	LOS C	11.7	85.4	0.83	0.87	1.00	40.5
East: Kings Meadows Link														
4	L2	152	5.0	160	5.0	0.480	35.4	LOS D	5.1	37.2	0.94	0.79	0.94	37.7
5	T1	270	5.0	284	5.0	*0.810	34.9	LOS C	10.6	77.4	1.00	0.97	1.26	38.2
6	R2	45	5.0	47	5.0	0.264	39.1	LOS D	1.6	11.7	0.96	0.73	0.96	36.2
Approach		467	5.0	492	5.0	0.810	35.5	LOS D	10.6	77.4	0.98	0.89	1.12	37.8
North: Hobart Road														
7	L2	39	5.0	41	5.0	0.036	9.2	LOS A	0.4	2.8	0.37	0.62	0.37	51.8
8	T1	401	5.0	422	5.0	0.699	27.8	LOS C	10.1	73.7	0.94	0.81	0.99	41.4
9	R2	214	5.0	225	5.0	*0.799	41.7	LOS D	8.4	61.7	1.00	0.94	1.27	35.2
Approach		654	5.0	688	5.0	0.799	31.3	LOS C	10.1	73.7	0.93	0.84	1.05	39.6
West: Kings Meadows Link														
10	L2	170	5.0	179	5.0	0.466	32.4	LOS C	5.5	40.4	0.92	0.80	0.92	38.4
11	T1	292	5.0	307	5.0	0.549	26.9	LOS C	7.0	51.1	0.92	0.75	0.92	41.8
12	R2	167	5.0	176	5.0	*0.762	41.9	LOS D	6.5	47.5	1.00	0.91	1.24	35.0
Approach		629	5.0	662	5.0	0.762	32.3	LOS C	7.0	51.1	0.94	0.80	1.00	38.9
All Vehicles		2377	5.0	2502	5.0	0.852	31.8	LOS C	11.7	85.4	0.91	0.85	1.04	39.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Hobart Road												
P1	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	196.4	217.2	1.11
East: Kings Meadows Link												
P2	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	198.9	220.5	1.11

North: Hobart Road												
P3	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	196.4	217.2	1.11
West: Kings Meadows Link												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	201.5	223.8	1.11
All Pedestrians		200	211	29.3	LOS C	0.1	0.1	0.92	0.92	198.3	219.7	1.11

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Kings Meadows Link - 2023 Development AM (Site Folder: Hobart Road/ Kings Meadows Link)]

08:00-09:00
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
1	L2	216	5.0	227	5.0	0.219	11.4	LOS B	2.7	19.4	0.52	0.69	0.52	50.5
2	T1	316	5.0	333	5.0	* 0.881	35.0	LOS D	11.9	86.6	1.00	1.08	1.47	38.2
3	R2	102	5.0	107	5.0	0.599	36.4	LOS D	3.3	24.2	1.00	0.81	1.09	37.0
Approach		634	5.0	667	5.0	0.881	27.2	LOS C	11.9	86.6	0.84	0.91	1.09	41.4
East: Kings Meadows Link														
4	L2	149	5.0	157	5.0	0.437	30.1	LOS C	4.2	30.8	0.92	0.79	0.92	39.7
5	T1	305	5.0	321	5.0	* 0.850	32.4	LOS C	10.9	79.6	1.00	1.03	1.38	39.2
6	R2	46	5.0	48	5.0	0.270	34.7	LOS C	1.4	10.3	0.96	0.73	0.96	37.8
Approach		500	5.0	526	5.0	0.850	31.9	LOS C	10.9	79.6	0.97	0.93	1.20	39.2
North: Hobart Road														
7	L2	53	5.0	56	5.0	0.051	9.6	LOS A	0.5	3.6	0.41	0.64	0.41	51.6
8	T1	254	5.0	267	5.0	0.506	23.8	LOS C	5.2	38.1	0.92	0.74	0.92	43.4
9	R2	142	5.0	149	5.0	* 0.834	41.0	LOS D	5.1	37.3	1.00	0.97	1.49	35.4
Approach		449	5.0	473	5.0	0.834	27.6	LOS C	5.2	38.1	0.88	0.80	1.04	41.2
West: Kings Meadows Link														
10	L2	224	5.0	236	5.0	0.657	31.4	LOS C	6.8	50.0	0.97	0.85	1.05	38.8
11	T1	365	5.0	384	5.0	0.735	26.3	LOS C	8.4	61.5	0.96	0.85	1.07	42.1
12	R2	141	5.0	148	5.0	* 0.828	40.8	LOS D	5.0	36.8	1.00	0.97	1.47	35.4
Approach		730	5.0	768	5.0	0.828	30.6	LOS C	8.4	61.5	0.97	0.87	1.14	39.6
All Vehicles		2313	5.0	2435	5.0	0.881	29.4	LOS C	11.9	86.6	0.92	0.88	1.12	40.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Hobart Road												
P1	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	191.4	217.2	1.13
East: Kings Meadows Link												

P2	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	194.0	220.5	1.14
North: Hobart Road												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	191.4	217.2	1.13
West: Kings Meadows Link												
P4	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	196.5	223.8	1.14
All Pedestrians		200	211	24.4	LOS C	0.1	0.1	0.90	0.90	193.3	219.7	1.14

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Kings Meadows Link - 2023 Development PM (Site Folder: Hobart Road/ Kings Meadows Link)]

16:00-17:00
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 70 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
1	L2	223	5.0	235	5.0	0.230	13.0	LOS B	3.4	25.0	0.53	0.70	0.53	49.6
2	T1	284	5.0	299	5.0	* 0.852	37.5	LOS D	11.7	85.4	1.00	1.02	1.35	37.2
3	R2	122	5.0	128	5.0	0.716	42.6	LOS D	4.7	34.6	1.00	0.87	1.21	34.8
Approach		629	5.0	662	5.0	0.852	29.8	LOS C	11.7	85.4	0.83	0.88	1.03	40.2
East: Kings Meadows Link														
4	L2	160	5.0	168	5.0	0.506	35.6	LOS D	5.4	39.4	0.95	0.80	0.95	37.6
5	T1	283	5.0	298	5.0	* 0.849	37.3	LOS D	11.6	84.7	1.00	1.02	1.34	37.3
6	R2	47	5.0	49	5.0	0.322	40.6	LOS D	1.7	12.5	0.98	0.74	0.98	35.6
Approach		490	5.0	516	5.0	0.849	37.1	LOS D	11.6	84.7	0.98	0.92	1.18	37.2
North: Hobart Road														
7	L2	41	5.0	43	5.0	0.038	9.3	LOS A	0.4	2.9	0.37	0.62	0.37	51.8
8	T1	420	5.0	442	5.0	0.689	26.9	LOS C	10.4	75.8	0.93	0.80	0.97	41.9
9	R2	214	5.0	225	5.0	* 0.799	41.7	LOS D	8.4	61.7	1.00	0.94	1.27	35.2
Approach		675	5.0	711	5.0	0.799	30.5	LOS C	10.4	75.8	0.92	0.83	1.03	40.0
West: Kings Meadows Link														
10	L2	170	5.0	179	5.0	0.437	31.3	LOS C	5.4	39.5	0.90	0.79	0.90	38.8
11	T1	300	5.0	316	5.0	0.529	25.9	LOS C	7.1	51.6	0.90	0.74	0.90	42.2
12	R2	175	5.0	184	5.0	* 0.799	43.1	LOS D	7.0	50.9	1.00	0.94	1.31	34.6
Approach		645	5.0	679	5.0	0.799	32.0	LOS C	7.1	51.6	0.93	0.81	1.01	39.0
All Vehicles		2439	5.0	2567	5.0	0.852	32.0	LOS C	11.7	85.4	0.91	0.86	1.06	39.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Hobart Road												
P1	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	196.4	217.2	1.11
East: Kings Meadows Link												

P2	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	198.9	220.5	1.11
North: Hobart Road												
P3	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	196.4	217.2	1.11
West: Kings Meadows Link												
P4	Full	50	53	29.3	LOS C	0.1	0.1	0.92	0.92	201.5	223.8	1.11
All Pedestrians		200	211	29.3	LOS C	0.1	0.1	0.92	0.92	198.3	219.7	1.11

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Kings Meadows Link - 2033 Development AM (Site Folder: Hobart Road/ Kings Meadows Link - 2%)]

08:00-09:00
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 80 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
1	L2	263	5.0	277	5.0	0.256	13.2	LOS B	4.5	32.8	0.51	0.69	0.51	49.4
2	T1	385	5.0	405	5.0	* 0.852	36.4	LOS D	17.1	124.5	0.97	1.00	1.23	37.7
3	R2	124	5.0	131	5.0	0.647	45.2	LOS D	5.3	38.4	1.00	0.83	1.09	34.0
Approach		772	5.0	813	5.0	0.852	29.9	LOS C	17.1	124.5	0.82	0.87	0.96	40.2
East: Kings Meadows Link														
4	L2	149	5.0	157	5.0	0.466	38.8	LOS D	5.6	41.2	0.94	0.79	0.94	36.3
5	T1	305	5.0	321	5.0	* 0.907	48.2	LOS D	15.4	112.4	1.00	1.11	1.47	33.6
6	R2	46	5.0	48	5.0	0.360	46.5	LOS D	1.9	14.2	0.99	0.74	0.99	33.7
Approach		500	5.0	526	5.0	0.907	45.2	LOS D	15.4	112.4	0.98	0.98	1.27	34.3
North: Hobart Road														
7	L2	64	5.0	67	5.0	0.062	11.5	LOS B	0.9	6.5	0.42	0.64	0.42	50.5
8	T1	308	5.0	324	5.0	0.427	25.0	LOS C	7.5	54.5	0.84	0.69	0.84	42.8
9	R2	173	5.0	182	5.0	* 0.903	56.2	LOS E	8.7	63.2	1.00	1.06	1.58	30.9
Approach		545	5.0	574	5.0	0.903	33.3	LOS C	8.7	63.2	0.84	0.80	1.03	38.8
West: Kings Meadows Link														
10	L2	273	5.0	287	5.0	0.712	38.7	LOS D	11.0	80.4	0.98	0.87	1.06	36.0
11	T1	443	5.0	466	5.0	0.793	34.2	LOS C	13.7	100.3	0.97	0.88	1.09	38.6
12	R2	170	5.0	179	5.0	* 0.887	54.4	LOS D	8.3	60.7	1.00	1.03	1.53	31.3
Approach		886	5.0	933	5.0	0.887	39.4	LOS D	13.7	100.3	0.98	0.91	1.16	36.2
All Vehicles		2703	5.0	2845	5.0	0.907	36.6	LOS D	17.1	124.5	0.90	0.89	1.10	37.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Hobart Road												
P1	Full	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	201.4	217.2	1.08
East: Kings Meadows Link												

P2	Full	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	203.9	220.5	1.08
North: Hobart Road												
P3	Full	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	201.4	217.2	1.08
West: Kings Meadows Link												
P4	Full	50	53	34.3	LOS D	0.1	0.1	0.93	0.93	206.5	223.8	1.08
All Pedestrians		200	211	34.3	LOS D	0.1	0.1	0.93	0.93	203.3	219.7	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [Hobart Road/ Kings Meadows Link - 2033 Development PM (Site Folder: Hobart Road/ Kings Meadows Link - 2%)]

16:00-17:00
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND 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	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Hobart Road														
1	L2	272	5.0	286	5.0	0.278	20.8	LOS C	9.5	69.6	0.52	0.71	0.52	45.2
2	T1	346	5.0	364	5.0	* 0.974	96.6	LOS F	33.6	244.9	1.00	1.19	1.44	23.3
3	R2	148	5.0	156	5.0	0.794	80.0	LOS E	11.8	85.9	1.00	0.88	1.17	25.7
Approach		766	5.0	806	5.0	0.974	66.5	LOS E	33.6	244.9	0.83	0.96	1.06	28.8
East: Kings Meadows Link														
4	L2	193	5.0	203	5.0	0.531	64.0	LOS E	13.2	96.7	0.94	0.82	0.94	29.2
5	T1	342	5.0	360	5.0	* 0.966	95.2	LOS F	33.1	241.3	1.00	1.17	1.41	23.5
6	R2	56	5.0	59	5.0	0.493	81.8	LOS F	4.4	31.8	1.00	0.76	1.00	25.5
Approach		591	5.0	622	5.0	0.966	83.7	LOS F	33.1	241.3	0.98	1.01	1.22	25.3
North: Hobart Road														
7	L2	49	5.0	52	5.0	0.045	11.6	LOS B	1.0	6.9	0.31	0.62	0.31	50.3
8	T1	508	5.0	535	5.0	0.749	40.0	LOS D	20.7	151.5	0.81	0.70	0.82	36.5
9	R2	261	5.0	275	5.0	* 0.989	112.8	LOS F	26.1	190.4	0.96	1.08	1.52	20.9
Approach		818	5.0	861	5.0	0.989	61.5	LOS E	26.1	190.4	0.83	0.82	1.01	29.9
West: Kings Meadows Link														
10	L2	207	5.0	218	5.0	0.414	51.2	LOS D	12.7	93.0	0.85	0.80	0.85	32.1
11	T1	364	5.0	383	5.0	0.519	45.7	LOS D	16.4	119.6	0.85	0.72	0.85	34.4
12	R2	211	5.0	222	5.0	* 0.976	110.4	LOS F	20.8	151.5	1.00	1.06	1.53	21.2
Approach		782	5.0	823	5.0	0.976	64.6	LOS E	20.8	151.5	0.89	0.83	1.04	29.0
All Vehicles		2957	5.0	3113	5.0	0.989	68.1	LOS E	33.6	244.9	0.88	0.90	1.07	28.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Hobart Road												
P1	Full	50	53	69.3	LOS F	0.2	0.2	0.96	0.96	236.3	217.2	0.92
East: Kings Meadows Link												

P2	Full	50	53	69.3	LOS F	0.2	0.2	0.96	0.96	238.9	220.5	0.92
North: Hobart Road												
P3	Full	50	53	69.3	LOS F	0.2	0.2	0.96	0.96	236.3	217.2	0.92
West: Kings Meadows Link												
P4	Full	50	53	69.3	LOS F	0.2	0.2	0.96	0.96	241.4	223.8	0.93
All Pedestrians		200	211	69.3	LOS F	0.2	0.2	0.96	0.96	238.3	219.7	0.92

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

pitt&sherry

Launceston Techno Park Subdivision

Traffic Impact Assessment

Pitt & Sherry (Operations) Pty Ltd
ABN 67 140 184 309

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From: Kingston, Wendy
To: Krafft, Jeff
Subject: RE: Housing Land Supply (Kings Meadows) Order 2022 – Lot 2 Techno Park Drive, Kings Meadows
Date: Tuesday, 21 February 2023 9:34:11 AM

> You don't often get email from wendy.kingston@nre.tas.gov.au. Learn why this is important

Good morning Jeff,

Thank you for your email of 17 February 2023 in relation to correspondence on 28 October 2022 from the Department of Natural Resources and the Environment Tasmania (NRE Tas) to the State Planning Office (SPO) which outlined some potential threatened species issues in relation to the proposed Housing Land Supply (Kings Meadows) Order 2022 – Lot 2 Techno Park Drive, Kings Meadows.

I note that on 8 February 2023 you were in contact with Mary Gibbs, Section Head, Conservation Assessment and Wildlife Services, NRE Tas to seek assurance that Home Tasmania have acted appropriately on the recommendations provided in that correspondence. Mary has confirmed that the additional work that Homes Tasmania has undertaken is sufficient to ascertain that the proposed development is highly unlikely to result in a significant impact on threatened flora and fauna. NRE Tas is satisfied that Homes Tasmania has adequately addressed all of the concerns raised and will notify the SPO accordingly during the next round of consultation.

Kind regards

Tasmanian Government

Wendy Kingston (she/her)
Strategic Projects and Policy
Strategic Services
Department of Natural Resources and Environment Tasmania
Mt Pleasant Building, 165 Westbury Road, Prospect, TAS 7250
M: 0499781475
E: Wendy.Kingston@nre.tas.gov.au
W: nre.tas.gov.au

From: Krafft, Jeff <jeff.krafft@homes.tas.gov.au>
Sent: Friday, 17 February 2023 9:54 AM
To: Kingston, Wendy <Wendy.Kingston@nre.tas.gov.au>
Subject: RE: Housing Land Supply (Kings Meadows) Order 2022 – Lot 2 Techno Park Drive, Kings Meadows

Hi Wendy,

The State Planning Office (SPO) have asked Homes Tasmania to assist their response to NRE's

representation to the proposed HLSO. The representation raised two additional matters to the hollow bearing trees: 1) a resurvey at a suitable flowering time that considers the flora species within 5km of the site, and 2) the Swift Parrot foraging habitat.

Homes Tasmania commissioned a resurvey of the site that accords with NRE Guidelines for Natural Values Surveys – Terrestrial Development Proposals, and an independent Significant Impact Assessment of the swift parrot foraging habitat. The purpose of my contact was to arrange a meeting with yourself, as the author of the representation, to share the findings of this further work.

The ecological assessments undertaken by the independent consultants determined:

1. No flora species listed as threatened on the *Tasmanian Threatened Species Protection Act 1995* (TSP) and/or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC) were identified during the field survey. And as no threatened flora or fauna species were recorded, no additional approvals are required in that regard; and
2. Based on the results of the significant impact assessment, the proposed development is highly unlikely to result in a significant impact to swift parrots.

Given we have resolved the hollow bearing tree matter with Mary, Homes Tasmania are of the view is has satisfactorily responded to all of NRE's concerns. We also understand a second round of consultation will occur and NRE will again be invited to comment. It is our preference that NRE use that opportunity to confirm to the SPO that Homes Tasmania has adequately addressed all of the agency's concerns. Such confirmation would assist the SPO's recommendation to the Minister for Planning.

As no other environmental approvals or investigations are required from Homes Tasmania, we will operate on the above understanding unless you advise otherwise.

Kind regards,

Jeffery Krafft
Asset Planning Consultant I Homes Tasmania
(m) 0427 610 847 | jeff.krafft@homes.tas.gov.au

In recognition of the deep history and culture of this island, I acknowledge and pay my respects to all Tasmanian Aboriginal people; the past, present and emerging custodians of the Land.

From: Kingston, Wendy <Wendy.Kingston@nre.tas.gov.au>
Sent: Wednesday, 15 February 2023 2:21 PM
To: Krafft, Jeff <jeff.krafft@homes.tas.gov.au>
Subject: Housing Land Supply (Kings Meadows) Order 2022 – Lot 2 Techno Park Drive, Kings Meadows

> You don't often get email from wendy.kingston@nre.tas.gov.au. Learn why this is important

I have contacted Mary Gibbs and she supplied the emails that she has exchanged with you. She

did not indicate a need to meet given her comprehensive response. What in the October 2022 NRE Tas letter to the State Planning Office is of most concern to you?

Kind regards

Tasmanian Government

Wendy Kingston (she/her)
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