Traffix Group

Development Plan Report

Future Residential Subdivisions

Jetty Road, Curlewis: Stage 2

Prepared for
Stantec

November 2022

G21702R-04E

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1. Introduction

Traffix Group has been engaged by Stantec to prepare a report to inform the relevant traffic engineering items to be included within a Development Plan Overlay for Stage 2 of the Jetty Road Growth Area.

The Jetty Road Growth Area is generally bound by Jetty Road and Griggs Creek to the east, McDermott Road to the west, Port Phillip Bay to the north and Geelong-Portarlington Road to the south.

As part of its involvement, Traffix Group has undertaken detailed assessments to determine anticipated ultimate daily and peak hourly traffic volumes along key roads and intersections for which analysis has also been undertaken. This work has enabled us to determine the traffic impacts, ultimate non-localised intersection arrangements and road cross-sections for the development plan area (see Traffix Group report reference G21702R-03E attached at Appendix A to this report).

Traffix Group also previously prepared a Road Network and Traffic Management Plan for Stage 1 of the Jetty Road Growth Area which is now largely developed.

2. DPO Items

The following traffic engineering items are considered necessary within any future DPO for Stage 2 of the Jetty Road Growth Area based on our previous involvement with the Stage 1 development, vast experience with numerous residential subdivisions and specific findings of our recent assessments for Stage 2:

A Road Network and Traffic Management Plan that includes:

- *An appropriately designed internal road network which allows for convenient and safe access for all vehicular and non-vehicular traffic.*
- *A duplicated carriageway for Tivoli Drive and Greenvale Drive which is generally consistent with the Jetty Road Urban Growth Plan north-south collector road cross section.*
- *The provision of land to accommodate necessary splays on the west side of the future Tivoli Drive/Greenvale Drive/Coriyule Road intersection.*
- *A roundabout treatment at the intersection of Tivoli Drive, Greenvale Drive and Coriyule Road.*
- *Signalisation of the Greenvale Drive/Centennial Boulevard intersection at an appropriate time as determined by analysis which assumes the full build-out of Stage 1 of the Jetty Road Development Plan area and the relevant proportion of future growth of the Stage 2 area.*
- *Provision of traffic control treatment along Coriyule Road between Tivoli Drive/Greenvale Drive and McDermott Road to discourage the use of Coriyule Road to the west of McDermott Road.*
- *A Tivoli Drive and Greenvale Drive Early Delivery Plan that must include:*

- *Early provision of land for the widening of Tivoli Drive/Greenvale Drive to allow for early construction of the ultimate treatment.*
- *Early provision of the ultimate treatment of Tivoli Drive and Greenvale Drive that is generally consistent with the ultimate cross-section in the Jetty Road Urban Growth Plan.*
- *Completion of the ultimate treatment of Tivoli Drive and Greenvale Drive as follows:*
  - *North of Coriyule Road: Completion of the entire section between Coriyule Road and the northern boundary of the growth area as one stage of works within 12 months of the first Statement of Compliance being issued for a residential stage to the north of Coriyule Road.*
  - *Between Coriyule Road and the Bellarine Rail Trail: Completion of the entire section between the Bellarine Rail Trail and Coriyule Road as one stage of works within 12 months of the first Statement of Compliance being issued for a residential stage north of the Bellarine Rail Trail.*
  - *South of the Bellarine Rail Trail: Completion of the entire section between Portarlington Road and the Bellarine Rail Trail as one stage of works within 12 months of the first Statement of Compliance being issued for a residential stage connecting with the section of Tivoli Drive between Portarlington Road and the Bellarine Rail Trail. This should include the required upgrades to/widening of the existing Pedestrian Operated Signals that are located across Tivoli Drive at the Rail Trail.*
  - *Upgrade to the northern leg of the intersection between Portarlington Road and Tivoli Drive to lengthen the existing exclusive right-turn lane by 60m.*
  - *No direct access should be provided to future dwellings on the east side of Tivoli Drive for at least 100m north of Portarlington Road.*

A plan showing these requirements is attached at Appendix B.

Appendix A

Stage 2 Traffic Report

Traffix Group

Traffic Engineering Assessment

Future Residential Subdivisions

Jetty Road, Curlewis: Stage 2

Prepared for
Stantec

November 2022

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1. Introduction

Traffix Group has been engaged by Stantec to undertake a Traffic Engineering Assessment for the Future Residential Subdivisions which form Stage 2 of the Jetty Road Growth Area Structure Plan.

The Jetty Road Growth Area is generally bound by Jetty Road and Griggs Creek to the east, McDermott Road to the west, Port Phillip Bay to the north and Geelong-Portarlington Road to the south.

Traffix Group has previously prepared a Road Network and Traffic Management Plan for Stage 1 of the Jetty Road Growth Area Structure Plan which is now largely developed. We have also previously undertaken a Traffic Engineering Assessment for the proposed rezoning of the property at the southeast corner of Stage 2 of the development to allow for a conventional residential subdivision to be developed.

This report provides a detailed traffic engineering assessment of the traffic impacts on the surrounding road network, intersection arrangements and road cross-sections.

A copy of the development plan is attached at Appendix A.

2. Existing Conditions

2.1. Subject Site

The subject site is generally located along the east side of Tivoli Drive to the south of the Bellarine Rail Trail and the west side of Tivoli Drive/Greenvale Drive to the north of the Bellarine Rail Trail.

The site is currently occupied by rural residential dwellings and associated agricultural uses. The majority of land on the subject site is vacant.

A locality plan and aerial photograph of the subject site are presented at Figure 1 and Figure 2, respectively.

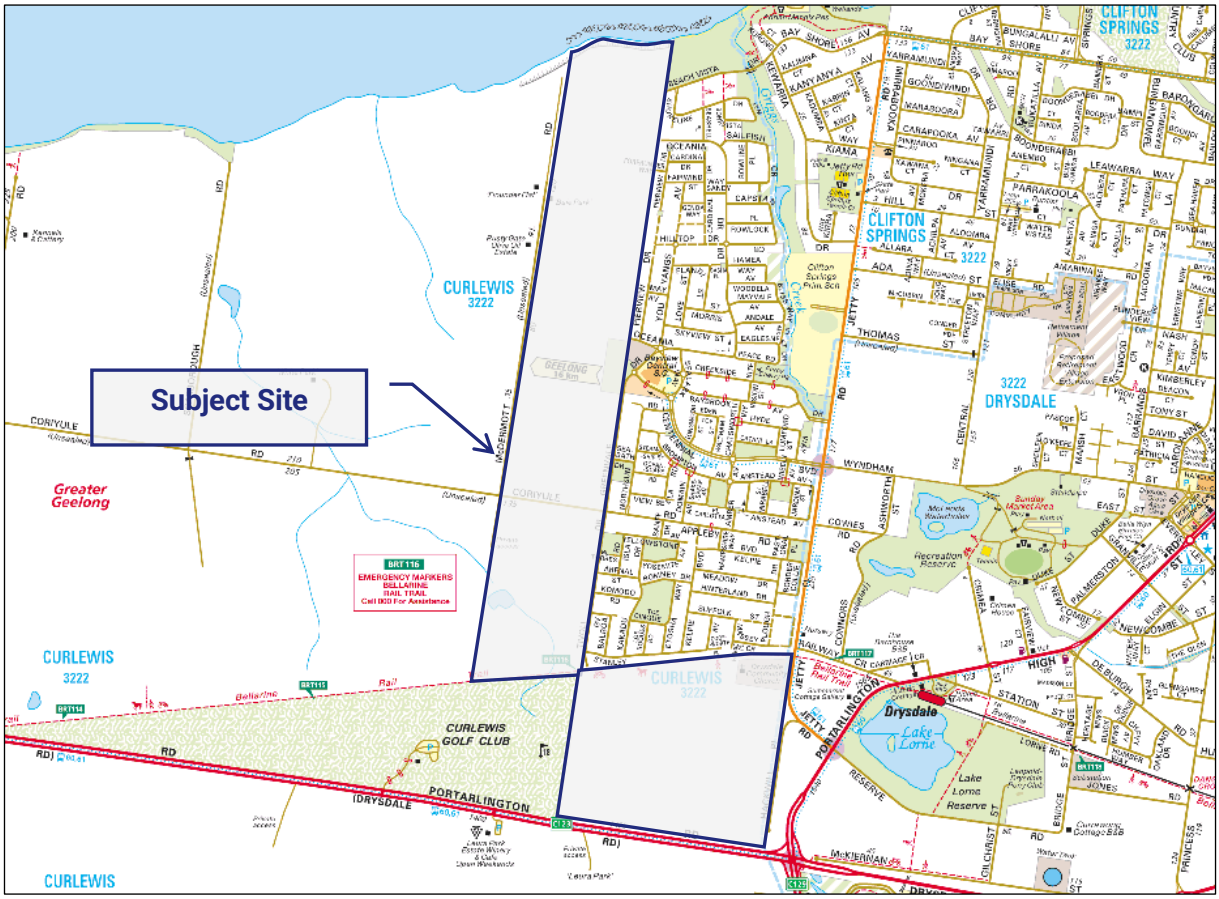

Figure 1: Locality Plan

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Figure 2: Aerial Photograph

Source: NearMap

The subject site is currently zoned 'Farming Zone (FZ)' and 'Rural Living Zone (RLZ)' under the Greater Geelong Planning Scheme, as indicated at Figure 3.

Surrounding land uses generally consist of developing residential to the east, farming to the south and west, and public conservation and resource to the north.

Key surrounding land uses include:

- Curlewis Golf Club, located immediately south/west of the subject site,
- Bayview Central Shopping Centre, located immediately east of the subject site, and
- Clifton Springs Foreshore Reserve, located to the northeast of the subject site.

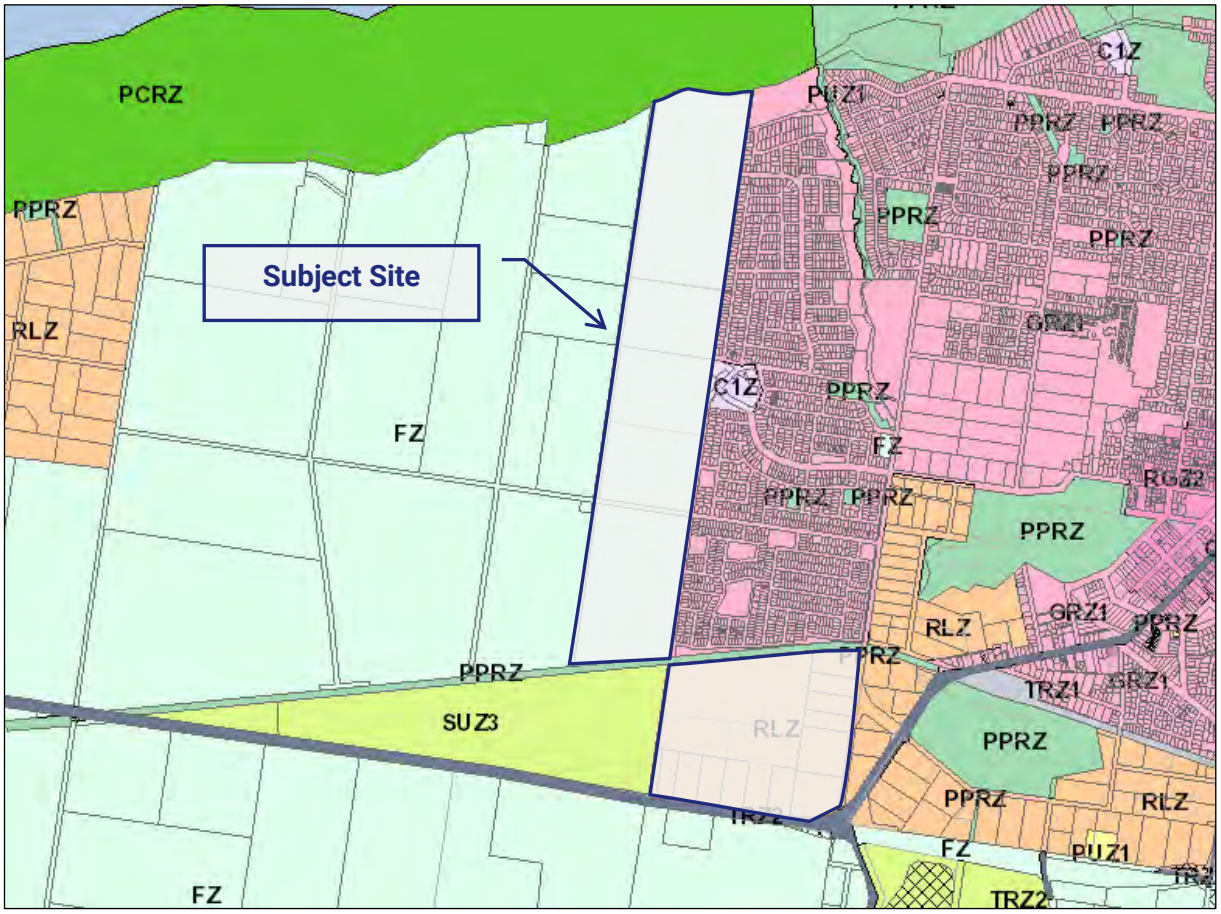


Figure 3: Land Use Zoning Map *Source: VicPlan*

2.2. Road Network

Tivoli Drive (Greenvale Drive to the north of the Bellarine Rail Trail) is a local Council road that is aligned in a general north-south direction between Oceania Drive (to the north) and Geelong-Portarlington Road (to the south).

In the vicinity of the site, Tivoli Drive generally accommodates a single traffic lane in each direction. Towards its intersection with Geelong-Portarlington Road, Tivoli Drive widens to provide a divided carriageway, bicycle lane in each direction, and kerbside parallel parking lane on the west side of the road.

A posted speed limit of 50km/h currently applies to Tivoli Drive past the site.

Pedestrian operated signals are provided across Tivoli Drive at the Bellarine Rail Trail.

Tivoli Drive, adjacent to the subject site, is presented at Figure 4 and Figure 5.

Figure 4: Tivoli Drive - view north

Figure 5: Tivoli Drive - view south

Coriyule Road is a local Council road that is aligned in a general east-west direction between Domain Avenue (to the east, where it continues as Appleby Street) and Hermsley Road (to the west).

To the east of Tivoli Drive, Coriyule Road accommodates a sealed carriageway which provides a single traffic lane and informal kerbside parallel parking in each direction.

The default urban speed limit of 50km/h currently applies to Coriyule Road to the east of the site.

To the west of Tivoli Drive, Coriyule Road currently accommodates an unsealed carriageway which is sufficiently wide to accommodate simultaneous two-way movements.

A posted speed limit of 80 km/h currently applies to Coriyule Road to the west of Tivoli Drive.

Coriyule Road, in the vicinity of the subject site, is presented at Figure 6 and Figure 7.

Figure 6: Coriyule Road (east of Tivoli Drive) - view east

Figure 7: Coriyule Road (east of Tivoli Drive) - view west

Geelong-Portarlington Road is a DoT declared arterial road that is zoned 'Transport Zone 2 (TRZ2)' under the Planning Scheme.

In the vicinity of the site, Geelong-Portarlington Road accommodates a divided carriageway with two through traffic lanes and a bicycle lane in each direction.

A posted speed limit of 80km/h applies to Geelong-Portarlington Road past the site.

Geelong-Portarlington Road, adjacent to the subject site, is presented at Figure 8 and Figure 9.

Figure 8: Geelong-Portarlington Road - view east

Figure 9: Geelong-Portarlington Road - view west

The Tivoli Drive/Geelong-Portarlington Road intersection is a signalised intersection which provides dedicated left and right turn lanes from Geelong-Portarlington Road into Tivoli Drive. The northern intersection leg provides a shared left and right turn lane as well as a dedicated right turn lane.

2.3. Existing Traffic Volumes

2.3.1. Tivoli Drive/Coriyule Road/Greenvale Drive Intersection

Traffix Group commissioned turning movement counts at the Tivoli Drive/Greenvale Drive/Coriyule Road intersection on Wednesday 14th July 2021[1] at the following times:

- 7:30am to 9:30am, and
- 2:45pm to 4:45pm.

The survey times were selected based on the existing weekday AM and PM peak hours of the nearby Jetty Road/Wyndham Street/Centennial Boulevard intersection to the east of the Stage 2 growth area (located within the Stage 1 growth area).

The turning movement counts identified that the AM and PM peak hours were from 8:15am to 9:15am and from 3:15pm to 4:15pm respectively.

A summary of the AM and PM peak hour traffic volumes recorded during the turning movement counts is presented at Figure 10.

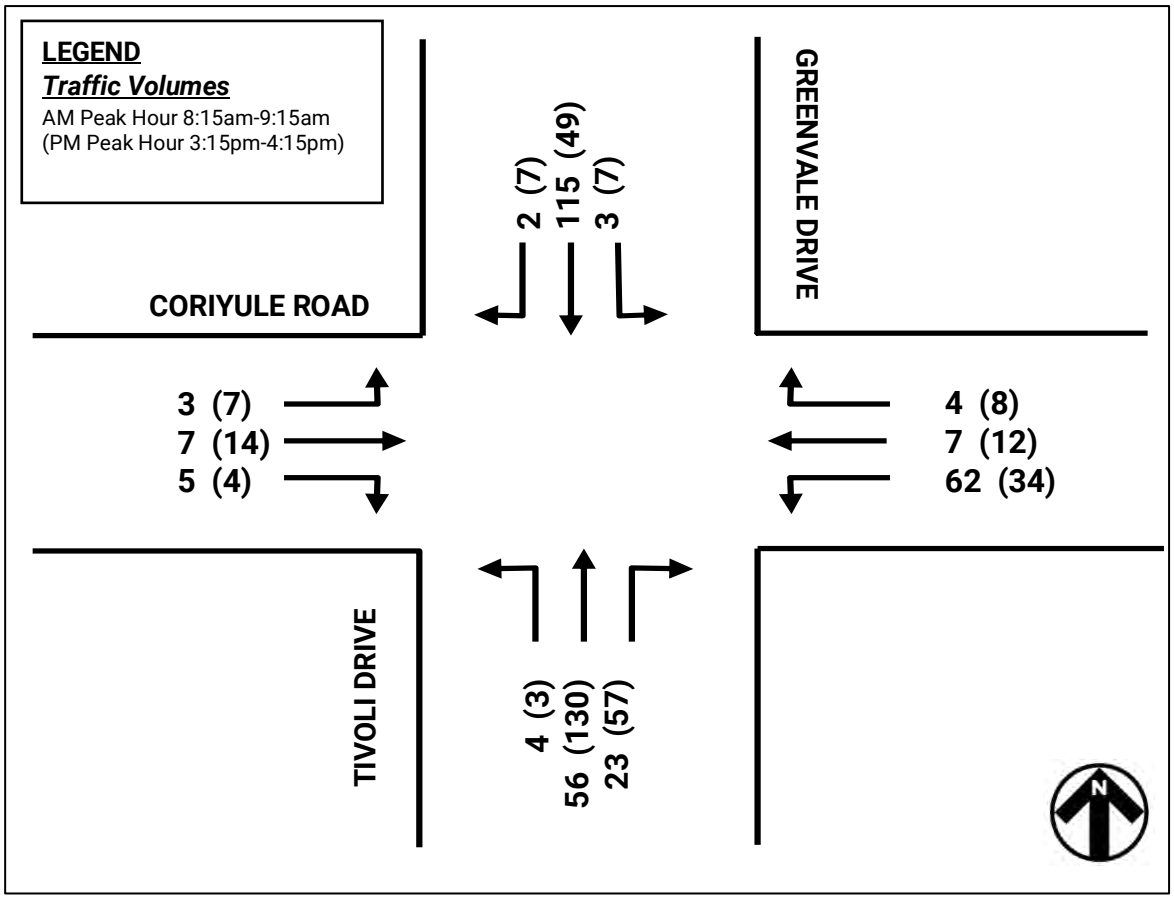


Figure 10: Tivoli Drive/Coriyule Road/Greenvale Drive Turning Movement Count Results

[1] It is noted that government restrictions were introduced on Friday 16th July 2021, therefore the results are expected to reflect 'typical' conditions.

2.3.2. Geelong-Portarlington Road/Tivoli Drive Intersection

Traffix Group sourced turning movement counts from Ratio at the Geelong-Portarlington Road/Tivoli Drive intersection on Wednesday 23rd March 2022 at the following times:

- 5:30am to 9:30am, and
- 3:00pm to 7:00pm.F

The turning movement counts identified that the AM and PM peak hours were from 7:45am to 8:45am and from 4:30pm to 5:30pm, respectively.

A summary of the AM and PM peak hour traffic volumes recorded during the turning movement counts is presented at Figure 11.

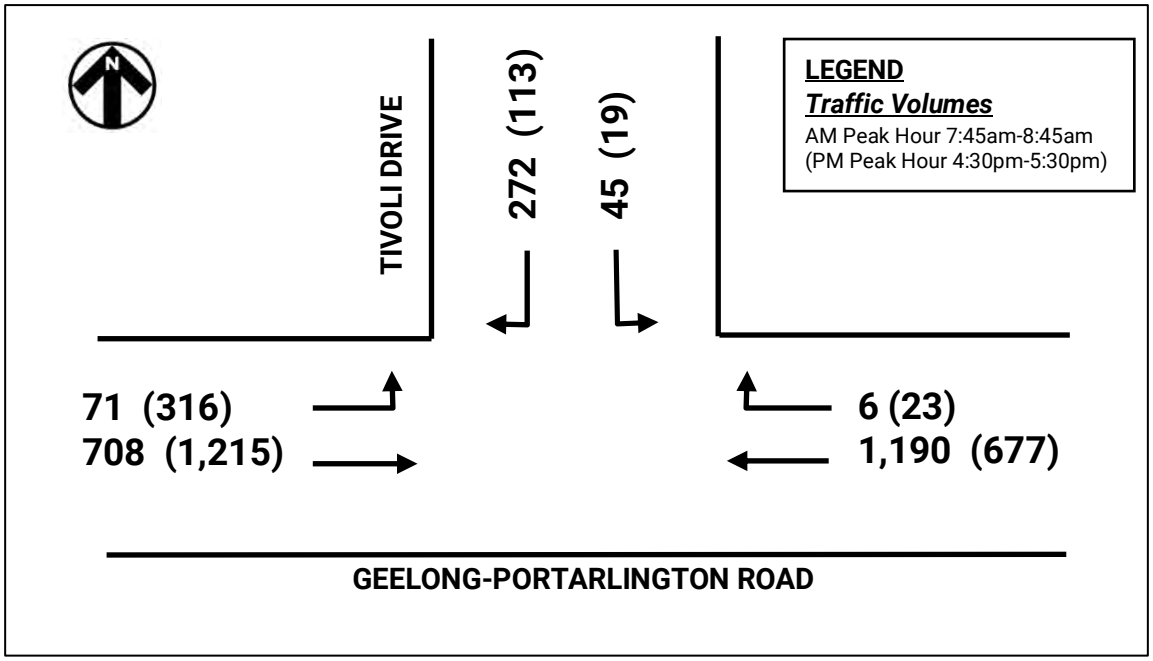


Figure 11: Geelong-Portarlington Road/Tivoli Drive Turning Movement Count Results

3. Proposal

The proposal is to ultimately subdivide the land to allow for conventional residential subdivisions to be developed, consisting of standard and medium density residential allotments.

A residential village is also proposed, being at the northwest corner of the Tivoli Drive (Greenvale Drive)/Coriyule Road intersection.

Any future subdivision would be subject to a future detailed report as part of a separate application.

4. Traffic Engineering Assessment

4.1. Tivoli Drive Daily Traffic Volumes

4.1.1. Allotment Yield

For the purposes of our assessments, the existing and future allotments were broken down based on the likely routes that would be used by vehicles for external trips to/from the west, external trips to/from the east and for internal trips (i.e. to the town centre within the site and a nearby school, recreation, etc immediately to the northeast). A diagram illustrating the naming and breakdown of the areas is presented at Figure 12.

Figure 12: Modelling Area Assumptions *Source: NearMap*

The allotment yields that were adopted for each property is summarised in Table 1, noting that whilst some allotments remain unoccupied by dwellings within Areas 1-4, the approximate ultimate number has been estimated from NearMap aerial imagery and indicative plans that show the likely ultimate lot layout.

The allotment yields for the undeveloped areas C, D, I and II have been estimated based on the following lot density advised by the project team:

- Standard residential allotments – 15 lots per hectare of net developable area, and
- Medium density allotments – 20 lots per hectare of net developable area.

For areas A and B the following yields have been adopted based on indictive layout plans that have been prepared for each:

- A = 297 standard residential allotments and 132 medium density residential allotments
- B = A 500 dwelling residential village

Table 1: Modelling Area Estimated Allotment Yields

Modelling Area	Estimated Allotment Yield
1	445 standard residential allotments
2	581 standard residential allotments 24 medium density residential allotments
3	624 standard residential allotments
4	93 standard residential allotments
A	297 standard residential allotments 132 medium density residential allotments
B	500 residential village dwellings
C[2]	310 standard residential allotments 177 medium density residential allotments
D[2]	34 standard residential allotments 19 medium density allotments
I	443 standard residential allotments
II	239 standard residential allotments

[2] Assumes the net developable area is proportioned at approximately 70%/30% for standard residential allotments and medium density residential allotments, respectively.

4.1.2. Traffic Generation

The predicted daily traffic generation for the Jetty Road growth area has been assessed on the following basis.

Traffix Group commissioned tube counts of traffic volumes at four locations along Tivoli Road/Greenvale Drive between Saturday 10th July 2021 and Saturday 17th July 2021[3] to measure existing traffic volumes generated by developments already constructed in the area. The tube counts were undertaken at the following locations:

- Tivoli Road to the south of Stanley Avenue,
- Tivoli Road immediately to the south of Coriyule Road,
- Greenvale Drive immediately to the north of Coriyule Road, and
- Greenvale Drive to the south of Centennial Boulevard.

The counts suggest that the link carries in the order of between 2,500 and 4,500 vehicles per day with the volume progressively increasing towards Portarlington Road. Notably, Tivoli Drive currently carries a minimum of in the order of 3,500 daily vehicles which is above the environmental capacity of the road based on the current single carriageway configuration which provides for direct access to properties on the east side of the road and informal on-street parking.

Accordingly, we believe that the section of Tivoli Drive between Coriyule Road and the Rail Trail would need to be upgraded as a result of any development that occurs within the Stage 2 area.

The need to upgrade Tivoli Drive to the south of the Rail Trail would largely depend on the timing of development of the land to the south of the Rail Trail, whilst we believe that there is scope for the existing configuration of Greenvale Drive (south of Centennial Boulevard) to remain for some development of the Stage 2 area. However, the timing of the required upgrade for the relevant section of Greenvale Drive would largely depend on where development occurs. For example, it currently has scope to accommodate in the order of 500 daily vehicles until its environmental capacity is reached and may need to be upgraded within approximately 55 allotments being approved if they are located towards the middle part of the overall Stage 2 area that is north of Coriyule Road. However, if they are located to the south of this, two to three times as many allotments could potentially be approved prior to the relevant section of Greenvale Drive needing to be upgraded.

Accordingly, not only it is not possible to determine when Greenvale Drive and the section of Tivoli Drive to the south of the Rail Trail would need to be upgraded until individual applications are submitted in the future, but Greenvale Drive in particular would need to be upgraded in the early stages of the overall development regardless of where the development occurs within the overall Stage 2 area.

Notably, whilst the relevant cross-sections as previously approved are identified as a connector road(s), the 15,000 daily traffic movements permitted along it as per the approved Stage 1 documentation is more akin to a road that is of greater importance and significance than a typical connector or connector boulevard when having particular regard for the fact that it is a main transport 'spine' that provides a major transport link for all user groups such

[3] It is noted that government restrictions were introduced on Friday 16th July 2021, therefore two days' worth of data has been removed due to the anticipated changes to travel conditions.

as motorists, pedestrians and cyclists between Portarlington Road and Jetty Road (when the east-west orientated Centennial Boulevard is also considered) as presented in the Road Network plan of the Jetty Road Urban Growth Plan.

As discussed previously, we believe that it is essential that the upgrade of certain sections of the Tivoli Drive/Greenvale Drive link (namely the section between the Rail Trail and Coriyule Road) occur as part of any future development of the overall Stage 2 area regardless of where the land is located. Such an upgrade might therefore be required prior to the land that abuts the relevant section being developed which means that a mechanism needs to be put in place to ensure that the relevant land component is available. Furthermore, it would not necessarily be equitable if the relevant section needs to be constructed by developers that do not abut it and we again believe that a mechanism needs to be put in place to ensure there is nexus in relation to the construction of the relevant sections of the ultimate link.

As mentioned previously, the number of vacant lots within areas 1-4 was estimated based on aerial imagery, with the number of vacant lots calculated to be approximately 13.5% of the already constructed lots. Accordingly, the average weekday traffic volume obtained from the tube counts was factored up by the same percentage to reflect the full development scenario.

We have adopted an average of 9 daily vehicle trip ends per allotment[4] and an average of 5 daily vehicle trip[5] ends per residential village dwelling for the future Stage 2 development (i.e., areas A-D, I and II).

4.1.3. Traffic Distribution

Traffic was distributed throughout the road network based on the assumptions adopted for the approved Stage 1 Jetty Road Growth Area documentation as follows:

- 65% of the trips generated by the modelling area will be external to the Urban Growth Area.
- 80% of the external trips will be distributed to/from the west and the remaining 20% of external trips will be distributed to/from the east.
- The remaining 35% of trips generated within the area will effectively be internal, including in association with the town centre within the site and a nearby school (Clifton Springs Primary School including those trips via the internal connection via Bliss Way), recreation, etc immediately to the northeast).

Traffic from Stage 2 of the Jetty Road Growth Area was distributed onto the external road network based on its proposed intersection locations with Tivoli Road, Greenvale Drive and Coriyule Road. External trips were distributed to the wider road network between Tivoli Road/Greenvale Drive and Jetty Road having consideration for the directness of the route to Portarlington Road. A summary of the external trip distribution for the proposed lots is provided at Table 2.

[4] Rate has been adopted for both standard residential allotments and medium density dwellings.
[5] Our experience suggests that in the order of 3 vehicle trips ends per dwelling is more representative of the level of daily traffic generated by residential village dwellings.

Table 2: External Trip Distribution

Area	External Trips – West		External Trips – East	
	Tivoli Road	Jetty Road	Tivoli Road	Jetty Road
A	100%	0%	100%	0%
B	100%	0%	80%	20%
C	90%	10%	20%	80%
D	70%	30%	10%	90%
I	100%	0%	80%	20%
II	0%	100%	0%	100%

Internal trips were largely considered to be generated to/from the nearby Bayview Central Shopping Centre, as well as nearby schools and recreational facilities immediately to the northeast. As a result of this distribution, internal trips that are generated by the southern portion of Area A and land to the south of the Bellarine Rail Trail would be likely to travel along the relevant length of Tivoli Road to access these destinations, whereas trips that are generated by land further to the north would likely instead include travel along future internal roads within the proposed subdivision.

It is also noted that no trips associated with Stage 2 were distributed to the west of the proposed subdivisions (i.e. to the west of McDermott Road).

4.1.4. Anticipated Daily Traffic Volumes

A diagram presenting the anticipated traffic volumes that will ultimately travel along the Tivoli Drive/Greenvale Drive following full development of Stage 1 and Stage 2 of the Jetty Road Growth Area is attached at Appendix B.

The previously approved ultimate cross-section for the Tivoli Drive/Greenvale Drive link with a 32m wide road reservation and Tivoli Drive link with a 31.3m wide road reservation are presented at Figure 13 and Figure 14, respectively. Notably, the approved Stage 1 documentation is based on this approved ultimate cross-section accommodating up to 15,000 daily traffic movements.

It is also noted that one of the ultimate carriageways has already been constructed and currently accommodates two-way traffic flow with informal on-street kerbside parking. In particular, the ultimate eastern (southbound) and western (northbound) carriageways have already been constructed to the north and south of the Rail Trail, respectively.

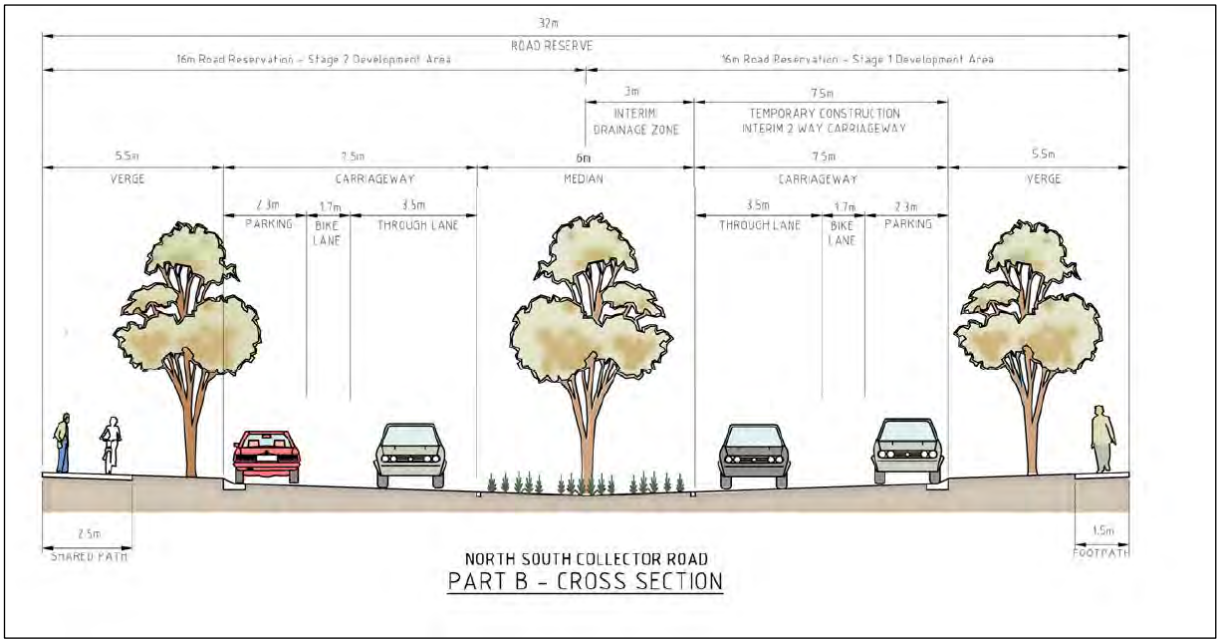


Figure 13: Previously Approved Ultimate Tivoli Drive/Greenvale Drive Cross-Section (north of Rail Trail)

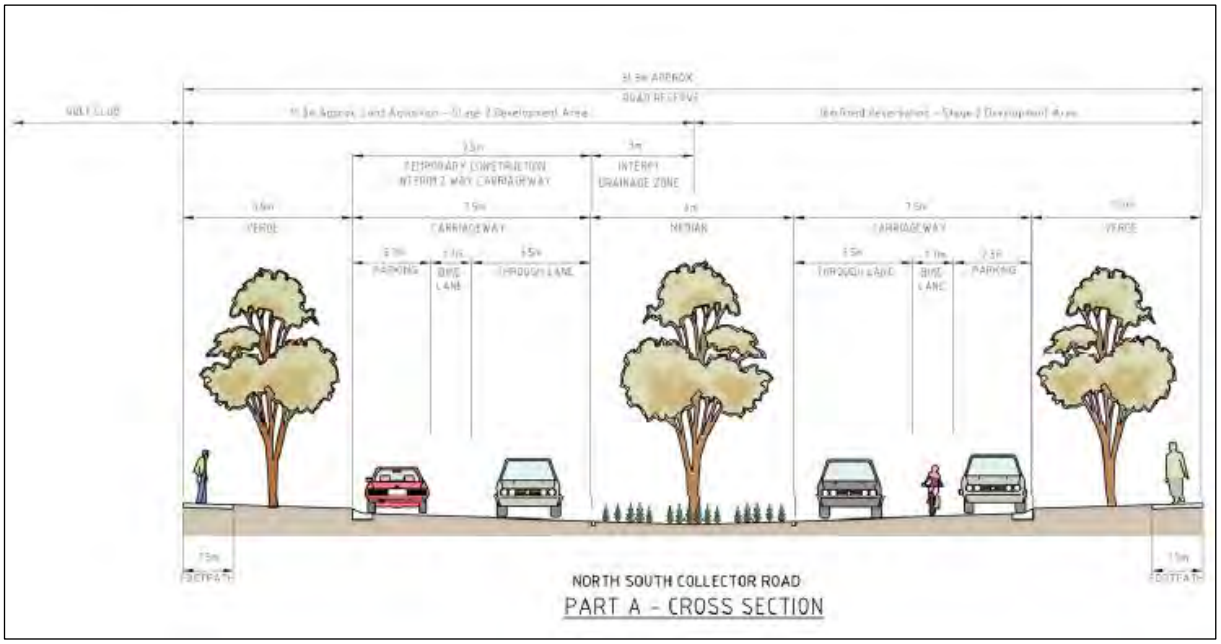


Figure 14: Previously Approved Ultimate Tivoli Drive Cross-Section (south of Rail Trail)

It can be seen from Appendix B that all sections of the Tivoli Drive/Greenvale Drive link are predicted to ultimately carry less than 15,000 daily traffic movements.

Accordingly, we are satisfied that the cross-section that has previously been approved for Tivoli Road/Greenvale Drive which includes one through lane of traffic, an on-road bicycle lane and parallel kerbside parking, in addition to direct property access on each side of a divided carriageway, is consistent with what would ultimately be required based on our recent assessments.

4.2. Tivoli Drive/Coriyule Road/Greenvale Drive Intersection Analysis

4.2.1. Post Development Traffic Volumes

The allotment yield that was adopted for the daily traffic volume assessment was also adopted for the intersection analysis assessment.

An average conservative traffic generation rate of 0.9 trips per allotment has been adopted for each peak hour.

Based on the preceding assumptions, the anticipated ultimate traffic volumes following full development of Stages 1 and 2 during the AM and PM peak hours were calculated and have been summarised in Figure 15.

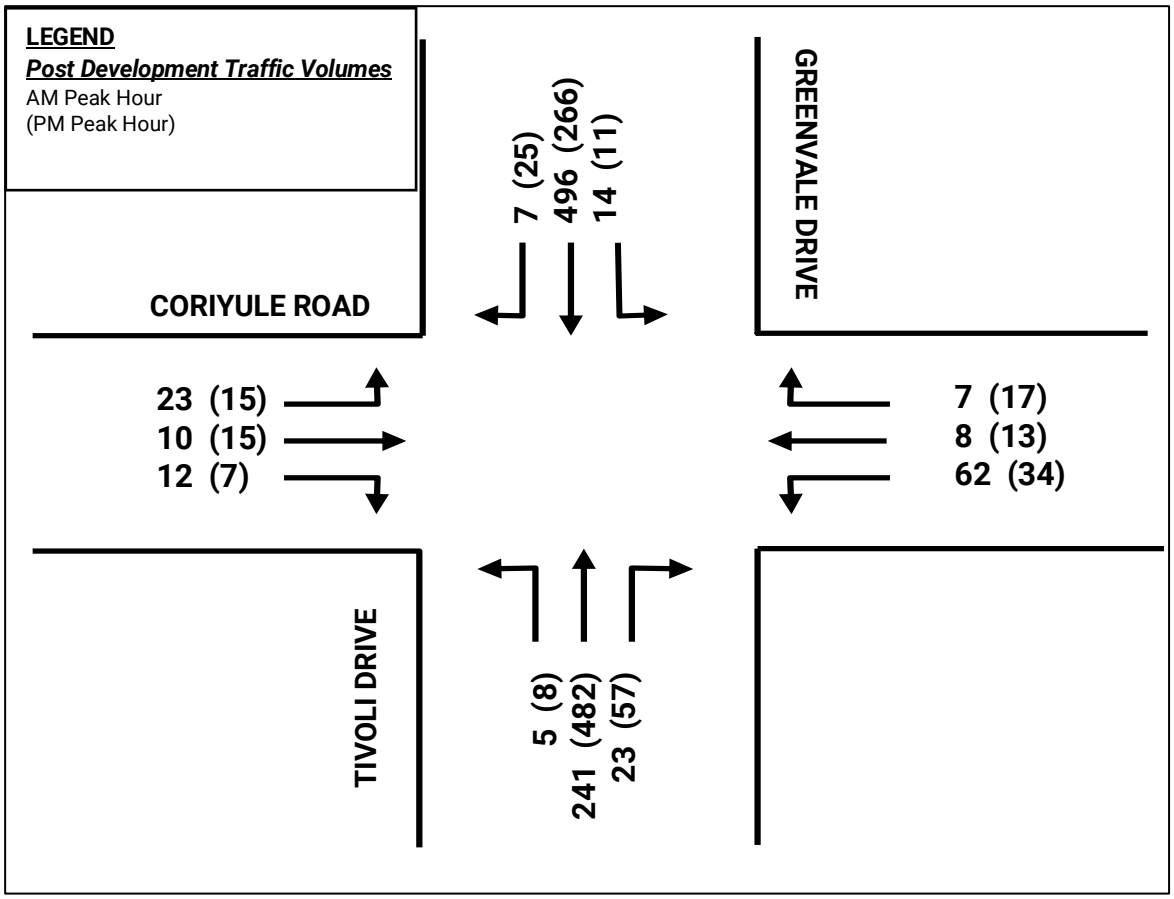


Figure 15: Anticipated Post Development Peak Hour Traffic Volumes – Tivoli Drive/Coriyule Road Intersection

4.2.2. Intersection Assessment

We have assessed the ultimate layout of the Tivoli Drive/Greenvale Drive/Coriyule Road intersection as a single lane roundabout, which is similar to many of the surrounding intersections within the Jetty Road Stage 1 Growth Area.

We have undertaken a SIDRA assessment of the intersection under the predicted post development scenario.

SIDRA is a computer simulation package which assesses the operating performance of intersections. A summary of the key outputs is as follows:

- **Degree of Saturation (DoS)** – The ratio of traffic volume to the practical absorption capacity for a particular turning movement.
- **Average Delay (Avg. Delay)** – The average delay in seconds for a vehicle making a particular turning movement.
- **95th Percentile Queue (95% Queue)** – The 95% percentile queue is the length in metres which 95 per cent of all observed cycle queues fall below (or 5% exceed) during the peak analysis period.

The results of the analysis identify that the intersection will function well within acceptable operating conditions, with short queues and delays anticipated.

A copy of the SIDRA outputs is attached at Appendix C.

A functional layout plan of the proposed roundabout, including associated swept path diagrams, is attached at Appendix D.

Importantly, the design of the roundabout ensures that access to existing properties on the east side of the carriageway can be well maintained and that a suitable outcome could also be achieved for access to and from potential future allotments on the west side of the carriageway.

4.3. Geelong-Portarlington Road/Tivoli Drive Intersection Analysis

4.3.1. Post Development Traffic Volumes

As detailed previously, turning movement counts were conducted at the existing Geelong-Portarlington Road/Tivoli Drive intersection. In order to account for the future growth and development of the surrounding area, through traffic on Geelong-Portarlington Road was factored up by 20% (i.e. a growth of 2% over 10 years), noting that no factor was applied to traffic turning into or out of Tivoli Drive.

An average conservative traffic generation rate of 0.9 trips per allotment has been adopted for each peak hour, noting that this is conservative as we have adopted it for all standard and MDH allotments and a rate of 0.8 trips per allotment per peak hour is more akin to typical practice for standard allotments with something even lower typically applicable for MDH allotments. We have also adopted a traffic generation rate of 0.5 peak hour trips per residential village dwelling, noting that our experience suggests that this is conservative and closer to 0.3 trips per dwelling. It is also noted the peak residential village traffic is typically generated outside of overall peak commuter periods which means that there is an even greater level of conservatism within our analysis.

An entry/exit split of 20%/80% and 70%/30% was adopted for the AM and PM peak hours, respectively.

The post development traffic volumes for each peak hour are presented at Figure 16.

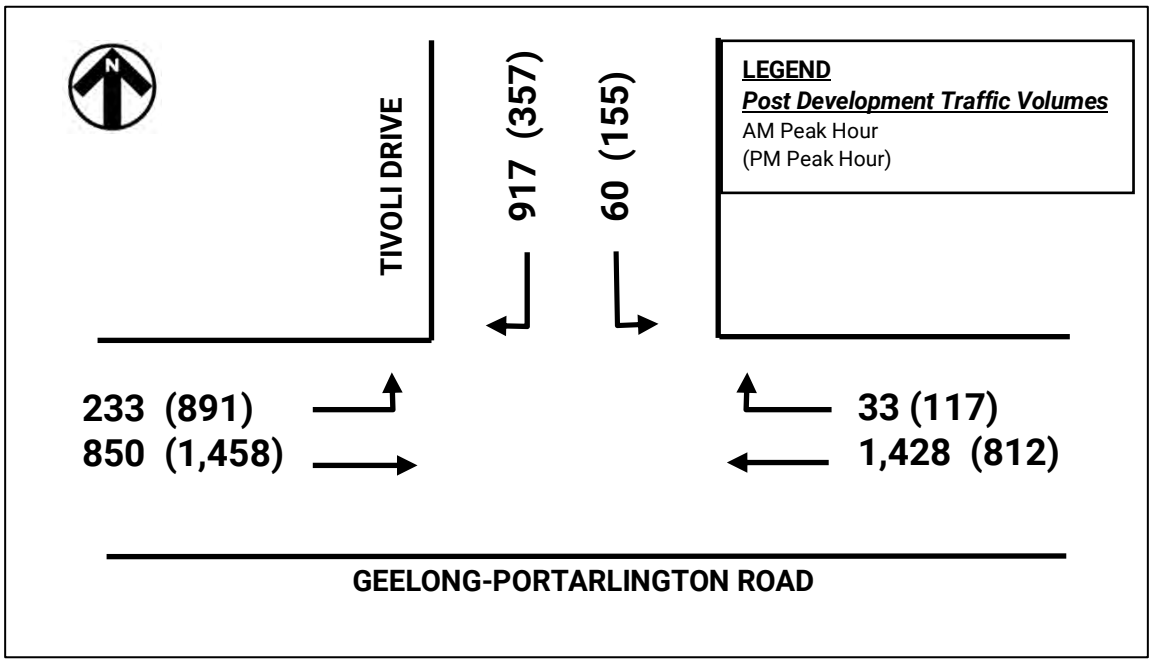


Figure 16: Anticipated Post Development Peak Hour Traffic Volumes – Geelong-Portarlington Road/Tivoli Drive Intersection

4.3.2. Intersection Assessment

SIDRA Intersection 9 has been utilised to undertake an assessment of the performance of the Geelong-Portarlington Road/Tivoli Drive intersection, under both existing and post development conditions.

Heavy vehicles have been adopted as a nominal 5% for through traffic on Geelong-Portarlington Road and a nominal 2% for all other movements. The signal phasing has been assessed using an 'optimal cycle time' with a range between 90 seconds to 120 seconds.

The existing dedicated right-turn lane on the northern leg of the intersection has been lengthened to 100m under the post development scenario given that the existing 40m long turn lane was determined to provide for a poor outcome for post development conditions. No further modifications have needed to be made to the layout of the intersection between existing and post development conditions in order to provide for an acceptable outcome.

All remaining SIDRA values have been kept as default.

Table 3 and Table 4 provide a summary of the intersection outputs under existing conditions and post development during the AM and PM peak hours, respectively.

Table 3: Geelong-Portarlington Road/Tivoli Drive - AM Peak Hour SIDRA Results Summary

Intersection Leg	Existing Conditions			Post Development			Change		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Portarlington Road – East (T)	0.49	7	96	0.81	24	219	+0.32	+17	+123
Portarlington Road – East (R)	0.05	50	2	0.29	52	11	+0.24	+2	+9
Tivoli Drive – North (L)	0.47	41	48	0.81	36	173	+0.34	-5	+125
Tivoli Drive – North (R)	0.47	41	48	0.81	36	173	+0.34	-5	+125
Portarlington Road – West (L)	0.05	8	5	0.17	8	17	+0.12	0	+12
Portarlington Road – East (T)	0.36	12	67	0.67	27	122	+0.31	+15	+55

Table 4: Geelong-Portarlington Road/Tivoli Drive - PM Peak Hour SIDRA Results Summary

Intersection Leg	Existing Conditions			Post Development			Change		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Portarlington Road – East (T)	0.24	3	31	0.32	5	50	+0.08	+2	+19
Portarlington Road – East (R)	0.20	51	8	0.67	51	40	+0.47	0	+32
Tivoli Drive – North (L)	0.41	49	23	0.75	48	73	+0.34	-1	+50
Tivoli Drive – North (R)	0.41	49	23	0.75	48	73	+0.34	-1	+50
Portarlington Road – West (L)	0.23	8	25	0.67	11	139	+0.44	+3	+114
Portarlington Road – East (T)	0.53	9	109	0.75	17	188	+0.22	0	+79

Based on the above assessments and outcomes, we are satisfied that the Geelong-Portarlington Road/Tivoli Drive intersection can accommodate the anticipated post

development traffic volumes, subject to lengthening of turn lane on the northern intersection leg as discussed above.

Full output of the SIDRA assessment has been attached at Appendix E, together with a concept layout plan showing the required modification to the right turn lane at the Portarlington Road intersection.

4.4. Tivoli Drive Carriageway Transition Across the Rail Trail

As mentioned previously, pedestrian operated signals are currently provided across single Tivoli Drive carriageway at the Bellarine Rail Trail. A functional layout plan demonstrating the upgrade of the pedestrian operated signals as a result of the future dual carriageway transition across the Bellarine Rail Trail is attached at Appendix F.

4.5. Greenvale Drive/Centennial Boulevard Signalisation

There is a requirement under the Jetty Road Urban Growth Area Infrastructure Plan to signalise the Greenvale Drive/Centennial Boulevard intersection 'at approximately 2,250 lots', noting that this intersection is currently controlled by a roundabout treatment.

As part of Traffix Group's involvement with the Jetty Road Urban Growth Area Infrastructure Plan we prepared concept layouts showing how this intersection could potentially be signalised under two scenarios as follows:

- Within what is now the existing road reservation of both roads, i.e. prior to additional land being provided within the Stage 2 area.
- Within what is to be a widened duplicated Greenvale Drive road reservation/cross-section to the south of the intersection within the Stage 2 area.

For the purposes of this report/assessment, it is assumed that the signalisation of the intersection will not occur prior to the southern leg being widened/duplicated, with a layout plan that Traffix Group prepared at the time for such an outcome attached at Appendix G of this report.

Given that much of the Stage 1 area has now been developed, we believe that an appropriate assessment could now be undertaken to determine whether the signalisation of the intersection could be delayed for some time after '*approximately 2,250 lots*' based on the outcome of potential intersection analysis.

In particular, any such analysis should include existing traffic volumes at the intersection during peak operating periods, a predicted increase to the existing volumes based on the full build-out of the currently undeveloped areas of Stage 1 of the Jetty Road Development Plan area and the relevant proportion of future growth of the Stage 2 area.

Notably, the location of development within the overall Stage 2 Development Plan area will largely dictate how many allotments can be approved within the same prior to the intersection needing to be signalised.

4.6. Intersection Treatments with Tivoli Drive and Greenvale Drive

We have undertaken detailed preliminary assessments of the ultimate form of intersection treatments that would be suitable along the Tivoli Drive/Greenvale Drive link when having

regard to the existing connections to the east and location of future connections to the west in the section to the north of the rail trail and we are satisfied that a suitable outcome can be achieved.

In particular, whilst it is important to ensure that access to and from all directions will be conveniently available in the ultimate outcome, it is also important to ensure that intersection types and spacing of the same is appropriately provided in order to minimise the potential for conflict and associated safety concerns. Our preliminary assessments suggest that this is possible, noting that detailed assessments and the preparation of layout plans will likely be required as part of any future application for the various land.

Furthermore, we believe that it would be desirable that no direct property access is provided to Tivoli Drive for future dwellings that are proposed on the east side nearest to Portarlington Road. In particular, this would desirably be for a minimum of approximately 100m based on the recommended length of the designated right turn lane discussed previously, and desirably up to the location of the first road that is to ultimately be provided into the land that is located on the east side of Tivoli Drive.

4.7. Potential Coriyule Road Treatment

As mentioned previously, it has in our opinion been reasonably assumed that no traffic associated with Stage 2 of the Jetty Road Growth Area Structure Plan area would travel to or from the wider road network via the western extension of Coriyule Road beyond its abuttal with the subject site.

Not only is this considered to be reasonable given the location of the subject site in context of the wider road network and intersections and existing configuration of the same, but it is also consistent with the expectations of the Jetty Road Urban Growth Plan which states the following:

- ***Objective 20.4:***

  The road network is to ensure that local roads do not become desirable routes though the growth area ('rat running'), in particular, between Jetty Road and Geelong-Portarlington Road, and for using Coriyule Road for anything other than local traffic.

- ***Objective 20.14:***

  Coriyule Road is to maintain its status as a rural access road and as an urban link to the Hermsley rural living community.

  - *Design of the road network is to discourage traffic generated within the growth area and/or Clifton Springs from exiting or passing through the growth area via Coriyule Road. However, a link must be maintained with the internal primary network such that the rural living community to the west in Hermsley is able to access the Drysdale town centre and the Jetty Road growth area neighbourhood centre without the need to use Geelong Portarlington Road. The transport network does not need to rely on the existing Coriyule Road to be continuous for conveying traffic through the growth area.*
  - *It will be necessary to fully construct Coriyule Road over whatever lengths are required by the final road network within the growth plan area plus a distance of 50 meters beyond the intersection with Mc Dermott Road.*

- *The role of Coriyule Road as a higher order link is not supported, and the final adopted Development Plan must consider over which sections the existing road reserve alignment is relevant.*
- *Traffic volumes must remain at a level that can be accommodated by the existing gravel seal pavement.*

In response to these key objectives, we understand that Council has suggested that it would like any future development on the subject site to include either truncation of Coriyule Road or traffic calming towards the western end of the overall subject site, i.e. presumably a short distance to the east of its intersection with McDermott Road.

We do not necessarily agree that there is a need for any specific work to be undertaken as part of the Stage 2 development for these objectives to be met given the location and type of existing roads and intersections in the context of the subject site. However, we also acknowledge the relevant requirements and expectations of the Stage 2 development and agree that relevant measures should be implemented in due course. However, we do not believe that truncation should be considered moving forward. This is because truncation would significantly decrease the ability for residents living further to the west to access services within the overall subject site (the local shopping centre on the corner of Centennial Boulevard and Greenvale Drive for example) and further to the east (Clifton Springs Primary School and the Great Beginnings Child Care Centre on the west side of Jetty Road for example). Notably, doing this would be in direct conflict of part of Objective 20.14 of the Jetty Road Urban Growth Plan.

Accordingly, we believe that any such treatment considered necessary moving forward should be nothing more than traffic calming treatment. This would ensure that vehicle access between the west and east sides of McDermott Road is still possible whilst physically discouraging motorists to use the length of Coriyule Road as part of a rat-run route and/or a trip to/from the wider network. Such an outcome would meet all the relevant requirements of Objectives 20.4 and 20.14 of the Jetty Road Urban Growth Plan in our opinion.

Attached at Appendix H is a series of concept layouts showing proposed traffic control that we believe would not only provide for an appropriate outcome, but would importantly also be consistent with the expectations of the Jetty Road Urban Growth Plan.

Notably, whilst any traffic control treatment along this section of Coriyule Road would abut two future land developers within the overall Stage 2 area, the treatments are required as a result of the entire Jetty Road Urban Growth Plan area rather than the individual developers.

Accordingly, the cost for implementing any such treatment should not be borne solely by the abutting land owners but instead by the overall area. Accordingly, the cost for implementation of any traffic control treatment along this section of Coriyule Road, including any associated land requirements, should be borne by all developers within Stage 2 of the Jetty Road Growth Area.

4.8. Tivoli Drive/Greenvale Drive Access Strategy

Not only is it important to ensure that appropriate access is provided to and from the various land parcels that make up Stage 2 of the Development Plan area, but it is also imperative that appropriate access is also maintained for the existing Stage 1 area.

Attached at Appendix I is a 'high level' access strategy layout showing how we believe existing and future intersections should be configured along the Tivoli Drive/Greenvale Drive link based on the existing Stage 1 locations and currently identified Stage 2 locations.

In relation to Stage 2, we have provided preliminary advice to the various land owners for consideration as part of the development of plans in association with such land in order to ensure that an appropriate overall outcome can be achieved. It is also noted that any such connections would be subject to future assessment of/approval by Council as part of future town planning applications for the various Stage 2 land parcels. However, the attached high level access strategy layout not only provides guidance for these future applications, but it also provides guidance in relation to the preparation of layout plans and construction of the duplicated Tivoli Drive/Greenvale Drive link.

5. Conclusions

Having undertaken various detailed traffic engineering assessments for Stage 2 of the Jetty Road Growth Area, we are of the opinion that:

a) the daily level of traffic that is estimated to be generated by the development area is not anticipated to exceed 15,000 vehicles per day on Tivoli Drive/Greenvale Drive and can be accommodated within the proposed 31.3 and 32m wide road reservation to the north and south of the rail trial respectively,

b) a mechanism needs to be put in place to ensure that the land is available for the upgrade of the relevant sections of the Tivoli Drive/Greenvale Drive link in the event that the upgrade is needed prior to development of the abutting land,

c) a mechanism needs to be put in place to ensure there is Nexus in relation to the construction of the relevant sections of the Tivoli Drive/Greenvale Drive link,

d) a roundabout at the Tivoli Drive/Greenvale Drive/Coriyule Road intersection as generally shown in the layout plan at Appendix D would be an appropriate ultimate treatment which would result in

   – no capacity issues with a low Degree of Saturation anticipated on all four legs,

   – short queues and delays on all four legs, and

   – minimal impact to nearby existing and future residential driveways and intersections.

e) the Geelong-Portarlington Road/Tivoli Drive intersection will function within acceptable operating conditions, subject to the lengthening of the designated right turn lane to 100m (plus taper) on the northern intersection leg as generally shown at Appendix E,

f) the layout attached at Appendix F identifies an appropriate form of transition across the Bellarine Rail Trail pedestrian operated signals under the ultimate dual carriageway scenario,

g) the existing Greenvale Drive/Centennial Boulevard intersection should be upgraded to signals with any proposal to delay the same beyond '*approximately 2,250 lots*' as currently required by the Jetty Road Urban Growth Area Infrastructure Plan subject to demonstrating that the existing roundabout would continue to operate satisfactorily,

h) the location of future intersection connections on the west side of Tivoli Drive/Greenvale Drive to the north of the rail trail and associated form of intersection treatments on both sides can be appropriately accommodated,

i) the cost, and any associated land requirement, associated with any traffic calming treatment required along the section of Coriyule Road that abuts the subject site should be borne by all developers within Stage 2 of the Jetty Road Growth Area,

j) the high level access strategy attached to this report would ensure that appropriate access is provided for existing Stage 1 and future Stage 2 of the overall Development Plan area, and

k) no direct access should be provided to future dwellings on the east side of Tivoli Drive for at least 100m north of Portarlington Road as discussed in this report.

Appendix A

Development Plan

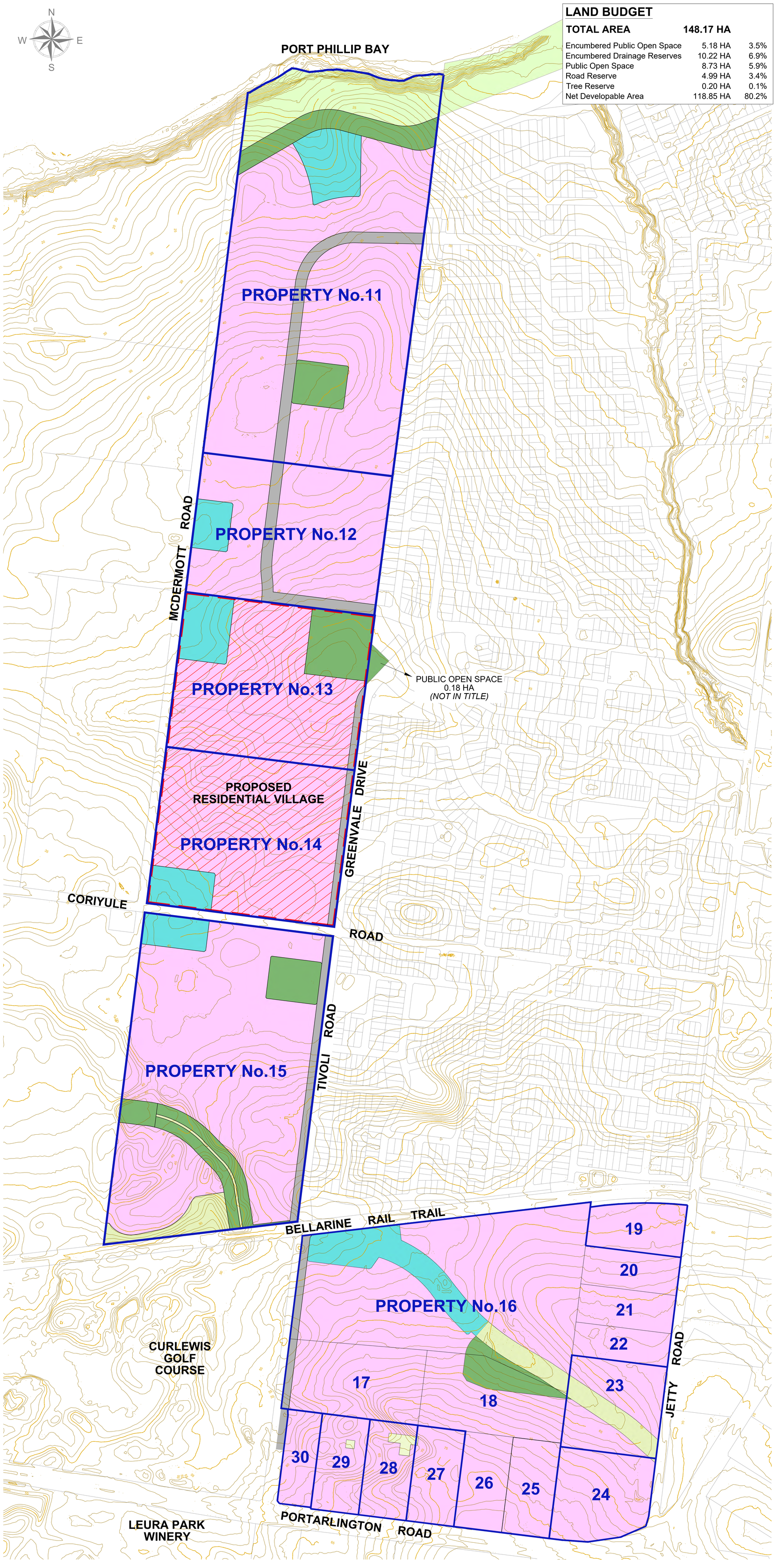
JETTY ROAD, STAGE 2

Curlewis, Victoria

Overall Development

REV: 18
DATE: 16-11-2022
SHEET: 1 OF 1

PRELIMINARY
FOR DISCUSSION PURPOSES ONLY



LAND BUDGET

TOTAL AREA	**148.17 HA**	
Encumbered Public Open Space	5.18 HA	3.5%
Encumbered Drainage Reserves	10.22 HA	6.9%
Public Open Space	8.73 HA	5.9%
Road Reserve	4.99 HA	3.4%
Tree Reserve	0.20 HA	0.1%
Net Developable Area	118.85 HA	80.2%

PROPERTY No.11

TOTAL AREA	**33.03 HA**
Encumbered Public Open Space	3.99 HA
Drainage Reserves	1.68 HA
Public Open Space	2.87 HA
Road (Boulevard)	1.57 HA
TOTAL	10.11 HA
NET DEVELOPABLE AREA	**22.92 HA**

PROPERTY No.12

TOTAL AREA	**11.75 HA**
Drainage Reserve	0.78 HA
Road (Boulevard)	1.17 HA
TOTAL	1.95 HA
NET DEVELOPABLE AREA	**9.80 HA**

PROPERTY No.13

TOTAL AREA	**13.02 HA**
Drainage Reserve	1.44 HA
Public Open Space	1.82 HA
Road (Boulevard)	0.26 HA
TOTAL	3.52 HA
NET DEVELOPABLE AREA	**9.50 HA**

PROPERTY No.14

TOTAL AREA	**13.04 HA**
Drainage Reserve	1.08 HA
Road (Boulevard)	0.49 HA
TOTAL	1.08 HA
NET DEVELOPABLE AREA	**11.47 HA**

PROPERTY No.15

TOTAL AREA	**25.87 HA**
Encumbered Open Space	1.19 HA
Drainage Reserves	0.90 HA
Public Open Space	2.82 HA
Road (Boulevard)	0.92 HA
TOTAL	2.09 HA
NET DEVELOPABLE AREA	**20.04 HA**

PROPERTY No's 16, 17, 18, 20, 21, 22, 25 & 26 *(COMBINED)*

TOTAL AREA	**34.45 HA**
Drainage Reserves	3.41 HA
Public Open Space	1.22 HA
Road Widening	0.58 HA
TOTAL	5.21 HA
NET DEVELOPABLE AREA	**29.24 HA**

PROPERTY No.19

NET DEVELOPABLE AREA	**2.01 HA**

PROPERTY No.23

TOTAL AREA	**3.89 HA**
Drainage Reserves	0.92 HA
TOTAL	0.92 HA
NET DEVELOPABLE AREA	**2.97 HA**

PROPERTY No.24

TOTAL AREA	**3.61 HA**
Drainage Reserves	0.01 HA
TOTAL	0.01 HA
NET DEVELOPABLE AREA	**3.60 HA**

PROPERTY No.27

TOTAL AREA	**2.04 HA**
Tree Reserve	0.01 HA
TOTAL	0.01 HA
NET DEVELOPABLE AREA	**2.03 HA**

PROPERTY No.28

TOTAL AREA	**2.03 HA**
Tree Reserve	0.16 HA
TOTAL	0.16 HA
NET DEVELOPABLE AREA	**1.87 HA**

PROPERTY No.29

TOTAL AREA	**2.02 HA**
Tree Reserve	0.03 HA
TOTAL	0.03 HA
NET DEVELOPABLE AREA	**2.03 HA**

PROPERTY No.30

NET DEVELOPABLE AREA	**1.41 HA**

NOTES:

- AREAS FOR DRAINAGE RESERVES ARE INDICATIVE ONLY AND SUBJECT TO FUTURE DETAILED DESIGN
- CONCEPT PLAN BEING PREPARED FOR WATERWAY THROUGH PROPERTIES 16 AND 23. THIS WILL BE PROVIDED TO COUNCIL TO DETERMINE FINAL BOUNDARY OF ENCUMBERED AND UNENCUMBERED OPEN SPACE.

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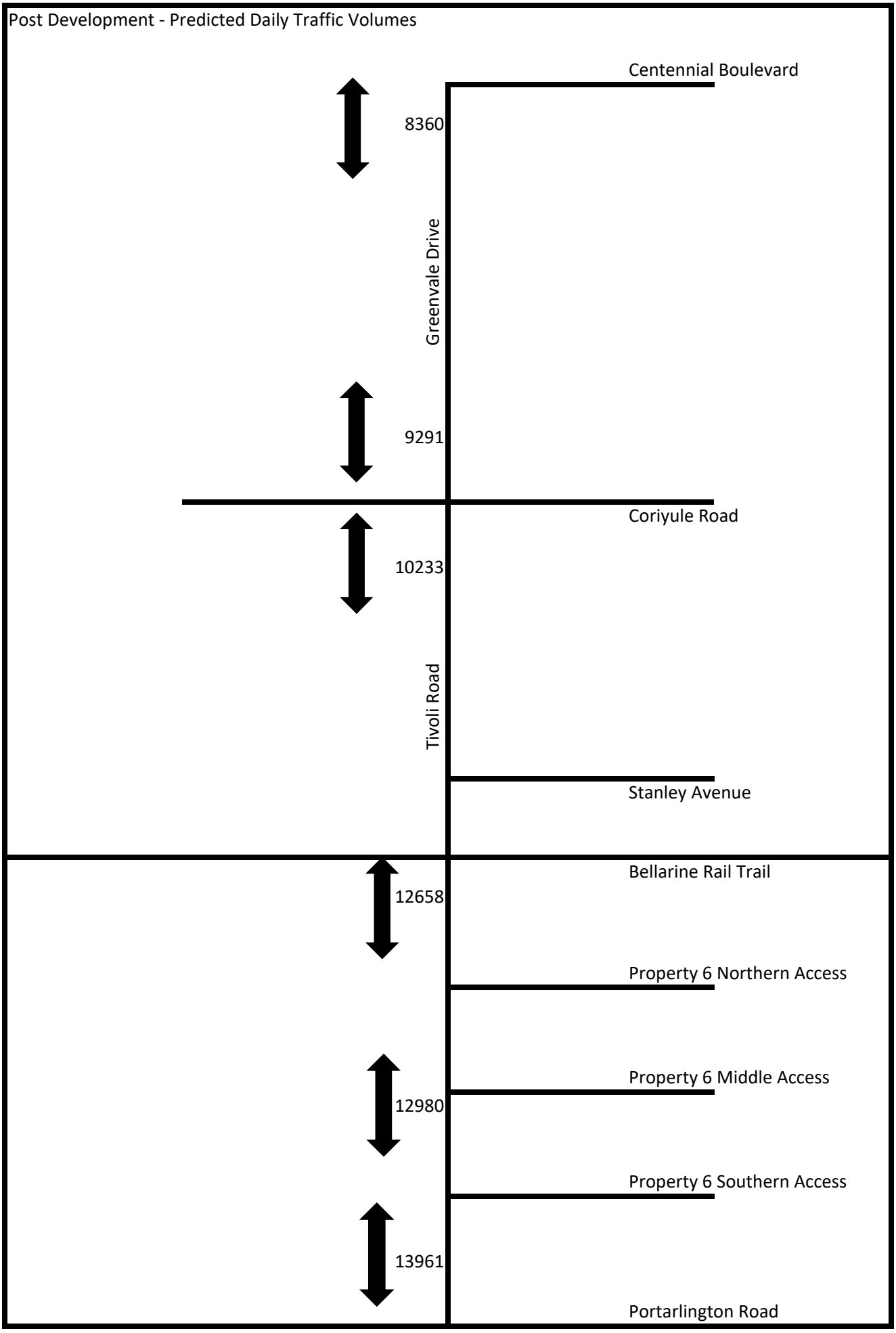
Appendix B

Daily Traffic Volume Diagrams


Post Development - Predicted Daily Traffic Volumes
Centennial Boulevard
8360
Greenvale Drive
9291
Coriyule Road
10233
Tivoli Road
Stanley Avenue
Bellarine Rail Trail
12658
Property 6 Northern Access
Property 6 Middle Access
12980
Property 6 Southern Access
13961
Portarlington Road

Appendix C

Tivoli Drive/Coriyule Road/Greenvale Drive
SIDRA Outputs

MOVEMENT SUMMARY

Site: 101 [Roundabout - PM (Site Folder: Tivoli-Coriyule)]

New Site
Site Category: (None)
Roundabout

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: Tivoli Road														
1	L2	8	2.0	8	2.0	0.382	4.5	LOS A	2.7	19.0	0.25	0.47	0.25	53.5
2	T1	443	2.0	466	2.0	0.382	4.6	LOS A	2.7	19.0	0.25	0.47	0.25	54.6
3	R2	57	2.0	60	2.0	0.382	8.6	LOS A	2.7	19.0	0.25	0.47	0.25	54.3
Approach		508	2.0	535	2.0	0.382	5.1	LOS A	2.7	19.0	0.25	0.47	0.25	54.5
East: Coriyule Road														
4	L2	34	2.0	36	2.0	0.066	5.7	LOS A	0.3	2.3	0.45	0.60	0.45	52.7
5	T1	13	2.0	14	2.0	0.066	5.8	LOS A	0.3	2.3	0.45	0.60	0.45	53.7
6	R2	15	2.0	16	2.0	0.066	9.8	LOS A	0.3	2.3	0.45	0.60	0.45	53.4
Approach		62	2.0	65	2.0	0.066	6.7	LOS A	0.3	2.3	0.45	0.60	0.45	53.1
North: Greenvale Drive														
7	L2	10	2.0	11	2.0	0.233	4.6	LOS A	1.3	9.5	0.26	0.48	0.26	53.5
8	T1	250	2.0	263	2.0	0.233	4.7	LOS A	1.3	9.5	0.26	0.48	0.26	54.6
9	R2	25	2.0	26	2.0	0.233	8.8	LOS A	1.3	9.5	0.26	0.48	0.26	54.3
Approach		285	2.0	300	2.0	0.233	5.1	LOS A	1.3	9.5	0.26	0.48	0.26	54.5
West: Coriyule Road														
10	L2	15	2.0	16	2.0	0.048	7.2	LOS A	0.2	1.8	0.59	0.65	0.59	51.9
11	T1	15	2.0	16	2.0	0.048	7.3	LOS A	0.2	1.8	0.59	0.65	0.59	52.9
12	R2	7	2.0	7	2.0	0.048	11.3	LOS B	0.2	1.8	0.59	0.65	0.59	52.6
Approach		37	2.0	39	2.0	0.048	8.0	LOS A	0.2	1.8	0.59	0.65	0.59	52.4
All Vehicles		892	2.0	939	2.0	0.382	5.3	LOS A	2.7	19.0	0.28	0.49	0.28	54.3

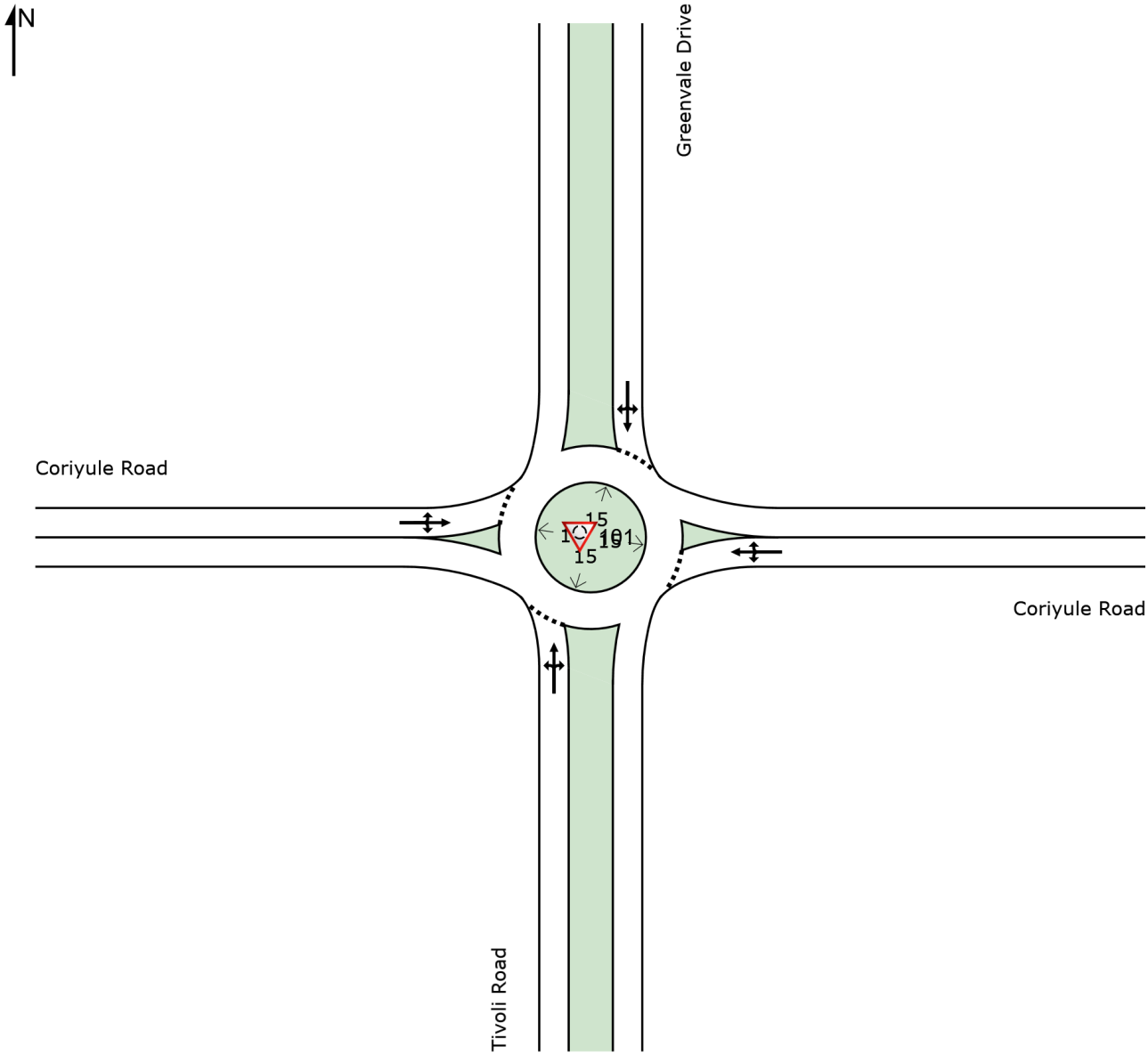
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

SITE LAYOUT

Site: 101 [Roundabout - AM (Site Folder: Tivoli-Coriyule)]

New Site
Site Category: (None)
Roundabout

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



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MOVEMENT SUMMARY

Site: 101 [Roundabout - AM (Site Folder: Tivoli-Coriyule)]

New Site
Site Category: (None)
Roundabout

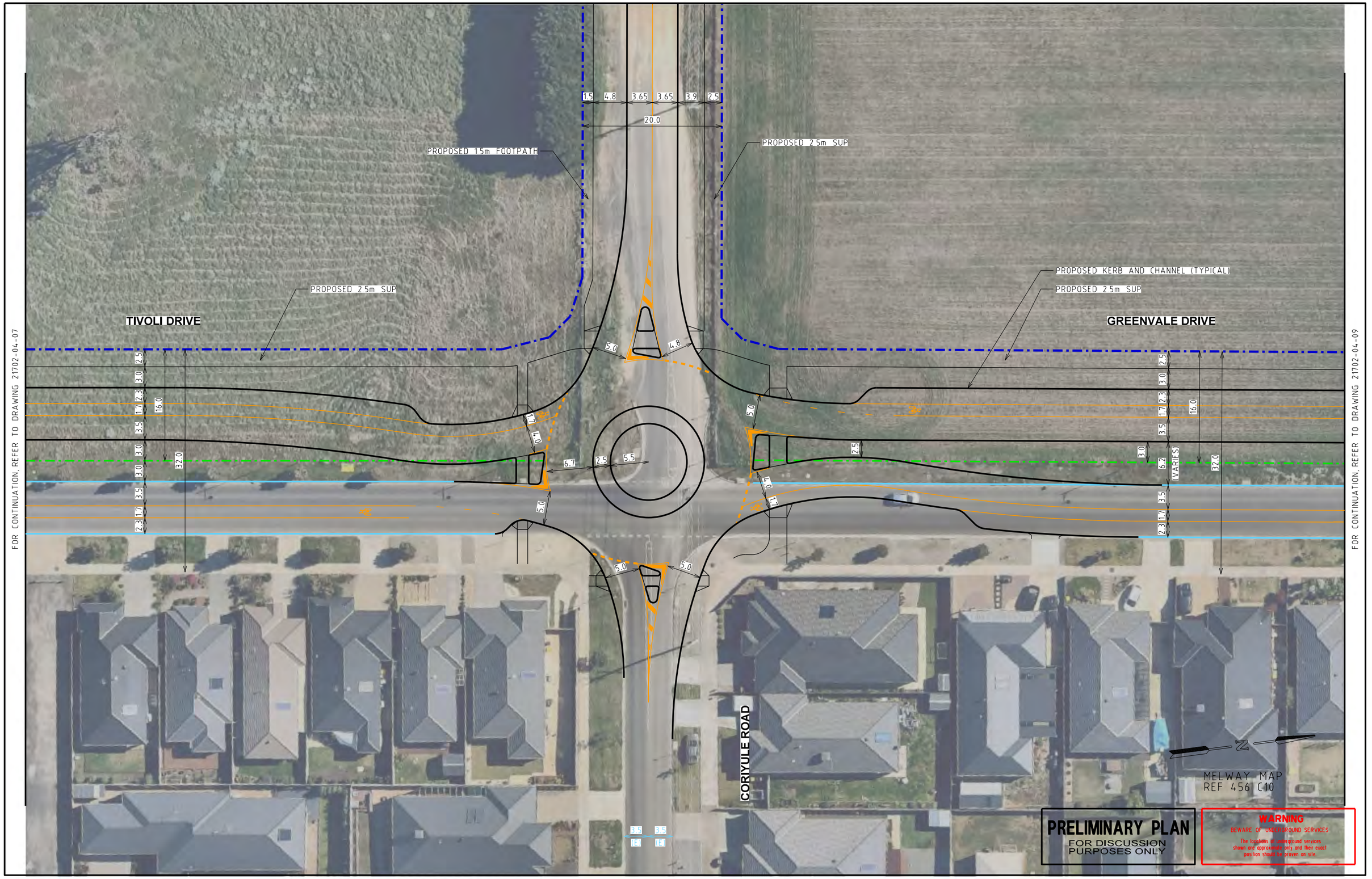
Vehicle Movement Performance

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: Tivoli Road														
1	L2	5	2.0	5	2.0	0.185	4.3	LOS A	1.1	7.8	0.12	0.45	0.12	54.0
2	T1	230	2.0	242	2.0	0.185	4.4	LOS A	1.1	7.8	0.12	0.45	0.12	55.1
3	R2	23	2.0	24	2.0	0.185	8.4	LOS A	1.1	7.8	0.12	0.45	0.12	54.8
Approach		258	2.0	272	2.0	0.185	4.7	LOS A	1.1	7.8	0.12	0.45	0.12	55.1
East: Coriyule Road														
4	L2	62	2.0	65	2.0	0.094	7.0	LOS A	0.5	3.5	0.58	0.67	0.58	52.3
5	T1	8	2.0	8	2.0	0.094	7.1	LOS A	0.5	3.5	0.58	0.67	0.58	53.3
6	R2	6	2.0	6	2.0	0.094	11.1	LOS B	0.5	3.5	0.58	0.67	0.58	53.1
Approach		76	2.0	80	2.0	0.094	7.4	LOS A	0.5	3.5	0.58	0.67	0.58	52.5
North: Greenvale Drive														
7	L2	11	2.0	12	2.0	0.349	4.4	LOS A	2.3	16.6	0.21	0.44	0.21	53.9
8	T1	453	2.0	477	2.0	0.349	4.6	LOS A	2.3	16.6	0.21	0.44	0.21	54.9
9	R2	7	2.0	7	2.0	0.349	8.6	LOS A	2.3	16.6	0.21	0.44	0.21	54.7
Approach		471	2.0	496	2.0	0.349	4.6	LOS A	2.3	16.6	0.21	0.44	0.21	54.9
West: Coriyule Road														
10	L2	23	2.0	24	2.0	0.046	5.5	LOS A	0.2	1.6	0.41	0.58	0.41	52.7
11	T1	10	2.0	11	2.0	0.046	5.7	LOS A	0.2	1.6	0.41	0.58	0.41	53.7
12	R2	12	2.0	13	2.0	0.046	9.7	LOS A	0.2	1.6	0.41	0.58	0.41	53.5
Approach		45	2.0	47	2.0	0.046	6.7	LOS A	0.2	1.6	0.41	0.58	0.41	53.1
All Vehicles		850	2.0	895	2.0	0.349	5.0	LOS A	2.3	16.6	0.23	0.47	0.23	54.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
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.

Appendix D

Tivoli Drive/Coriyule Road/Greenvale Drive Roundabout Functional Layout Plan



ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	28/05/22
B	COUNCIL COMMENTS ADDRESSED	05/10/22
C	COUNCIL COMMENTS ADDRESSED	25/10/22

GENERAL NOTES

1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUL 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - TIVOLI DRIVE (SPEED ZONE 50km/h)
- CORIYULE ROAD (SPEED ZONE 50km/h)
- GREENVALE DRIVE (SPEED ZONE 50km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4:2009

DESIGNED	MATT O'BRIEN 28/05/22
CHECKED/APPROVED	N. WOOLCOCK 28/05/22
FILE NAME	G21702-04-00.dgn

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JETTY ROAD STAGE 2
ULTIMATE DUAL CARRIAGEWAY CROSS SECTION
GREATER GEELONG CITY
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 8/11
DWG No. G21702-04-08

DATE: 28/10/2022
MODEL: G21702-04-08
FILE: P:\Synergy\Projects\GRP2\GRP21702\03-Drawings\GRP21702-04-00.dgn

Appendix E

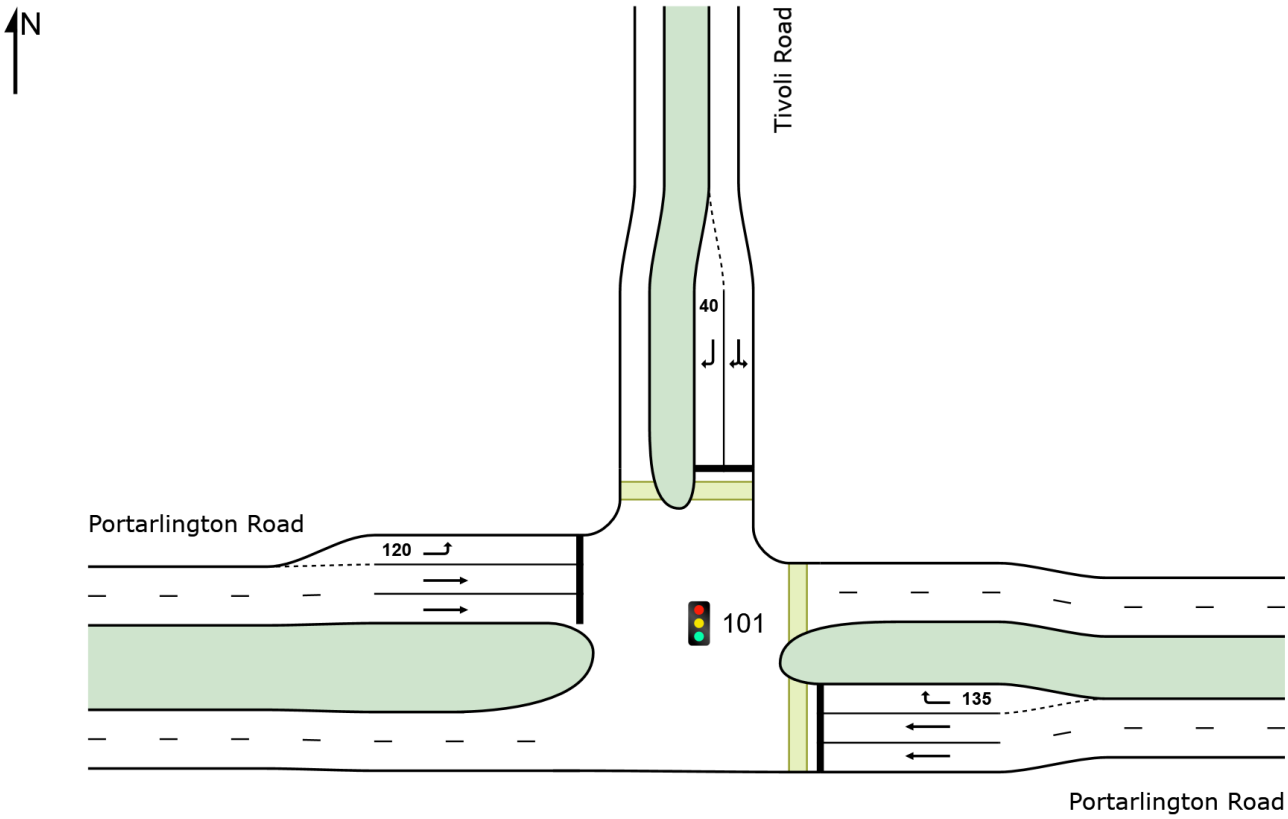
Portarlington Road/Tivoli Drive
SIDRA Results and Functional Layout Plan

SITE LAYOUT

Site: 101 [Existing AM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



SIDRA INTERSECTION 9.0 | Copyright © 2000-2020 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: TRAFFIX GROUP PTY LTD | Licence: NETWORK / Enterprise | Created: Friday, 24 June 2022 9:19:16 AM
Project: P:\Synergy\Projects\GRP2\GRP21702\07-Analysis\SIDRA\Jetty Road Stage 2.sip9

MOVEMENT SUMMARY

Site: 101 [Existing AM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

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
East: Portarlington Road														
5	T1	1190	5.0	1253	5.0	* 0.489	7.4	LOS A	13.1	95.6	0.52	0.47	0.52	53.5
6	R2	6	2.0	6	2.0	0.052	50.0	LOS D	0.3	1.9	0.96	0.65	0.96	32.4
Approach		1196	5.0	1259	5.0	0.489	7.6	LOS A	13.1	95.6	0.52	0.47	0.52	53.3
North: Tivoli Road														
7	L2	45	2.0	47	2.0	0.472	40.7	LOS D	6.8	48.3	0.93	0.80	0.93	35.4
9	R2	272	2.0	286	2.0	* 0.472	41.2	LOS D	6.8	48.3	0.94	0.80	0.94	35.2
Approach		317	2.0	334	2.0	0.472	41.1	LOS D	6.8	48.3	0.93	0.80	0.93	35.2
West: Portarlington Road														
10	L2	71	2.0	75	2.0	0.051	7.5	LOS A	0.7	4.7	0.22	0.62	0.22	52.0
11	T1	708	5.0	745	5.0	0.362	12.4	LOS B	9.2	67.2	0.61	0.53	0.61	49.8
Approach		779	4.7	820	4.7	0.362	12.0	LOS B	9.2	67.2	0.57	0.54	0.57	50.0
All Vehicles		2292	4.5	2413	4.5	0.489	13.7	LOS B	13.1	95.6	0.60	0.54	0.60	48.7

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.
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
East: Portarlington Road												
P21	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.5	210.9	1.05
P22	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
North: Tivoli Road												
P31	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
P32	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	196.4	204.3	1.04
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04

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.

PHASING SUMMARY

Site: 101 [Existing AM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

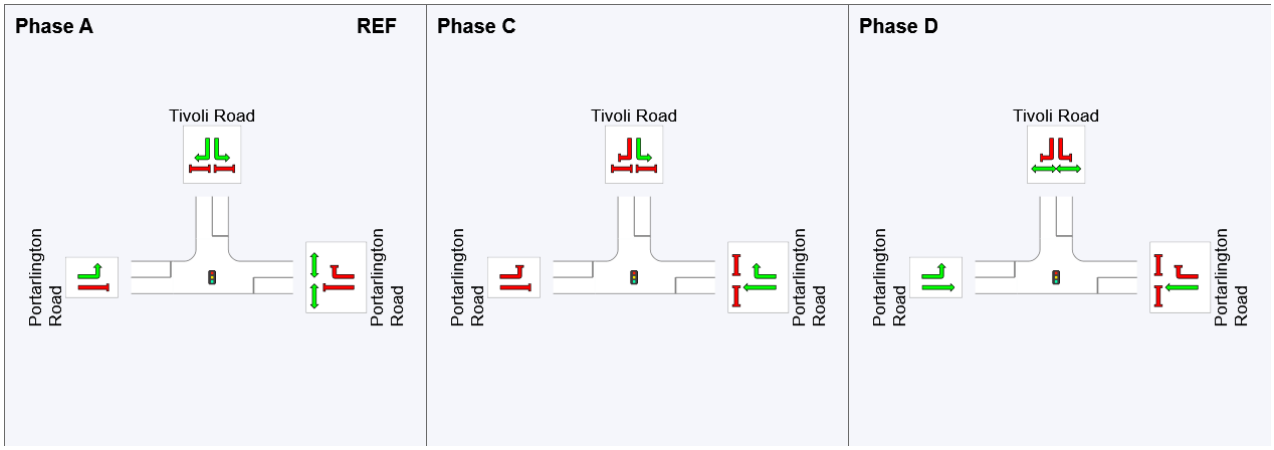
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, C, D
Output Phase Sequence: A, C, D

Phase Timing Summary

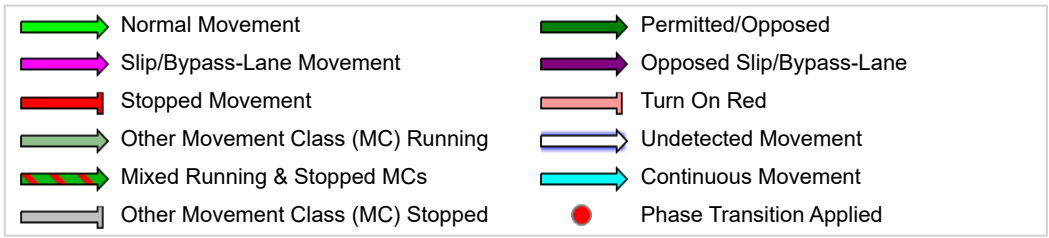
Phase	A	C	D
Phase Change Time (sec)	0	23	35
Green Time (sec)	17	6	49
Phase Time (sec)	23	12	55
Phase Split	26%	13%	61%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Existing PM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

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
East: Portarlington Road														
5	T1	677	5.0	713	5.0	0.243	2.9	LOS A	4.2	30.7	0.29	0.26	0.29	57.3
6	R2	23	2.0	24	2.0	*0.198	51.2	LOS D	1.1	7.6	0.98	0.71	0.98	32.1
Approach		700	4.9	737	4.9	0.243	4.5	LOS A	4.2	30.7	0.32	0.27	0.32	55.8
North: Tivoli Road														
7	L2	19	2.0	20	2.0	0.408	48.8	LOS D	3.2	22.5	0.98	0.76	0.98	32.8
9	R2	113	2.0	119	2.0	*0.408	49.4	LOS D	3.2	22.5	0.98	0.76	0.98	32.6
Approach		132	2.0	139	2.0	0.408	49.3	LOS D	3.2	22.5	0.98	0.76	0.98	32.7
West: Portarlington Road														
10	L2	316	2.0	333	2.0	0.227	7.9	LOS A	3.5	24.9	0.26	0.65	0.26	51.8
11	T1	1215	5.0	1279	5.0	*0.525	9.2	LOS A	14.9	109.0	0.58	0.52	0.58	52.1
Approach		1531	4.4	1612	4.4	0.525	8.9	LOS A	14.9	109.0	0.51	0.55	0.51	52.1
All Vehicles		2363	4.4	2487	4.4	0.525	9.8	LOS A	14.9	109.0	0.48	0.48	0.48	51.4

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
East: Portarlington Road												
P21	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.5	210.9	1.05
P22	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
North: Tivoli Road												
P31	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
P32	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	196.4	204.3	1.04
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04

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.

PHASING SUMMARY

Site: 101 [Existing PM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

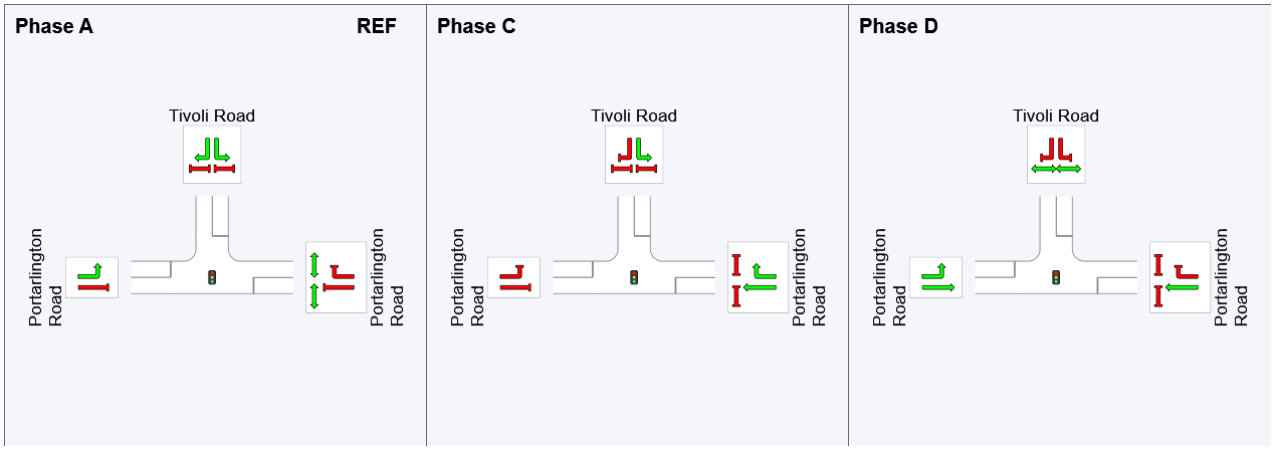
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, C, D
Output Phase Sequence: A, C, D

Phase Timing Summary

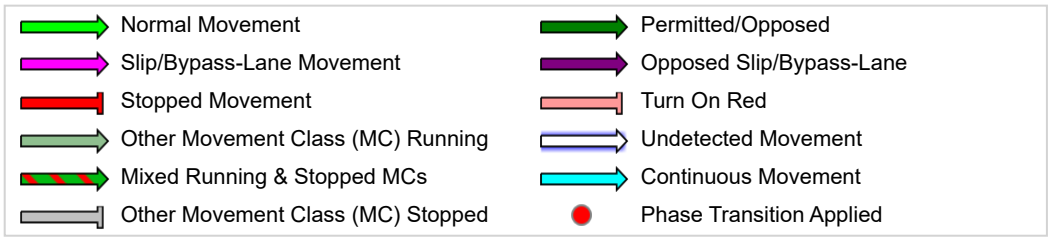
Phase	A	C	D
Phase Change Time (sec)	0	14	26
Green Time (sec)	8	6	58
Phase Time (sec)	14	12	64
Phase Split	16%	13%	71%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

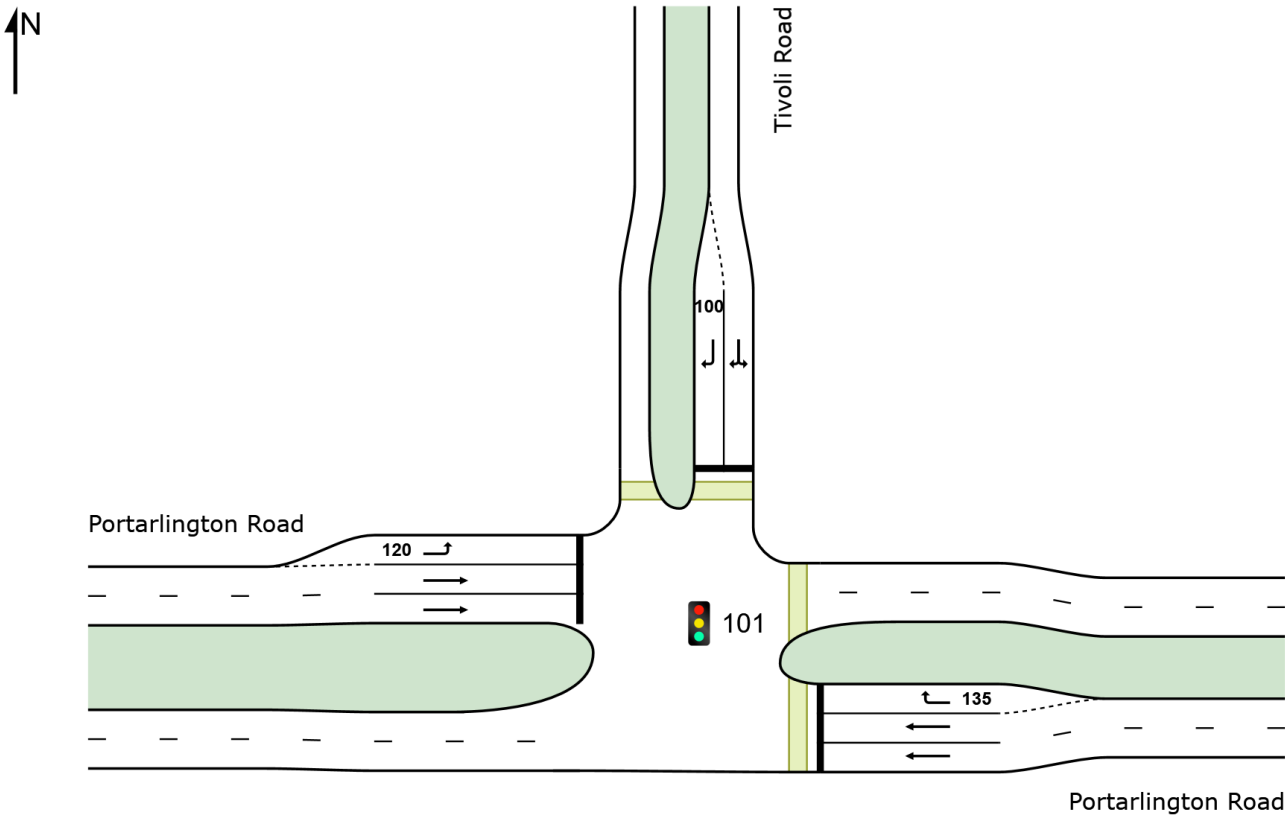


SITE LAYOUT

Site: 101 [Post Dev AM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



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Project: P:\Synergy\Projects\GRP2\GRP21702\07-Analysis\SIDRA\Jetty Road Stage 2.sip9

MOVEMENT SUMMARY

Site: 101 [Post Dev AM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

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
East: Portarlington Road														
5	T1	1428	5.0	1503	5.0	* 0.814	24.1	LOS C	30.0	219.3	0.92	0.88	0.98	43.0
6	R2	33	2.0	35	2.0	0.285	51.7	LOS D	1.6	11.1	0.99	0.72	0.99	32.0
Approach		1461	4.9	1538	4.9	0.814	24.7	LOS C	30.0	219.3	0.92	0.87	0.98	42.6
North: Tivoli Road														
7	L2	155	2.0	163	2.0	0.806	35.8	LOS D	24.3	172.8	0.96	0.91	1.05	37.1
9	R2	917	2.0	965	2.0	* 0.806	36.2	LOS D	24.3	172.8	0.96	0.91	1.05	37.0
Approach		1072	2.0	1128	2.0	0.806	36.1	LOS D	24.3	172.8	0.96	0.91	1.05	37.0
West: Portarlington Road														
10	L2	233	2.0	245	2.0	0.167	7.8	LOS A	2.4	17.3	0.25	0.65	0.25	51.9
11	T1	850	5.0	895	5.0	0.666	26.6	LOS C	16.7	122.0	0.90	0.79	0.90	41.8
Approach		1083	4.4	1140	4.4	0.666	22.5	LOS C	16.7	122.0	0.76	0.76	0.76	43.6
All Vehicles		3616	3.9	3806	3.9	0.814	27.4	LOS C	30.0	219.3	0.88	0.85	0.93	41.1

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.
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
East: Portarlington Road												
P21	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.5	210.9	1.05
P22	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
North: Tivoli Road												
P31	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
P32	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	196.4	204.3	1.04
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04

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.

PHASING SUMMARY

Site: 101 [Post Dev AM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

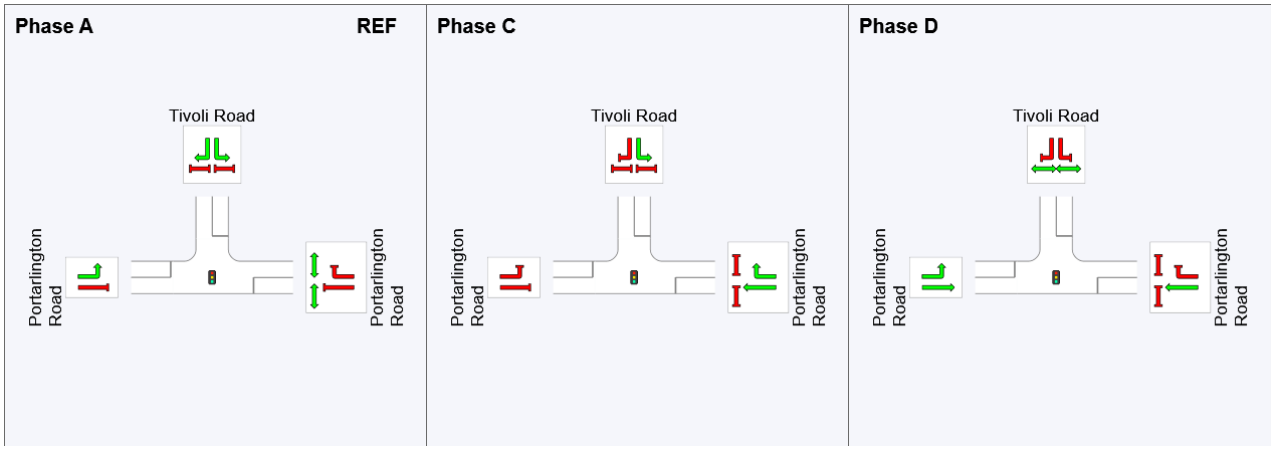
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase A
Input Phase Sequence: A, C, D
Output Phase Sequence: A, C, D

Phase Timing Summary

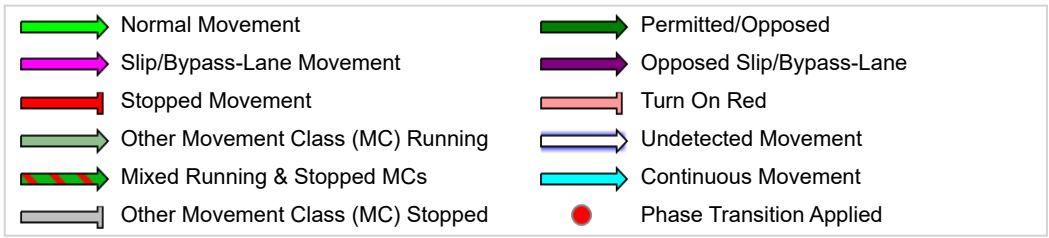
Phase	A	C	D
Phase Change Time (sec)	0	40	52
Green Time (sec)	34	6	32
Phase Time (sec)	40	12	38
Phase Split	44%	13%	42%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Post Dev PM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

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
East: Portarlington Road														
5	T1	812	5.0	855	5.0	0.318	5.1	LOS A	6.9	50.4	0.40	0.35	0.40	55.3
6	R2	117	2.0	123	2.0	*0.673	51.1	LOS D	5.6	40.1	1.00	0.83	1.11	32.1
Approach		929	4.6	978	4.6	0.673	10.9	LOS B	6.9	50.4	0.48	0.41	0.49	50.7
North: Tivoli Road														
7	L2	60	2.0	63	2.0	0.750	47.8	LOS D	10.2	72.7	1.00	0.88	1.14	33.1
9	R2	357	2.0	376	2.0	*0.750	48.2	LOS D	10.2	72.7	1.00	0.88	1.14	33.0
Approach		417	2.0	439	2.0	0.750	48.1	LOS D	10.2	72.7	1.00	0.88	1.14	33.0
West: Portarlington Road														
10	L2	891	2.0	938	2.0	0.668	10.9	LOS B	19.5	138.6	0.52	0.76	0.52	49.7
11	T1	1458	5.0	1535	5.0	*0.746	16.9	LOS B	25.8	188.0	0.83	0.75	0.83	47.0
Approach		2349	3.9	2473	3.9	0.746	14.6	LOS B	25.8	188.0	0.71	0.76	0.71	48.0
All Vehicles		3695	3.8	3889	3.8	0.750	17.5	LOS B	25.8	188.0	0.69	0.68	0.70	46.2

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
East: Portarlington Road												
P21	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.5	210.9	1.05
P22	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
North: Tivoli Road												
P31	Stage 1	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04
P32	Stage 2	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	196.4	204.3	1.04
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	199.0	207.6	1.04

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.

PHASING SUMMARY

Site: 101 [Post Dev PM Peak Hour (Site Folder: Tivoli-Portarlington)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

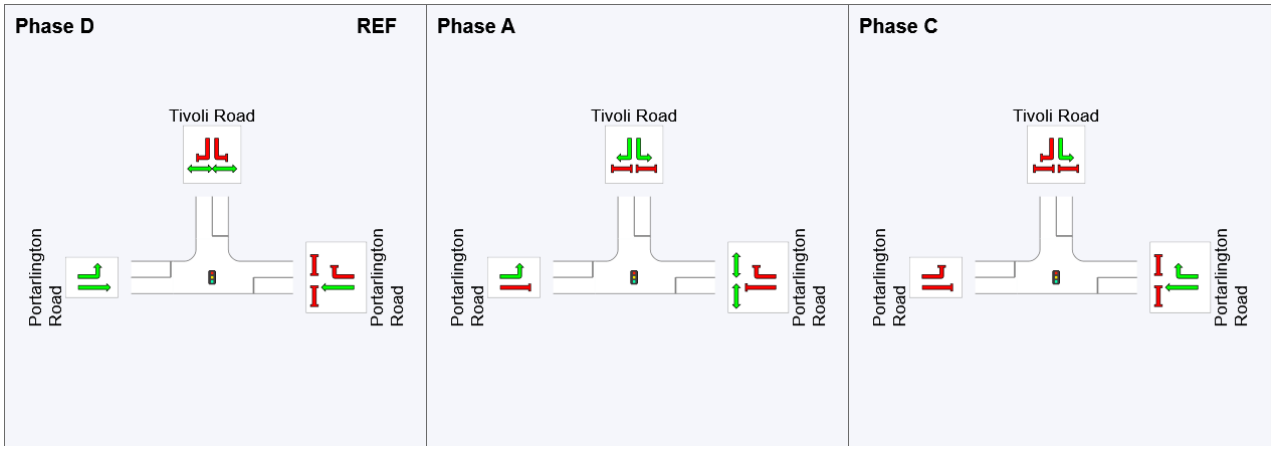
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase D
Input Phase Sequence: D, A, C
Output Phase Sequence: D, A, C

Phase Timing Summary

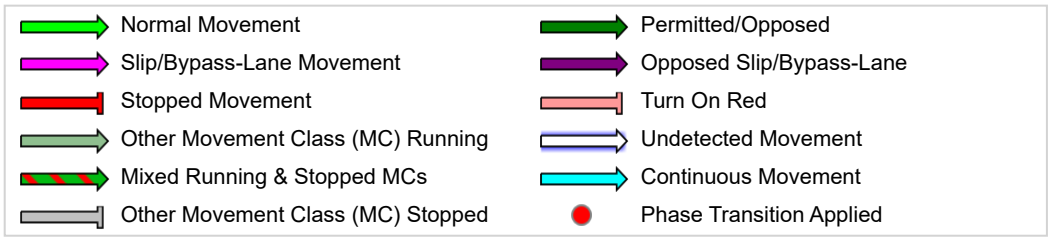
Phase	D	A	C
Phase Change Time (sec)	0	55	75
Green Time (sec)	49	14	9
Phase Time (sec)	55	20	15
Phase Split	61%	22%	17%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	28/05/22
B	COUNCIL COMMENTS ADDRESSED	05/10/22

GENERAL NOTES

1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUL 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - TIVOLI DRIVE (SPEED ZONE 50km/h)
- PORTARLINGTON ROAD (SPEED ZONE 80km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4 2009

DESIGNED	MATT O'BRIEN	28/05/22
CHECKED/APPROVED	N. WOOLCOCK	28/05/22
FILE NAME	G21702-04-00.dgn	

Traffix Group
Level 28, 459 Collins Street
Melbourne, Victoria 3000
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www.traffixgroup.com.au

JETTY ROAD STAGE 2
ULTIMATE DUAL CARRIAGEWAY CROSS SECTION
GREATER GEELONG CITY
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10 | SHEET No. 2/11 | DWG No. G21702-04-02

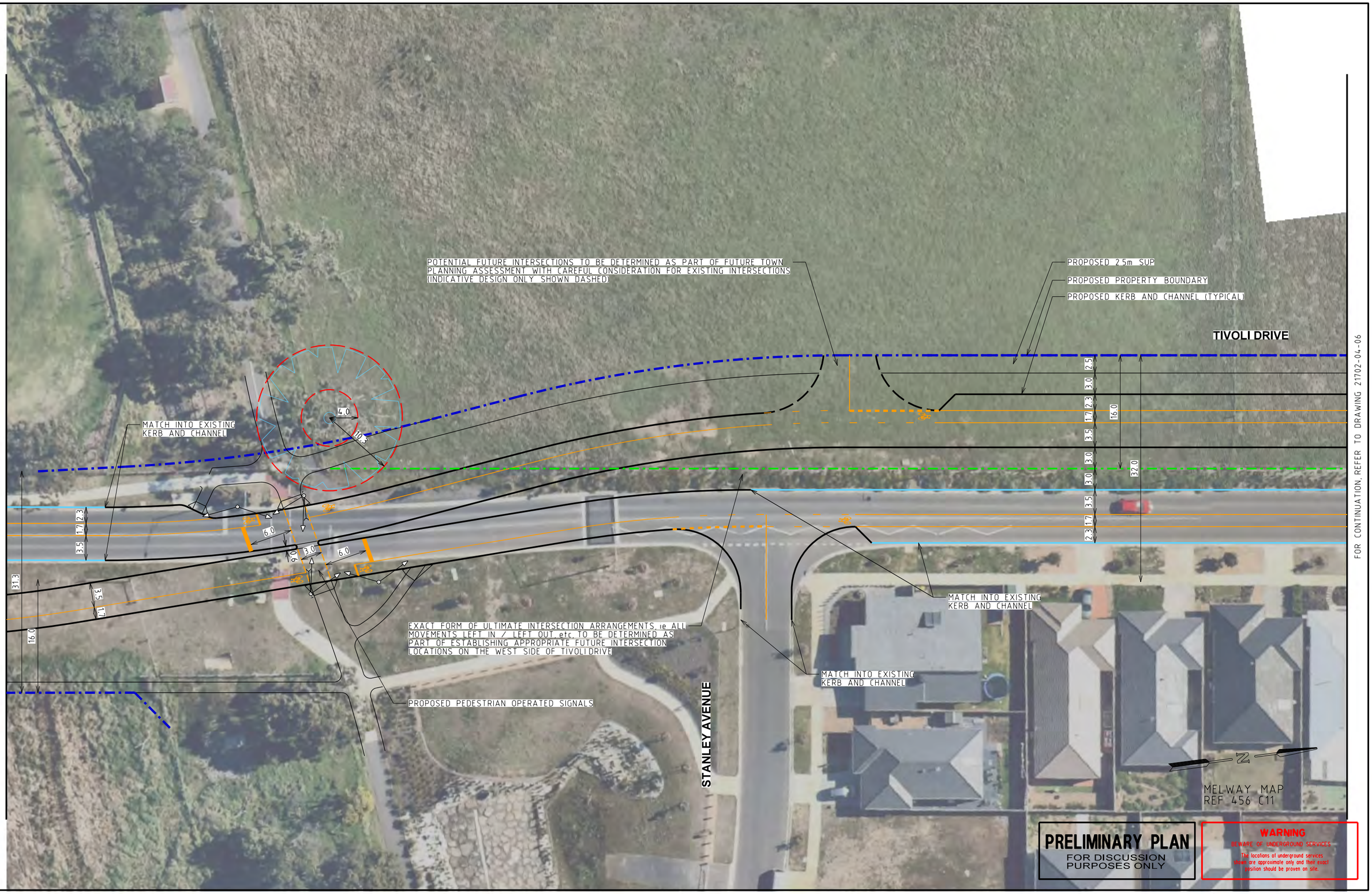
DATE: 28/10/2022
MODEL: G21702-04-02
FILE: P:\Synergy\Projects\GRP2\GRP21702\03-Drawings\GRP21702-04-00.dgn

Appendix F

Tivoli Drive Carriageway Transition and POS Functional Layout Plan

Traffix Group

G21702R-03E



ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	28/05/22
B	COUNCIL COMMENTS ADDRESSED	05/10/22
C	COUNCIL COMMENTS ADDRESSED	25/10/22
D	FOOTPATH MODIFIED TO AVOID SRZ	28/10/22

GENERAL NOTES

1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUL 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - TIVOLI DRIVE (SPEED ZONE 50km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4:2009

DESIGNED	MATT O'BRIEN	28/05/22
CHECKED/APPROVED	N. WOOLCOCK	28/05/22
FILE NAME	G21702-04-00.dgn	

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JETTY ROAD STAGE 2
ULTIMATE DUAL CARRIAGEWAY CROSS SECTION
GREATER GEELONG CITY
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10 | SHEET No. 5/11 | DWG No. G21702-04-05

DATE: 28/10/2022
MODEL: 21702x4-05
FILE: P:\Synergy\Projects\GRP2\GRP21702\03-Drawings\GRP21702-04-00.dgn

Appendix G

Future Greenvale Drive/Centennial Boulevard Signals Functional Layout Plan

ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	28/05/22
B	COUNCIL COMMENTS ADDRESSED	05/10/22

GENERAL NOTES

1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUL 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - GREENVALE DRIVE (SPEED ZONE 50km/h)
- CENTENNIAL BOULEVARD (SPEED ZONE 50km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4 2009

DESIGNED	MATT O'BRIEN	28/05/22
CHECKED/APPROVED	N. WOOLCOCK	28/05/22
FILE NAME	G21702-04-00.dgn	

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JETTY ROAD STAGE 2
ULTIMATE DUAL CARRIAGEWAY CROSS SECTION
GREATER GEELONG CITY
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10 | SHEET No. 11/11 | DWG No. G21702-04-11

DATE: 28/10/2022
MODEL: 21702-04-11
FILE: P:\Synergy\Projects\GRP2\GRP21702\03-Drawings\GRP21702-04-00.dgn

Appendix H

Coriyule Road Traffic Control Treatment

ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	14/10/22

GENERAL NOTES

1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUL 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - TIVOLI DRIVE (SPEED ZONE 50km/h)
- GREENVALE DRIVE (SPEED ZONE 50km/h)
- CORIYULE ROAD (SPEED ZONE 50km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4:2009

DESIGNED: MATT O'BRIEN
CHECKED/APPROVED: N. WOOLCOCK PE0006892
FILE NAME: G21702-06-00.dgn

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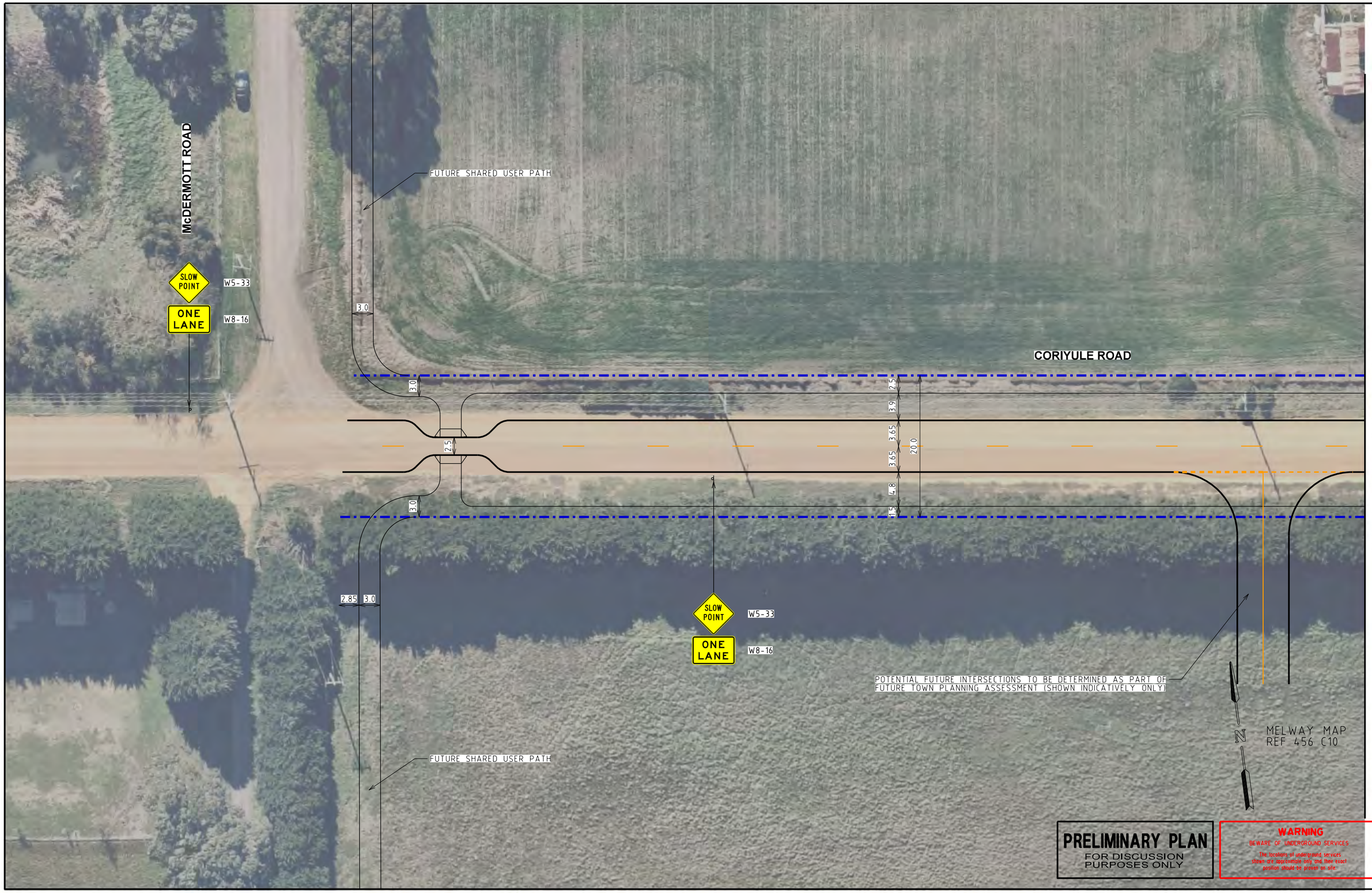
JETTY ROAD STAGE 2
CORIYULE ROAD TRAFFIC CONTROL TREATMENT
GREATER GEELONG CITY
KEY PLAN

SCALE 1:1500 (A3) 0 7.5 15 22.5 30
SHEET No. 1/3
DWG No. G21702-06-01

DATE: 14/10/2022
MODEL: G21702-06-01
FILE: P:\Synergy\Projects\GRP2\GRP21702\03-Drawings\GRP21702-06-00.dgn



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services shown are approximate only and their exact position should be proven on site.

ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	14/10/22

GENERAL NOTES
1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP JUL 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - CORIYULE ROAD (SPEED ZONE 50km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4-2009

DESIGNED: MATT O'BRIEN
CHECKED/APPROVED: N. WOOLCOCK PE0006892
FILE NAME: G21702-06-00.dgn

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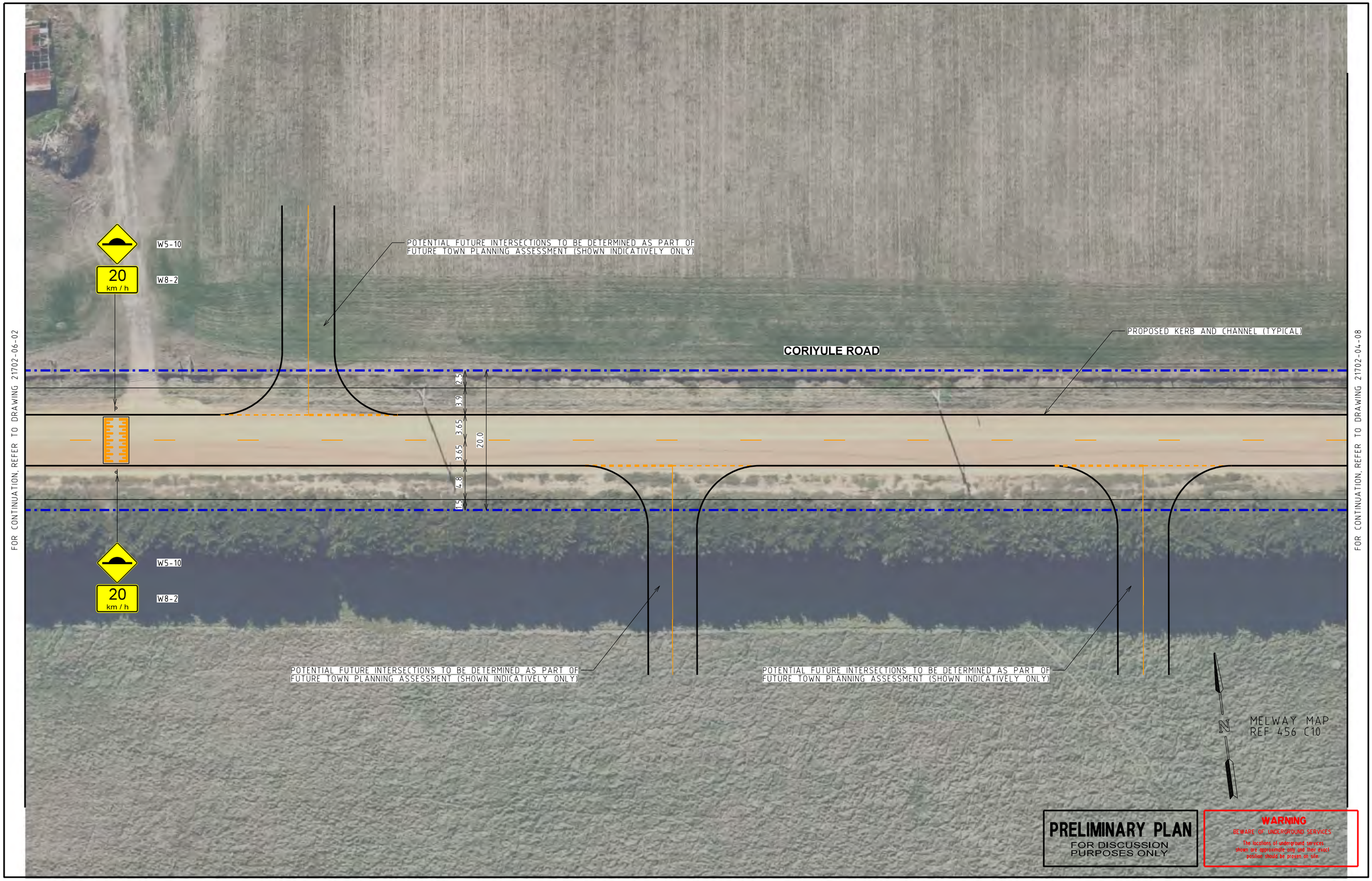
JETTY ROAD STAGE 2
CORIYULE ROAD TRAFFIC CONTROL TREATMENT
GREATER GEELONG CITY
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10 | SHEET No. 2/3 | DWG No. G21702-06-02

DATE: 14/10/2022
MODEL: G21702-06-02
FILE: P:\Synergy\Projects\GRP2\GRP21702\03-Drawings\GRP21702-06-00.dgn



ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	14/10/22

GENERAL NOTES

1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE: NEARMAP JUL 2021)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 MAIN ROAD - CORIYULE ROAD (SPEED ZONE 50km/h)
4 ALL PROPOSED FOOTPATHS AND PRAM CROSSINGS ARE TO BE CONSTRUCTED WITH TACTILE GROUND SURFACE INDICATORS TO DDA COMPLIANCE GUIDELINES REFER TO AS 1428.4:2009

DESIGNED: MATT O'BRIEN
CHECKED/APPROVED: N. WOOLCOCK PE0006892
FILE NAME: G21702-06-00.dgn

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JETTY ROAD STAGE 2
CORIYULE ROAD TRAFFIC CONTROL TREATMENT
GREATER GEELONG CITY
CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10 | SHEET No. 3/3 | DWG No. G21702-06-03

DATE: 14/10/2022
MODEL: G21702-06-03
FILE: P:\Synergy\Projects\GRP2\GRP21702\03-Drawings\GRP21702-06-00.dgn

Appendix I

Tivoli Drive/Greenvale Drive Access Strategy


Legend
Left-In/Left-Out Connection
Key All Movements Connection
Local All Movements Connection
Note: location and number of site access intersections is indicative and based on previous plans and advice from the project team.
PORT PHILLIP BAY
PROPERTY No.11
PROPERTY No.12
PROPERTY No.13
PROPOSED RESIDENTIAL VILLAGE
PROPERTY No.14
PROPERTY No.15
PROPERTY No.16
McDERMOTT ROAD
GREENVALE DRIVE
CORIYULE ROAD
BELLARINE RAIL TRAIL
PUBLIC OPEN SPACE 0.10 HA (NOT IN TITLE)
CURLEWIS GOLF COURSE
LEURA PARK WINERY
PORTARLINGTON ROAD
JETTY ROAD
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Appendix B

DPO Requirements Plan

JETTY ROAD, CURLEWIS

STAGE 2 DEVELOPMENT PLAN
TRAFFIC ENGINEERING PROJECTS

REV: 2
DATE: 07-11-2022
SHEET: 1 OF 1

PRELIMINARY

FOR DISCUSSION PURPOSES ONLY

LEGEND

- Duplication of Greenvale Drive
- Duplication of Tivoli Drive (North)
- Duplication of Tivoli Drive (South)
- Upgrade Coriyule Road
- Signalisation of Intersection
- Upgrade Pedestrian Operated Signals
- Upgrade Intersection
- Construction of Roundabout
- Traffic Calming Device

* Internal subdivision(s) road networks to be appropriately designed as part of the application stage(s).

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