Attachment 5 - 574 Meander Valley Road Prospect
Traffic Impact Assessment
(Pages = 52)

Agri Park Industrial Subdivision - 574 Meander Valley Road, Prospect

Traffic Impact Assessment

CG140807

Prepared for
Grubb Consulting Group

4 June 2015

Cardno
Shaping the Future

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1 Introduction

Cardno was retained by Grubb Consulting Group to undertake a traffic impact assessment of the proposed rezoning and subdivision of the land at 574 Meander Valley Road, Prospect for the purposes an agricultural industrial estate.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the subdivision prepared by 6ty Pty Ltd (Drawing No. P01 Rev A, 12th December 2014) examined and traffic volume data for the Prospect Interchange and surrounding intersections collected and analysed.

The following assessment has been prepared having consideration of the Department of State Growth Traffic Impact Assessment (TIA) Guidelines.

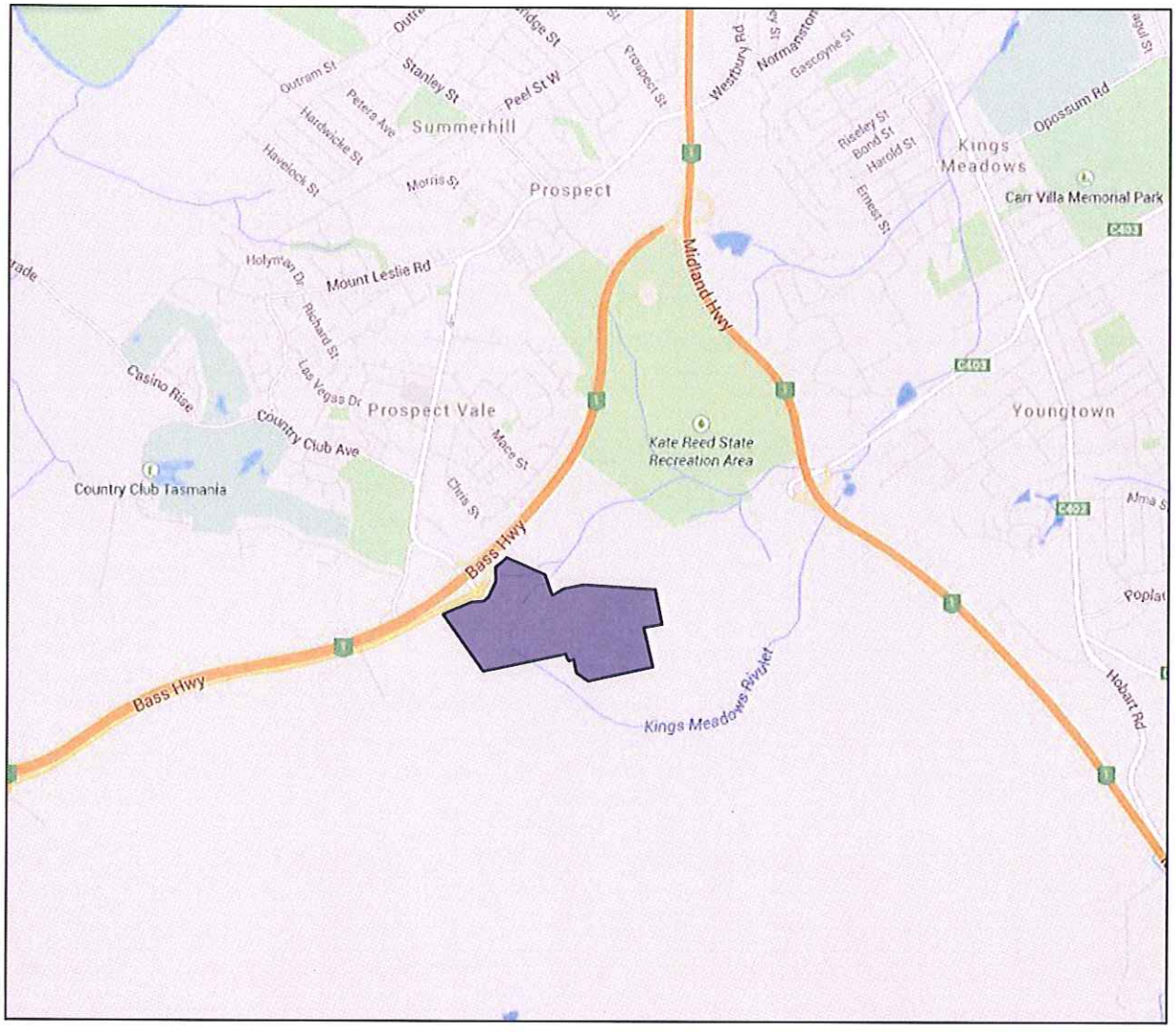
2 Existing Conditions

2.1 Site and Surrounds

The subject land is located to the immediate east of the Bass Highway Prospect interchange, as shown in Figure 2-1. The land has frontages to the Bass Highway Prospect interchange and Meander Valley Road and forms part of a larger rural land holding that is largely steep bushland. A single dwelling is located towards the south west corner of the land, with vehicle access via a rural standard gravel driveway to Meander Valley Road south of the interchange roundabout.

Rural landholdings extend to the south and east of the site, with the Kate Reed State Recreation Reserve Area to the north. The Prospect Vale industrial area is to the west, across Bass Highway, with residential development further to the north-west.

Figure 2-1 Subject Land



2.2 Road Network

2.2.1 Bass Highway and Prospect Interchange

Bass Highway is a State Highway road linking Launceston with the North West Coast. In the vicinity of the subject land the Highway is constructed as a duplicated freeway standard road with two traffic lanes in each direction and sealed shoulders.

The Prospect interchange provides access to the Highway from the subject land and Prospect Vale to the west, with the interchange comprised of:

- Southbound on and off-ramps linking to the north of the Meander Valley Road roundabout on the east side of the interchange;
- A two-lane, two way overpass of the Highway from this roundabout as the continuation of Meander Valley Road to Westbury Road;
- A northbound on-ramp from Meander Valley Road immediately west of the overpass; and
- A northbound off-ramp as the southern extent of Westbury Road.

The interchange configuration requires all exiting northbound vehicles to travel along the southern section of Westbury Road and through the Westbury Road / Meander Valley Road intersection prior to continuing north to Prospect Vale or east along Meander Valley Road towards the subject land. This intersection is constructed as a sign controlled channelised T-intersection with priority to through movements between Westbury Road north and Meander Valley Road across the interchange overpass. A protected right turn lane is provided for right turn movements from Westbury Road north to Westbury Road south. Whilst not line marked, the Westbury Road south approach is sufficiently wide to cater for independent left and right turn movements.

The northbound on-ramp from Meander Valley Road sits approximately 30 metres to the west of the Bass Highway overpass. No formal turn lanes are provided such that turning vehicles do so directly from through lanes. However the combined width of the Meander Valley Road westbound lane and adjacent shoulder is sufficient to allow through traffic to pass stationary right turn queues of up to 3 vehicles waiting to turn right to the on-ramp.

Both southbound ramps are accessed from the Meander Valley Road / Prospect interchange roundabout on the west side of Bass Highway. This roundabout includes a single circulating lane of approximately 9.0 metres and a centre island with a diameter of 30.0 metres.

2.2.2 Meander Valley Road

Meander Valley Road extends east and south from Westbury Road as a two-way arterial standard road that provides a parallel route to Bass Highway between Prospect Vale and Deloraine.

South of the interchange roundabout and along the frontage of the subject land, Meander Valley Road has a carriageway of approximately 7.0 metres, line marked as two 3.0 metre wide lanes, with unsealed shoulders and adjacent table drains. A posted speed limit of 100km/h applies.

Across the overpass and on approach to Westbury Road, Meander Valley Road continues as a sealed two way two lane road with unsealed shoulders and adjacent table drains. An isolated section of footpath is provided adjacent to the roadway on the south side of the overpass. West of the interchange roundabout a 60 km/h posted speed limit applies.

Figure 2-2 Meander Valley Road, south of Prospect interchange, along the subject land frontage

Figure 2-3 Meander Valley Road, west of the Prospect interchange overpass

2.2.3 Westbury Road

Westbury Road functions as the primary collector road for the Prospect and Prospect Vale area, linking the Prospect interchange to Wellington Street in South Launceston.

To both the north and south of the intersection with Meander Valley Road, Westbury Road has an urban standard carriageway of 12.5-13.0 metres configured as a single lane in each direction with unrestricted kerbside parallel parking permitted away from intersection. A posted speed limit of 60 km/h applies.

Figure 2-4 Westbury Road, north of the Meander Valley Road / Westbury Road intersection

Figure 2-5 Westbury Road south from the Meander Valley Road / Westbury Road intersection

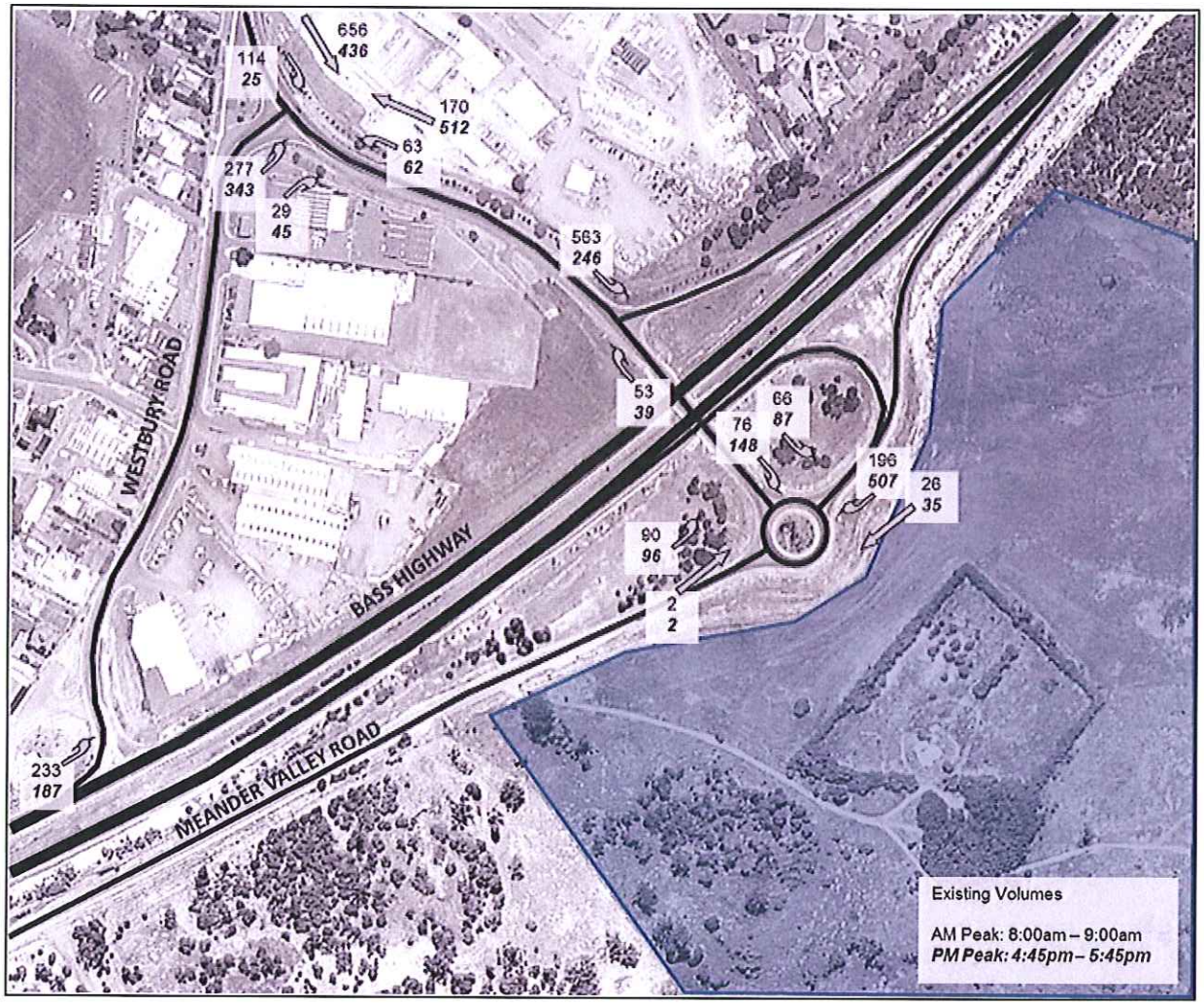
2.3 Traffic Volumes

To determine current road network traffic volumes, a series of peak period turning movement counts were undertaken on Thursday 23rd October 2014 at the following intersections:

- Meander Valley Road / Prospect interchange roundabout;
- Meander Valley Road / Bass Highway northbound on-ramp;
- Westbury Road / Meander Valley Road; and
- Bass Highway northbound off-ramp / Westbury Road south.

Peak volumes, recorded from 8:00-9:00am and 4:45-5:45pm, are summarised and presented in Figure 2-6.

Figure 2-6 Existing Peak Hour Traffic Volumes



Extrapolating these counts, estimated road network daily volumes are presented in Table 2-1.

Table 2-1 Existing Daily Traffic Volumes (estimated)

Road	Daily Two-way (estimated)
Westbury Road South	4,750
Meander Valley Road (Westbury to Northbound On-ramp)	9,800
Meander Valley Road (Overpass)	6,350
Meander Valley Road (South of interchange roundabout)	2,400

2.4 Sustainable Transport

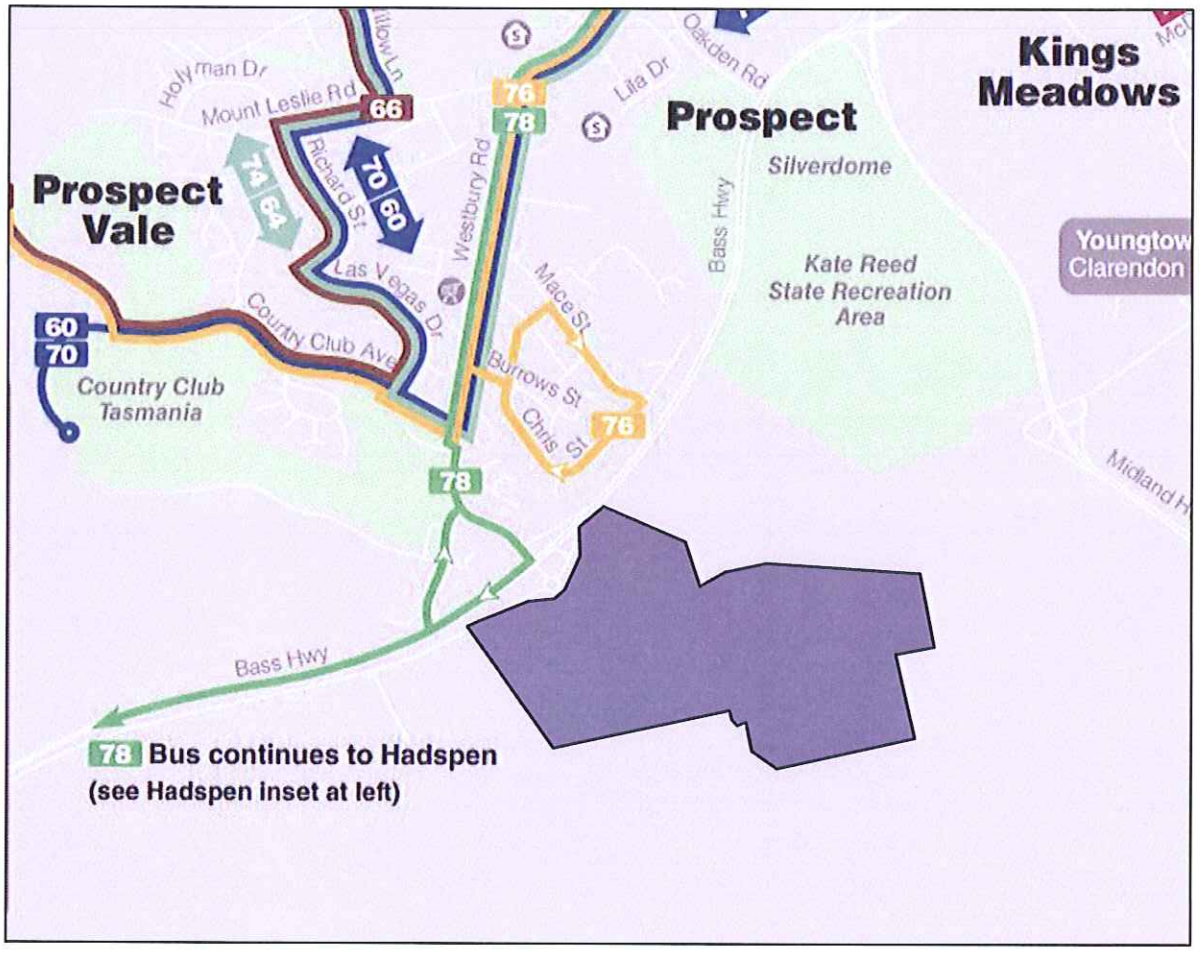
2.4.1 Public Transport

Metro bus route 78 from Hadspen to Launceston City extends along Westbury Road and Bass Highway in the vicinity of the site, with routes 60/70, 64/74 and 76 extending along Westbury Road further north before turning through Country Club Avenue.

Route 78 services run approximately every hour between 7:00am and 7:00pm weekdays, with limited services on Saturdays. The closest stops for this service are approximately 500 metres from the subject land and are located on Westbury Road approximately 30 metres south of Donalds Avenue (southbound) and immediately north of Harley Parade (northbound) .

Existing bus routes are shown in Figure 2-7.

Figure 2-7 Bus Routes



2.4.2 Bicycle Access

No formal commuter bicycle routes exist in the vicinity of the site, with cyclists typically required to share road space with other vehicle traffic.

The Kate Reed State Recreation Area and abutting bushland include a number of off-road recreational bicycle tracks.

3 Future Network Improvements

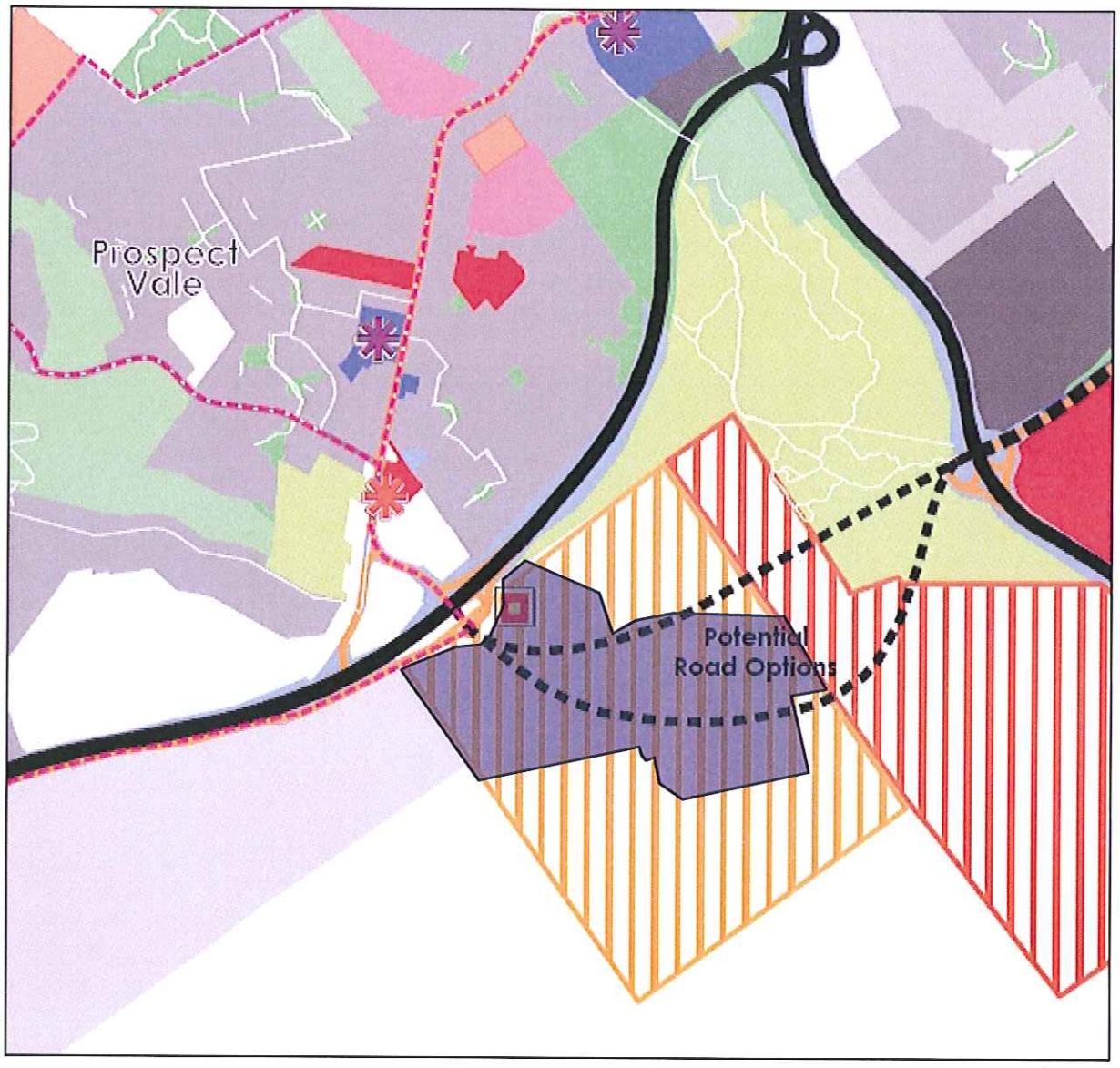
3.1 Kings Meadows Link Road Extension

As part of the Launceston Connector Route, the draft Greater Launceston Plan (GLP) identifies two potential alignment options for the extension of the Kings Meadows Link Road from the Kings Meadows / Midland Highway interchange, across the subject and adjacent land to the east, to the Prospect interchange.

Within the GLP, the Kings Meadows Link Road extension is identified as a key component of the Launceston Connector Route to provide improved arterial access between the existing Kings Meadows Link Road / Quarantine Road route and Bass Highway, avoiding the need for vehicles to unnecessarily pass through the Midland Highway / Bass Highway interchange, as well as high level access to the identified Prospect Vale regional employment node and suburban activity centre.

Potential route options in relation to the subject land are shown in Figure 3-1.

Figure 3-1 Kings Meadows Link Road Extension Route Options (Greater Launceston Plan – draft)



3.2 Westbury Road / Meander Valley Road Bicycle Route

Westbury Road and Meander Valley Road, to the east of Westbury Road and south of the Prospect interchange, are identified in the Greater Launceston Plan and The Greater Launceston Commuting Network Map as a future priority bicycle friendly route.

4 Proposal

4.1 General

The proposal seeks to rezone and subdivide the subject land to facilitate the development of an industrial park to support a range of agricultural industrial uses including manufacturing, warehousing, transport and rural and agricultural support services.

As per the plan prepared by 6ty consulting (see Figure 4-1), the land would be subdivided as four super-lot areas totalling 52.8 hectares and a primary internal road network with the potential for future applications to potentially further refine development form across each of the super lot sites.

4.2 Access and Internal Road Network

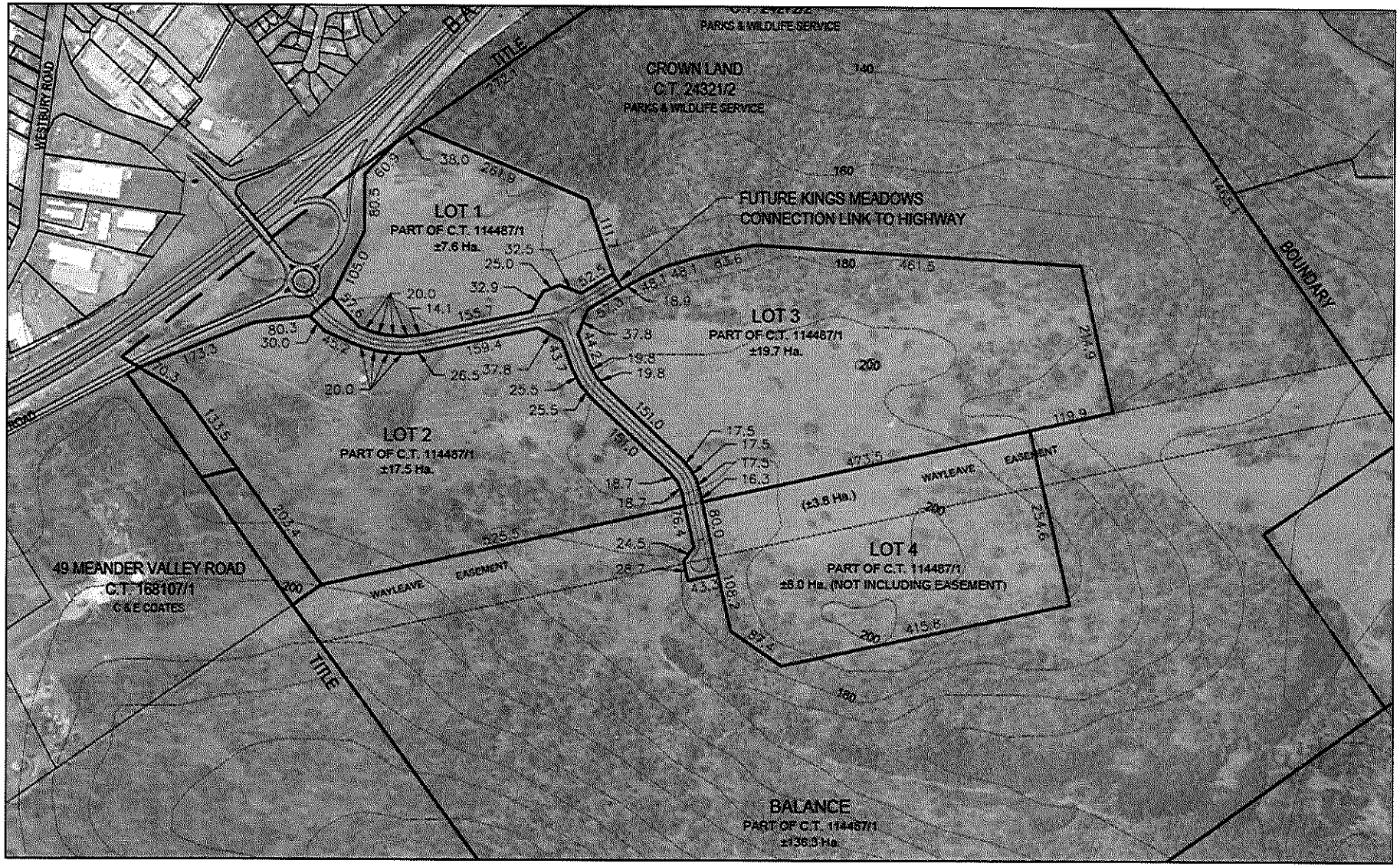
Access to the subdivision will be via a new eastern approach to the Prospect interchange roundabout.

The internal east-west subdivision road from this access is proposed as a 25.0 metre road reserve, sufficient to accommodate a single carriageway two-lane two-way connector standard road with possible on-street car parking clear of through traffic lanes. The alignment of this road is consistent with the northern potential route for the Kings Meadows Link Road extension identified within the draft Greater Launceston Plan, with adopted horizontal and vertical geometry consistent with the Austroads Guide to Road design geometric design standards for a 60km/h urban standard road. As such, the proposed subdivision does not prejudice the ability to provide the future Kings Meadows Link Road extension as identified within the Greater Launceston Plan.

The other identified north-south internal road is proposed with a road reserve of 18.0 metres, consistent with the Local Government Association of Tasmania (LGAT) urban industrial road standard cross section. Acknowledging the intersection of the identified internal roads as the logical access point to Lot 1, allowance has been made for a roundabout at this intersection should this ultimately be constructed as a four way cross intersection.

A concept plan based on a 25.0m B-double design vehicle that demonstrates the capacity of the proposed subdivision to accommodate the road network as described above is attached as Appendix A.

Figure 4-1 Proposed Subdivision



5 Traffic Impacts

5.1 Existing Road Network Operation

To assess the current operation of the Prospect Interchange and surrounding road network at the critical road network peak times, using current traffic volume data as presented in Section 2.3, the following intersections have been assessed using SIDRA Intersection:

- Meander Valley Road / Bass Highway southbound ramps (interchange roundabout);
- Meander Valley Road / Bass Highway northbound on-ramp; and
- Westbury Road / Meander Valley Road.

SIDRA Intersection, a software modelling tool originally developed by the Australian Road Research Board, provides information about the capacity of an intersection in terms of a range of parameters, as described below:

Degree of Saturation (D.O.S.) is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement. Various values of degree of saturation and their rating are shown in Table 5-1.

Table 5-1 Rating of Degrees of Saturation (DoS)

D.O.S.	Rating
Up to 0.6	Excellent
0.6 to 0.7	Very Good
0.7 to 0.8	Good
0.8 to 0.9	Fair
0.9 to 1.0	Poor
Above 1.0	Very Poor

It is considered acceptable for some critical movements in an intersection to operate in the range of 0.9 to 1.0 during the high peak periods, reflecting actual conditions in a significant proportion of suburban signalised intersections.

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

Average Delay is the delay time, in seconds, which can be expected over all vehicles making a particular movement in the peak hour.

The results of the SIDRA Intersection analysis are summarised in Table 5-2 through Table 5-4 and show that movements across all intersections operate under excellent conditions and that vehicle queues and delays, at no more than 20 metres and 12 seconds for any movement, are minor.

Table 5-2 Westbury / Meander Valley Intersection Operation (existing)

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Westbury Road (S)	L	0.20	7	6	0.37	14	9
	R	0.07	2	12	0.12	3	13
Meander Valley Rd (E)	L	0.13	0	6	0.31	0	6
	T	0.13	0	0	0.31	0	0
Westbury Rd (N)	T	0.35	0	0	0.23	0	0
	R	0.08	3	6	0.03	1	8

Table 5-3 Prospect Interchange Northbound On-ramp Operation (existing)

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (E)	T	0.16	9	3	0.27	18	2
	R	0.16	9	10	0.27	18	9
Meander Valley Rd (W)	L	0.39	0	6	0.26	0	6
	T	0.39	0	0	0.26	0	0

Table 5-4 Prospect Interchange Roundabout Operation (existing)

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (S)	L	0.08	3	4	0.10	4	6
	T	0.08	3	4	0.10	4	6
Bass Hwy Ramps (N)	T	0.16	6	4	0.40	19	4
	R	0.16	6	10	0.40	19	10
Meander Valley Rd (W)	L	0.08	3	4	0.14	6	4
	R	0.08	3	9	0.14	6	9

5.2 Traffic Generation

The RMS (NSW) "Guide to Traffic Engineering Developments" lists the daily and peak hour traffic generation rates for industrial and warehouse developments. The Guide identifies daily traffic generation rates of 4-5 trips per 100 square metres gross floor area (GFA) and between 0.5 – 1 trip per 100 square metres GFA in the peak hour.

As identified in the RMS Guide, these rates are applicable to single standalone developments with lower rates often applicable to multiuse development where differing temporal traffic generation characteristics of a range of uses often 'soften' the traffic generation levels of the combined site.

This phenomenon is substantiated by case studies conducted by Cardno of large industrial developments. These case studies recorded daily generation rates varying between 2.9 and 4.8 movements per 100 square metres of building area, and peak hour movements varying between 0.3 and 0.5 movements per 100 square metres, with AM movements being more dominant.

Table 5-5 provides a summary of this data.

Table 5-5 Large Industrial Estates – Case Study (Cardno)

Development	Size (m2)	Trips / 100 sqm floor area	Daily Peak Hour Trips / 100 sqm floor area
Bayswater Industrial Estate	31,490	N.A.	0.5
Enterprise Park	53,300	4.8	0.5
Northcorp Industrial Park	96,000	2.9	0.3

Considering the above and that the proposal will ultimately accommodate a range of industrial uses, for the purposes of this assessment, a daily traffic rate of 4.5 vehicle movements per 100 square metres of floor area and a peak hour rate of 0.5 movements per 100 square metres of floor area has been adopted for the purposes of this assessment.

Applying these rates to the proposal based on a typical industrial estate building area of 35 percent of the developable land area (18.5 hectares), when fully developed, the proposed subdivision is expected to generate the following traffic:

- Daily – 8, 320 vehicle movements
- Peak hour – 924 vehicle movements

5.3 Traffic Distribution and Impact

With access proposed to the Prospect interchange only (alternate access may become available in the future through the development of the Kings Meadows Link Road) and considering the broader road network connections, the following traffic distribution has been adopted:

- Bass Highway North – 50 percent
- Bass Highway South – 25 percent
- Meander Valley Road South – 15 percent
- Westbury Road North – 10 percent

From the above and considering the configuration of the Prospect interchange, additional daily development traffic and expected post development midblock daily two-way volumes are shown in Table 5-6. Whilst the subject proposal will result in a substantive increase of traffic relative to existing volumes, particularly across the overpass, post development midblock daily traffic volumes remain well below the accepted upper limit of 17,000-19,000 vehicles per day for a single carriageway two-way two-lane urban road prior to which duplication is typically considered.

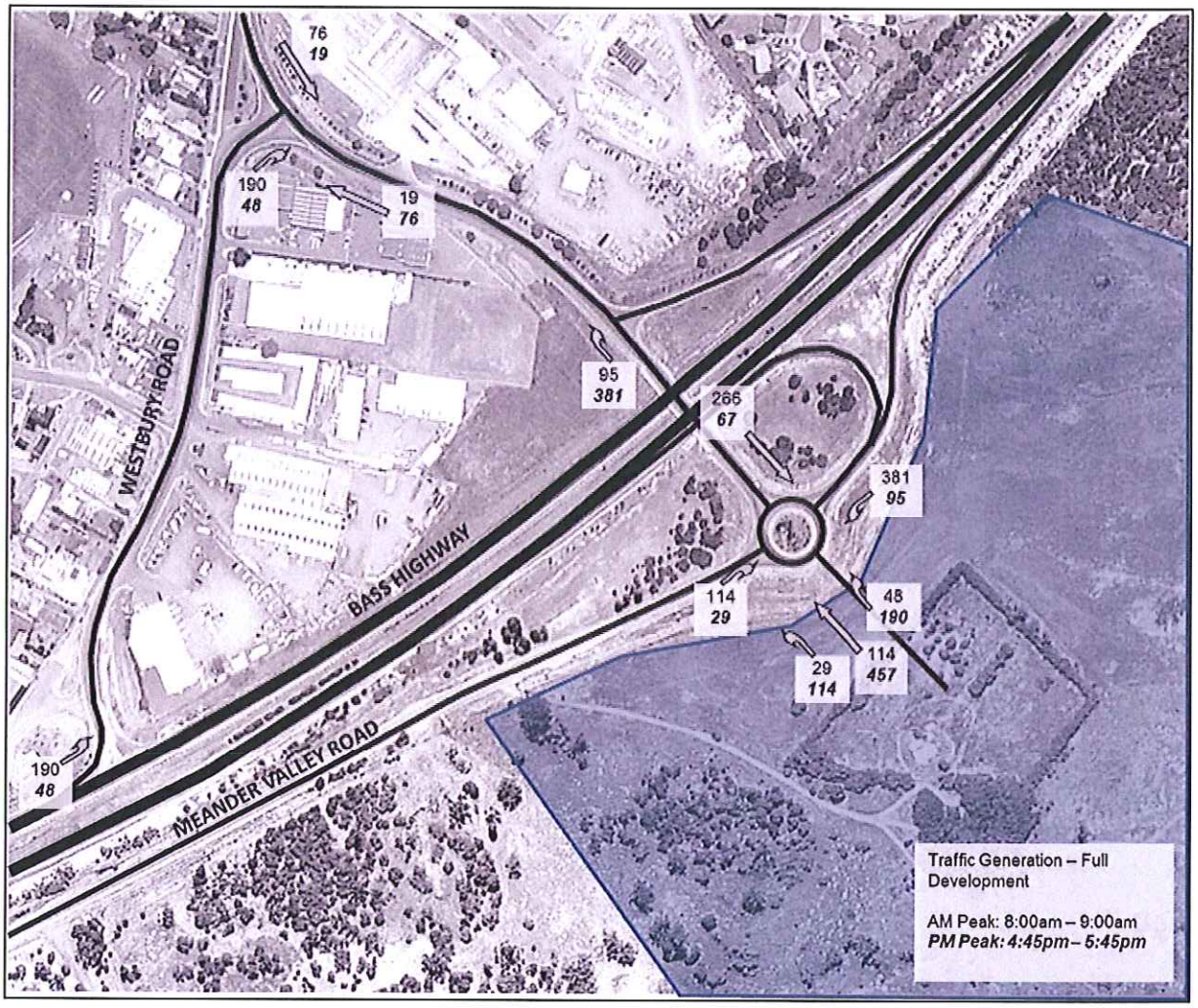
Table 5-6 Post Development Daily Traffic Volumes (vehicles per day)

Road	Existing Daily Traffic	Additional Development Traffic	Total
Westbury Road South	4,750	+1,060	5,810
Meander Valley Road (Westbury to Northbound On-ramp)	9,800	+1,880	11,680
Meander Valley Road (Overpass)	6,350	+4,010	10,360
Meander Valley Road (South of interchange roundabout)	2,400	+1,230	3,630

5.4 Intersection Operation

From the above destination distribution and applying a 20/80 split of outbound to inbound movements during the AM peak hour and the reverse in the PM peak hour, expected peak hour development generated vehicle movements through surrounding intersections are shown in Figure 5-1.

Figure 5-1 Generated Peak Hour Traffic Volumes – Full Development, Existing Road Network



5.4.2 Full Development – Existing Road Network

Adding development traffic presented in Figure 5-1 to existing peak hour traffic volumes, post development peak hour traffic volumes are presented in Figure 5-2. Summaries of analyses of the operation of the Prospect interchange intersection based on these volumes are shown in Table 5-7 through Table 5-9. These analyses show:

- Movements at the Westbury Road / Meander Valley intersection continue to operate under excellent conditions with the exception of the right turn from Westbury Road south. Post development, this movement is expected to operate under very good conditions with a degree of saturation of 0.62. Queues and delays for all movements remain minimal;
- The Meander Valley / Bass Highway on-ramp intersection also continues to operate under excellent conditions during the AM peak. During the PM peak, due to the additional right turn movements generated from the subject proposal, the Meander Valley east approach is expected to operate under fair conditions, primarily as a result of increased average delays experienced by these right turn movements. Queues will remain well clear of the interchange roundabout to the east; and

- The interchange roundabout will continue to operate under excellent conditions during both peak hours, with no material change to vehicles queues and delays for existing movements.

Figure 5-2 Post Development Peak Hour Traffic Volumes

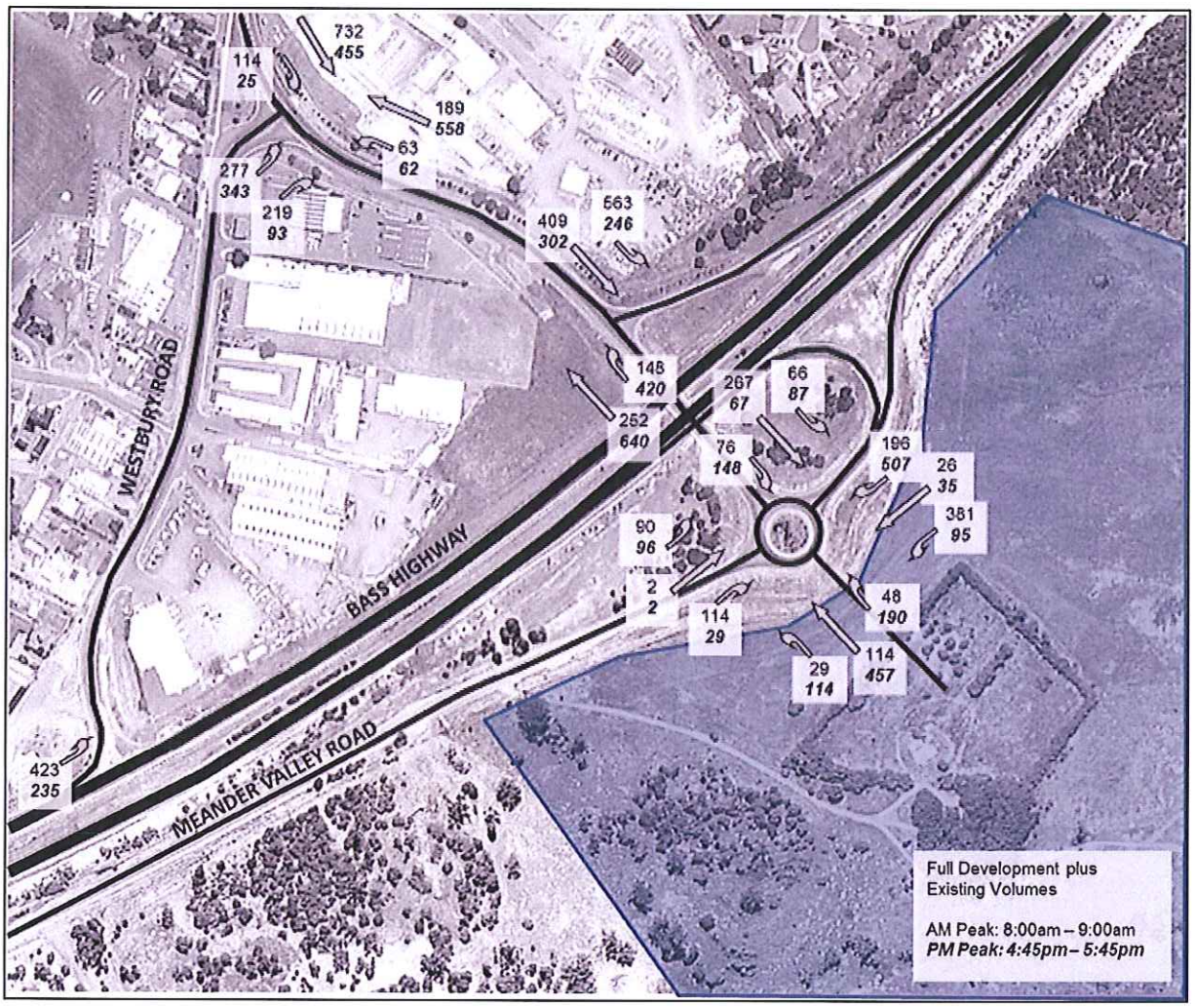


Table 5-7 Westbury / Meander Valley Intersection Operation – Post Development

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Westbury Road (S)	L	0.21	7	6	0.39	15	9
	R	0.62	21	20	0.18	4	13
Meander Valley Rd (E)	L	0.14	0	6	0.33	0	6
	T	0.14	0	0	0.33	0	0
Westbury Rd (N)	T	0.39	0	0	0.24	0	0
	R	0.08	3	7	0.03	1	8

Table 5-8 Prospect Interchange Northbound On-ramp Operation – Post Development

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (E)	T	0.37	19	4	0.87	14	100
	R	0.37	19	17	0.87	14	100
Meander Valley Rd (W)	L	0.53	0	6	0.30	0	0
	T	0.53	0	0	0.30	0	0

Table 5-9 Prospect Interchange Roundabout Operation – Post Development

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (S)	L	0.11	5	4	0.20	13	13
	T	0.11	5	4	0.20	13	13
	R	0.11	5	10	0.20	13	18
Access Road (E)	L	0.10	4	5	0.56	42	8
	T	0.10	4	4	0.56	42	8
	R	0.10	4	10	0.56	42	13
Bass Hwy Ramps (N)	L	0.35	18	5	0.32	15	4
	T	0.35	18	5	0.32	15	4
	R	0.35	18	11	0.32	15	10
Meander Valley Rd (W)	L	0.19	8	4	0.15	7	4
	T	0.19	8	4	0.15	7	4
	R	0.19	8	9	0.15	7	10

5.4.3 Full Development – Existing Traffic Volumes plus Growth

Applying a 2 percent compounded growth rate to underlying existing traffic (excluding development generated traffic) for the 10 year design period advocated within the Department of State Growth TIA guidelines, plus 10 year post development traffic volumes are shown in Figure 5-3, with intersection analyses based on these volumes presented in Table 5-10 through Table 5-12. These analyses show:

- Excluding the right turn from Westbury Road south in the AM peak hour, all vehicle movements at the Westbury Road / Meander Valley intersection continue to remain under excellent conditions. The right turn from Westbury Road south during the AM peak is expected to operate with a DoS of 0.92, reflective of the reduced right turn capacity available due to the growth applied to through movements on Meander Valley Road and Westbury Road North. However, as vehicle queues remain within the effective available storage and therefore do not impact left turns, and with average delays not excessive in comparison to that expected if this intersection were signalised, the intersection operation is considered reasonable with works to mitigate this movement not warranted;
- As a result of the applied growth the Meander Valley west approach is expected to operate under very good conditions during the AM peak hour. Right turns from Meander Valley Road east during the PM peak remain at fair conditions, with vehicle queues remaining well clear of the interchange roundabout to the east; and

- With the exception of the development access road during the PM peak, the interchange roundabout will continue to operate under excellent conditions during both peak hours. Vehicle queues on the site access approach will extend approximately 75 metres at this time. However, noting that works required on this approach to match to the interchange roundabout will limit lot access or intersection locations for a reasonable distance into the site, this queue is manageable. Vehicle queues on the Bass Highway off-ramp are expected to increase by 5 metres to 20 metres, with this having no material impact.

Figure 5-3 Post Development Peak Hour Traffic Volumes – plus 10 years (2% compound growth)

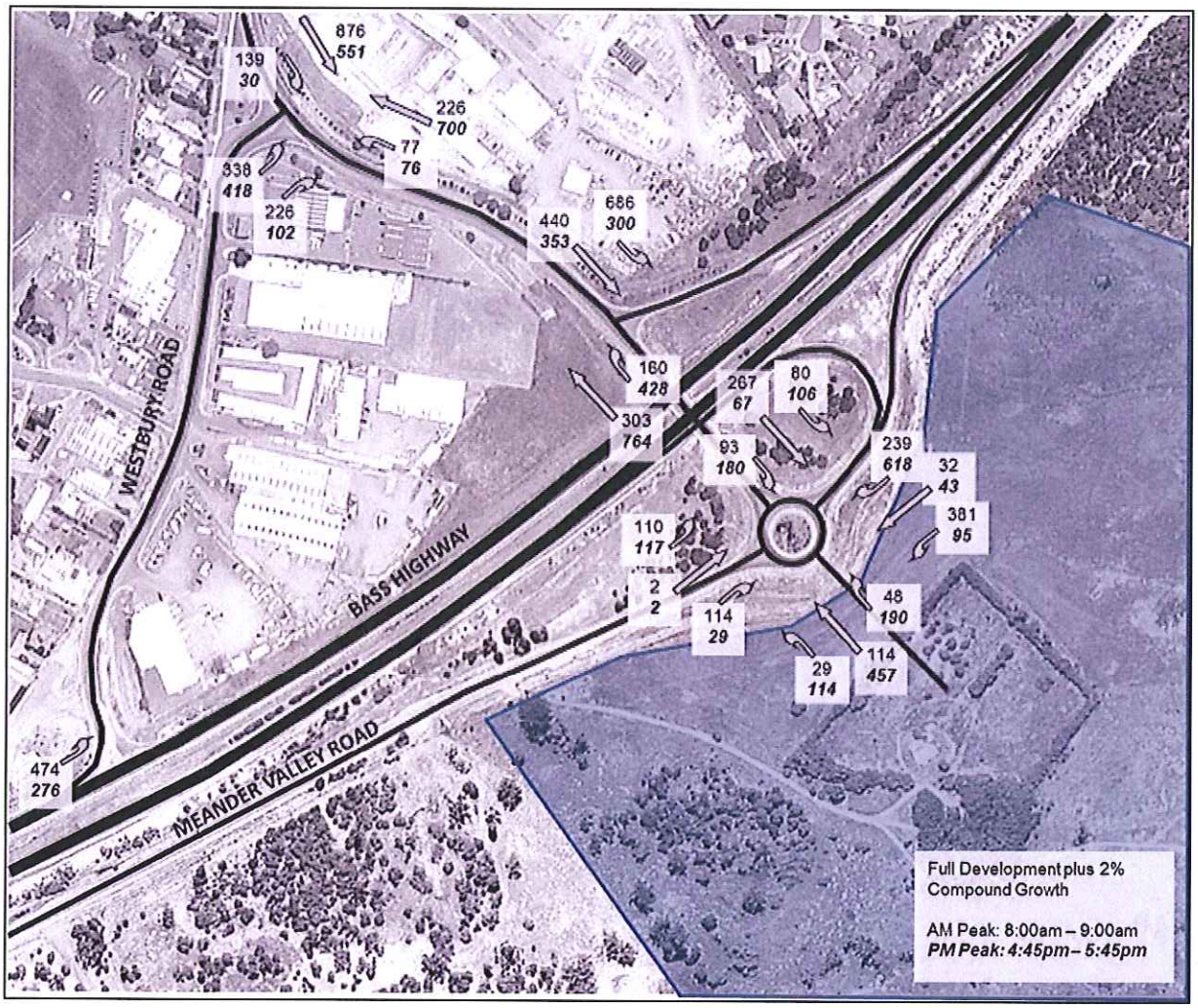


Table 5-10 Westbury / Meander Valley Intersection Operation – Post Development plus 10 years

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Westbury Road (S)	L	0.26	9	7	0.59	28	13
	R	0.91	50	50	0.41	10	22
Meander Valley Rd (E)	L	0.16	0	6	0.41	0	6
	T	0.16	0	0	0.41	0	0
Westbury Rd (N)	T	0.46	0	0	0.29	0	0
	R	0.11	4	7	0.05	1	10

Table 5-11 Prospect Interchange Northbound On-ramp Operation – Post Development plus 10 years

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (E)	T	0.55	27	3	0.75	96	7
	R	0.55	27	26	0.75	96	18
Meander Valley Rd (W)	L	0.62	0	6	0.35	0	6
	T	0.62	0	0	0.35	0	0

Table 5-12 Prospect Interchange Roundabout Operation – Post Development plus 10 years

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (S)	L	0.13	6	4	0.29	20	17
	T	0.13	6	4	0.29	20	17
	R	0.13	6	10	0.29	20	22
Access Road (E)	L	0.11	5	5	0.68	74	14
	T	0.11	5	5	0.68	74	14
	R	0.11	5	10	0.68	74	19
Bass Hwy Ramps (N)	L	0.39	21	5	0.39	20	4
	T	0.39	21	5	0.39	20	4
	R	0.39	21	11	0.39	20	10
Meander Valley Rd (W)	L	0.21	9	4	0.18	9	4
	T	0.21	9	4	0.18	9	4
	R	0.21	9	9	0.18	9	10

5.4.4 Post Future Kings Meadows Link Extension

The future Kings Meadows Link Road extension will provide additional access to the subject land and redistribute a proportion of existing traffic from the Kings Meadows area that currently travels to/from the west via the Midland Highway / Bass Highway interchange. With this link in place estimated 10 year post development peak hour traffic volumes are shown in Figure 5-4, assuming that:

- 50 percent of development generated traffic to Bass Highway north would divert to the east: and
- 30 percent of existing traffic through the interchange to/from Bass Highway north would divert through the Kings Meadows Link Extension.

Intersection analysis for the Meander Valley Road / Bass Highway on-ramp and the interchange roundabout extension suggests that, with the likely redistribution of traffic, the operation of both intersections would improve versus the post 10 year scenario without this link.

No change to the Westbury Road / Meander Valley Road intersection is expected. It is also acknowledged that this assessment does not consider additional traffic growth from other development that may use this link road.

Figure 5-4 Post Development Peak Hour Traffic Volumes – plus 10 years with Kings Meadows Link Extension

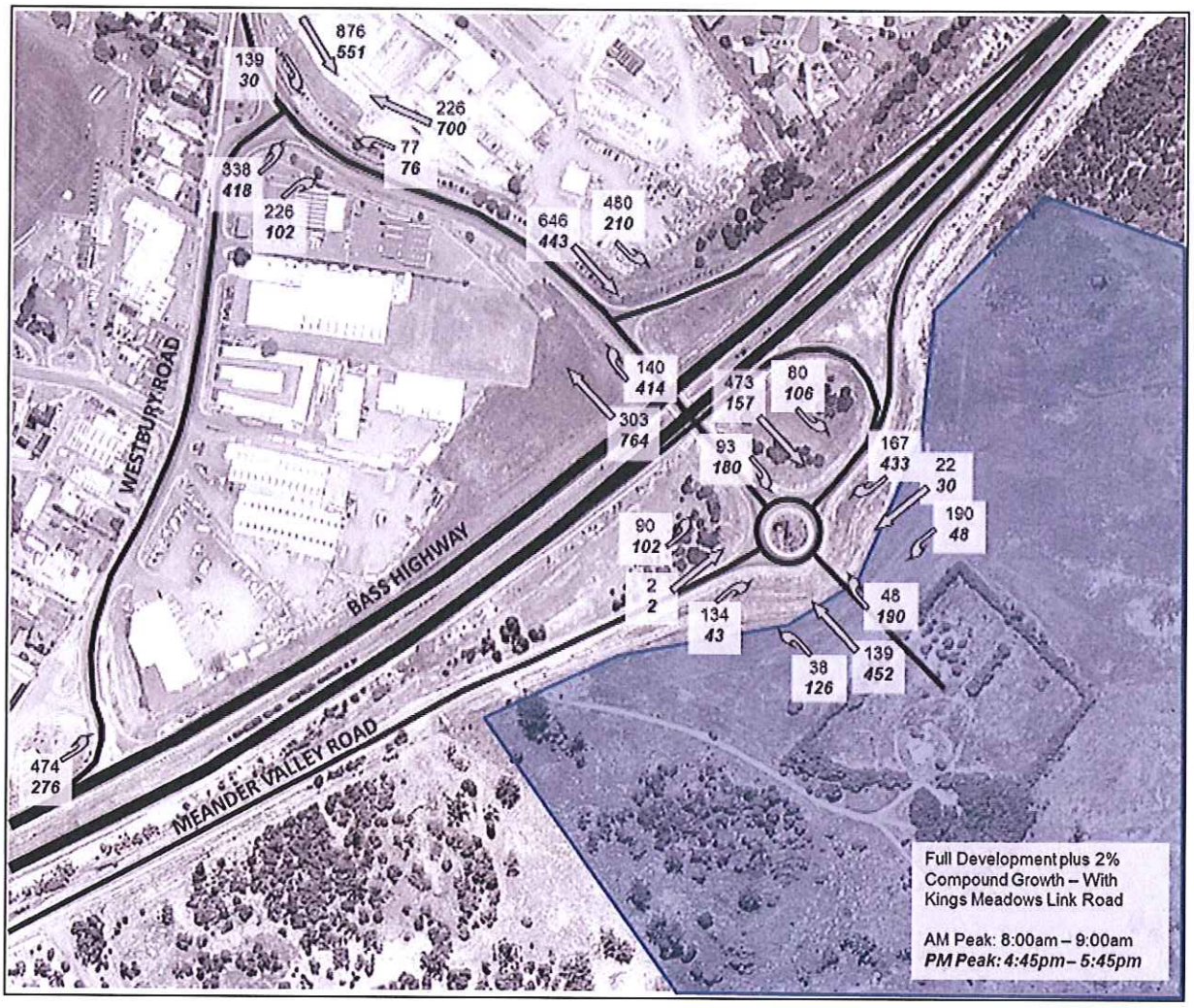


Table 5-13 Prospect Interchange Northbound On-ramp Operation – Post Development with Kings Meadows Link Road

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (E)	T	0.54	28	4	0.74	92	7
	R	0.54	28	28	0.74	92	18
Meander Valley Rd (W)	L	0.64	0	6	0.35	0	6
	T	0.64	0	0	0.35	0	0

Table 5-14 Prospect Interchange Roundabout Operation – Post Development with Kings Meadows Link Road

Approach		AM Peak			PM Peak		
		DoS	95th%ile Queue (m)	Average Delay (s)	DoS	95th%ile Queue (m)	Average Delay (s)
Meander Valley Rd (S)	L	0.12	5	4	0.20	13	11
	T	0.12	5	4	0.20	13	11
	R	0.12	5	10	0.20	13	17
Access Road (E)	L	0.12	5	5	0.55	39	7
	T	0.12	5	4	0.55	39	7
	R	0.12	5	10	0.55	39	13
Bass Hwy Ramps (N)	L	0.28	16	6	0.28	14	5
	T	0.28	16	7	0.28	14	5
	R	0.28	16	12	0.28	14	10
Meander Valley Rd (W)	L	0.31	14	4	0.23	11	4
	T	0.31	14	4	0.23	11	4
	R	0.31	14	10	0.23	11	10

5.4.5 Summary

From the above analyses, it is concluded that traffic generated from the proposed subdivision can be accommodated by the existing road network without substantive impact on the operation of the road network and without the need to undertake additional external works.

Additionally, as a result of the likely redistribution of traffic, the construction of the future Kings Meadows Link Road between the Prospect and Kings Meadows interchange would result in the improved operation of the Meander Valley Road / Bass Highway on-ramp intersection and the Prospect interchange roundabout.

6 Statutory Review

6.1 Interim Launceston Planning Scheme 2015

6.1.1 E4.0 Road and Railway Assets Code

E4.0 of the Interim Launceston Planning Scheme 2015 requires that that new land use and development demonstrates that any such proposal does not compromise the safe and efficient use of the adjacent road or rail network.

Responding to performance criteria P1 of E 4.5.1 and performance criteria P1 of E 4.6.2, considering the broad and external impacts of the proposal, the traffic impact analysis presented in Section 5 of this report clearly demonstrates the capacity of the adjacent road network to accommodate traffic generated by the proposed subdivision, including allowing for future underlying traffic volume growth over a 10 year period.

Relevant to performance criteria P1 of E 4.6.1 and E 4.6.4, as outlined in Section 4.2, the primary internal road network and access to the Prospect Interchange provided for will ensure that all future roads can be delivered in accordance with relevant design standards and LGAT requirements and does not prejudice the ability to deliver the future Kings Meadows Link Road extension as identified within the Greater Launceston Plan.

Internally, roads within the subdivision and individual site access will be delivered in conjunction with individual future land use applications, with these applications also required to consider the relevant requirements of the E4.0 at the time of application.

On the above basis it is considered that the proposed subdivision is consistent with and does not prejudice the ability for future land use applications to comply with the requirements and objectives of E4.0 of the Interim Launceston Planning Scheme 2015.

6.1.2 E6.0 Parking and Sustainable Transport Code

E6.0 of the Interim Launceston Planning Scheme 2015 seeks to ensure that new development and land use makes adequate provision for car and bicycle parking and sustainable transport through a range of use standards that specify acceptable parking, loading and pedestrian access provisions and associated design requirements.

The subject subdivision and rezoning does not include specific land use or development applications and is limited to four super-lot areas and a primary internal road network with the potential for future applications. As discussed above, the primary internal road network allows for future roads to be delivered consistent with relevant design standards and LGAT requirements, ensuring that compliance with the broader access considerations of the Car Parking and Sustainable Transport Code can be achieved.

The finer grain land use standards outlined in E6.5 and E6.6 would be resolved as part of subsequent land use applications, with it expected that each such application would be responsible for demonstrating compliance with the relevant requirements and provisions.

7 Conclusions

Based on the foregoing analysis it is concluded that;

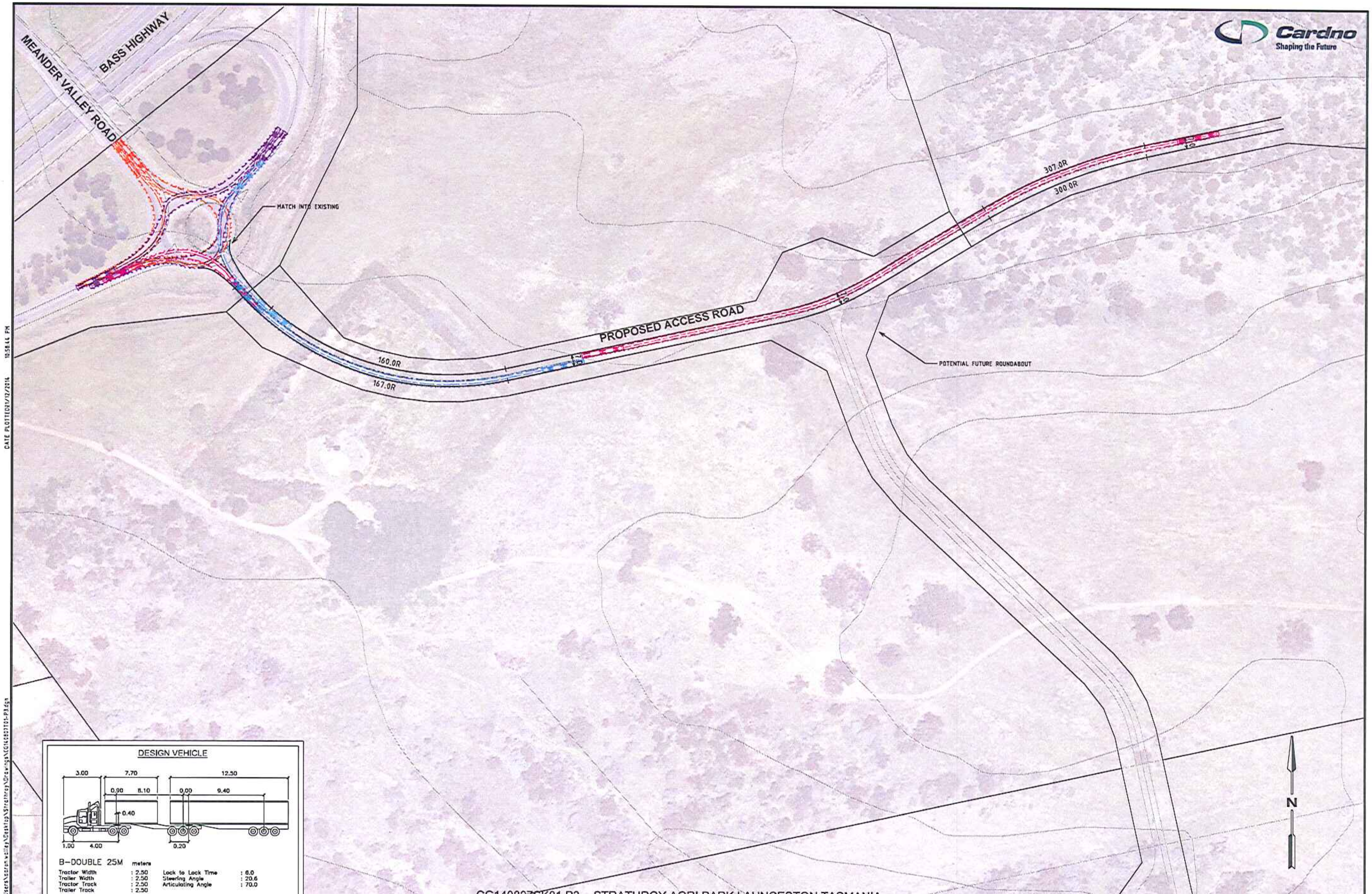
- The proposed rezoning and subdivision of the subject land will result in 52.8 hectares of developable area, equivalent to 18.5 hectares of building area at a typical yield of 35 percent;
- Access to the site will be via a fourth leg of the existing Prospect interchange roundabout. This access and the internal road network have been laid out with consideration for the future Kings Meadows Link Road extension, with road reserves and alignments allowing for a suitable future connector road cross section in accordance with the intended function of this road link;
- Based on accepted industrial use traffic generation rates, the proposed subdivision would generate in the order of 8,320 vehicle movements per day and 924 vehicle movements per hour at peak times when completed;
- From the analysis undertaken, this additional traffic can be accommodated by the existing road network without substantive impact on the operation of the road network and without the need to undertake additional external works; and
- From additional analysis, as a result of the likely redistribution of traffic, the construction of the future Kings Meadows Link Road between the Prospect and Kings Meadows interchange would result in the improved operation of the Meander Valley Road / Bass Highway on-ramp intersection and the Prospect interchange roundabout; and
- The proposed subdivision road network and access arrangements are consistent with the relevant requirements of the Interim Launceston Planning Scheme 2015.

Traffic Impact Assessment

APPENDIX A

INTERNAL ROAD CONCEPT PLAN

Cardno
Shaping the Future



CG140807SK01 P3 - STRATHROY AGRI PARK LAUNCESTON TASMANIA

PROPOSED ROAD ALIGNMENT - CONCEPT LAYOUT PLAN

SCALE - 1:2000 @ A3 DATE - 18-12-14

Traffic Impact Assessment

APPENDIX B

SIDRA INTERSECTION ANALYSIS – OUTPUT SUMMARIES

Cardno
Shaping the Future

MOVEMENT SUMMARY

▽ Site: Meander Valley / Westbury AM

AM Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Westbury Sth											
1	L2	277	5.0	0.202	6.3	LOS A	0.9	6.7	0.30	0.58	52.5
3	R2	29	5.0	0.073	12.3	LOS B	0.2	1.5	0.68	0.87	48.2
Approach		306	5.0	0.202	6.8	LOS A	0.9	6.7	0.34	0.61	52.0
East: Meander Valley											
4	L2	63	5.0	0.125	5.6	LOS A	0.0	0.0	0.00	0.16	56.7
5	T1	170	5.0	0.125	0.0	LOS A	0.0	0.0	0.00	0.16	58.5
Approach		233	5.0	0.125	1.5	NA	0.0	0.0	0.00	0.16	58.0
West: Westbury Nth											
11	T1	656	5.0	0.347	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	114	5.0	0.081	6.4	LOS A	0.4	2.7	0.35	0.59	52.2
Approach		770	5.0	0.347	1.0	NA	0.4	2.7	0.05	0.09	58.6
All Vehicles		1309	5.0	0.347	2.5	NA	0.9	6.7	0.11	0.22	56.8

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / Westbury PM

PM Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Westbury Sth											
1	L2	343	5.0	0.369	8.9	LOS A	2.0	14.3	0.59	0.86	50.9
3	R2	45	5.0	0.115	12.7	LOS B	0.3	2.5	0.69	0.88	47.9
Approach		388	5.0	0.369	9.4	LOS A	2.0	14.3	0.60	0.86	50.6
East: Meander Valley											
4	L2	62	5.0	0.306	5.6	LOS A	0.0	0.0	0.00	0.06	57.5
5	T1	512	5.0	0.306	0.0	LOS A	0.0	0.0	0.00	0.06	59.3
Approach		574	5.0	0.306	0.6	NA	0.0	0.0	0.00	0.06	59.1
West: Westbury Nth											
11	T1	436	5.0	0.231	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	25	5.0	0.027	8.1	LOS A	0.1	0.8	0.54	0.68	51.3
Approach		461	5.0	0.231	0.5	NA	0.1	0.8	0.03	0.04	59.4
All Vehicles		1423	5.0	0.369	3.0	NA	2.0	14.3	0.17	0.27	56.6

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp AM

AM Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	233	5.0	0.157	3.1	LOS A	1.2	9.0	0.47	0.15	56.2
6	R2	53	5.0	0.157	10.2	LOS B	1.2	9.0	0.67	0.22	52.4
Approach		286	5.0	0.157	4.4	NA	1.2	9.0	0.51	0.16	55.5
West: Meander Valley W											
10	L2	563	5.0	0.389	5.6	LOS A	0.0	0.0	0.00	0.46	54.2
11	T1	142	5.0	0.389	0.1	LOS A	0.0	0.0	0.00	0.46	55.8
Approach		705	5.0	0.389	4.5	NA	0.0	0.0	0.00	0.46	54.5
All Vehicles		991	5.0	0.389	4.5	NA	1.2	9.0	0.15	0.38	54.8

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp PM

PM Existing
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	564	5.0	0.271	2.2	LOS A	2.4	17.5	0.49	0.05	57.5
6	R2	39	5.0	0.271	8.6	LOS A	2.4	17.5	0.63	0.07	54.4
Approach		603	5.0	0.271	2.6	NA	2.4	17.5	0.50	0.05	57.3
West: Meander Valley W											
10	L2	246	5.0	0.262	5.6	LOS A	0.0	0.0	0.00	0.30	55.6
11	T1	235	5.0	0.262	0.0	LOS A	0.0	0.0	0.00	0.30	57.3
Approach		481	5.0	0.262	2.9	NA	0.0	0.0	0.00	0.30	56.4
All Vehicles		1084	5.0	0.271	2.7	NA	2.4	17.5	0.28	0.16	56.9

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout AM

AM Peak - Existing
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	90	5.0	0.075	4.3	LOS A	0.4	2.7	0.35	0.47	55.2
2	T1	2	5.0	0.075	4.4	LOS A	0.4	2.7	0.35	0.47	57.0
Approach		92	5.0	0.075	4.3	LOS A	0.4	2.7	0.35	0.47	55.2
North: Bass Hwy Ramps											
8	T1	26	5.0	0.156	3.8	LOS A	0.8	5.8	0.21	0.59	53.6
9	R2	196	5.0	0.156	9.6	LOS A	0.8	5.8	0.21	0.59	53.8
Approach		222	5.0	0.156	8.9	LOS A	0.8	5.8	0.21	0.59	53.8
West: Meader Valley W											
10	L2	66	5.0	0.083	3.5	LOS A	0.5	3.3	0.02	0.56	54.1
12	R2	76	5.0	0.083	9.2	LOS A	0.5	3.3	0.02	0.56	56.0
Approach		142	5.0	0.083	6.5	LOS A	0.5	3.3	0.02	0.56	55.1
All Vehicles		456	5.0	0.156	7.2	LOS A	0.8	5.8	0.18	0.55	54.5

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout PM

PM Peak - Existing
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	96	5.0	0.103	5.9	LOS A	0.6	4.3	0.60	0.62	54.2
2	T1	2	5.0	0.103	6.0	LOS A	0.6	4.3	0.60	0.62	56.0
Approach		98	5.0	0.103	5.9	LOS A	0.6	4.3	0.60	0.62	54.3
North: Bass Hwy Ramps											
8	T1	35	5.0	0.399	4.4	LOS A	2.6	19.2	0.39	0.62	52.8
9	R2	507	5.0	0.399	10.1	LOS B	2.6	19.2	0.39	0.62	53.0
Approach		542	5.0	0.399	9.7	LOS A	2.6	19.2	0.39	0.62	53.0
West: Meader Valley W											
10	L2	87	5.0	0.136	3.5	LOS A	0.9	6.2	0.03	0.58	53.7
12	R2	148	5.0	0.136	9.2	LOS A	0.9	6.2	0.03	0.58	55.6
Approach		235	5.0	0.136	7.1	LOS A	0.9	6.2	0.03	0.58	54.8
All Vehicles		875	5.0	0.399	8.6	LOS A	2.6	19.2	0.31	0.61	53.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / Westbury AM FU

Full Development
Existing Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Westbury Sth											
1	L2	277	5.0	0.206	6.4	LOS A	0.9	6.8	0.32	0.59	52.4
3	R2	219	5.0	0.620	19.6	LOS C	2.8	20.7	0.86	1.10	43.9
Approach		496	5.0	0.620	12.2	LOS B	2.8	20.7	0.56	0.82	48.3
East: Meander Valley											
4	L2	63	5.0	0.135	5.6	LOS A	0.0	0.0	0.00	0.15	56.8
5	T1	189	5.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.15	58.6
Approach		252	5.0	0.135	1.4	NA	0.0	0.0	0.00	0.15	58.2
West: Westbury Nth											
11	T1	732	5.0	0.388	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	114	5.0	0.083	6.5	LOS A	0.4	2.7	0.36	0.59	52.1
Approach		846	5.0	0.388	0.9	NA	0.4	2.7	0.05	0.08	58.7
All Vehicles		1594	5.0	0.620	4.5	NA	2.8	20.7	0.20	0.32	54.9

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / Westbury PM FU

Full Development
Existing Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Westbury Sth											
1	L2	343	5.0	0.388	9.4	LOS A	2.1	15.3	0.61	0.89	50.6
3	R2	69	5.0	0.183	13.4	LOS B	0.6	4.0	0.72	0.89	47.5
Approach		412	5.0	0.388	10.1	LOS B	2.1	15.3	0.63	0.89	50.0
East: Meander Valley											
4	L2	62	5.0	0.326	5.6	LOS A	0.0	0.0	0.00	0.06	57.5
5	T1	550	5.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.06	59.4
Approach		612	5.0	0.326	0.6	NA	0.0	0.0	0.00	0.06	59.2
West: Westbury Nth											
11	T1	446	5.0	0.236	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	25	5.0	0.029	8.4	LOS A	0.1	0.8	0.56	0.70	51.1
Approach		471	5.0	0.236	0.5	NA	0.1	0.8	0.03	0.04	59.4
All Vehicles		1495	5.0	0.388	3.2	NA	2.1	15.3	0.18	0.28	56.4

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp AM FU

Full Development
Existing Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	252	5.0	0.372	3.6	LOS A	2.6	19.2	0.31	0.22	55.6
6	R2	148	5.0	0.372	16.9	LOS C	2.6	19.2	0.95	0.70	46.4
Approach		400	5.0	0.372	8.5	NA	2.6	19.2	0.54	0.40	51.8
West: Meander Valley W											
10	L2	563	5.0	0.531	5.7	LOS A	0.0	0.0	0.00	0.34	55.1
11	T1	409	5.0	0.531	0.1	LOS A	0.0	0.0	0.00	0.34	56.8
Approach		972	5.0	0.531	3.3	NA	0.0	0.0	0.00	0.34	55.8
All Vehicles		1372	5.0	0.531	4.9	NA	2.6	19.2	0.16	0.36	54.6

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp PM FU

Full Development
Existing Volumes
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	640	5.0	0.873	5.2	LOS A	13.7	100.3	0.33	0.41	54.1
6	R2	420	5.0	0.873	19.7	LOS C	13.7	100.3	0.88	1.11	44.9
Approach		1060	5.0	0.873	10.9	NA	13.7	100.3	0.55	0.69	50.0
West: Meander Valley W											
10	L2	246	5.0	0.297	5.6	LOS A	0.0	0.0	0.00	0.26	55.8
11	T1	302	5.0	0.297	0.0	LOS A	0.0	0.0	0.00	0.26	57.6
Approach		548	5.0	0.297	2.5	NA	0.0	0.0	0.00	0.26	56.8
All Vehicles		1608	5.0	0.873	8.1	NA	13.7	100.3	0.36	0.55	52.2

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
The results of iterative calculations indicate a somewhat unstable solution. See the Diagnostics section in the Detailed Output report.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout AM FU

Full Development
Existing Volumes
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	90	5.0	0.112	4.2	LOS A	0.7	4.8	0.42	0.58	52.7
2	T1	2	5.0	0.112	4.3	LOS A	0.7	4.8	0.42	0.58	54.3
3	R2	114	5.0	0.112	10.0	LOS A	0.7	4.8	0.42	0.58	54.6
Approach		206	5.0	0.112	7.4	LOS A	0.7	4.8	0.42	0.58	53.7
East: Access											
4	L2	29	5.0	0.100	4.5	LOS A	0.6	4.2	0.38	0.50	53.1
5	T1	114	5.0	0.100	4.4	LOS A	0.6	4.2	0.38	0.50	54.9
6	R2	48	5.0	0.100	9.7	LOS A	0.6	4.2	0.38	0.50	55.1
Approach		191	5.0	0.100	5.7	LOS A	0.6	4.2	0.38	0.50	54.6
North: Bass Hwy Ramps											
7	L2	381	5.0	0.351	4.9	LOS A	2.5	18.1	0.56	0.62	53.2
8	T1	26	5.0	0.351	5.3	LOS A	2.5	18.1	0.56	0.62	54.4
9	R2	196	5.0	0.351	10.6	LOS B	2.5	18.1	0.56	0.62	54.7
Approach		603	5.0	0.351	6.8	LOS A	2.5	18.1	0.56	0.62	53.7
West: Meader Valley W											
10	L2	66	5.0	0.194	3.7	LOS A	1.1	7.7	0.27	0.44	54.5
11	T1	267	5.0	0.194	3.8	LOS A	1.1	7.7	0.27	0.44	56.2
12	R2	76	5.0	0.194	9.4	LOS A	1.1	7.7	0.27	0.44	56.1
Approach		409	5.0	0.194	4.8	LOS A	1.1	7.7	0.27	0.44	55.9
All Vehicles		1409	5.0	0.351	6.2	LOS A	2.5	18.1	0.43	0.55	54.5

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout PM FU

Full Development
Existing Volumes
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	96	5.0	0.196	12.5	LOS B	1.8	13.0	1.00	0.84	48.9
2	T1	2	5.0	0.196	12.6	LOS B	1.8	13.0	1.00	0.84	50.2
3	R2	29	5.0	0.196	18.3	LOS B	1.8	13.0	1.00	0.84	50.5
Approach		127	5.0	0.196	13.9	LOS B	1.8	13.0	1.00	0.84	49.2
East: Access											
4	L2	114	5.0	0.562	8.2	LOS A	5.8	42.3	0.85	0.82	51.0
5	T1	457	5.0	0.562	8.1	LOS A	5.8	42.3	0.85	0.82	52.6
6	R2	190	5.0	0.562	13.3	LOS B	5.8	42.3	0.85	0.82	52.9
Approach		761	5.0	0.562	9.4	LOS A	5.8	42.3	0.85	0.82	52.4
North: Bass Hwy Ramps											
7	L2	95	5.0	0.319	4.0	LOS A	2.0	14.9	0.38	0.61	51.9
8	T1	35	5.0	0.319	4.4	LOS A	2.0	14.9	0.38	0.61	53.0
9	R2	507	5.0	0.319	9.7	LOS A	2.0	14.9	0.38	0.61	53.3
Approach		637	5.0	0.319	8.5	LOS A	2.0	14.9	0.38	0.61	53.1
West: Meader Valley W											
10	L2	87	5.0	0.152	3.9	LOS A	1.0	7.1	0.37	0.54	53.1
11	T1	67	5.0	0.152	3.9	LOS A	1.0	7.1	0.37	0.54	54.8
12	R2	148	5.0	0.152	9.5	LOS A	1.0	7.1	0.37	0.54	54.6
Approach		302	5.0	0.152	6.6	LOS A	1.0	7.1	0.37	0.54	54.2
All Vehicles		1827	5.0	0.562	9.0	LOS A	5.8	42.3	0.62	0.70	52.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / Westbury AM FU

Full Development
2% Growth
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Westbury Sth											
1	L2	338	5.0	0.261	6.6	LOS A	1.2	8.9	0.37	0.61	52.3
3	R2	226	5.0	0.906	50.0	LOS F	6.8	49.8	0.98	1.61	32.1
Approach		564	5.0	0.906	24.0	LOS C	6.8	49.8	0.61	1.01	41.8
East: Meander Valley											
4	L2	77	5.0	0.163	5.6	LOS A	0.0	0.0	0.00	0.15	56.8
5	T1	226	5.0	0.163	0.0	LOS A	0.0	0.0	0.00	0.15	58.6
Approach		303	5.0	0.163	1.4	NA	0.0	0.0	0.00	0.15	58.1
West: Westbury Nth											
11	T1	876	5.0	0.464	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	139	5.0	0.107	6.7	LOS A	0.5	3.5	0.41	0.62	52.0
Approach		1015	5.0	0.464	1.0	NA	0.5	3.5	0.06	0.08	58.6
All Vehicles		1882	5.0	0.906	7.9	NA	6.8	49.8	0.21	0.37	52.3

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / Westbury PM FU

Full Development
2% Growth
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Westbury Sth											
1	L2	418	5.0	0.591	13.0	LOS B	3.9	28.4	0.75	1.07	48.2
3	R2	102	5.0	0.409	21.6	LOS C	1.4	10.2	0.86	1.01	42.9
Approach		520	5.0	0.591	14.7	LOS B	3.9	28.4	0.78	1.06	47.0
East: Meander Valley											
4	L2	76	5.0	0.413	5.6	LOS A	0.0	0.0	0.00	0.06	57.5
5	T1	700	5.0	0.413	0.1	LOS A	0.0	0.0	0.00	0.06	59.4
Approach		776	5.0	0.413	0.6	NA	0.0	0.0	0.00	0.06	59.2
West: Westbury Nth											
11	T1	551	5.0	0.292	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	30	5.0	0.045	10.0	LOS A	0.2	1.2	0.63	0.79	50.0
Approach		581	5.0	0.292	0.5	NA	0.2	1.2	0.03	0.04	59.3
All Vehicles		1877	5.0	0.591	4.5	NA	3.9	28.4	0.22	0.33	55.3

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp AM FU

Full Development
2% Growth
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	303	5.0	0.550	3.3	LOS A	3.7	27.2	0.17	0.15	56.3
6	R2	160	5.0	0.550	25.6	LOS D	3.7	27.2	1.00	0.90	41.5
Approach		463	5.0	0.550	11.0	NA	3.7	27.2	0.45	0.41	50.1
West: Meander Valley W											
10	L2	686	5.0	0.616	5.7	LOS A	0.0	0.0	0.00	0.36	55.0
11	T1	440	5.0	0.616	0.1	LOS A	0.0	0.0	0.00	0.36	56.6
Approach		1126	5.0	0.616	3.5	NA	0.0	0.0	0.00	0.36	55.6
All Vehicles		1589	5.0	0.616	5.7	NA	3.7	27.2	0.13	0.37	53.9

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp PM FU

Full Development
2% Growth
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	764	5.0	0.750	7.0	LOS A	13.1	95.5	0.55	0.41	52.6
6	R2	428	5.0	0.750	18.4	LOS C	13.1	95.5	1.00	0.75	46.0
Approach		1192	5.0	0.750	11.1	NA	13.1	95.5	0.71	0.53	50.0
West: Meander Valley W											
10	L2	300	5.0	0.354	5.6	LOS A	0.0	0.0	0.00	0.27	55.8
11	T1	353	5.0	0.354	0.0	LOS A	0.0	0.0	0.00	0.27	57.5
Approach		653	5.0	0.354	2.6	NA	0.0	0.0	0.00	0.27	56.7
All Vehicles		1845	5.0	0.750	8.1	NA	13.1	95.5	0.46	0.44	52.2

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout AM FU

Full Development
2% Growth
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	110	5.0	0.128	4.4	LOS A	0.8	5.7	0.47	0.59	52.8
2	T1	2	5.0	0.128	4.4	LOS A	0.8	5.7	0.47	0.59	54.4
3	R2	114	5.0	0.128	10.2	LOS B	0.8	5.7	0.47	0.59	54.6
Approach		226	5.0	0.128	7.3	LOS A	0.8	5.7	0.47	0.59	53.7
East: Access											
4	L2	29	5.0	0.106	4.7	LOS A	0.6	4.7	0.44	0.52	52.8
5	T1	114	5.0	0.106	4.6	LOS A	0.6	4.7	0.44	0.52	54.6
6	R2	48	5.0	0.106	9.9	LOS A	0.6	4.7	0.44	0.52	54.9
Approach		191	5.0	0.106	5.9	LOS A	0.6	4.7	0.44	0.52	54.4
North: Bass Hwy Ramps											
7	L2	381	5.0	0.385	5.1	LOS A	2.8	20.6	0.59	0.64	52.9
8	T1	32	5.0	0.385	5.4	LOS A	2.8	20.6	0.59	0.64	54.1
9	R2	239	5.0	0.385	10.7	LOS B	2.8	20.6	0.59	0.64	54.4
Approach		652	5.0	0.385	7.1	LOS A	2.8	20.6	0.59	0.64	53.5
West: Meader Valley W											
10	L2	80	5.0	0.209	3.8	LOS A	1.2	8.5	0.27	0.45	54.4
11	T1	267	5.0	0.209	3.8	LOS A	1.2	8.5	0.27	0.45	56.1
12	R2	93	5.0	0.209	9.4	LOS A	1.2	8.5	0.27	0.45	55.9
Approach		440	5.0	0.209	5.0	LOS A	1.2	8.5	0.27	0.45	55.8
All Vehicles		1509	5.0	0.385	6.4	LOS A	2.8	20.6	0.46	0.56	54.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout PM FU

Full Development
2% Growth
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	117	5.0	0.291	16.5	LOS B	2.8	20.3	1.00	0.89	46.5
2	T1	2	5.0	0.291	16.6	LOS B	2.8	20.3	1.00	0.89	47.8
3	R2	29	5.0	0.291	22.3	LOS C	2.8	20.3	1.00	0.89	48.0
Approach		148	5.0	0.291	17.7	LOS B	2.8	20.3	1.00	0.89	46.8
East: Access											
4	L2	114	5.0	0.681	13.8	LOS B	10.1	73.5	1.00	1.08	47.8
5	T1	457	5.0	0.681	13.7	LOS B	10.1	73.5	1.00	1.08	49.2
6	R2	190	5.0	0.681	18.9	LOS B	10.1	73.5	1.00	1.08	49.4
Approach		761	5.0	0.681	15.0	LOS B	10.1	73.5	1.00	1.08	49.0
North: Bass Hwy Ramps											
7	L2	95	5.0	0.388	4.2	LOS A	2.7	19.7	0.44	0.62	51.6
8	T1	43	5.0	0.388	4.6	LOS A	2.7	19.7	0.44	0.62	52.7
9	R2	618	5.0	0.388	9.8	LOS A	2.7	19.7	0.44	0.62	53.0
Approach		756	5.0	0.388	8.8	LOS A	2.7	19.7	0.44	0.62	52.8
West: Meader Valley W											
10	L2	106	5.0	0.180	3.9	LOS A	1.2	8.9	0.39	0.54	53.0
11	T1	67	5.0	0.180	3.9	LOS A	1.2	8.9	0.39	0.54	54.6
12	R2	180	5.0	0.180	9.5	LOS A	1.2	8.9	0.39	0.54	54.4
Approach		353	5.0	0.180	6.8	LOS A	1.2	8.9	0.39	0.54	54.0
All Vehicles		2018	5.0	0.681	11.4	LOS B	10.1	73.5	0.68	0.80	51.1

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp AM FU

Full Development_With Link
2% Growth
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	303	5.0	0.542	4.0	LOS A	3.8	27.7	0.18	0.15	55.7
6	R2	140	5.0	0.542	28.0	LOS D	3.8	27.7	1.00	0.85	40.4
Approach		443	5.0	0.542	11.6	NA	3.8	27.7	0.44	0.37	49.8
West: Meander Valley W											
10	L2	686	5.0	0.637	5.7	LOS A	0.0	0.0	0.00	0.35	55.0
11	T1	480	5.0	0.637	0.2	LOS A	0.0	0.0	0.00	0.35	56.7
Approach		1166	5.0	0.637	3.4	NA	0.0	0.0	0.00	0.35	55.7
All Vehicles		1609	5.0	0.637	5.7	NA	3.8	27.7	0.12	0.35	53.9

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▽ Site: Meander Valley / East Bnd On-ramp PM FU

Full Development_With Link
2% Growth
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Meander Valley E											
5	T1	764	5.0	0.736	6.8	LOS A	12.6	92.0	0.56	0.40	52.7
6	R2	414	5.0	0.736	18.0	LOS C	12.6	92.0	1.00	0.71	46.3
Approach		1178	5.0	0.736	10.8	NA	12.6	92.0	0.71	0.51	50.3
West: Meander Valley W											
10	L2	210	5.0	0.352	5.6	LOS A	0.0	0.0	0.00	0.19	56.4
11	T1	443	5.0	0.352	0.0	LOS A	0.0	0.0	0.00	0.19	58.2
Approach		653	5.0	0.352	1.8	NA	0.0	0.0	0.00	0.19	57.6
All Vehicles		1831	5.0	0.736	7.6	NA	12.6	92.0	0.46	0.40	52.7

Level of Service (LOS) Method: Delay (HCM 2000).
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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout AM FU

Full Development_With Link
2% Growth
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	90	5.0	0.123	4.2	LOS A	0.7	5.3	0.43	0.59	52.6
2	T1	2	5.0	0.123	4.3	LOS A	0.7	5.3	0.43	0.59	54.1
3	R2	134	5.0	0.123	10.0	LOS A	0.7	5.3	0.43	0.59	54.4
Approach		226	5.0	0.123	7.6	LOS A	0.7	5.3	0.43	0.59	53.6
East: Access											
4	L2	38	5.0	0.117	4.5	LOS A	0.7	5.1	0.38	0.49	53.2
5	T1	139	5.0	0.117	4.4	LOS A	0.7	5.1	0.38	0.49	55.0
6	R2	48	5.0	0.117	9.6	LOS A	0.7	5.1	0.38	0.49	55.3
Approach		225	5.0	0.117	5.5	LOS A	0.7	5.1	0.38	0.49	54.7
North: Bass Hwy Ramps											
7	L2	190	5.0	0.280	6.3	LOS A	2.2	15.7	0.73	0.71	52.1
8	T1	22	5.0	0.280	6.7	LOS A	2.2	15.7	0.73	0.71	53.3
9	R2	167	5.0	0.280	11.9	LOS B	2.2	15.7	0.73	0.71	53.5
Approach		379	5.0	0.280	8.8	LOS A	2.2	15.7	0.73	0.71	52.8
West: Meader Valley W											
10	L2	80	5.0	0.310	3.8	LOS A	1.9	13.9	0.32	0.44	54.4
11	T1	473	5.0	0.310	3.9	LOS A	1.9	13.9	0.32	0.44	56.1
12	R2	93	5.0	0.310	9.5	LOS A	1.9	13.9	0.32	0.44	56.0
Approach		646	5.0	0.310	4.7	LOS A	1.9	13.9	0.32	0.44	55.9
All Vehicles		1476	5.0	0.310	6.3	LOS A	2.2	15.7	0.45	0.54	54.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Prospect Interchange R-bout PM FU

Full Development_With Link
2% Growth
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Meander Valley S											
1	L2	102	5.0	0.199	10.7	LOS B	1.8	13.1	0.99	0.82	49.8
2	T1	2	5.0	0.199	10.8	LOS B	1.8	13.1	0.99	0.82	51.3
3	R2	43	5.0	0.199	16.5	LOS B	1.8	13.1	0.99	0.82	51.5
Approach		147	5.0	0.199	12.4	LOS B	1.8	13.1	0.99	0.82	50.3
East: Access											
4	L2	126	5.0	0.547	7.3	LOS A	5.3	38.8	0.82	0.77	51.3
5	T1	452	5.0	0.547	7.3	LOS A	5.3	38.8	0.82	0.77	52.9
6	R2	190	5.0	0.547	12.5	LOS B	5.3	38.8	0.82	0.77	53.2
Approach		768	5.0	0.547	8.6	LOS A	5.3	38.8	0.82	0.77	52.7
North: Bass Hwy Ramps											
7	L2	48	5.0	0.284	4.5	LOS A	1.9	14.0	0.50	0.64	51.3
8	T1	30	5.0	0.284	4.8	LOS A	1.9	14.0	0.50	0.64	52.4
9	R2	433	5.0	0.284	10.1	LOS B	1.9	14.0	0.50	0.64	52.7
Approach		511	5.0	0.284	9.3	LOS A	1.9	14.0	0.50	0.64	52.5
West: Meader Valley W											
10	L2	106	5.0	0.225	3.9	LOS A	1.5	10.9	0.39	0.52	53.3
11	T1	157	5.0	0.225	4.0	LOS A	1.5	10.9	0.39	0.52	55.0
12	R2	180	5.0	0.225	9.6	LOS A	1.5	10.9	0.39	0.52	54.8
Approach		443	5.0	0.225	6.2	LOS A	1.5	10.9	0.39	0.52	54.5
All Vehicles		1869	5.0	0.547	8.5	LOS A	5.3	38.8	0.65	0.68	52.9

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
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.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.