Traffix Group

Traffic Impact Assessment

Proposed Development Plan

Collison Estate, Cranbourne East

Prepared for
City of Casey

July 2023

G24859R-03C

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1. Introduction

Traffix Group has been engaged by City of Casey to prepare an updated Traffic Impact Assessment for the Proposed Development Plan of the Collison Estate in Cranbourne East.

This report includes a detailed assessment of the proposed Development Plan including the internal road layout and access arrangements, traffic generation and distribution assessments, analysis of traffic impacts. and recommendations for upgrades to the surrounding road network and intersections.

The following report is a consolidated and updated version of our two previous reports prepared for the proposed Collison Estate Development Plan as follows:

- Traffic Engineering Assessment report (Our Ref: G24859R-01D, dated 27/05/2019), and
- Traffic Impact Assessment report (Our Ref: G24859R-02B, dated 16/01/2020).

2. Existing Conditions

2.1. Subject Site

The subject site is located on the north side of Berwick-Cranbourne Road in Cranbourne East. The subject site is bound by Casey Fields Boulevard to the west, Berwick-Cranbourne Road to the south, Linsell Boulevard to the north, and a residential estate to the east.

The subject site is comprised of 95 individual land parcels with an overall land area of approximately 85.5 hectares excluding existing roads.

The subject site is presented in the locality plan at Figure 1.

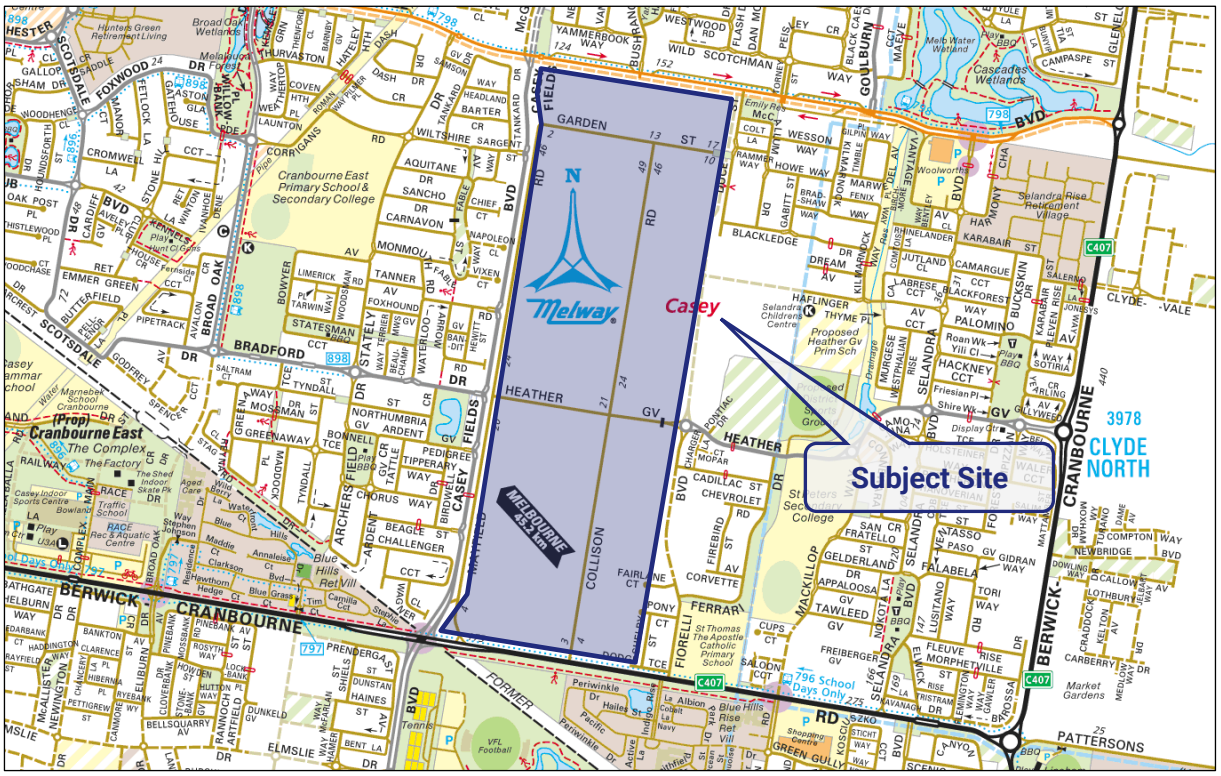

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Figure 1: Locality Plan

2.2. Land Use

The subject site is zoned 'General Residential Zone – Schedule 1 (GRZ1)' under the Casey Planning Scheme as indicated in Figure 2.

Land use within the subject site is generally a mixture of residential and small-scale agricultural land.

Land zoning surrounding the subject site is generally residential but also includes public park and recreation and an unused railway reserve zoned 'Transport Zone 1 - TRZ1' near the southwest corner of the site.

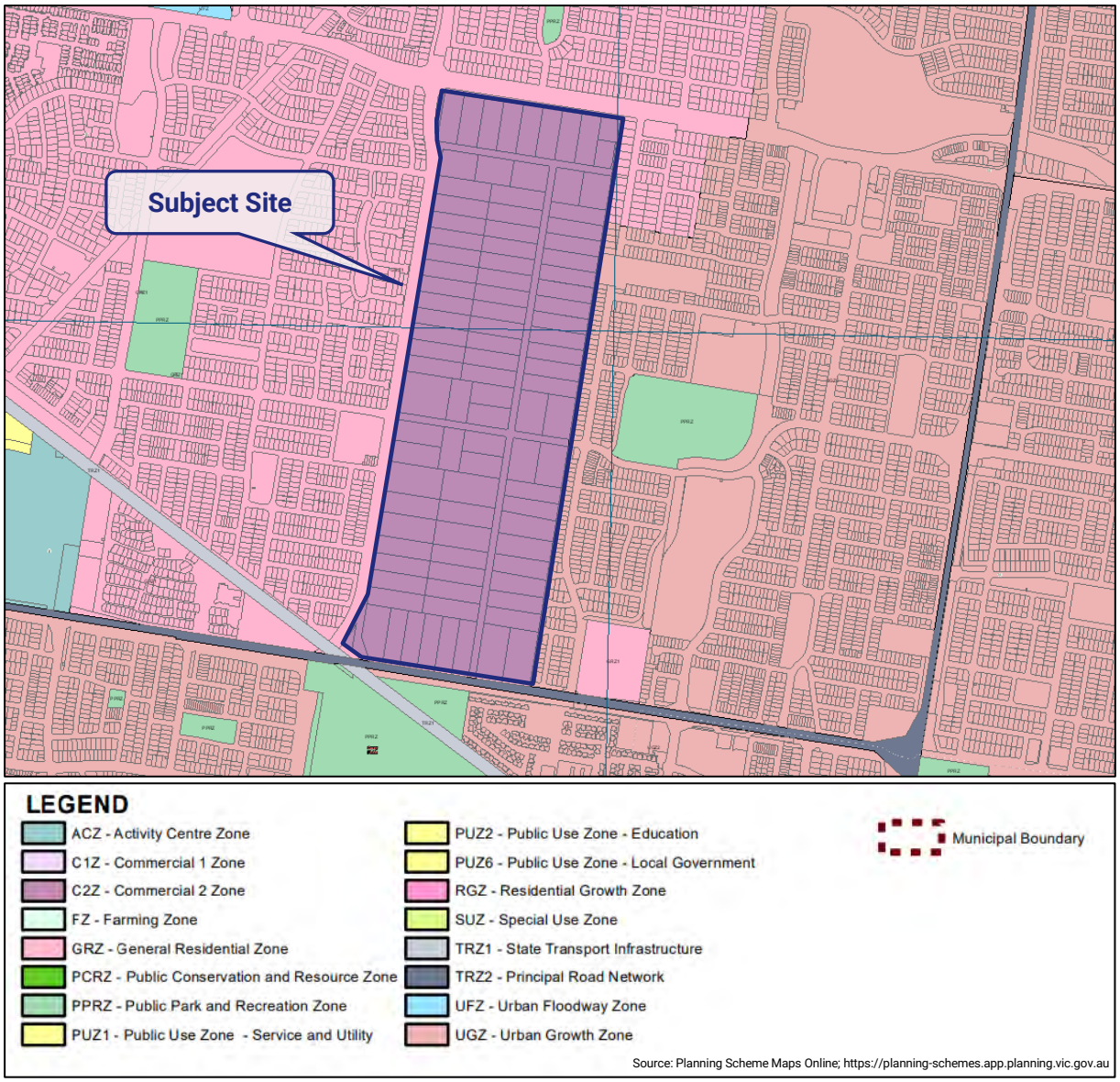


Figure 2: Land Use Zoning Map

2.3. Road Network

2.3.1. Internal Roads

Collison Road is aligned in a north-south direction between Berwick-Cranbourne Road (to the south) and Garden Street (to the north).

Collison Road generally has an unsealed carriageway width of approximately 6.0-6.5m which accommodates simultaneous two-way traffic.

A signed speed limit of 50km/h applies to Collison Road.

Collison Road, between Berwick-Cranbourne Road and Heather Grove, is shown in Figure 3 and Figure 4.

An unsignalised T-intersection which includes designated turn lanes is located at the intersection of Collison Road and Berwick-Cranbourne Road.

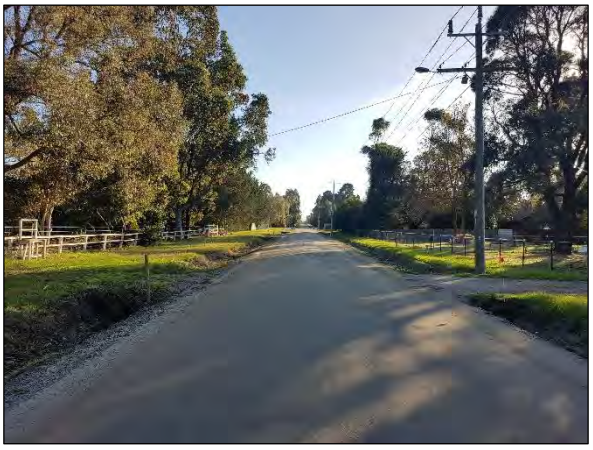


Figure 3: Collison Road – View North

Figure 4: Collison Road – View South

Garden Street is aligned in an east-west direction between Mayfield Road (to the west) and a dead end (to the east near the eastern boundary of the site).

Garden Street has an unsealed carriageway width of approximately 5.5-5.85m which accommodates simultaneous two-way traffic.

A speed limit of 50km/h applies to Garden Street.

Garden Street, between Collison Road and Mayfield Road, is shown in Figure 5 and Figure 6.

Figure 5: Garden Street – View East

Figure 6: Garden Street – View West

Heather Grove is aligned in an east-west direction between Berwick-Cranbourne Road (to the east where it continues further to the east within a recently developed estate) and Casey Fields Boulevard (to the west where it continues as Bradford Drive).

Heather Grove, within the site, generally has a sealed carriageway width of approximately 9.3m which accommodates a traffic lane in each direction and a parking lane along the south side of the road.

A roundabout is located at the Heather Grove/Casey Fields Boulevard and Heather Grove/Collison Road intersections. A speed limit of 50km/h applies to Heather Grove.

Heather Grove, between Collison Road and Mayfield Road, is shown in Figure 7 and Figure 8, noting that Heather Grove was linemarked with traffic lanes and a parking lane after the time of our site inspection.

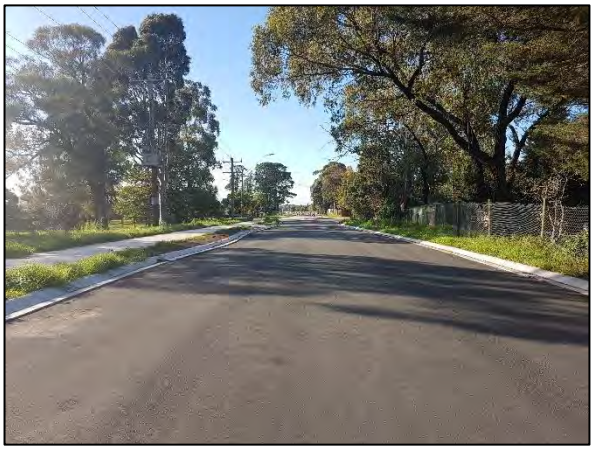


Figure 7: Heather Grove – View East

Figure 8: Heather Grove – View West

Mayfield Road is aligned in a general north-south direction between Berwick-Cranbourne Road (in the south) and Garden Street (in the north).

Mayfield Road has an unsealed carriageway width of approximately 5.8m which accommodates simultaneous two-way traffic.

A speed limit of 50km/h applies to Mayfield Road.

Mayfield Road, between Heather Grove and Garden Street, is shown in Figure 9 and Figure 10.

Figure 9: Mayfield Road – View North

Figure 10: Mayfield Road – View South

2.3.2. External Roads

Berwick-Cranbourne Road is zoned a 'Transport Zone 2 (TRZ2)' under the Planning Scheme and is under the control of the Department of Transport. Berwick-Cranbourne Road is aligned in an east-west orientation along the southern boundary of the site. In the vicinity of the subject site, Berwick-Cranbourne Road has a single carriageway with one traffic lane in each direction.

A speed limit of 80km/h applies to Berwick-Cranbourne Road in the vicinity of the site.

Berwick-Cranbourne Road in the vicinity of the subject site is shown in Figure 11 and Figure 12.

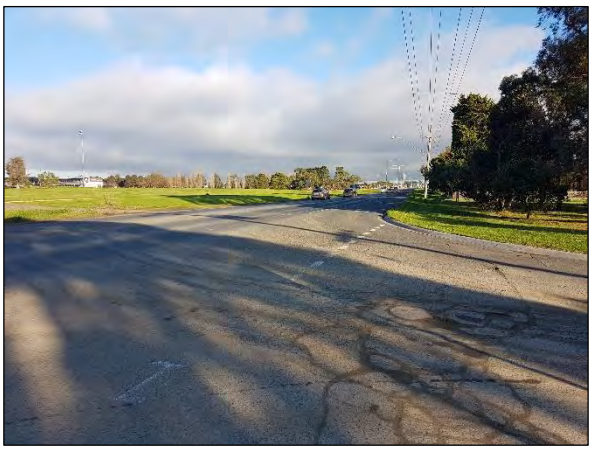


Figure 11: Berwick-Cranbourne Road – View West

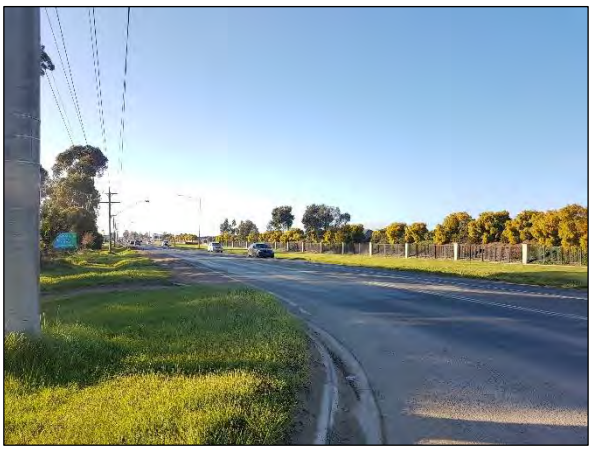


Figure 12: Berwick-Cranbourne Road – View East

Casey Fields Boulevard is a connector road under the control of Council. It is aligned in a general north-south orientation parallel to Mayfield Road along the western boundary of the site. In the vicinity of the site, Casey Fields Boulevard generally has single carriageway with a one traffic lane in each direction and a parking lane along its western side.

There is existing direct property access with Casey Fields Boulevard on the west side of the road between Sargent Street and Beagle Street.

A signed speed limit of 50km/h applies to Casey Fields Boulevard in the vicinity of the subject site.

A signalised cross-intersection of Berwick-Cranbourne Road and Casey Fields Boulevard is located at the southwest corner of the site.

Casey Fields Boulevard, in the vicinity of the subject site, is shown in Figure 13 and Figure 14.

Figure 13: Casey Fields Boulevard – View North

Figure 14: Casey Fields Boulevard – View South

Linsell Boulevard is a secondary arterial road under the control of Council and is aligned in an east-west orientation along the northern boundary of the site. In the vicinity of the subject site, Linsell Boulevard generally has a single carriageway that accommodates one traffic lane in each direction. Service roads are located along the north side of Linsell Boulevard which provide access to dwellings.

A speed limit of 60km/h applies to Linsell Boulevard.

An unsignalised T-intersection which includes designated turn lanes is located at the Linsell Boulevard/ Casey Fields Boulevard intersection.

Linsell Boulevard, in the vicinity of the subject site, is shown in Figure 15 and Figure 16.

Figure 15: Linsell Boulevard – View North

Figure 16: Linsell Boulevard – View South

2.4. Existing Public Transport

The following public transport services currently operate near the site:

- **Bus Route 796** runs along Berwick-Cranbourne Road past the site and provides a service between Clyde and Cranbourne Railway Station.
- **Bus Route 798** runs along Linsell Boulevard past the site and provides a service between Cranbourne Park Shopping Centre and Selandra Rise, via Cranbourne Railway Station.
- **Bus Route 897** runs along Berwick-Cranbourne Road past the site and provides a service between Clyde North and Lynbrook Railway Station via Cranbourne Park Shopping Centre.
- **Bus Route 898** runs along Heather Grove through the centre of the site and provides a service between Clyde North and Cranbourne Railway Station, via Cranbourne Park Shopping Centre.

Figure 17 shows the public transport services in proximity of the subject site.

As the surrounding area continues to develop, it is likely that public transport services will be extended to provide new services to the area. This includes potential bus routes along Casey Fields Boulevard adjacent to the site's western boundary.

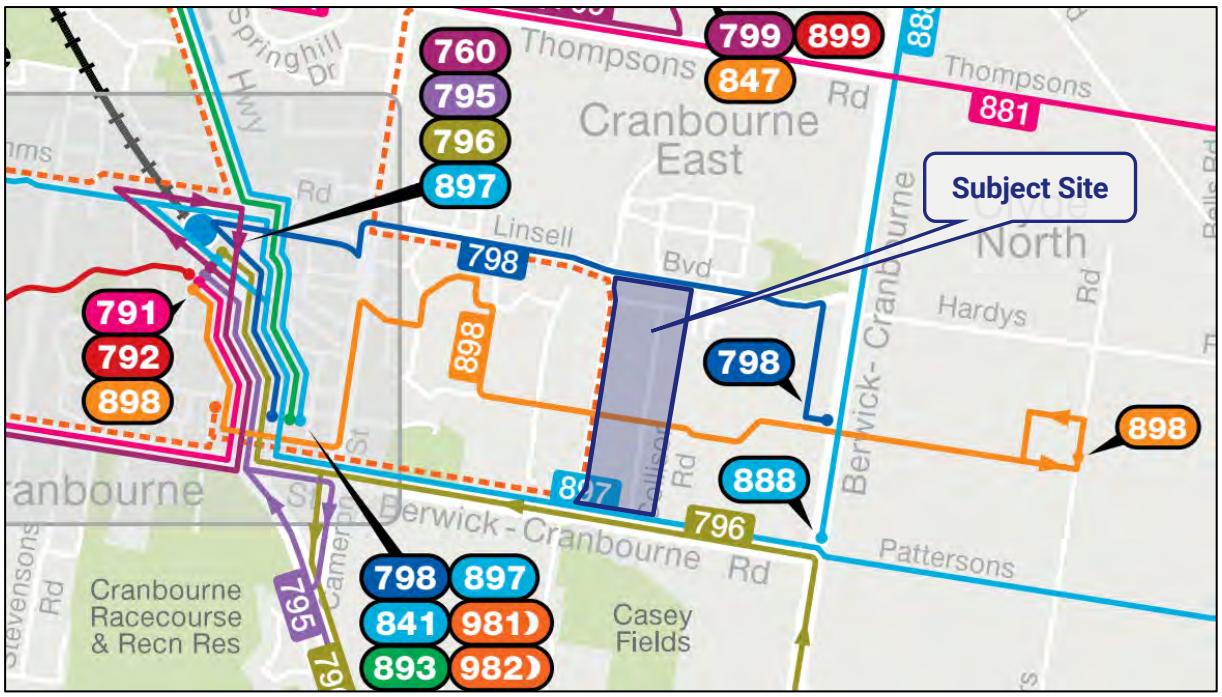


Figure 17: Public Transport Map

3. Cranbourne East Precinct Structure Plan

The Cranbourne East Precinct Structure Plan (PSP) area is located directly to the east of the site. Whilst the Collison Estate is not located within the PSP, it identifies the planned future road network and intersections in the surrounding area.

An excerpt of the Road Network Plan of the Cranbourne East Precinct Structure Plan is shown at Figure 18.

This plan identifies the following which is relevant to the Collison Estate:

- Heather Grove as a residential connector street that is aligned through the centre of the site in an east-west direction.
- Casey Fields Boulevard as a connector street and a potential future council arterial road.
- The intersection of Heather Grove and Casey Fields Boulevard as an interim uncontrolled intersection (ultimate signals).
- The intersection of Berwick-Cranbourne Road and Collison Road as being uncontrolled with turn lanes.

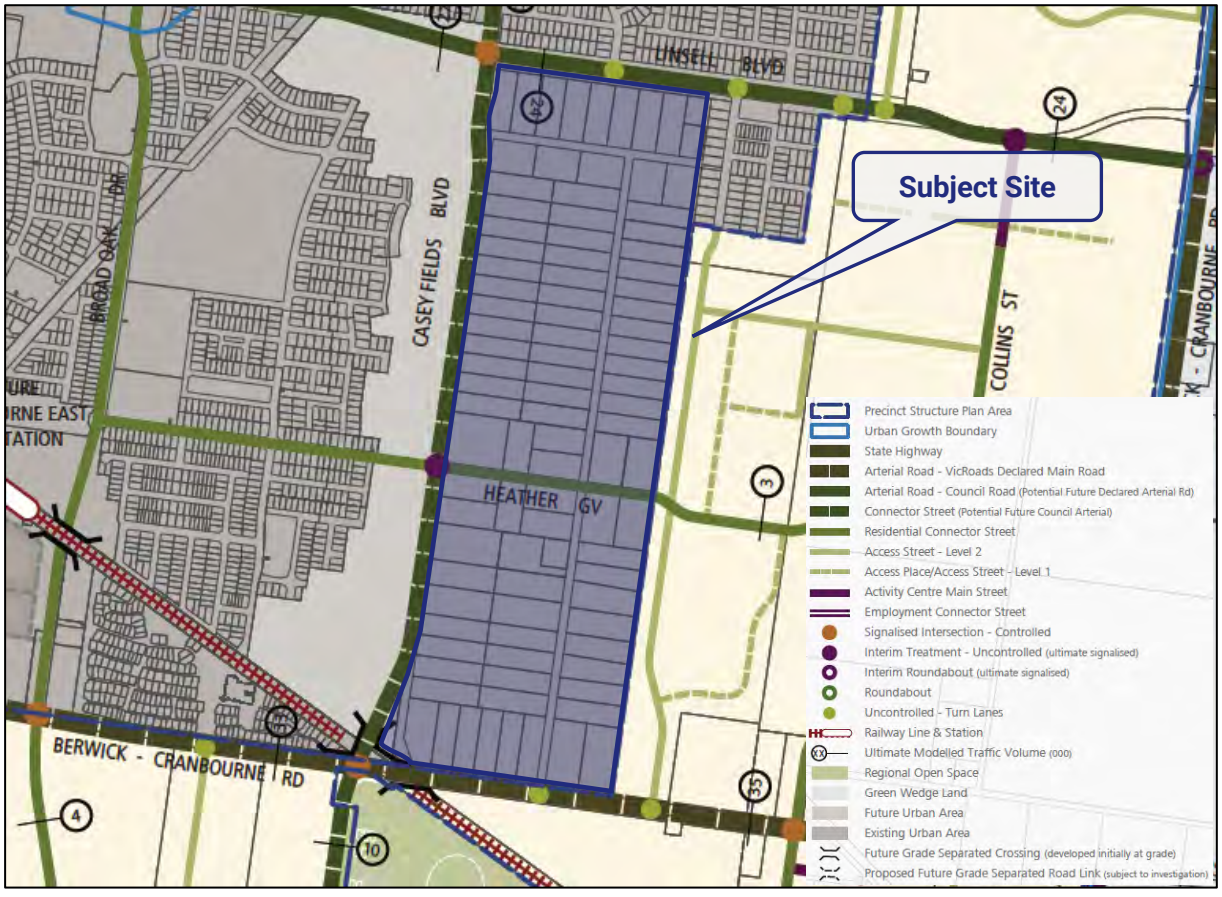


Figure 18: Cranbourne East PSP - Road Network Plan

4. The Proposal

The proposal is for a Development Plan to accommodate up to approximately 1,635 dwellings, including a mixture of conventional and medium density lots.

The Development Plan sets out the higher order road network within the estate and also connections with the external road network including Berwick-Cranbourne Road, Casey Fields Boulevard/Mayfield Road and local road connections with land to the east.

A copy of the Draft Development Plan, prepared by KLM Spatial, is attached at Appendix A.

5. Internal Traffic Matters

5.1. Road Cross-Sections

Each of the proposed road reservations and cross-sections are to be generally in accordance with Clause 56.06 of the Planning Scheme, the Victorian Planning Authority (formerly Metropolitan Planning Authority and Growth Areas Authority) and good current practice whilst also having consideration for the relevant requirements of the Cranbourne East PSP.

Each of the proposed road/street types are outlined below.

5.1.1. Local Access Street – Level 1

The majority of internal roads in the estate are to be Local Access Street Level 1s with a 16m wide road reservation. These roads are to be generally provided as per the cross-section shown at Figure 19 which is generally consistent with typical PSPs.

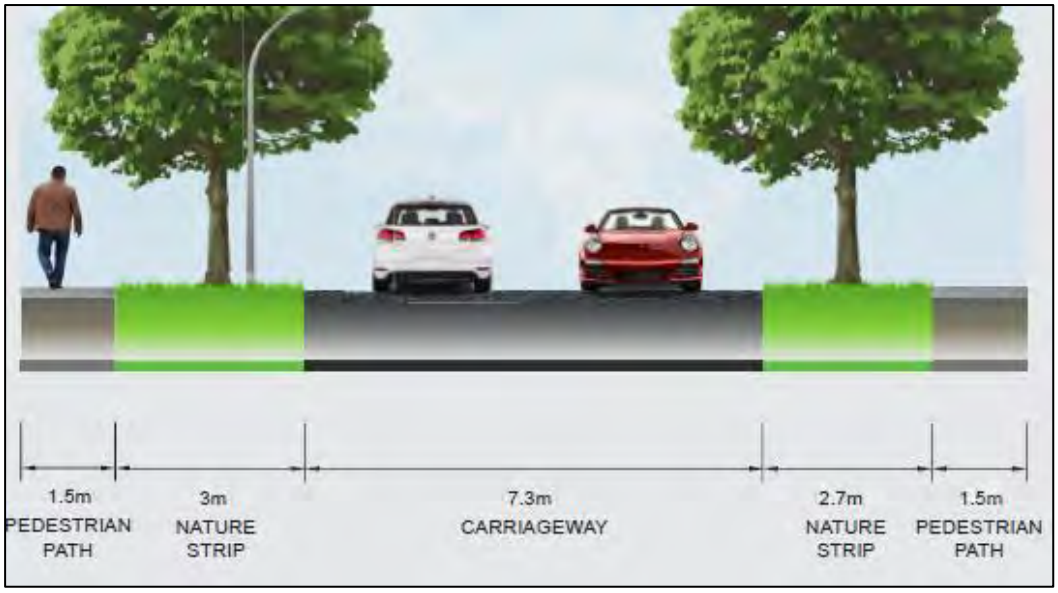


Figure 19: Local Access Level 1 16m

Local access streets adjacent to Berwick-Cranbourne Road, Linsell Boulevard, or Casey Field Boulevard (i.e. service roads or internal loop roads) are to be appropriately provided with a road reservation width of at least 12 metres including a reduced verge on the side that abuts the road reserve, noting that the Development Plan states the following:

Service lanes and internal loop roads can be reduced to 12 metres width with an appropriate indicative cross section to be provided to the satisfaction of the Responsible Authority.

These roads are to be provided with a carriageway width of at least 5.5m which accommodates on-street parking on one side only whilst maintaining a single lane for two-way traffic. This is considered appropriate given that there will be residential abuttal on one side of these roads only.

5.1.2. Garden Street

Garden Street has an existing road reserve width of 20m. Garden Street will terminate at its eastern end as is consistent with current arrangements.

Garden Street will not provide the key east-west travel route between Collison Road and Casey Fields Boulevard and therefore will function similar to a typical 16m wide Local Access Street Level 1.

Accordingly, Garden Street will be provided generally consistent with a Local Access Street Level 1 cross-section (as shown at Figure 19) except with wider verges on each side.

The eastern end of Garden Street (to the east of Collison Road) could be reduced to a road reserve width of 16m given it is a dead-end road that will carry low traffic volumes. A dead-end turning treatment must be provided at its eastern end.

The proposed cross-section for Garden Street is shown at Figure 20.

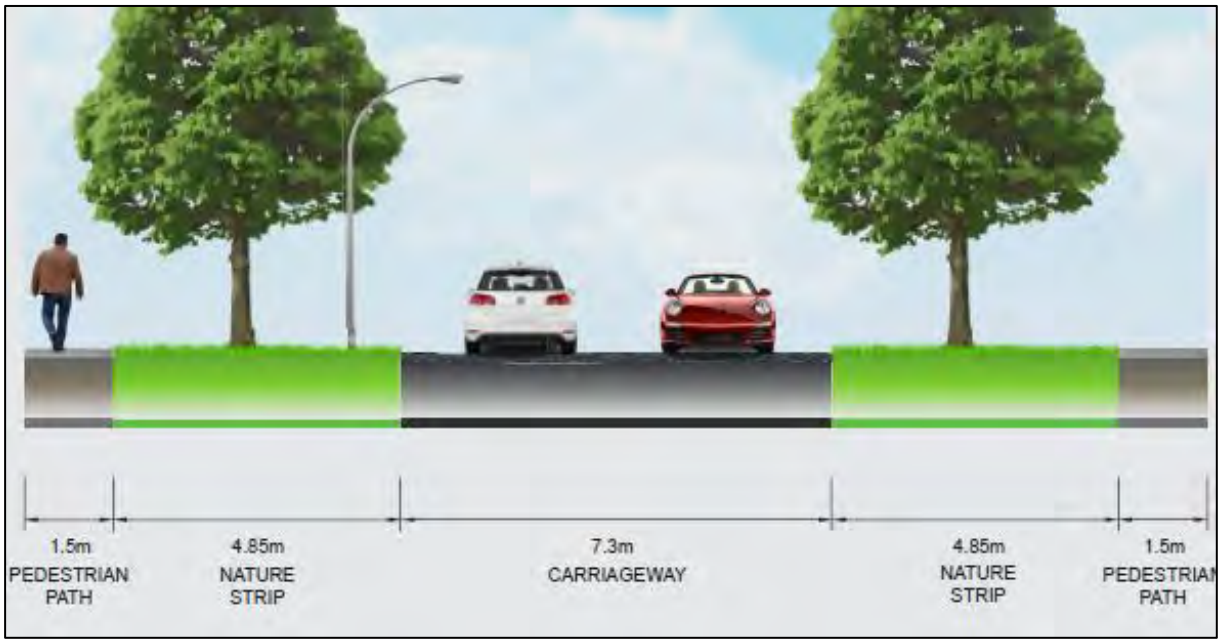


Figure 20: Garden Street 20m

5.1.3. Local Access Street Level 2

Collison Road

Collison Road has an existing road reserve width of approximately 20m. Collison Road is to be upgraded to be Local Access Street Level 2 within the existing 20m wide road reserve as per the cross-section shown at Figure 21. This includes a 3m wide shared path on one side.

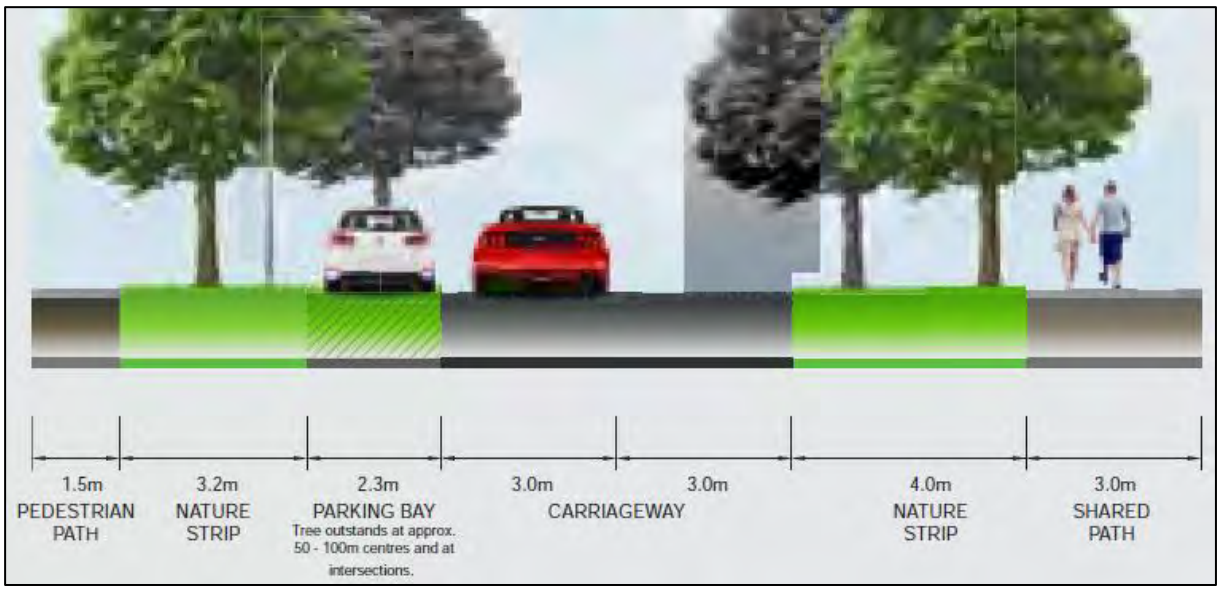


Figure 21: Collison Road (Access Level 2) 20m

Sargent Street Extension

The Development Plan identifies a new Local Access Street Level 2 in the northern part of the site. The road will be an extension of Sargent Street and will provide an east-west connection between Collison Road and Casey Fields Boulevard.

This road is be provided with a 20m wide road reservation as per the cross-section at Figure 22. This cross-section includes a 3m wide shared path on one side.

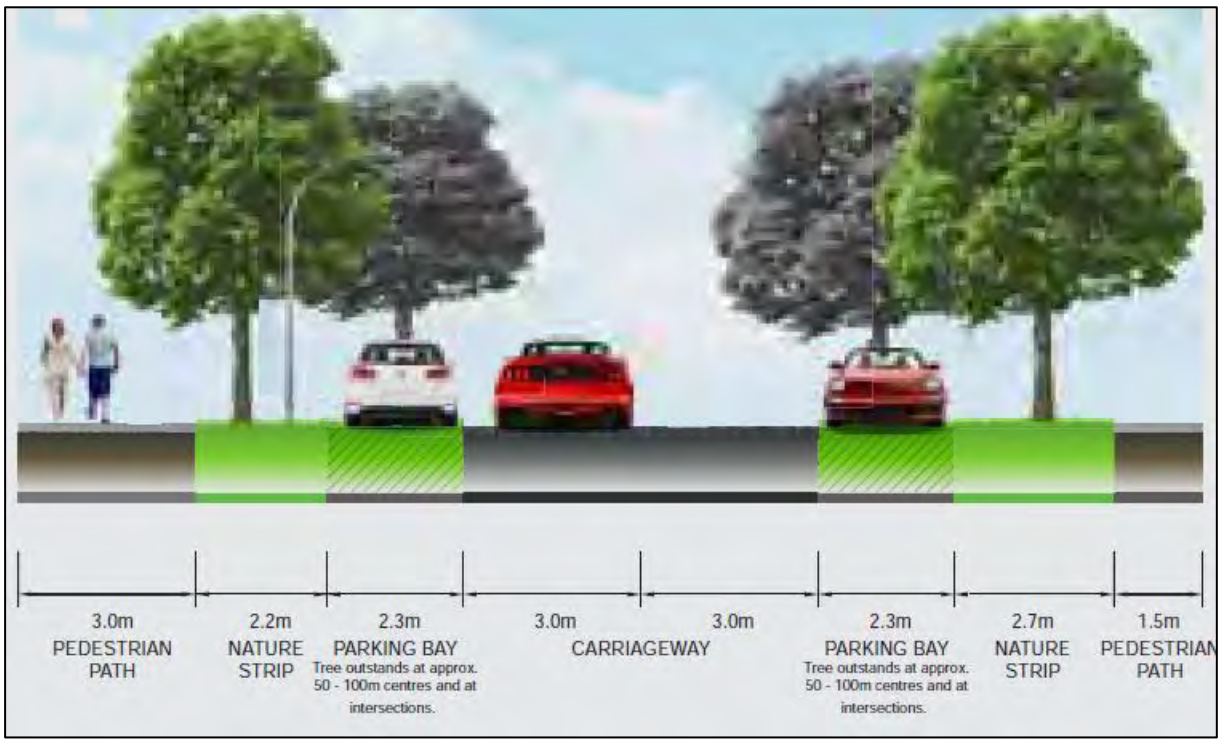


Figure 22: Sargent Street (Access Level 2) 20m

Beagle Street Extension

The Development Plan identifies a new Local Access Street Level 2 in the southern part of the site. The road will be an extension of Beagle Street and will provide an east-west connection between Collison Road and Casey Fields Boulevard.

This road is be provided with a 20m wide road reservation as per the cross-section at Figure 23.

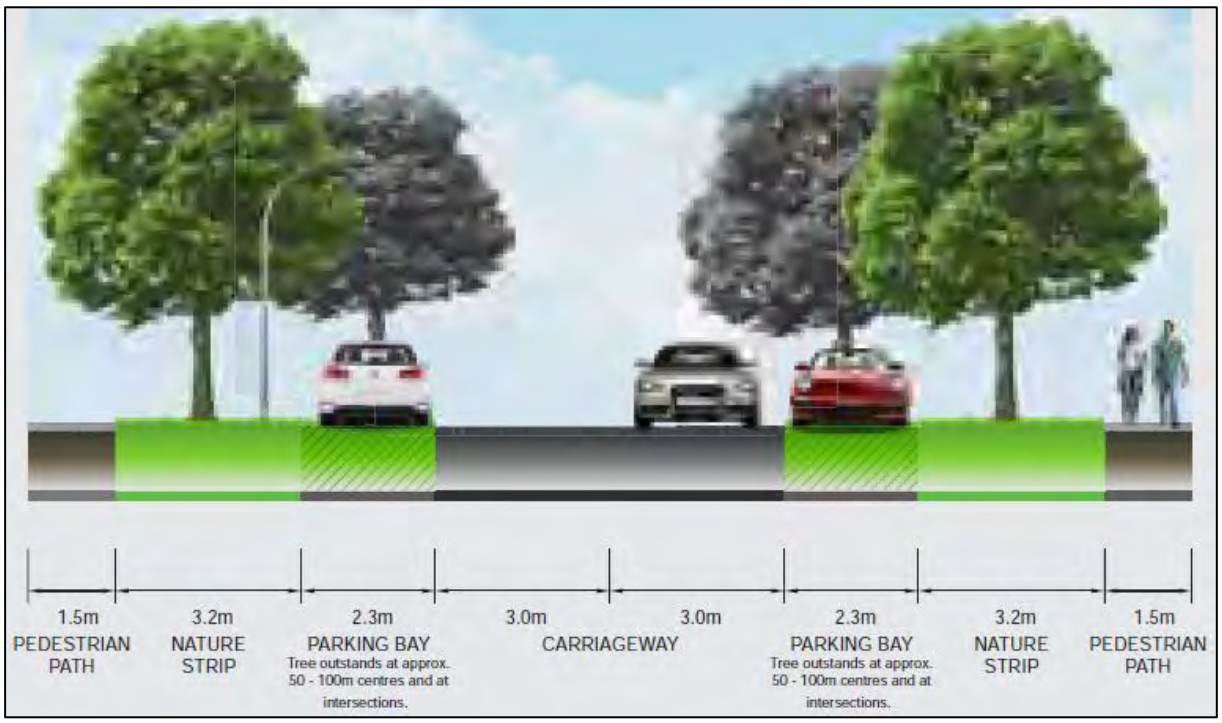
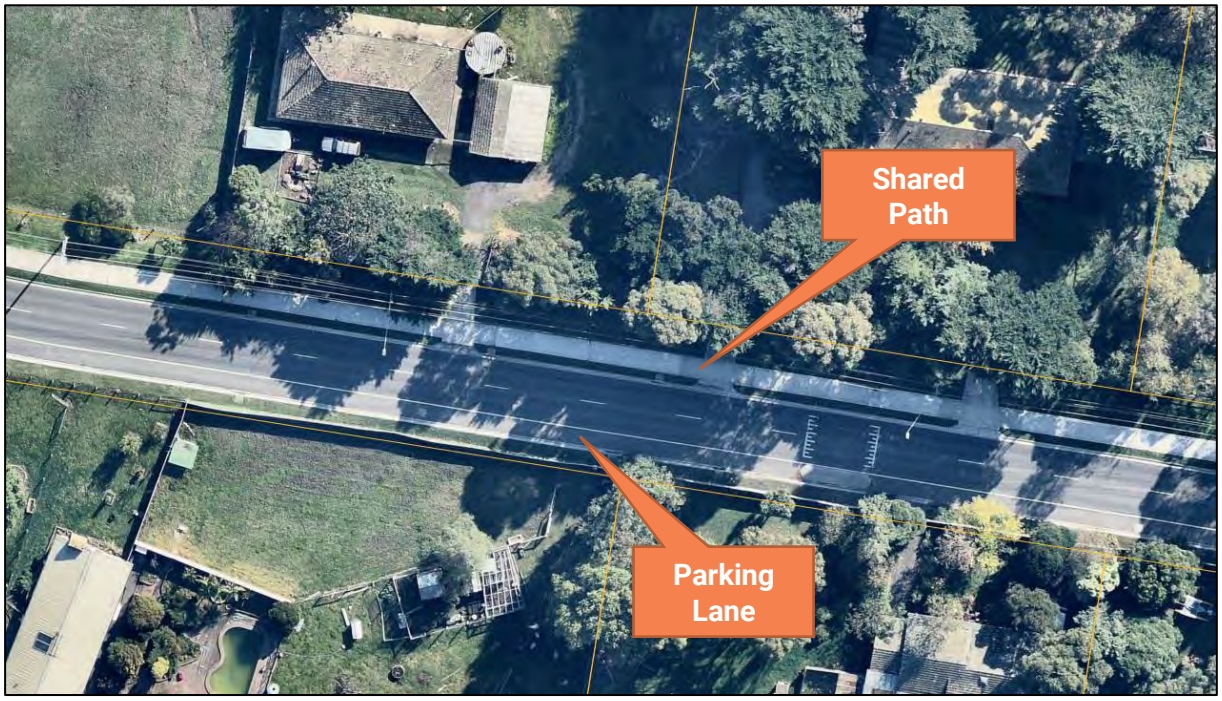


Figure 23: Beagle Street (Access Level 2) 20m

5.1.4. Heather Grove

Heather Grove within the site was upgraded a number of years ago to provide a through road connection between the Hunt Club estate to the west and the Selandra Rise estate to the east. Heather Grove was constructed with a sealed carriageway that accommodates a single traffic lane in each direction and a parking lane on the south side only as shown in the aerial photograph at Figure 24.

A shared path is provided along the north side of Heather Grove. There are no pedestrian provisions along the south side of Heather Grove.



Source: NearMap (April 2023)

Figure 24: Aerial Photograph of Existing Heather Grove

As part of the Development Plan, the road reserve of Heather Grove is proposed to be widened to provide for a widened verge including a new footpath. The proposed Heather Grove cross-section includes widening of the road reserve from 20m to 22m.

The proposed Heather Grove cross-section is shown at Figure 25, noting that this will apply to section of road to the east of the proposed drainage reserve.

The Development Plan identifies that medium density development are proposed along Heather Grove. These developments will be required to provide off-street visitor parking which will off-set the non-provision of a parking lane on the north side of this section of Heather Grove.

The western end of Heather Grove (to the west of the proposed drainage reserve) is to be provided with and alternative 'Main Street' cross-section adjacent to the activity centre and

community facility identified in the Development Plan. This 'Main Street' cross-section is shown at Figure 26 and includes indented parking bays on both sides of the road.

The widening of road reserve will generally occur to the south of the existing road reserve, however at the far western end near Casey Fields Boulevard there will be short length of widening to the north side before transitioning to the south side. This widening is shown in the concept layout plan prepared by Traffix Group as attached at Appendix B.

Heather Grove will function as a bus capable connector street, noting that it is not proposed to have parking lanes on both sides for the full length as per a typical connector street cross-section.

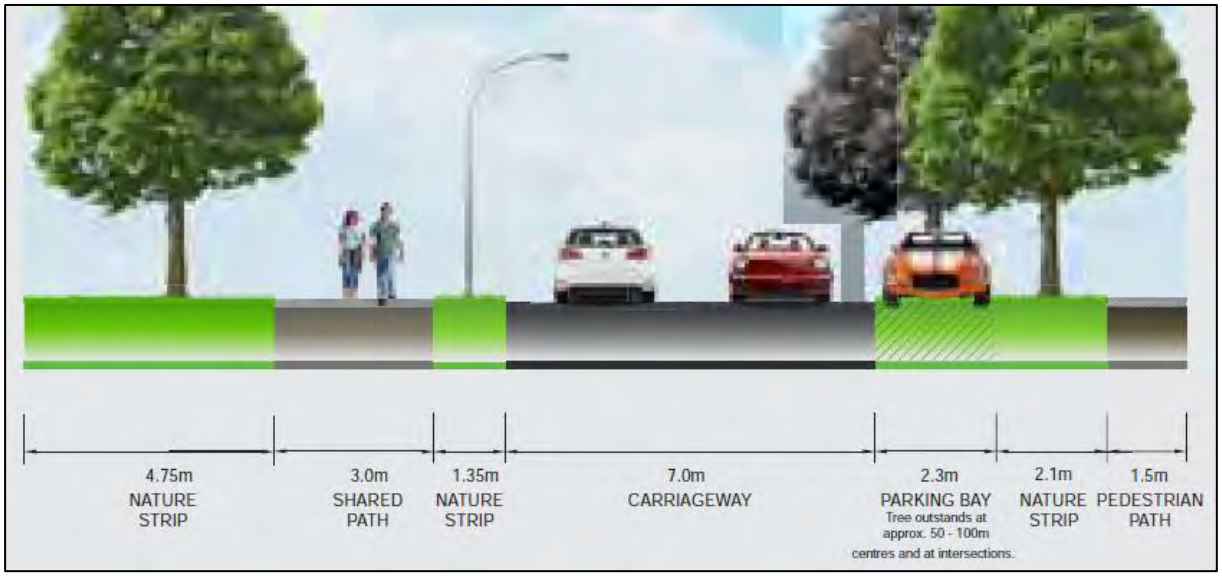


Figure 25: Heather Grove 22m

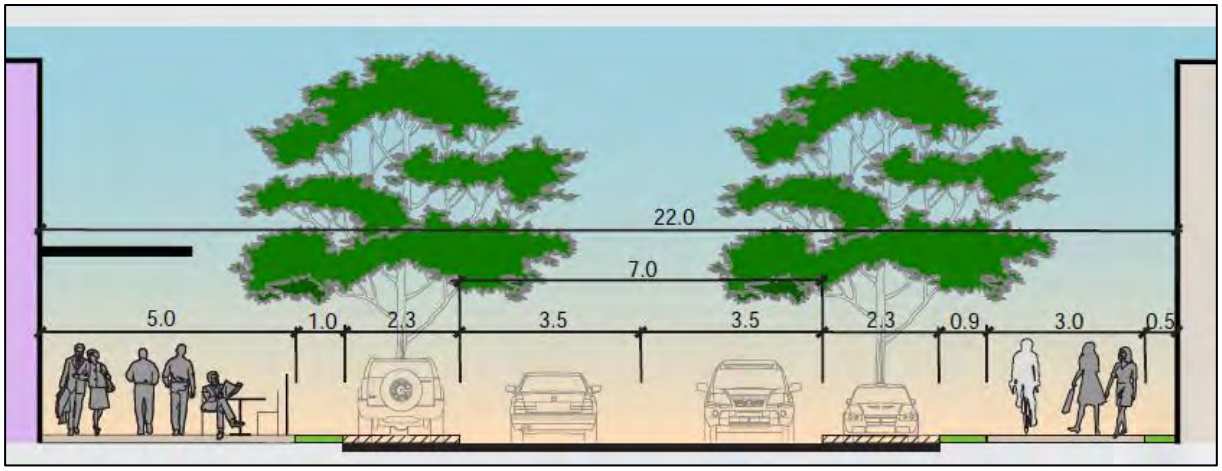


Figure 26: Heather Grove 'Main Street' Cross Section 22m

5.1.5. Casey Fields Boulevard and Mayfield Road

Based on our previous discussions with Council, we understand that there are no current plans for the timing of the duplication of Casey Fields Boulevard.

Under interim conditions, Casey Fields Boulevard and Mayfield Road will continue to operate as two separate bidirectional roads. As part of development on the east side of Mayfield Road within the Collison Estate, the Development Plan requires the pavement of Mayfield Road to be constructed in the location of the ultimate southbound carriageway for the ultimate duplicated scenario of Casey Fields Boulevard.

The ultimate Casey Fields Boulevard/Mayfield Road cross-section is shown at Figure 27. This will include a 7.0m wide carriageway plus a 2.3m wide parking lane on the east side of the road, i.e. within the existing Mayfield Road road reservation, and the existing Casey Fields Boulevard cross-section on the west side of the road.

Concept Functional Layout Plans are attached at Appendix B which show the ultimate Casey Fields Boulevard/Mayfield Road and the intersection treatments at each of the future connecting roads.

In relation to direct property access with Casey Fields Boulevard/Mayfield Road, the Development Plan states that:

- *No direct access to Mayfield Road is permitted for at least 300 metres north of Berwick-Cranbourne Road, except with the written consent of the relevant road management authority or as approved as an interim arrangement.*
- *Discourage direct driveway access to Mayfield Road where higher and medium densities are permitted, lots should be rear loaded or accessed via a service road.*
- *Direct vehicle access with Casey Fields Boulevard/upgraded Mayfield Road is discouraged.*

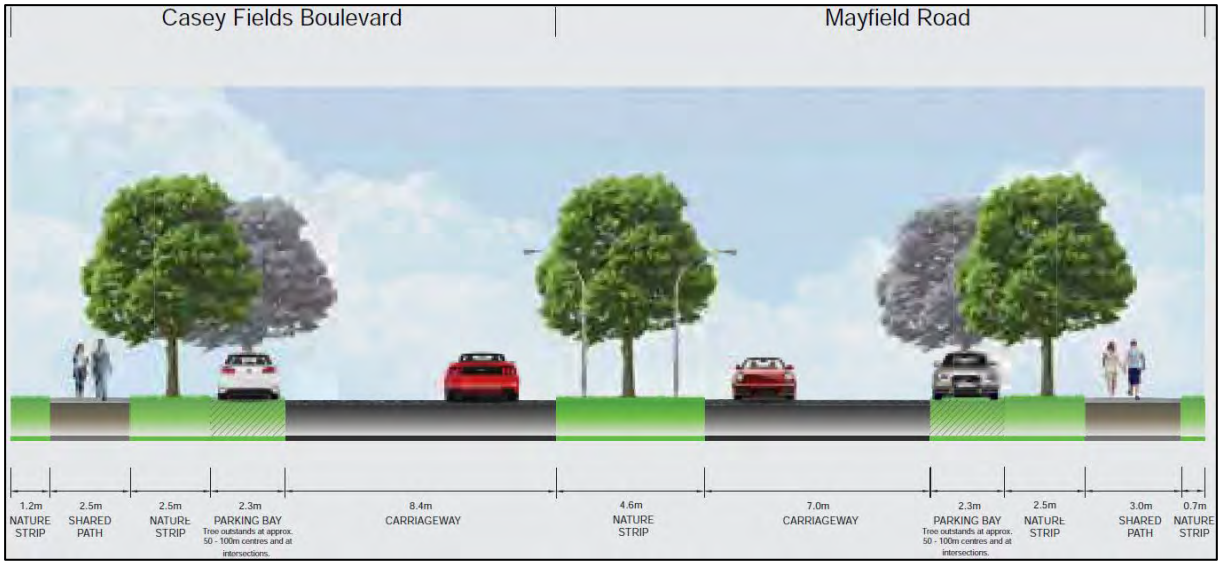


Figure 27: Casey Fields Boulevard - Mayfield Road 37m

5.1.6. Laneways

Laneways are to be provided with a minimum road reserve width of 8.0m including a minimum 5.5m wide carriageway consistent with the requirements of typical PSPs.

5.2. Parking Provisions

Collison Road and the east-west local access street level 2s (i.e. Beagle Street and Sargent Street extensions) are to have exclusive 2.3m wide parking bays on each side of the road. Furthermore, an exclusive parking lane is to be provided along the east side of Mayfield Road (ultimate southbound Casey Fields Boulevard carriageway). A parking lane is also provided along the south side of Heather Grove as per existing conditions, and will provided on both sides along Heather Grove for the 'Main Street' cross-section adjacent to the future activity centre and community facility lots.

The 7.3m wide carriageway for level 1 access streets where allotments are provided on both sides will be sufficient for parking to readily occur on both sides of the road whilst maintaining a through lane for traffic. Alternatively, simultaneous two-way traffic would be possible if parking occurred on only one side of these roads.

Where allotments are provided on one side of a road only, i.e. along service roads or internal loop roads adjacent to Berwick-Cranbourne Road or Linsell Boulevard, parking will be available on only one side of the 5.5m wide carriageway side whilst maintaining a single through lane for two-way traffic.

5.3. Access for Service and Emergency Vehicles

All carriageway widths discussed earlier will adequately facilitate relevant service and emergency vehicles and are consistent with the typical CFA requirements.

Any permanent 'dead-end' roads that are proposed as part of the estate should be provided with appropriate dead-end turning treatments in accordance with the VPA (formerly GAA) standards.

5.4. Pedestrian and Cycling Provision

Footpaths (as a minimum) are to be provided along both sides of all internal roads where allotments are provided on both sides.

An existing shared path is located along the north side of Heather Grove and the west side of Casey Fields Boulevard. Furthermore, the Development Plan identifies future shared paths as follows:

- along one side of Collison Road,
- along one side of the Sargent Street extension,
- along one side of Garden Street to the east of Collison Road only, and

- along various drainage reserves.

Additionally, cyclists will be able to utilise the proposed road carriageways in a shared fashion on the majority of internal roads.

The paths discussed above will provide connections with adjacent land at a level that is consistent with good current practice and will be appropriate to serve the future development.

5.5. Public Transport Considerations

The existing bus routes in the nearby area are identified previously at Figure 17. This includes a bus route through the centre of the site along Heather Grove, and adjacent to the site along Linsell Boulevard and Berwick-Cranbourne Road.

Casey Fields Boulevard and Heather Grove have been constructed to be bus capable to accommodate future bus services. This is reflected in the Development Plan which identifies future bus routes along both of these roads.

This level of existing and future public transport will ensure that all future dwellings in the development are within an acceptable walking distance of a bus route at a level that is consistent with current best practice objectives.

5.6. Traffic Control

Clause 56.06-7 of the Planning Scheme suggests that it is desirable for street blocks to be no more than approximately 240m long in order 'to facilitate pedestrian movement and control traffic speed'. Having said this, it is not uncommon or inappropriate for higher order roads, such as Heather Grove, to be in the order of up to 500m long between speed devices, particularly when the road is likely to be part of a bus route.

Given the length of Collison Road, speed control devices will ultimately be required at intervals to achieve speed control objectives. The Development Plan states that *Traffic management devices will be required along Collison Road at intervals of 150 metres.* This will could comprise T-deviation treatments at a number of intersections along Collison Road or other treatments which can typically be determined at functional design stage in consultation with Council.

Roundabouts are to be provided at any cross-intersections that are created within the estate, noting that there are existing roundabouts along Heather Grove at its intersections with Collison Road and Casey Fields Boulevard. Future roundabouts are proposed at the Sargent Street extension and Beagle Street extension intersections with Casey Fields Boulevard/Mayfield Road.

All T-intersections should be staggered by at least 20m (centre to centre) which is widely accepted as being satisfactory and consistent with typical design requirements.

6. External Traffic Considerations

The Development Plan proposes access with the external road network and abutting land as summarised in Table 1.

Table 1: External Access Connections

Road	Interim Connection	Ultimate Connection
Berwick-Cranbourne Road & Collison Road Intersection	Unrestricted T-intersection with turn lanes as consistent with existing conditions.	Left-in/left-out only access.
Casey Fields Boulevard/Mayfield Road - Road Connections	Generally unrestricted all movement access connections at T-intersections, or roundabouts where cross-intersections are formed with existing roads to the west (Sargent Street and Beagle Street extensions	Under the ultimate duplicated scenario, access connections could be converted to left-in/left-out or larger roundabouts could be provided at cross-intersections.
Casey Fields Boulevard/Mayfield Road - Allotment Connections	Each driveway for individual allotments is to connect only with Mayfield Road which would act as a separate road with a number of service road type connections with the existing carriageway of Casey Fields Boulevard. Both left-turn and right-turn movements would be possible under interim conditions.	No direct access to Casey Fields Road/Mayfield Road is permitted for at least 300 metres north of Berwick-Cranbourne Road. To the north, direct access is discouraged with access Further north, where direct access is permitted it would be restricted to left-in/left-out movements only.
Garden Street & Casey Fields Boulevard Intersection	Unrestricted T-intersection as per existing conditions.	Left-in/left-out only intersection under future duplicated Casey Fields Boulevard/Mayfield Road arrangement.
Estate to the east	Extension of Dodge Terrace (i.e. internal loop road along Berwick-Cranbourne Road). Several connections with the estate to the east via the extension of existing local streets (Rosina Street, Dominic Street & Fairland Court). These streets have been constructed as dead-ends that allow for future continuation.	Same as interim connections.
Linsell Boulevard	No access noting that there is an existing tree reserve along the northern boundary that prohibits access.	Same as interim (no access)

7. Existing Traffic Conditions

7.1. Traffic Counts

Traffix Group engaged Matrix Traffic and Transport Data to undertake traffic counts at the following intersections during the peak commuter periods on Tuesday 12th November, 2019:

- Casey Fields Boulevard/Linsell Boulevard,
- Casey Fields Boulevard/Heather Grove (including Mayfield Road connections to Casey Fields Boulevard),
- Berwick-Cranbourne Road/Casey Fields Boulevard (including Mayfield Road connections with Casey Fields Boulevard and Berwick-Cranbourne Road),
- Berwick-Cranbourne Road/Collison Road,
- Casey Fields Boulevard and Garden Street, and
- Heather Grove/Collison Road.

The traffic counts were undertaken between 7:30-9:30am during the morning peak period and 4:00-6:00pm during the evening peak period.

For the purposes of our AM and PM peak hour assessment, we have adopted the 8:15-9:15am and 4:30-5:30pm hourly traffic volumes for all intersections, noting that these periods correspond to the recorded peak hours at the Berwick-Cranbourne Road/Casey Fields Boulevard intersection.

A summary of the existing AM and PM peak hour volumes are attached at Appendix C.

7.2. Intersection Analysis

We have used SIDRA Intersection 8 to undertake an assessment of the performance of the following intersections under existing conditions:

- Casey Fields Boulevard/Linsell Boulevard
- Casey Fields Boulevard/Heather Grove
- Berwick-Cranbourne Road/Casey Fields Boulevard
- Berwick-Cranbourne Road/Collison Road

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

- **Degree of Saturation (DoS)** – The ratio of traffic volume to maximum capacity for a particular turning movement. Various values of degree of saturation and their rating are shown following.

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

- **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 existing conditions SIDRA analysis are summarised following with detailed outputs attached at Appendix D.

Based on the results of our traffic surveys we have adopted a heavy vehicle percentage of 3% for all turning movements, except for through traffic along Berwick-Cranbourne Road where we have adopted 5%.

7.2.1. Linsell Boulevard/Casey Fields Boulevard Intersection

We have adopted the existing geometry of the Linsell Boulevard/Casey Fields Boulevard intersection.

For gap acceptance (critical gap and follow-up headway) inputs, we have adopted the values set out in the Austroads Guide to Road Design Part 4A at Table 3.5. However, to calibrate the model to more closely reflect the observed queue lengths and average delays we have adjusted the 'Level of Reduction with Opposing Flow Rate' parameter from the default (none) to low. We have also adjusted the 'Exiting Flow Effect' parameter for the left-turn and right-turn movements from Casey Fields Boulevard to 0% given that there is a designated left-turn lane for vehicles on Linsell Boulevard.

For all other parameters we have adopted SIDRA default input values.

A summary of the SIDRA results is provided at Table 2, noting the existing Serpells Way (northern) connection was included in the SIDRA model but is not shown in the summary below due to the minimal recorded existing traffic volumes.

The results of the SIDRA analysis show that the existing Linsell Boulevard/Casey Fields Boulevard operated under excellent conditions with spare capacity to accommodate additional traffic. This is also consistent with our observations during the traffic counts.

Table 2: Intersection Performance – Casey Fields Boulevard/Linsell Boulevard Intersection

Movement	Existing Conditions					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Casey Fields Blvd (South Approach) (L)	0.37	13	12	0.10	8	2
Casey Fields Blvd (South Approach) (R)	0.40	20	11	0.34	30	8
Linsell Blvd (East Approach) (L)	0.11	6	0	0.04	6	0
Linsell Blvd (East Approach) (T)	0.36	0	0	0.21	0	0
Linsell Blvd (West Approach) (T)	0.17	0	0	0.48	0	0
Linsell Blvd (West Approach) (R)	0.16	10	5	0.13	7	4
(L) = left movement, (T) = through movement, (R) = right movement						

7.2.2. Casey Fields Boulevard/Heather Grove Intersection

We have adopted the existing geometry of the Casey Fields Boulevard/Heather Grove roundabout.

For all parameters we have adopted SIDRA default input values.

The results of the SIDRA analysis show that the existing Casey Fields Boulevard/Heather Grove roundabout operates under excellent conditions with spare capacity to accommodate additional traffic. This is also consistent with our observations during the traffic counts.

A summary of the SIDRA results is provided at Table 3.

Table 3: Intersection Performance – Casey Fields Boulevard/Heather Grove Intersection

Movement	Existing Conditions					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Casey Fields Blvd (South Approach) (L)	0.24	7	10	0.08	4	3
Casey Fields Blvd (South Approach) (T)	0.24	7	10	0.08	5	3
Casey Fields Blvd (South Approach) (R)	0.24	11	10	0.08	9	3
Heather Grove (East Approach) (L)	0.39	6	19	0.06	5	2
Heather Grove (East Approach) (T)	0.39	6	19	0.06	5	2
Heather Grove (East Approach) (R)	0.39	10	19	0.06	9	2
Casey Fields Blvd (North Approach) (L)	0.26	6	11	0.16	5	6
Casey Fields Blvd (North Approach) (T)	0.26	6	11	0.16	5	6
Casey Fields Blvd (North Approach) (R)	0.26	10	11	0.16	9	6
Bradford Drive (West Approach) (L)	0.22	6	9	0.08	5	3
Bradford Drive (West Approach) (T)	0.22	6	9	0.08	5	3
Bradford Drive (West Approach) (R)	0.22	10	9	0.08	9	3
(L) = left movement, (T) = through movement, (R) = right movement						

7.2.3. Berwick-Cranbourne Road/Casey Fields Boulevard Intersection

We have adopted the existing geometry of the Berwick-Cranbourne Road/Casey Fields Boulevard intersection. To calibrate the SIDRA model to more closely reflect the queue lengths observed by us during our traffic surveys, we have applied a '4 – Favourable' arrival type in the vehicle movement data parameter for through traffic along Berwick-Cranbourne Road only. For all parameters we have adopted SIDRA default input values.

The results of the SIDRA analysis show that the existing Berwick-Cranbourne Road/Casey Fields Boulevard intersection operates under excellent conditions with spare capacity to accommodate additional traffic. This is also consistent with our observations during the traffic counts.

A summary of the SIDRA results is provided at Table 4.

Table 4: Intersection Performance –Berwick-Cranbourne Road/Casey Fields Boulevard Intersection

Movement	Existing Conditions					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Casey Fields Blvd (South Approach) (L)	0.02	10	2	0.05	8	3
Casey Fields Blvd (South Approach) (T)	0.24	49	26	0.07	47	7
Casey Fields Blvd (South Approach) (R)	0.35	56	36	0.21	55	21
Berwick-Cranbourne Rd (East Approach) (L)	0.09	6	6	0.08	6	5
Berwick-Cranbourne Rd (East Approach) (T)	0.58	21	128	0.41	18	77
Berwick-Cranbourne Rd (East Approach) (R)	0.42	60	36	0.46	70	19
Casey Fields Blvd (North Approach) (L)	0.10	9	9	0.10	12	11
Casey Fields Blvd (North Approach) (T)	0.34	52	33	0.20	51	20
Casey Fields Blvd (North Approach) (R)	0.34	58	33	0.20	57	20
Berwick-Cranbourne Rd (West Approach) (L)	0.02	7	2	0.04	6	2
Berwick-Cranbourne Rd (West Approach) (T)	0.44	25	85	0.70	22	175
Berwick-Cranbourne Rd (West Approach) (R)	0.19	68	7	0.24	69	10
(L) = left movement, (T) = through movement, (R) = right movement						

7.2.4. Berwick-Cranbourne Road/Collison Road Intersection

We have adopted the existing geometry of the Berwick-Cranbourne Road/Collison Road intersection.

For gap acceptance (critical gap and follow-up headway) inputs, we have adopted the values set out in the Austroads Guide to Road Design Part 4A at Table 3.5. However, to calibrate the model to more closely reflect the observed queue lengths and average delays we have adjusted the 'Level of Reduction with Opposing Flow Rate' parameter from the default (none) to low. We have also adjusted the 'Exiting Flow Effect' parameter for the left-turn and right-turn movements from Collison Road to 0% given that there is a designated left-turn lane for vehicles on Berwick-Cranbourne Road.

For all other parameters we have adopted SIDRA default input values.

A summary of the SIDRA results is provided at Table 5.

Whilst existing vehicle movements exiting Collison Road are low, the SIDRA analysis found that average delays for right-turn exit movements are very high during both the AM and PM peak hours. Accordingly, there is no capacity to accommodate additional right-turn exit movements at this intersection under its current arrangement.

Table 5: Intersection Performance – Berwick-Cranbourne Road/Collison Road Intersection

Movement	Existing Conditions					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Berwick-Cranbourne Rd (East Approach) (L)	0.69	0	0	0.47	0	0
Berwick-Cranbourne Rd (East Approach) (R)	0.01	11	0	0.03	23	1
Collison Road (North Approach) (L)	0.15	16	3	0.16	63	3
Collison Road (North Approach) (R)	0.15	119	3	0.16	175	3
Berwick-Cranbourne Rd (West Approach) (L)	0.00	6	0	0.00	6	0
Berwick-Cranbourne Rd (West Approach) (T)	0.50	0	0	0.74	0	0
(L) = left movement, (T) = through movement, (R) = right movement						

8. Traffic Impact Assessment

8.1. Traffic Generation

Traffix Group previously undertook a case study of an existing residential area at the north-west corner of the intersection of Berwick-Cranbourne Road and Linsell Boulevard (Cranbourne East/Clyde North) in February, 2018. This case study determined peak hour traffic generation rates of 0.66 and 0.73 vehicle movements per dwelling during the AM and PM periods respectively. Traffix Group also previously undertook a similar case study of an existing estate on Plenty Road (South Morang) in 2013 which found similar traffic generation rates of 0.66 and 0.72 vehicle movements per dwelling during the AM and PM periods respectively.

We have adopted the Cranbourne East/Clyde North case study peak hour traffic generation rates for the purposes of our traffic impact assessment.

The Development Plan states it is to accommodate up to approximately 1,635 dwellings. However, for the purposes of a conservative assessment we have based our assessment on 1,700 dwellings.

Based on the above, it is conservatively predicted to generate a total of 1,122 vehicle movements during the AM peak hour and 1,241 vehicle movements during the PM peak hour. Our assessment conservatively does not deduct existing traffic currently being generated by the subject site which contains approximately 95 properties.

8.2. Traffic Distribution

Traffic generated by the estate will be distributed between a number of connections with the external road network including Casey Fields Boulevard, Berwick-Cranbourne Road, and future local street through connections with the estates to the west and east. Furthermore, traffic generated by the estate will also be distributed via Heather Grove which currently provides an east-west route through the subject land.

Based on our understanding of the wider road network and likely destinations for future residents, we have estimated the following directional distributions as previously presented to Council as shown at Figure 28. This includes:

- 30% to/from the northwest along Linsell Boulevard
- 20% to/from the northeast along Linsell Boulevard
- 10% to/from the east along Heather Grove
- 10% to/from the west along Bradford Drive
- 20% to/from the southwest along Berwick-Cranbourne Road
- 5% to/from southeast along Berwick-Cranbourne Road
- 5% to/from the south along Casey Fields Boulevard

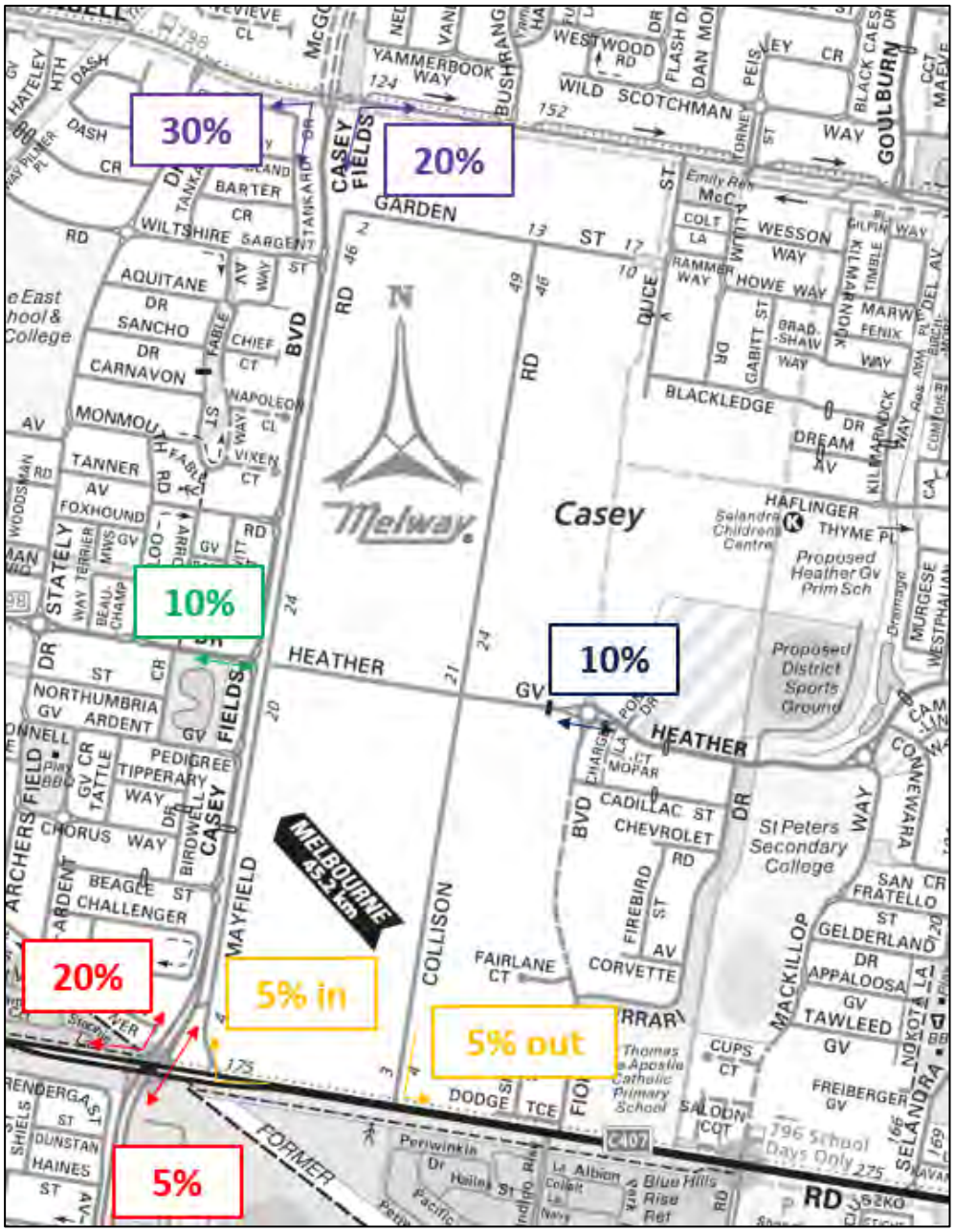


Figure 28: Traffic Directional Distributions

For our traffic distribution assessment, we have considered that the existing Berwick-Cranbourne Road/Collison Road intersection would be converted to left-in/left-out only given that the existing conditions analysis and observations found that right-turn exit movements are difficult. Accordingly, all departure movements to the southeast would occur at the Berwick-Cranbourne Road/Collison Road intersection whilst arrival movements would turn right at the Berwick-Cranbourne Road/Casey Fields Boulevard intersection before entering the estate via Casey Fields Boulevard.

We have adopted the following entry/exit proportions during the peak hours which are typical of a residential estate based on our experience:

- AM Peak Hour – 20% entry and 80% exit
- PM Peak Hour – 60% entry and 40% exit

8.3. Post Development Traffic

Based on the peak hour traffic generation rates and traffic directional distributions outlined previously, we have prepared a traffic model to predict site generated traffic movements at each of the following intersections:

- Casey Fields Boulevard/Linsell Boulevard
- Casey Fields Boulevard/Heather Grove
- Berwick-Cranbourne Road/Casey Fields Boulevard
- Berwick-Cranbourne Road/Collison Road

The predicted site generated turning movements and post-development traffic volumes (i.e. Collison Estate traffic added to existing traffic) during each of the AM and PM peak hours are attached at Appendix E.

For the purposes of our assessment to analyse the traffic impacts and associated upgrade works directly associated with Collison Estate traffic, we have not added any growth to existing traffic volumes at these intersections.

8.4. Traffic Analysis

8.4.1. Linsell Boulevard/Casey Fields Boulevard Intersection

We have undertaken analysis to determine what level of development of the Collison Estate could be adequately accommodated by the existing Linsell Boulevard/Casey Fields Boulevard intersection prior to signalisation being necessary.

Based on an iterative process, we have determined that development of approximately 40% of the assessed 1,700 allotments (which equates to 680 allotments) could be adequately accommodated by the existing unsignalised intersection arrangement, noting however that this is based on traffic volumes from 2019 and that current traffic is likely to be higher given the growth that has occurred in the surrounding area since that time.

Furthermore, we have undertaken analysis of approximately 45% of the assessed 1,700 allotments (which equates to 765 allotments) under the existing unsignalised intersection arrangement.

A summary of the SIDRA results based on the development of 680 allotments and 765 allotments within the Collison Estate is provided at Table 6 and Table 7, respectively. A detailed output is attached at Appendix F.

The results of the SIDRA analysis show that the existing Linsell Boulevard/Casey Fields Boulevard intersection would operate within acceptable conditions for 40% development (680 lots) based on 2019 volumes, with the critical movement being the right-turn from Casey Fields Boulevard to Linsell Boulevard which shows an average delay of 46 seconds during the PM peak hour. These results indicated a Level of Service E (LOS E).

However, at 45% development (765 lots), the SIDRA analysis shows that average delays for the right-turn movement during the PM peak hour would increase to 50 seconds and a Level of Service F (LOS F) which is the worst level of operating conditions. This indicates that the intersection would be over capacity.

Based on the above, the intersection should be upgraded to a signalised T-intersection prior to the approval of approximately 680 allotments, noting that expected growth in external traffic as discussed previously may result in signalisation being warranted earlier. Accordingly, we recommend that at the future town planning stage of each development application after say 300 allotments, a traffic analysis of this intersection should be undertaken to review the traffic impact at this intersection based on future traffic volumes recorded at that time.

The proposed layout and associated funding for the signalisation of the Casey Fields Boulevard/Linsell Boulevard intersection is discussed in detail later in this report at Section 9.

Table 6: Intersection Performance – Existing Casey Fields Boulevard/Linsell Boulevard Intersection – Interim Scenario (40% build-out = 680 Lots)

Movement	Existing Intersection					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Casey Fields Blvd (South Approach) (L)	0.60	16	25	0.18	8	5
Casey Fields Blvd (South Approach) (R)	0.68	28	25	0.66	46	19
Linsell Blvd (East Approach) (L)	0.12	6	0	0.08	6	0
Linsell Blvd (East Approach) (T)	0.36	0	0	0.21	0	0
Linsell Blvd (West Approach) (T)	0.17	0	0	0.48	0	0
Linsell Blvd (West Approach) (R)	0.20	10	6	0.23	8	8
(L) = left movement, (T) = through movement, (R) = right movement						

Table 7: Intersection Performance – Existing Casey Fields Boulevard/Linsell Boulevard Intersection – Interim Scenario (45% build-out - 765 Lots)

Movement	Existing Intersection					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Casey Fields Blvd (South Approach) (L)	0.63	17	28	0.18	8	5
Casey Fields Blvd (South Approach) (R)	0.72	29	28	**0.71**	**50**	**21**
Linsell Blvd (East Approach) (L)	0.12	6	0	0.08	6	0
Linsell Blvd (East Approach) (T)	0.36	0	0	0.21	0	0
Linsell Blvd (West Approach) (T)	0.17	0	0	0.48	0	0
Linsell Blvd (West Approach) (R)	0.21	10	6	0.24	8	8
(L) = left movement, (T) = through movement, (R) = right movement **Red – Level of Service (LOS) F**						

8.4.2. Casey Fields Boulevard/Heather Grove Intersection

We have adopted the existing geometry of the Casey Fields Boulevard/Heather Grove roundabout for the post-development analysis.

A summary of the SIDRA results is provided at Table 8 with the detailed output attached at Appendix F.

The results of the SIDRA analysis show that the Casey Fields Boulevard/Heather Grove roundabout would operate well within acceptable conditions with full build-out of the Collison Estate. Accordingly, no upgrades are considered necessary.

Table 8: Intersection Performance – Casey Fields Boulevard/Heather Grove Intersection

Movement	Post Development					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Casey Fields Blvd (South Approach) (L)	0.47	10	26	0.22	5	9
Casey Fields Blvd (South Approach) (T)	0.47	10	26	0.22	5	9
Casey Fields Blvd (South Approach) (R)	0.47	14	26	0.22	10	9
Heather Grove (East Approach) (L)	0.70	8	58	0.25	5	11
Heather Grove (East Approach) (T)	0.70	8	58	0.25	6	11
Heather Grove (East Approach) (R)	0.70	12	58	0.25	10	11
Casey Fields Blvd (North Approach) (L)	0.32	6	15	0.35	5	16
Casey Fields Blvd (North Approach) (T)	0.32	6	15	0.35	6	16
Casey Fields Blvd (North Approach) (R)	0.32	10	15	0.35	10	16
Bradford Drive (West Approach) (L)	0.30	7	14	0.17	6	7
Bradford Drive (West Approach) (T)	0.30	8	14	0.17	6	7
Bradford Drive (West Approach) (R)	0.30	12	14	0.17	10	7
(L) = left movement, (T) = through movement, (R) = right movement						

8.4.3. Berwick-Cranbourne Road/Casey Fields Boulevard Intersection

We have adopted the existing geometry of the Berwick-Cranbourne Road/Casey Fields Boulevard intersection for the post-development analysis.

A summary of the SIDRA results is provided at Table 9 with the detailed output attached at Appendix F.

The results of the SIDRA analysis show that the existing Berwick-Cranbourne Road/Casey Fields Boulevard intersection would operate under very good conditions when considering the additional traffic generated by full build-out of the Collison Estate.

Table 9: Intersection Performance –Berwick-Cranbourne Road/Casey Fields Boulevard Intersection

Movement	Post Development					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Casey Fields Blvd (South Approach) (L)	0.02	13	2	0.05	9	4
Casey Fields Blvd (South Approach) (T)	0.28	50	30	0.18	49	19
Casey Fields Blvd (South Approach) (R)	0.35	56	37	0.22	55	22
Berwick-Cranbourne Rd (East Approach) (L)	0.10	7	8	0.09	6	6
Berwick-Cranbourne Rd (East Approach) (T)	0.64	25	150	0.41	18	77
Berwick-Cranbourne Rd (East Approach) (R)	0.50	61	43	0.71	70	39
Casey Fields Blvd (North Approach) (L)	0.10	9	10	0.10	15	13
Casey Fields Blvd (North Approach) (T)	0.63	51	82	0.47	53	47
Casey Fields Blvd (North Approach) (R)	0.63	56	82	0.47	59	47
Berwick-Cranbourne Rd (West Approach) (L)	0.04	7	3	0.10	7	7
Berwick-Cranbourne Rd (West Approach) (T)	0.50	30	100	0.79	25	220
Berwick-Cranbourne Rd (West Approach) (R)	0.19	69	7	0.24	69	10
(L) = left movement, (T) = through movement, (R) = right movement						

8.4.4. Berwick-Cranbourne Road/Collison Road Intersection

We have assessed conversion of the existing Berwick-Cranbourne Road/Collison Road intersection to a left-in/left-out intersection arrangement due to the current difficulty to be able to safely and efficiently turn right out of Collison Road onto to Berwick-Cranbourne Road.

We have adopted the same SIDRA input parameters as the existing conditions model for this intersection.

A summary of the SIDRA results is provided at Table 10 with the detailed output attached at Appendix F.

The SIDRA analysis found that the proposed left-in/left-out arrangement for the Berwick-Cranbourne Road/Collison Road intersection would operate under excellent conditions with full build-out of the Collison Estate.

Table 10: Intersection Performance – Berwick-Cranbourne Road/Collison Road Intersection

Movement	Post Development					
	AM Peak Hour			PM Peak Hour		
	DoS	Avg. Delay (s)	95% Queue (m)	DoS	Avg. Delay (s)	95% Queue (m)
Collison Road (North Approach) (L)	0.12	13	3	0.17	27	4
Berwick-Cranbourne Rd (West Approach) (L)	0.02	6	0	0.05	6	0
Berwick-Cranbourne Rd (West Approach) (T)	0.50	0	0	0.74	0	0
(L) = left movement, (T) = through movement, (R) = right movement						

8.5. Conclusion

Based on the results of the traffic modelling and intersection analysis for the Collison Estate, we are satisfied the anticipated ultimate level of traffic can be adequately accommodated by the surrounding road network and intersections, subject to the following intersection works:

- Signalisation of the existing Casey Fields Boulevard/Linsell Boulevard intersection prior to statement of compliance for 680[1] allotments within the estate, noting the layout and funding of this intersection upgrade is discussed in detail later in this report at Section 9.

[1] As recommended earlier, at the future town planning stage of each development application after say 300 allotments, a traffic analysis of Casey Fields Boulevard/Linsell Boulevard intersection should be undertaken to review the traffic growth and operation of the intersection at the time to determine whether signalisation is warranted earlier.

- Conversion of the existing Berwick-Cranbourne Road/Collison Road intersection to left-in/left-out arrangements.

No intersection upgrade works were found to be necessary at the Casey Fields Boulevard/Heather Grove roundabout or Berwick-Cranbourne Road/Casey Fields Boulevard intersection to satisfactorily accommodate full build-out of the Collison Estate.

8.6. Other Matters

8.6.1. Casey Fields Boulevard and Mayfield Operation

Under interim conditions, Casey Fields Boulevard and Mayfield Road will continue to operate as two separate bidirectional roads. As part of development on the east side of Mayfield Road within the Collison Estate, the pavement of Mayfield Road is to be constructed in the location of the ultimate southbound carriageway for a potential future duplicated scenario of Casey Fields Boulevard, as agreed by Council.

8.6.2. Casey Fields Boulevard Roundabouts

The Development Plan proposes two new east-west roads that are to connect with Casey Fields Boulevard. These roads are to line up with Beagle Street near the southern end of the estate and Sargent Street near the northern end of estate.

This will create cross-intersections at both of these locations and therefore roundabout treatments will be required. An interim roundabout treatment would need to be delivered at the time of construction of each of these new east-west roads by the developer to connect with the existing Casey Fields Boulevard carriageway. These roundabouts would be similar to the one that exists at the Casey Fields Boulevard/Heather Grove intersection.

8.6.3. Land for Splays and Flaring

Under ultimate conditions, the roundabouts along Casey Fields Boulevard, including the two new roundabouts (i.e. Sargent Street and Beagle Street extensions) and the existing Casey Fields Boulevard/Heather Grove roundabout, would be upgraded to match with the ultimate Casey Fields Boulevard/Mayfield Road dual carriageway configuration.

Whilst these future intersection upgrades projects would not be undertaken by the Collison Estate, land for splays and flaring for the ultimate roundabout layouts should be set aside within the Collison Estate land.

No land within the Collison Estate is required to be set aside in the northwest corner of the site to accommodate splays and flaring for the ultimate Casey Fields Boulevard/Linsell Boulevard signalised intersection as our design shows there are already sufficient land available within the existing road reserve and tree reserve along Linsell Boulevard.

Similarly, no land within the Collison Estate is considered necessary for any future ultimate upgrade of the Casey Fields Boulevard/Berwick-Cranbourne Road intersection given that

ample land is currently available at the northeast corner of the intersection, i.e. immediately to the southwest of the Collison Estate.

9. Casey Fields Boulevard/Linsell Boulevard Intersection Upgrade

The Draft Collision Estate Development Plan identifies the signalisation of the Linsell Boulevard and Casey Fields Boulevard intersection as project IN-01. It states that the indicative timing of the project is medium-term or *prior to Statement of Compliance for the 680th lot within the Estate or at Council's discretion having regard to the timing of funds available from the Cranbourne East DCP to deliver the item.*

The Cranbourne East Development Contributions Plan (DCP) identifies the construction of an interim Linsell Boulevard and Casey Fields Boulevard signalised intersection as project RD10. The concept intersection layout in the Cranbourne East DCP identifies a 4-leg signalised intersection (refer to extract at Figure 29) including:

- Two though lanes in each direction on Linsell Boulevard that merge back into single lanes to the east and west.
- Right turn lanes on the east and west approaches of Linsell Boulevard, however there are no designated left-turn lanes.
- Short stubs on the north and south legs.
- Combined though/left and separate right turn lanes on the north and south approaches of Casey Fields Boulevard.

We note the Cranbourne East DCP concept plan for the intersection does not accord with current design standards/requirements given that Linsell Boulevard is identified as a secondary arterial road and therefore would require exclusive left-turn lanes on both the eastern and western approaches. Accordingly, we are of opinion that the costing of the intersection works associated with exclusive left-turn lanes on Linsell Boulevard should be apportioned to the Cranbourne East DCP and not the Collison Estate DCP given that this would be required regardless of whether the Collison Estate was to develop or not.

When considering the addition of Collison Estate traffic to the Casey Fields Boulevard/Linsell Boulevard Intersection, we are of opinion that it would not be unreasonable for an exclusive left-turn deceleration lane to be provided on the southern approach. This exclusive left-turn lane is in addition to what the concept layout identified in the Cranbourne East DCP identifies. Therefore, the cost associated with this additional left-turn lane would reasonably be attributed to the Collison Estate.

Regarding the northern leg, whilst this is identified in the Cranbourne East DCP concept with a stub as part of the costed area, the northern leg is not necessary from a traffic perspective until such time that the future Croskell PSP area to the north is developed. Accordingly, the funding collected as part of the Cranbourne East DCP should be used to deliver a stub on the northern leg consistent with the DCP concept plan, however any works for the northern leg

including associated turn lanes on the other legs is not attributable to the Collision Estate at all.

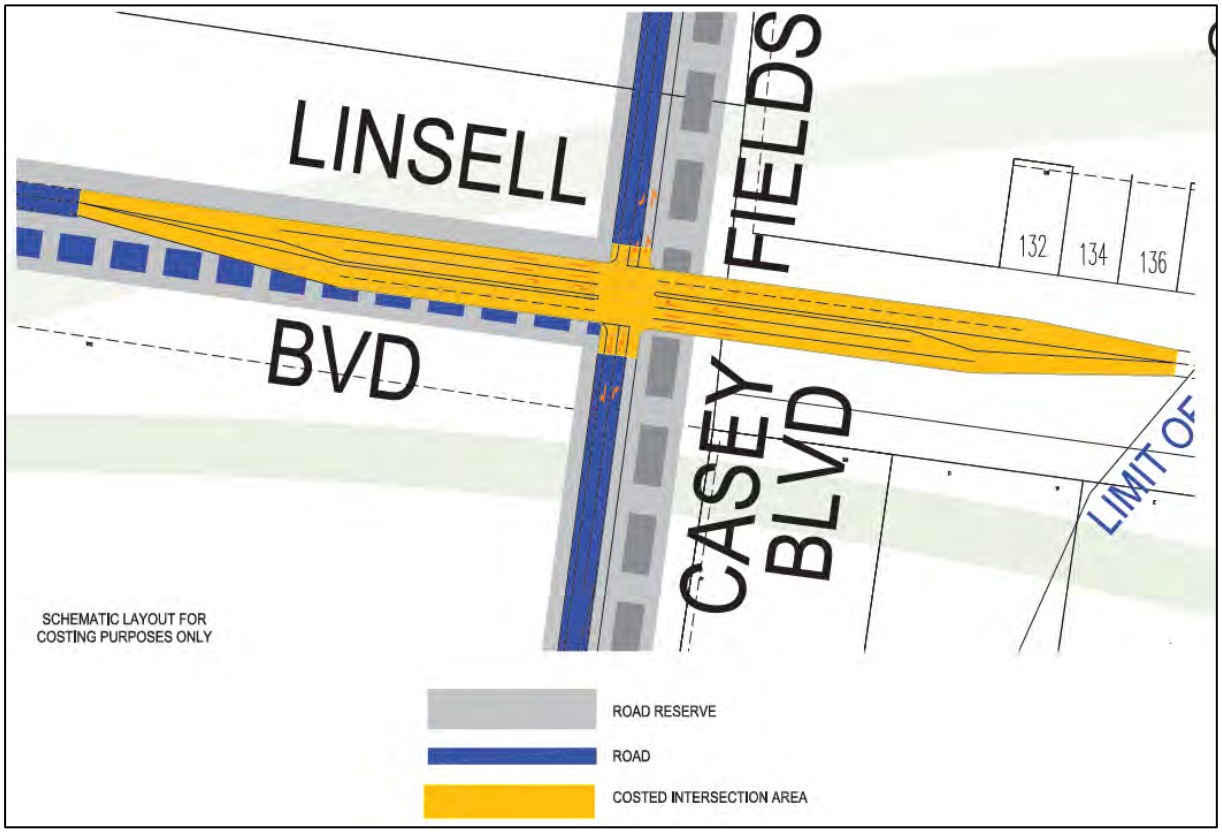


Figure 29: Cranbourne East DCP –Linsell Boulevard and Casey Fields Boulevard Schematic Layout

10. Concept Intersection Designs

Traffix Group has prepared concept functional layout plans for the following:

- **Casey Fields Boulevard/Linsell Boulevard Signalised Intersection:**
  - 'Cranbourne East DCP Concept Based on Current Standards/Requirements' (Ref: G24859-01-41 to 44)
  - 'Updated Cranbourne East DCP Concept to Reflect Future Collision Estate Traffic' with exclusive left turn added on south approach (Ref: G24859-01-51 to 54).

    Further to the discussion in the previous section, the difference between drawings G24859-01-41 to 44 and G24859-01-51 to 54 is what we believe is reasonably attributed to the Collison Estate. That being, the provision of an exclusive left-turn on the southern approach.
  - 'Potential Best Interim Secondary Arterial/ Secondary Arterial T-intersection' (Ref: G24859-01-31 to 35). This concept intersection plan has been prepared to demonstrate what will potentially be constructed as an interim signalised intersection that allows for the future northern leg connection and associated growth in traffic, i.e., it has not been prepared for the purposes of any DCP costing assessment.
- **Berwick-Cranbourne Road/Collison Road Signalised Intersection** (Ref: G24859-01-01): This plan shows conversion of the existing all movements unsignalised T-intersection to a left-in/left-out intersection. This includes a central concrete island within the centre of Berwick-Cranbourne Road and a small island on Collison Road to physically prevent vehicles from being able to undertake right-turn movements.
- **Heather Grove Main Street Concept Plan** (Ref: G24859-02-01): This plan shows a concept layout plan for the Heather Grove 'Main Street' for the length between Casey Fields Boulevard and the future drainage reserve to the east.

The abovementioned concept functional layout plans are attached at Appendix B.

11. Conclusions

Having visited the site and its surrounds, perused relevant documents and plans, commissioned traffic surveys and undertaken peak period intersection observations, predicted traffic generation and distribution, and undertaken intersection analysis using SIDRA, and undertaken other traffic engineering assessments, we are of the opinion that:-

a) the proposed road reservations are consistent with what is required to accommodate appropriate carriageways, footpaths, services, etc. generally in accordance typical PSP cross-sections, relevant standards and current practice,

b) on-street parking, pedestrian and cycle provisions can be provided in a manner that is generally consistent with the requirements of typical PSPs, relevant standards and current practice,

c) any permanent dead-end roads will be treated with a turning treatment and therefore, all relevant vehicles will be able to adequately access the site,

d) the ultimate level of traffic predicted to be generated by the Collison Estate warrants the future signalisation of the Casey Fields Boulevard/Linsell Boulevard T-intersection,

e) the signalisation of the existing Casey Fields Boulevard/Linsell Boulevard intersection is required prior to Statement of Compliance for the 680th lot within the estate based on an assessment of Collison Estate traffic only,

f) the cost apportionment for the Casey Fields Boulevard/Linsell Boulevard interim signalised intersection should comprise the difference in cost between the Cranbourne East DCP concept layout based on current standards/requirements, and the updated version of this layout with the exclusive left-turn lane added on the southern approach,

g) the Berwick-Cranbourne Road/Collison Road intersection is to be converted to left-in/left-out in the early stages of development of the Collison Estate,

h) no intersection upgrade works were found to be necessary at the Casey Fields Boulevard/Heather Grove roundabout or Berwick-Cranbourne Road/Casey Fields Boulevard intersection to satisfactorily accommodate Collison Estate traffic,

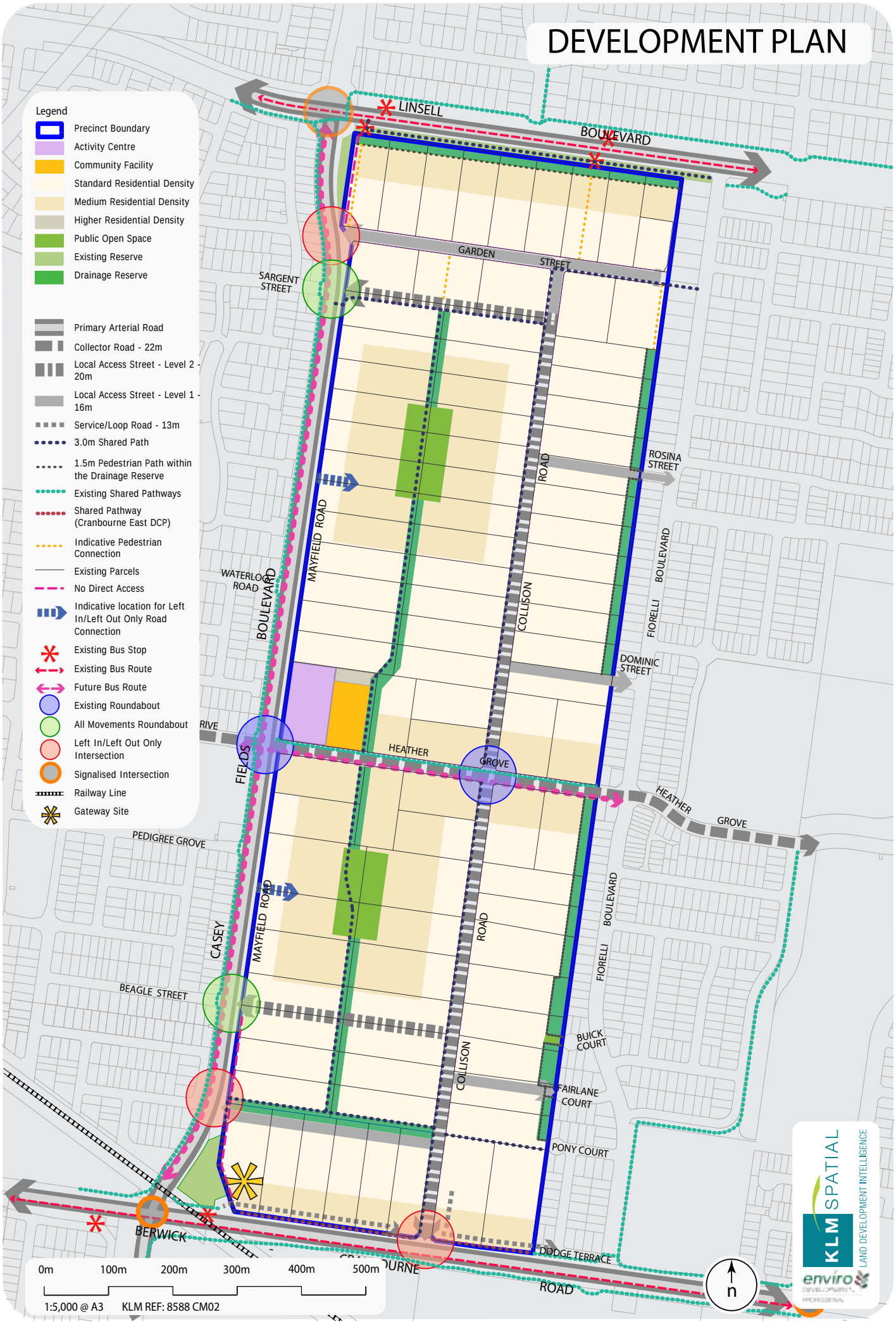
i) roundabouts will be required at two locations along Casey Fields Boulevard at cross-intersections created with the two new east-west roads that are to line up with Beagle Street and Sargent Street to the west,

j) splays and flaring will be required within the Collison Estate land to accommodate the three ultimate roundabout configurations along Casey Fields Boulevard based on the ultimate duplicated scenario, and

k) there are no traffic engineering reasons why the proposed Development Plan for the Collison Estate should not be approved.

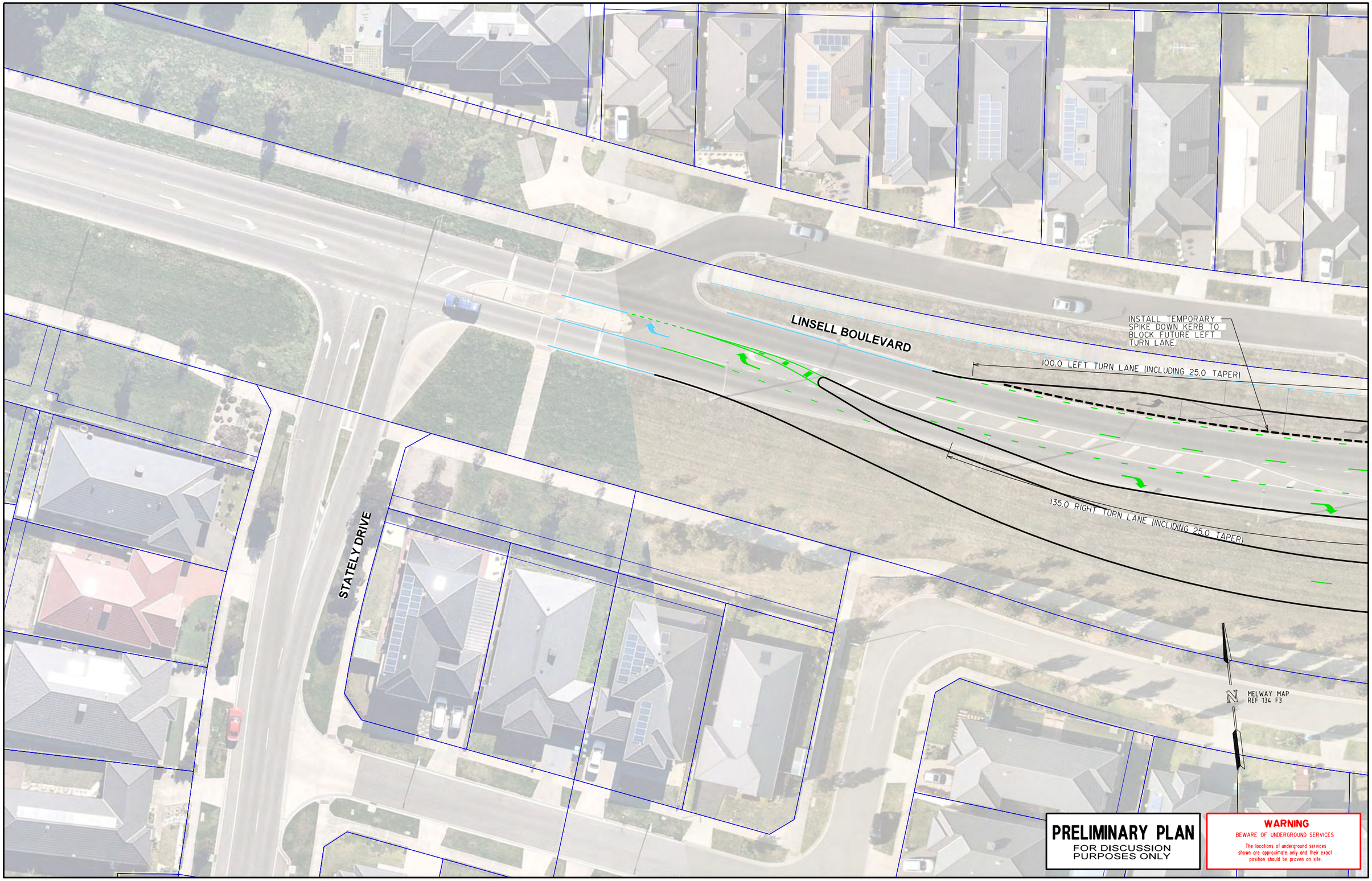
Appendix A

Draft Development Plan


DEVELOPMENT PLAN
Legend
Precinct Boundary
Activity Centre
Community Facility
Standard Residential Density
Medium Residential Density
Higher Residential Density
Public Open Space
Existing Reserve
Drainage Reserve
Primary Arterial Road
Collector Road - 22m
Local Access Street - Level 2 - 20m
Local Access Street - Level 1 - 16m
Service/Loop Road - 13m
3.0m Shared Path
1.5m Pedestrian Path within the Drainage Reserve
Existing Shared Pathways
Shared Pathway (Cranbourne East DCP)
Indicative Pedestrian Connection
Existing Parcels
No Direct Access
Indicative location for Left In/Left Out Only Road Connection
Existing Bus Stop
Existing Bus Route
Future Bus Route
Existing Roundabout
All Movements Roundabout
Left In/Left Out Only Intersection
Signalised Intersection
Railway Line
Gateway Site
LINSELL BOULEVARD
GARDEN STREET
SARGENT STREET
ROSINA STREET
MAYFIELD ROAD
COLLISON ROAD
BOULEVARD
FIORELLI
DOMINIC STREET
WATERLOO ROAD
FIELDS
HEATHER GROVE
PEDIGREE GROVE
CASEY
BEAGLE STREET
BUICK COURT
FAIRLANE COURT
PONY COURT
DODGE TERRACE
BERWICK
ROAD
0m 100m 200m 300m 400m 500m
1:5,000 @ A3 KLM REF: 8588 CM02
n
KLM SPATIAL
LAND DEVELOPMENT INTELLIGENCE
enviro

Appendix B

Concept Functional Layout Plans



FOR CONTINUATION REFER TO SHEET 2

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B	UPDATED BASED ON MEETING WITH COUNCIL ON 13th JUNE 2023	M C	B C (PE0007582)	14/06/2023
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LOCAL ROAD - CASEY FIELDS BOULEVARD - NORTH OF LINSELL BVD (SPEED ZONE 60km/h)
LOCAL ROAD - LINSELL BOULEVARD (EXISTING SPEED ZONE 60km/h, ULTIMATE SPEED ZONE 80km/h)

FUTURE WORKS
PROPOSED PROPERTY BOUNDARY

DESIGNED
M CHIU

CHECKED/APPROVED
B CHISHOLM

FILE NAME
G24859-01.dgn

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LINSELL BOULEVARD / CASEY FIELDS BOULEVARD
CASEY CITY
POTENTIAL BEST INTERIM - SECONDARY ARTERIAL / SECONDARY-ARTERIAL T-INTERSECTION
FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 1 of 5
DWG No. G24859-01-31

FOR CONTINUATION REFER TO SHEET 4

FOR CONTINUATION REFER TO SHEET 1

FOR CONTINUATION REFER TO SHEET 3

POTENTIAL KERB MODIFICATION TO PERMIT SERVICE ROAD WESTBOUND EGRESS.

CASEY FIELDS BOULEVARD

100.0 RIGHT TURN LANE (INCLUDING 20.0 TAPER)

SERVICE ROAD CONNECTION TO BE REMOVED.

5.50

INSTALL TEMPORARY SPIKE DOWN KERB TO BLOCK FUTURE LEFT TURN LANE.

NORTH LEG TO BE COMPLETED BY OTHERS.

INSTALL WATER-FILLED BARRIERS.

100.0 LEFT TURN LANE (INCLUDING 25.0 TAPER)

INSTALL TEMPORARY SPIKE DOWN KERB TO BLOCK FUTURE RIGHT TURN LANE.

LINSELL BOULEVARD

3.5

3.5

3.5

3.5

6.0

135.0 RIGHT TURN LANE (INCLIDING 25.0 TAPER)

3.5

3.5

3.5

3.5

3.5

6.0

135.0 RIGHT TURN LANE (INCLUDING 25.0 TAPER)

3.5

3.5

3.5

3.5

5.0

LINSELL BOULEVARD

5.0

100.0 LEFT TURN LANE (INCLUDING 25.0 TAPER)

INSTALL TEMPORARY SPIKE DOWN KERB TO BLOCK FUTURE LANES.

CASEY FIELDS BOULEVARD

2.5

3.5

3.5

3.5

3.5

3.5

3.5

15.0

N

MELWAY MAP REF 134 F3

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.

FOR CONTINUATION REFER TO SHEET 5

ISSUE	ISSUE DESCRIPTION	DESIGNER	CHECKED/APPROVED	ISSUE DATE
B	UPDATED BASED ON MEETING WITH COUNCIL ON 13th JUNE 2023	M C	B C (PE0007582)	14/06/2023
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LOCAL ROAD - LINSELL BOULEVARD (EXISTING SPEED ZONE 60km/h, ULTIMATE SPEED ZONE 80km/h)

FUTURE WORKS
PROPOSED PROPERTY BOUNDARY

DESIGNED: M CHIU
CHECKED/APPROVED: B CHISHOLM
FILE NAME: G24859-01.dgn

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POTENTIAL BEST INTERIM - SECONDARY ARTERIAL / SECONDARY-ARTERIAL T-INTERSECTION
FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 2 of 5
DWG No. G24859-01-32

FOR CONTINUATION REFER TO SHEET 2

INSTALL TEMPORARY SPIKE DOWN KERB TO BLOCK FUTURE RIGHT TURN LANE.

LINSELL BOULEVARD

135.0 RIGHT TURN LANE (INCLUDING 25.0 TAPER)

100.0 LEFT TURN LANE (INCLUDING 25.0 TAPER)

N

MELWAY MAP
REF 134 F3

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY

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SHEET No. 3 of 5
DWG No. G24859-01-33

FOR CONTINUATION REFER TO SHEET 2

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SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 4 of 5
DWG No. G24859-01-34

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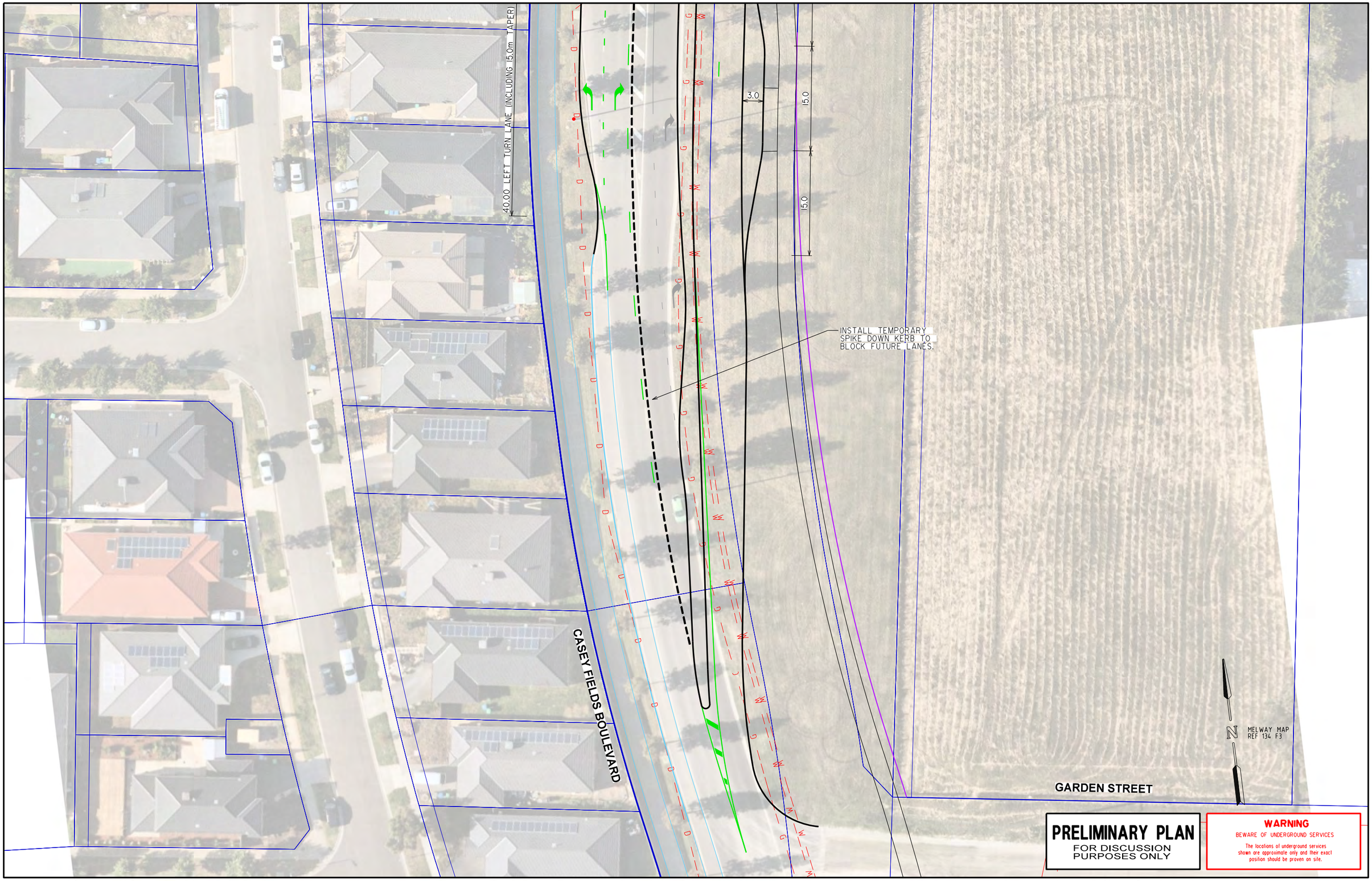

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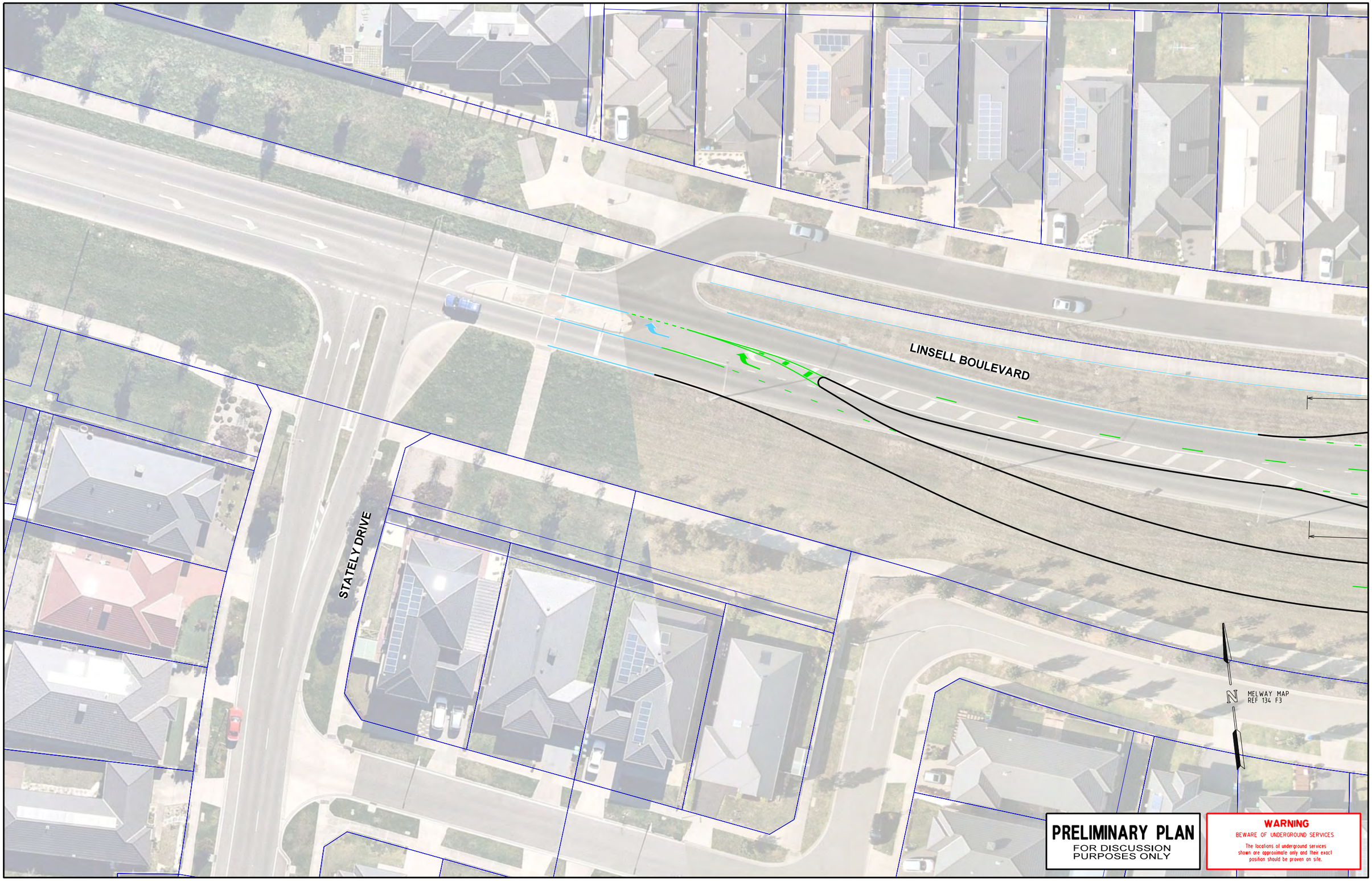

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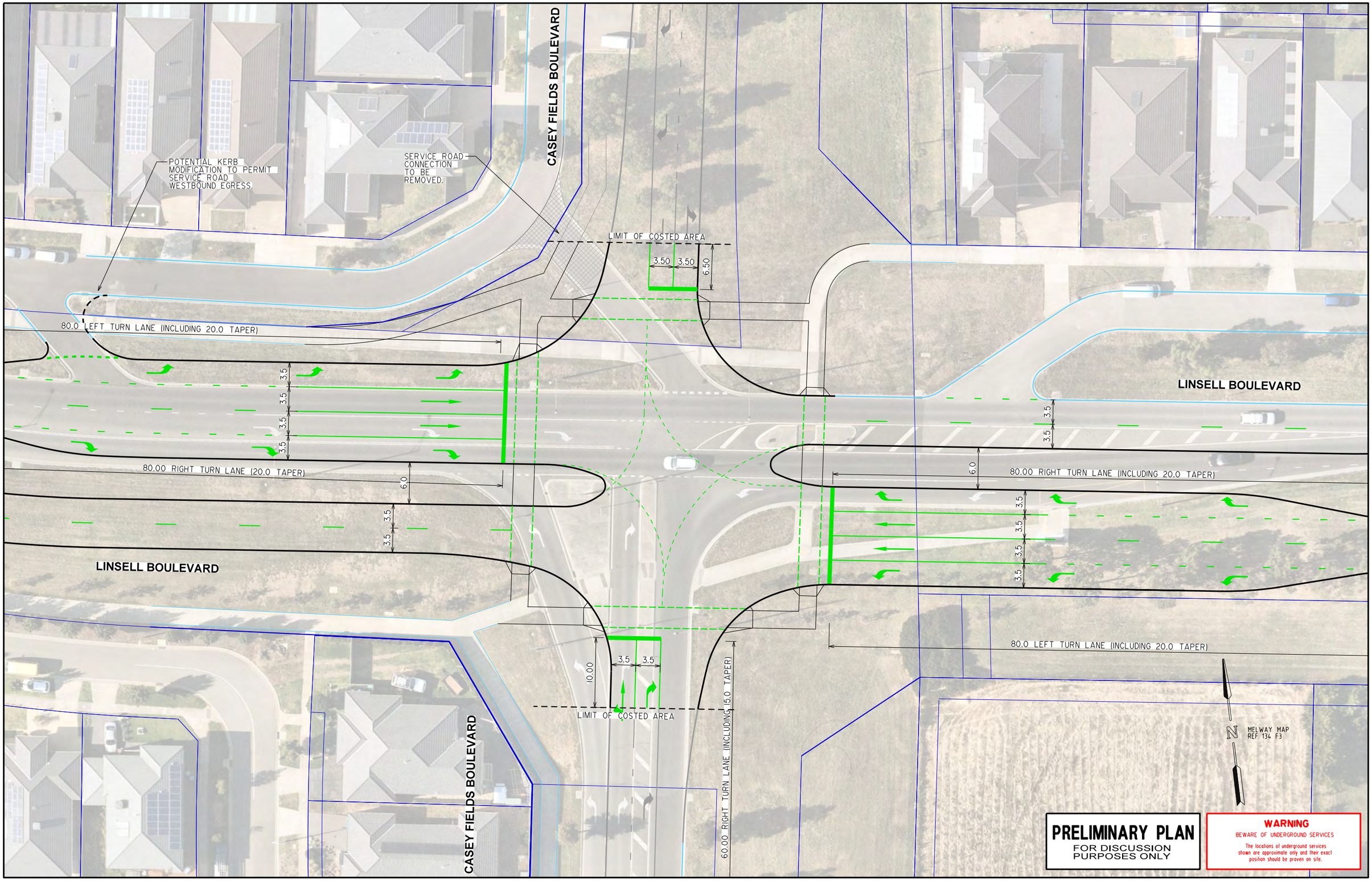
CRANBOURNE EAST DCP CONCEPT BASED ON CURRENT STANDARDS / REQUIREMENTS
FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 1 of 4
DWG No. G24859-01-41



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FOR CONTINUATION REFER TO SHEET 3

FOR CONTINUATION REFER TO SHEET 4

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CRANBOURNE EAST DCP CONCEPT BASED ON CURRENT STANDARDS / REQUIREMENTS
FUNCTIONAL LAYOUT PLAN

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SHEET No. 2 of 4
DWG No. G24859-01-42

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FUTURE WORKS
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CASEY CITY
CRANBOURNE EAST DCP CONCEPT BASED ON CURRENT STANDARDS / REQUIREMENTS
FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 3 of 4
DWG No. G24859-01-43

FOR CONTINUATION REFER TO SHEET 2

PRELIMINARY PLAN
FOR DISCUSSION
PURPOSES ONLY

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FUTURE WORKS
PROPOSED PROPERTY BOUNDARY

DESIGNED
M.CHIU

CHECKED/APPROVED
B.CHISHOLM

FILE NAME
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LINSELL BOULEVARD / CASEY FIELDS BOULEVARD
CASEY CITY
CRANBOURNE EAST DCP CONCEPT BASED ON
CURRENT STANDARDS / REQUIREMENTS
FUNCTIONAL LAYOUT PLAN

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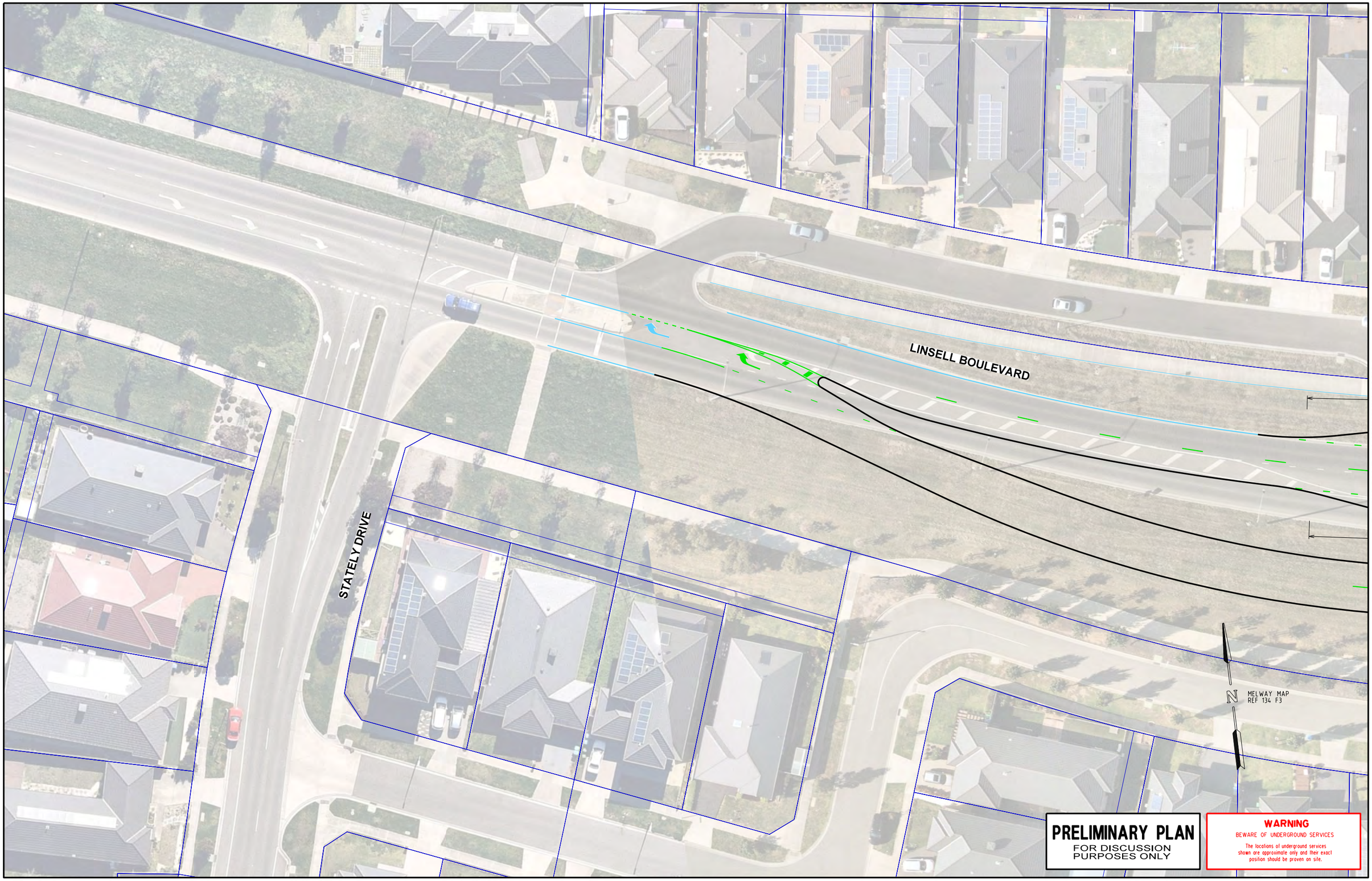
DWG No. G24859-01-44



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FUTURE WORKS
PROPOSED PROPERTY BOUNDARY

DESIGNED
M CHIU

CHECKED/APPROVED
B CHISHOLM

FILE NAME
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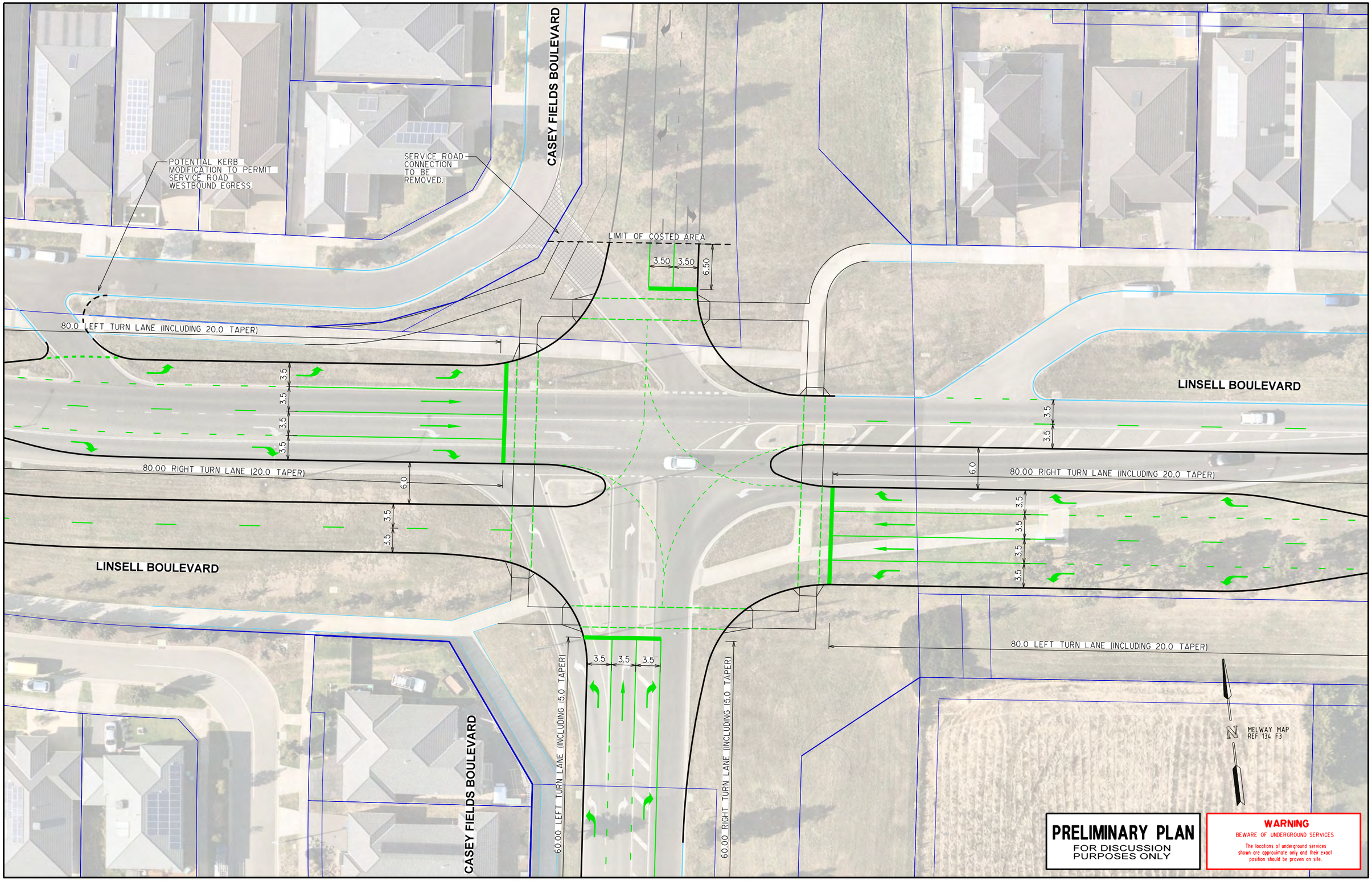
LINSELL BOULEVARD / CASEY FIELDS BOULEVARD
CASEY CITY
UPDATED CRANBOURNE EAST DCP CONCEPT TO REFLECT FUTURE COLLISON ESTATE TRAFFIC
FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 1 of 4
DWG No. G24859-01-51



FOR CONTINUATION REFER TO SHEET 1

FOR CONTINUATION REFER TO SHEET 3

FOR CONTINUATION REFER TO SHEET 4

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FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 2 of 4
DWG No. G24859-01-52

ISSUE	ISSUE DESCRIPTION	DESIGNER	CHECKED/APPROVED	ISSUE DATE
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1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP NOV 2019)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 LOCAL ROAD - CASEY FIELDS BOULEVARD - SOUTH OF LINSELL BVD (SPEED ZONE 50km/h)
LOCAL ROAD - CASEY FIELDS BOULEVARD - NORTH OF LINSELL BVD (SPEED ZONE 60km/h)
LOCAL ROAD - LINSELL BOULEVARD (SPEED ZONE 60km/h)

FUTURE WORKS
PROPOSED PROPERTY BOUNDARY

DESIGNED
M CHIU

CHECKED/APPROVED
B CHISHOLM

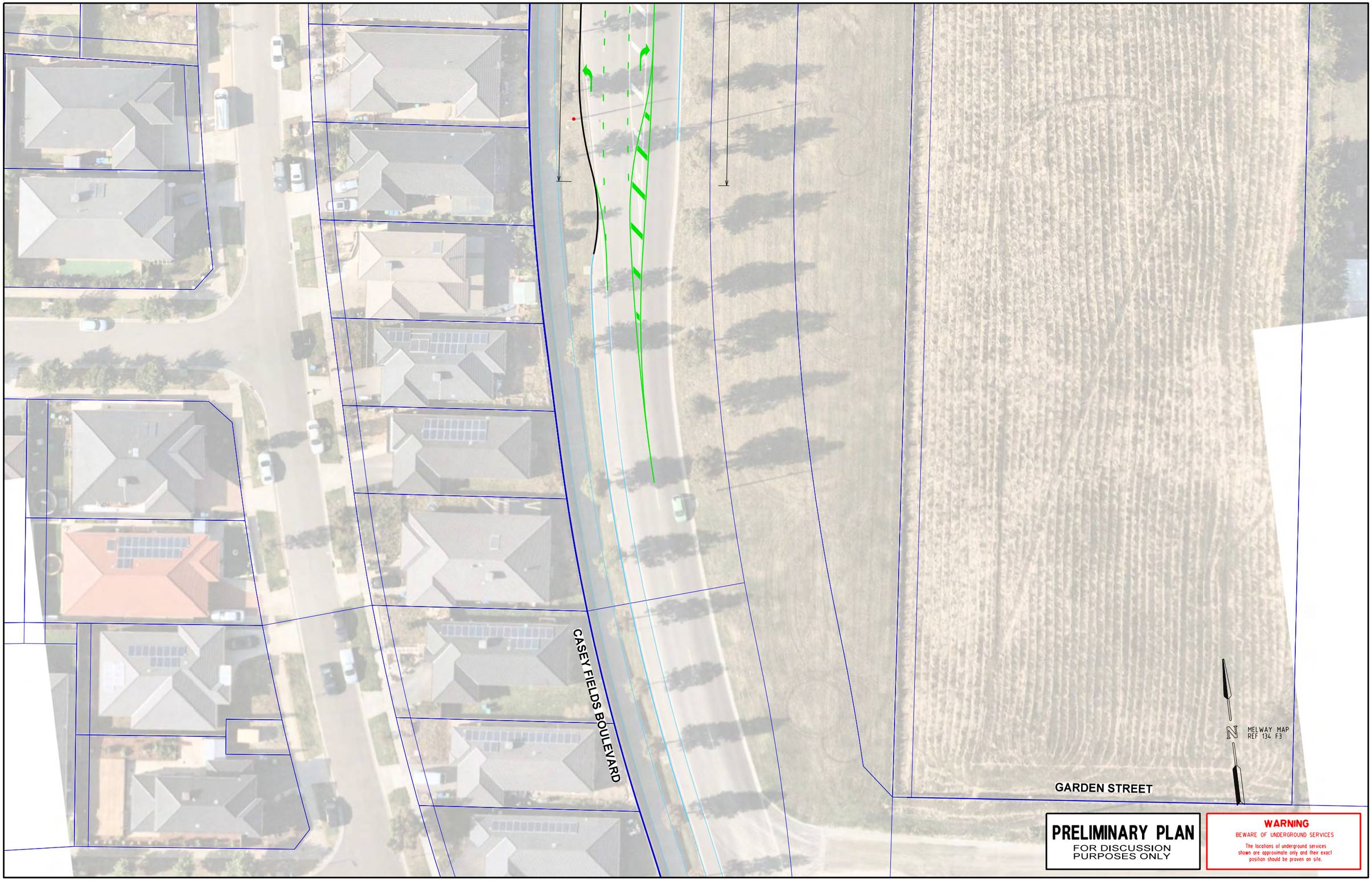
FILE NAME
G24859-01.dgn

Traffix Group
Level 28, 459 Collins Street
Melbourne, Victoria 3000
+61 3 9822 2888
www.traffixgroup.com.au

LINSELL BOULEVARD / CASEY FIELDS BOULEVARD
CASEY CITY
UPDATED CRANBOURNE EAST DCP CONCEPT TO REFLECT FUTURE COLLISON ESTATE TRAFFIC
FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 3 of 4
DWG No. G24859-01-53

FOR CONTINUATION REFER TO SHEET 2



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	DESIGNER	CHECKED/APPROVED	ISSUE DATE
B	UPDATED BASED ON MEETING WITH COUNCIL ON 13th JUNE 2023	M C	B C (PE0007582)	14/06/2023
A	INITIAL ISSUE	M C	B C (PE0007582)	09/06/2023

GENERAL NOTES
1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP NOV 2019)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 LOCAL ROAD - CASEY FIELDS BOULEVARD - SOUTH OF LINSELL BVD (SPEED ZONE 50km/h)
LOCAL ROAD - CASEY FIELDS BOULEVARD - NORTH OF LINSELL BVD (SPEED ZONE 60km/h)
LOCAL ROAD - LINSELL BOULEVARD (SPEED ZONE 60km/h)

FUTURE WORKS
PROPOSED PROPERTY BOUNDARY

DESIGNED
M CHIU

CHECKED/APPROVED
B CHISHOLM

FILE NAME
G24859-01.dgn

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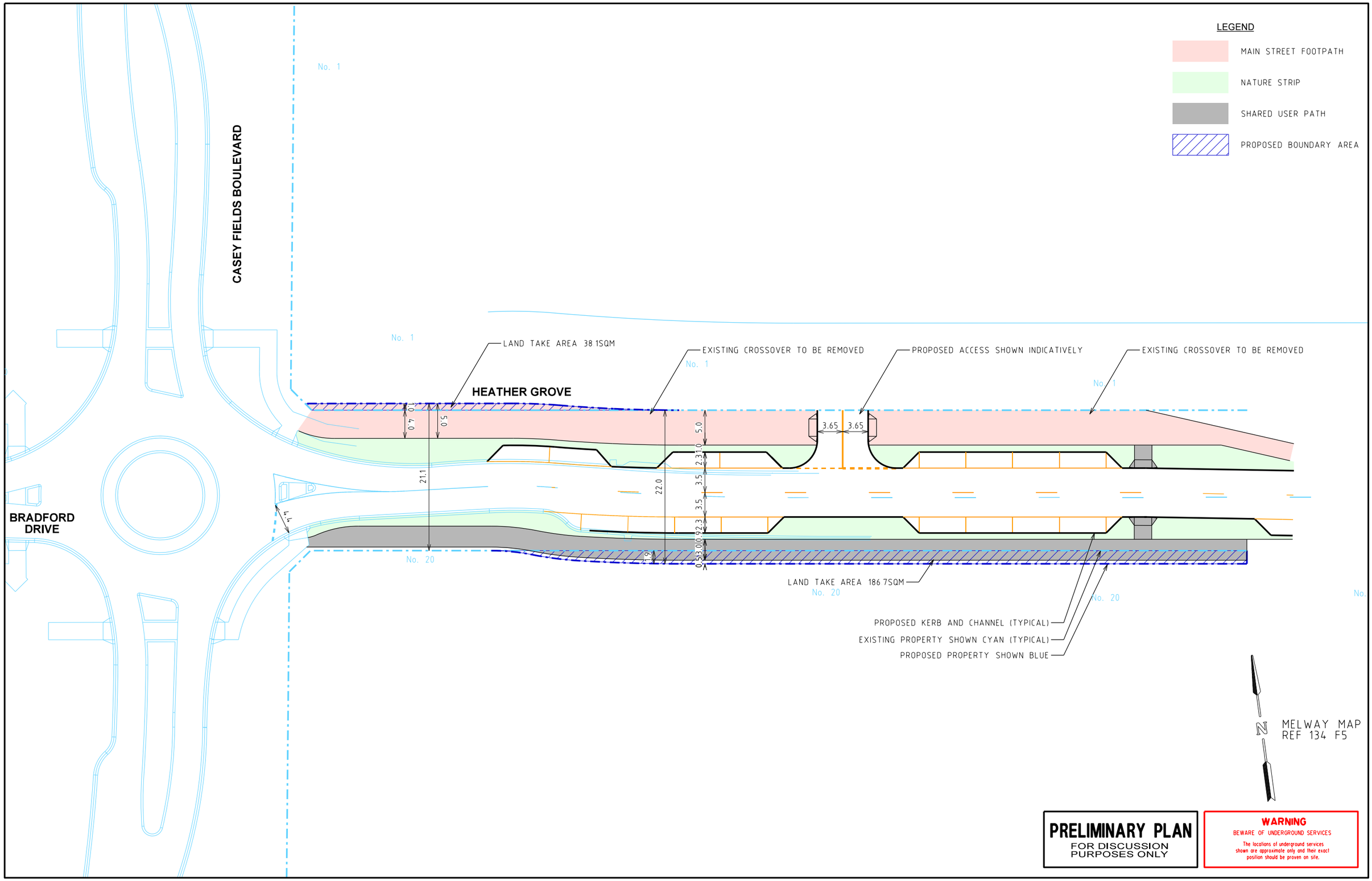
LINSELL BOULEVARD / CASEY FIELDS BOULEVARD
CASEY CITY
UPDATED CRANBOURNE EAST DCP CONCEPT TO REFLECT FUTURE COLLISON ESTATE TRAFFIC
FUNCTIONAL LAYOUT PLAN

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 4 of 4
DWG No. G24859-01-54



ISSUE	ISSUE DESCRIPTION	ISSUE DATE
A	INITIAL ISSUE	07/10/22
B	AMENDMENT	02/02/23
C	DRAINAGE RESERVE REMOVED	18/05/23

GENERAL NOTES
1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL
3 LOCAL ROAD - HEATHER GROVE (SPEED ZONE 50km/h)
- CASEY FIELDS BOULEVARD (SPEED ZONE 50km/h)
- BRADFORD 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: S. O'KEEFE
CHECKED/APPROVED: B. CHISHOLM (RPE7582)
FILE NAME: G24859-02.dgn

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HEATHER GROVE, CRANBOURNE EAST

CITY OF CASEY

CONCEPT LAYOUT PLAN

SCALE 1:500 (A3) 0 2.5 5 7.5 10
SHEET No. 1/1
DWG No. G24859-02-01

DATE: 1/06/2023
MODEL: G24859-02-01
FILE: \\tksrv02\group\Synergy\Projects\GRP2\GRP24859\03-Drawings\G24859-02.dgn

ISSUE	ISSUE DESCRIPTION	ISSUE DATE

GENERAL NOTES
1 BASE INFORMATION FROM AERIAL PHOTOGRAPH (SOURCE NEARMAP NOV 2019)
2 ALL DIMENSIONS ARE TO FACE OF KERB & CHANNEL

DESIGNED
M CHIU 14 JAN 2020

CHECKED / APPROVED
B CHISHOLM 14 JAN 2020

FILE NAME
G24859-01.dgn

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Melbourne, Victoria 3000
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www.traffixgroup.com.au

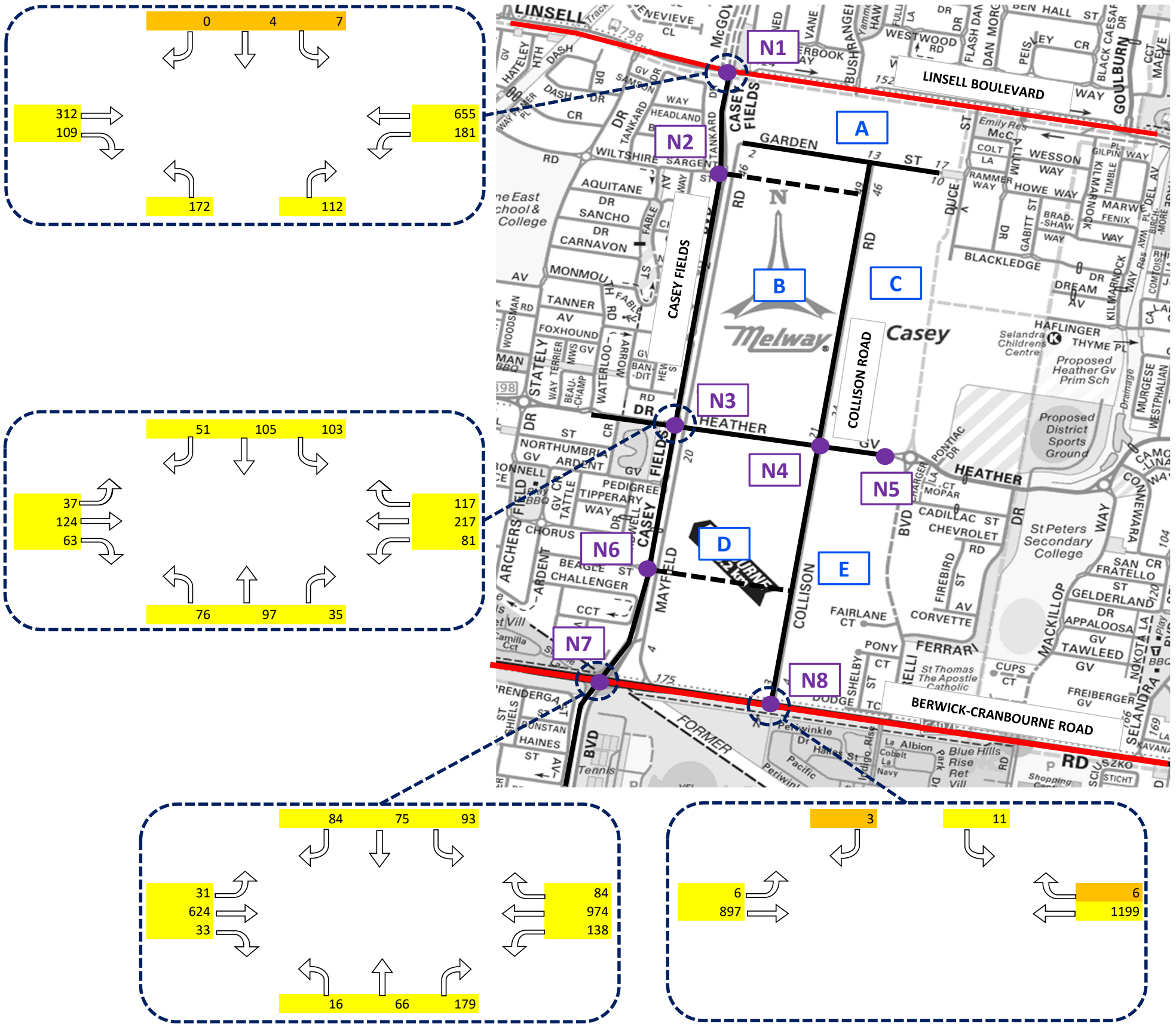
COLLISON ESTATE
CITY OF CASEY
CONCEPT LAYOUT - COLLISON ROAD & BERWICK-CRANBOURNE ROAD

SCALE: 1:500 (A3) 0 2.5 5 7.5 10
SHEET No.
DWG No. G24859-01-01

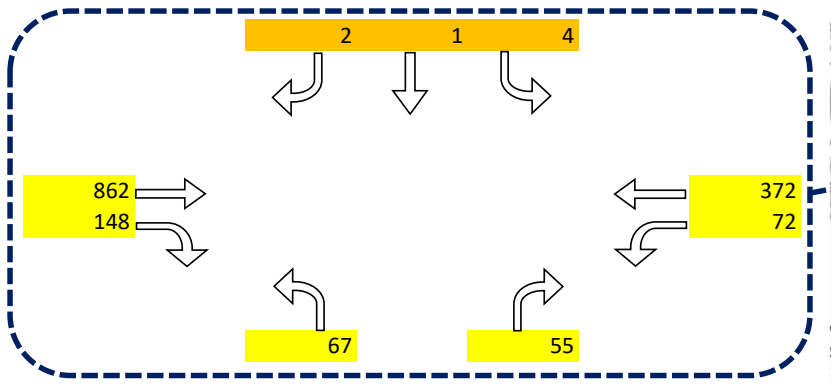
Appendix C

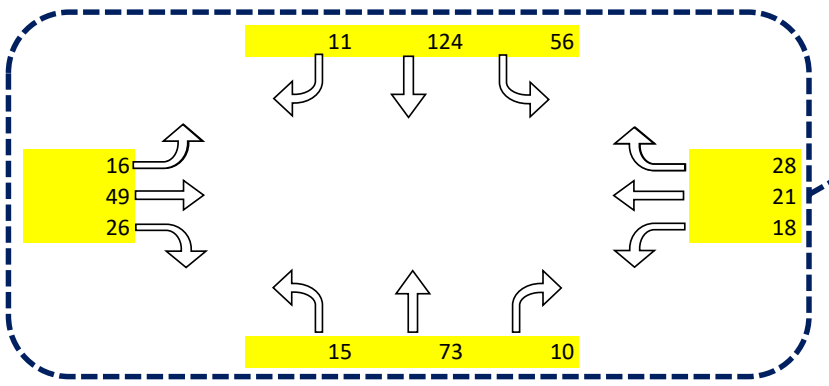
Existing Traffic Volumes

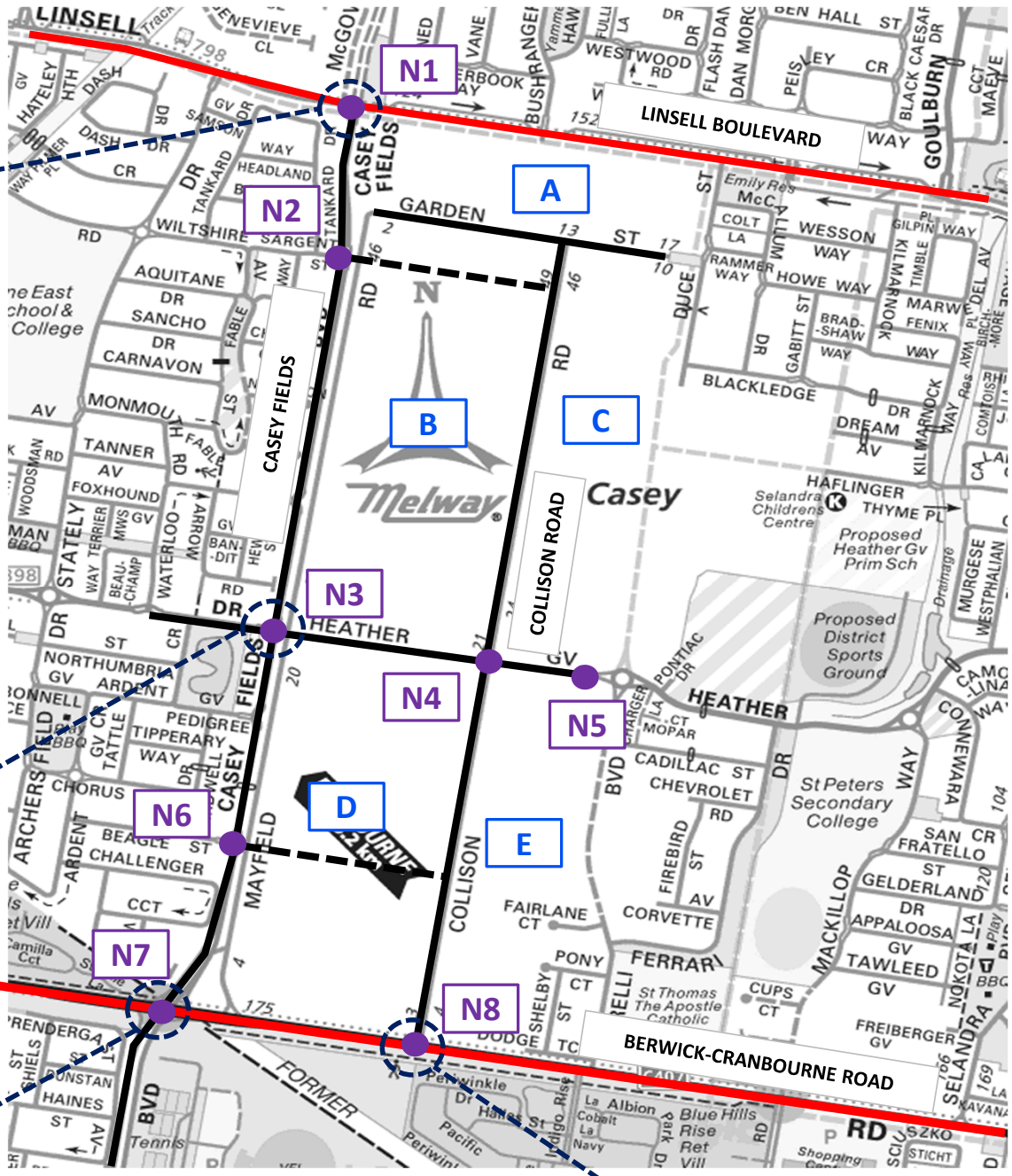
AM Peak Hour Volumes

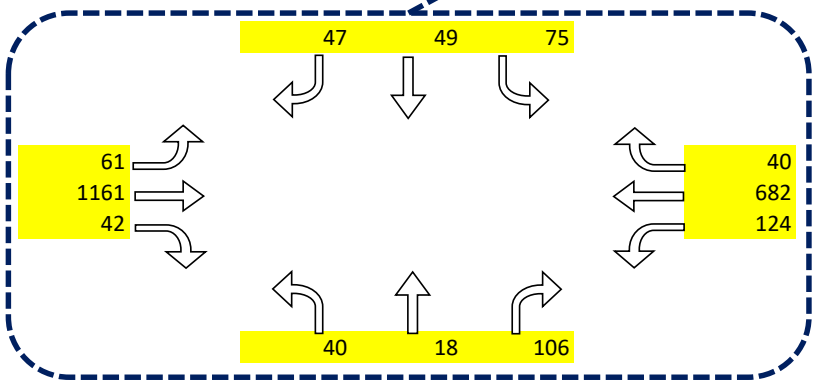


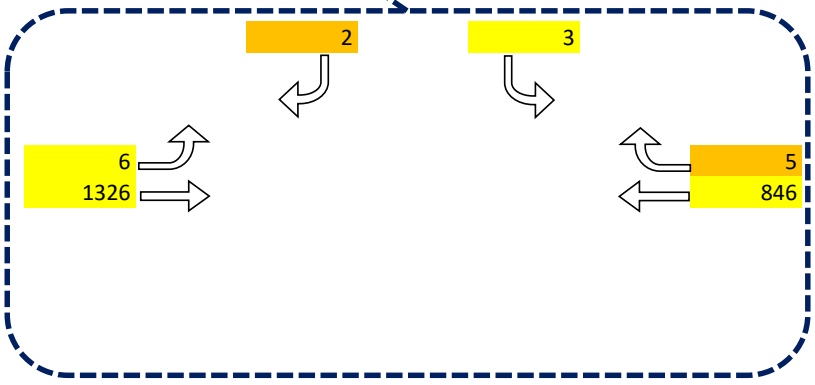
PM Peak Hour Volumes











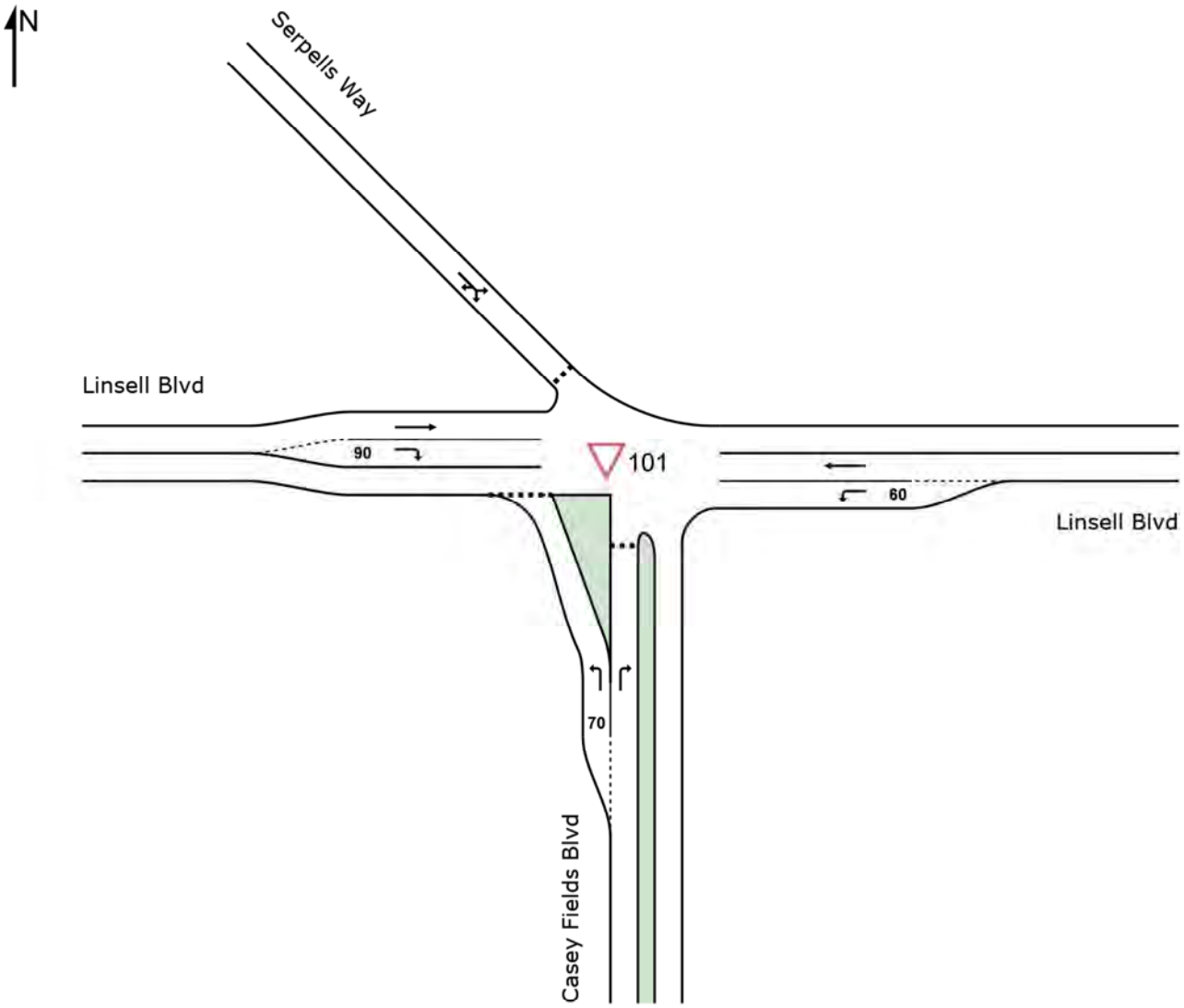
Appendix D

SIDRA Output – Existing Conditions

SITE LAYOUT

Site: 101 [Linsell Blvd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Linsell Blvd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	181	3.0	0.371	13.3	LOS B	1.6	11.5	0.71	0.93	0.92	48.7
3	R2	118	3.0	0.400	20.4	LOS C	1.6	11.3	0.85	1.00	1.10	43.8
Approach		299	3.0	0.400	16.1	LOS C	1.6	11.5	0.76	0.96	0.99	46.7
East: Linsell Blvd												
4	L2	191	3.0	0.105	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	689	3.0	0.360	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		880	3.0	0.360	1.2	NA	0.0	0.0	0.00	0.12	0.00	58.4
NorthWest: Serpells Way												
27a	L1	7	0.0	0.034	5.0	LOS A	0.1	0.7	0.57	0.70	0.57	43.4
29a	R1	4	0.0	0.034	20.1	LOS C	0.1	0.7	0.57	0.70	0.57	44.2
29b	R3	1	0.0	0.034	14.5	LOS B	0.1	0.7	0.57	0.70	0.57	43.1
Approach		13	0.0	0.034	10.8	LOS B	0.1	0.7	0.57	0.70	0.57	43.6
West: Linsell Blvd												
11	T1	328	3.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	115	3.0	0.159	10.0	LOS B	0.6	4.6	0.65	0.86	0.65	50.0
Approach		443	3.0	0.173	2.6	NA	0.6	4.6	0.17	0.22	0.17	57.0
All Vehicles		1635	3.0	0.400	4.4	NA	1.6	11.5	0.19	0.31	0.23	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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: 101 [Linsell Blvd & Casey Fields Blvd - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

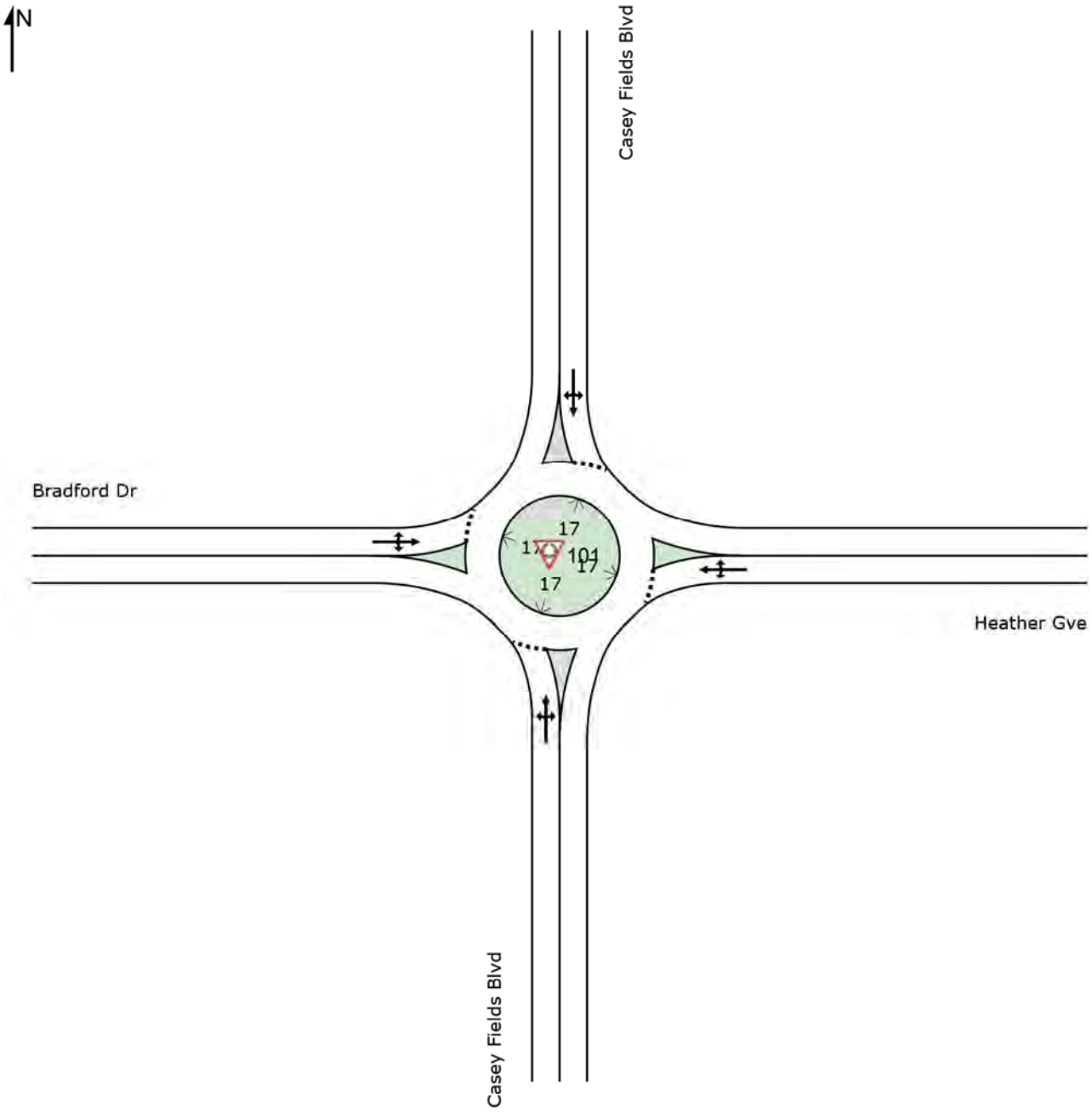
Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	71	3.0	0.092	8.0	LOS A	0.3	2.3	0.46	0.68	0.46	52.3
3	R2	58	3.0	0.340	30.3	LOS D	1.1	8.1	0.91	1.00	1.07	39.1
Approach		128	3.0	0.340	18.1	LOS C	1.1	8.1	0.66	0.82	0.73	45.5
East: Linsell Blvd												
4	L2	76	3.0	0.042	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	392	3.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		467	3.0	0.205	0.9	NA	0.0	0.0	0.00	0.09	0.00	58.8
NorthWest: Serpells Way												
27a	L1	4	0.0	0.032	12.3	LOS B	0.1	0.7	0.82	0.92	0.82	38.0
29a	R1	1	0.0	0.032	26.8	LOS D	0.1	0.7	0.82	0.92	0.82	38.7
29b	R3	2	0.0	0.032	22.8	LOS C	0.1	0.7	0.82	0.92	0.82	37.9
Approach		7	0.0	0.032	17.3	LOS C	0.1	0.7	0.82	0.92	0.82	38.1
West: Linsell Blvd												
11	T1	907	3.0	0.477	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
12	R2	156	3.0	0.134	7.4	LOS A	0.6	4.3	0.50	0.69	0.50	51.8
Approach		1063	3.0	0.477	1.1	NA	0.6	4.3	0.07	0.10	0.07	58.5
All Vehicles		1666	3.0	0.477	2.5	NA	1.1	8.1	0.10	0.16	0.11	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101 [Linsell Blvd & Heather Gve & Bradford Dr - AM]

New Site
Site Category: (None)
Roundabout



MOVEMENT SUMMARY

Site: 101 [Linsell Blvd & Heather Gve & Bradford Dr - AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	80	3.0	0.239	6.5	LOS A	1.4	10.3	0.60	0.68	0.60	52.2
2	T1	102	3.0	0.239	6.8	LOS A	1.4	10.3	0.60	0.68	0.60	53.4
3	R2	37	3.0	0.239	11.0	LOS B	1.4	10.3	0.60	0.68	0.60	53.2
Approach		219	3.0	0.239	7.4	LOS A	1.4	10.3	0.60	0.68	0.60	52.9
East: Heather Gve												
4	L2	85	3.0	0.387	5.6	LOS A	2.6	18.8	0.52	0.62	0.52	52.4
5	T1	228	3.0	0.387	5.8	LOS A	2.6	18.8	0.52	0.62	0.52	53.5
6	R2	123	3.0	0.387	10.1	LOS B	2.6	18.8	0.52	0.62	0.52	53.3
Approach		437	3.0	0.387	7.0	LOS A	2.6	18.8	0.52	0.62	0.52	53.2
North: Casey Fields Blvd												
7	L2	108	3.0	0.256	5.5	LOS A	1.5	11.0	0.48	0.60	0.48	52.7
8	T1	111	3.0	0.256	5.7	LOS A	1.5	11.0	0.48	0.60	0.48	54.0
9	R2	54	3.0	0.256	10.0	LOS A	1.5	11.0	0.48	0.60	0.48	53.7
Approach		273	3.0	0.256	6.5	LOS A	1.5	11.0	0.48	0.60	0.48	53.4
West: Bradford Dr												
10	L2	39	3.0	0.220	5.6	LOS A	1.3	9.1	0.47	0.60	0.47	52.5
11	T1	131	3.0	0.220	5.8	LOS A	1.3	9.1	0.47	0.60	0.47	53.6
12	R2	66	3.0	0.220	10.1	LOS B	1.3	9.1	0.47	0.60	0.47	53.4
Approach		236	3.0	0.220	7.0	LOS A	1.3	9.1	0.47	0.60	0.47	53.3
All Vehicles		1164	3.0	0.387	6.9	LOS A	2.6	18.8	0.51	0.62	0.51	53.2

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.
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: 101 [Linsell Blvd & Heather Gve & Bradford Dr - PM]

New Site
Site Category: (None)
Roundabout

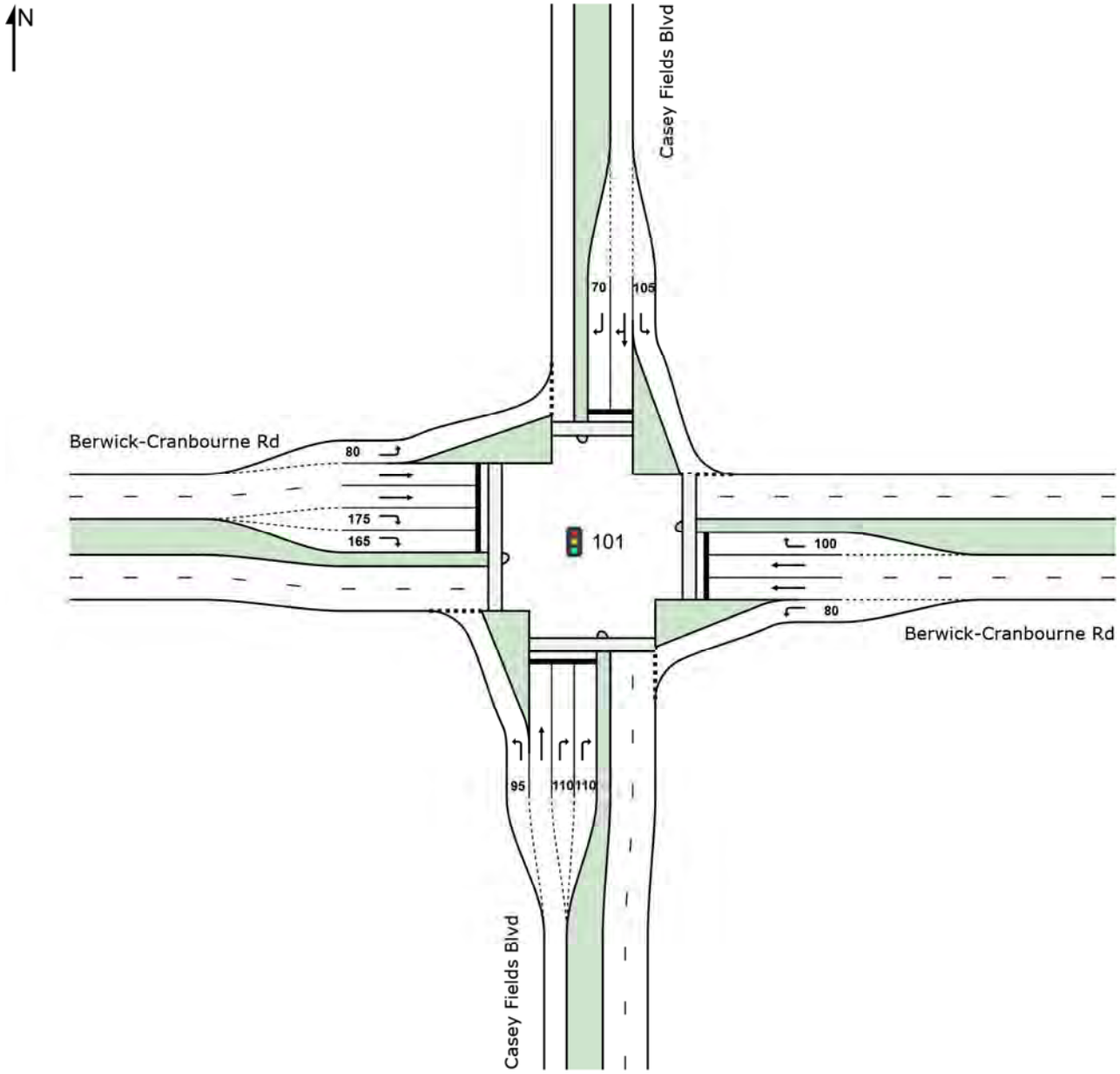
Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	16	3.0	0.081	4.4	LOS A	0.4	3.0	0.20	0.46	0.20	53.8
2	T1	77	3.0	0.081	4.6	LOS A	0.4	3.0	0.20	0.46	0.20	55.1
3	R2	11	3.0	0.081	8.8	LOS A	0.4	3.0	0.20	0.46	0.20	54.9
Approach		103	3.0	0.081	5.0	LOS A	0.4	3.0	0.20	0.46	0.20	54.9
East: Heather Gve												
4	L2	19	3.0	0.060	4.9	LOS A	0.3	2.1	0.33	0.56	0.33	52.7
5	T1	22	3.0	0.060	5.1	LOS A	0.3	2.1	0.33	0.56	0.33	53.8
6	R2	29	3.0	0.060	9.4	LOS A	0.3	2.1	0.33	0.56	0.33	53.6
Approach		71	3.0	0.060	6.8	LOS A	0.3	2.1	0.33	0.56	0.33	53.4
North: Casey Fields Blvd												
7	L2	59	3.0	0.159	4.5	LOS A	0.9	6.2	0.26	0.47	0.26	53.8
8	T1	131	3.0	0.159	4.7	LOS A	0.9	6.2	0.26	0.47	0.26	55.1
9	R2	12	3.0	0.159	9.0	LOS A	0.9	6.2	0.26	0.47	0.26	54.8
Approach		201	3.0	0.159	4.9	LOS A	0.9	6.2	0.26	0.47	0.26	54.7
West: Bradford Dr												
10	L2	17	3.0	0.078	4.6	LOS A	0.4	2.8	0.27	0.52	0.27	53.2
11	T1	52	3.0	0.078	4.8	LOS A	0.4	2.8	0.27	0.52	0.27	54.3
12	R2	27	3.0	0.078	9.1	LOS A	0.4	2.8	0.27	0.52	0.27	54.2
Approach		96	3.0	0.078	6.0	LOS A	0.4	2.8	0.27	0.52	0.27	54.1
All Vehicles		471	3.0	0.159	5.4	LOS A	0.9	6.2	0.26	0.49	0.26	54.4

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.
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.

SITE LAYOUT

Site: 101 [Berwick-Cranbourne Rd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated



MOVEMENT SUMMARY

Site: 101 [Berwick-Cranbourne Rd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	17	3.0	0.021	9.9	LOS A	0.2	1.8	0.32	0.61	0.32	51.0
2	T1	69	3.0	0.242	49.2	LOS D	3.6	26.2	0.92	0.71	0.92	33.4
3	R2	188	3.0	0.345	55.9	LOS E	5.0	36.2	0.94	0.77	0.94	31.1
Approach		275	3.0	0.345	51.3	LOS D	5.0	36.2	0.90	0.75	0.90	32.4
East: Berwick-Cranbourne Rd												
4	L2	145	3.0	0.094	6.4	LOS A	0.9	6.2	0.16	0.59	0.16	53.5
5	T1	1025	5.0	0.582	20.3	LOS C	17.6	128.4	0.64	0.57	0.64	45.1
6	R2	88	3.0	0.417	60.3	LOS E	5.0	35.6	0.97	0.77	0.97	29.8
Approach		1259	4.6	0.582	21.5	LOS C	17.6	128.4	0.61	0.58	0.61	44.3
North: Casey Fields Blvd												
7	L2	98	3.0	0.098	8.7	LOS A	1.3	9.1	0.29	0.63	0.29	51.8
8	T1	79	3.0	0.337	51.9	LOS D	4.7	33.4	0.95	0.74	0.95	32.4
9	R2	88	3.0	0.337	57.7	LOS E	4.7	33.4	0.95	0.77	0.95	30.8
Approach		265	3.0	0.337	37.9	LOS D	4.7	33.4	0.71	0.71	0.71	36.8
West: Berwick-Cranbourne Rd												
10	L2	33	3.0	0.022	6.8	LOS A	0.2	1.7	0.19	0.59	0.19	53.2
11	T1	657	5.0	0.435	25.0	LOS C	11.6	84.6	0.65	0.56	0.65	42.7
12	R2	35	3.0	0.191	68.2	LOS E	1.0	7.4	0.99	0.69	0.99	28.1
Approach		724	4.8	0.435	26.2	LOS C	11.6	84.6	0.64	0.57	0.64	42.0
All Vehicles		2523	4.3	0.582	27.8	LOS C	17.6	128.4	0.66	0.61	0.66	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.
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 Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	54.3	LOS E			0.95	0.95

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 [Berwick-Cranbourne Rd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

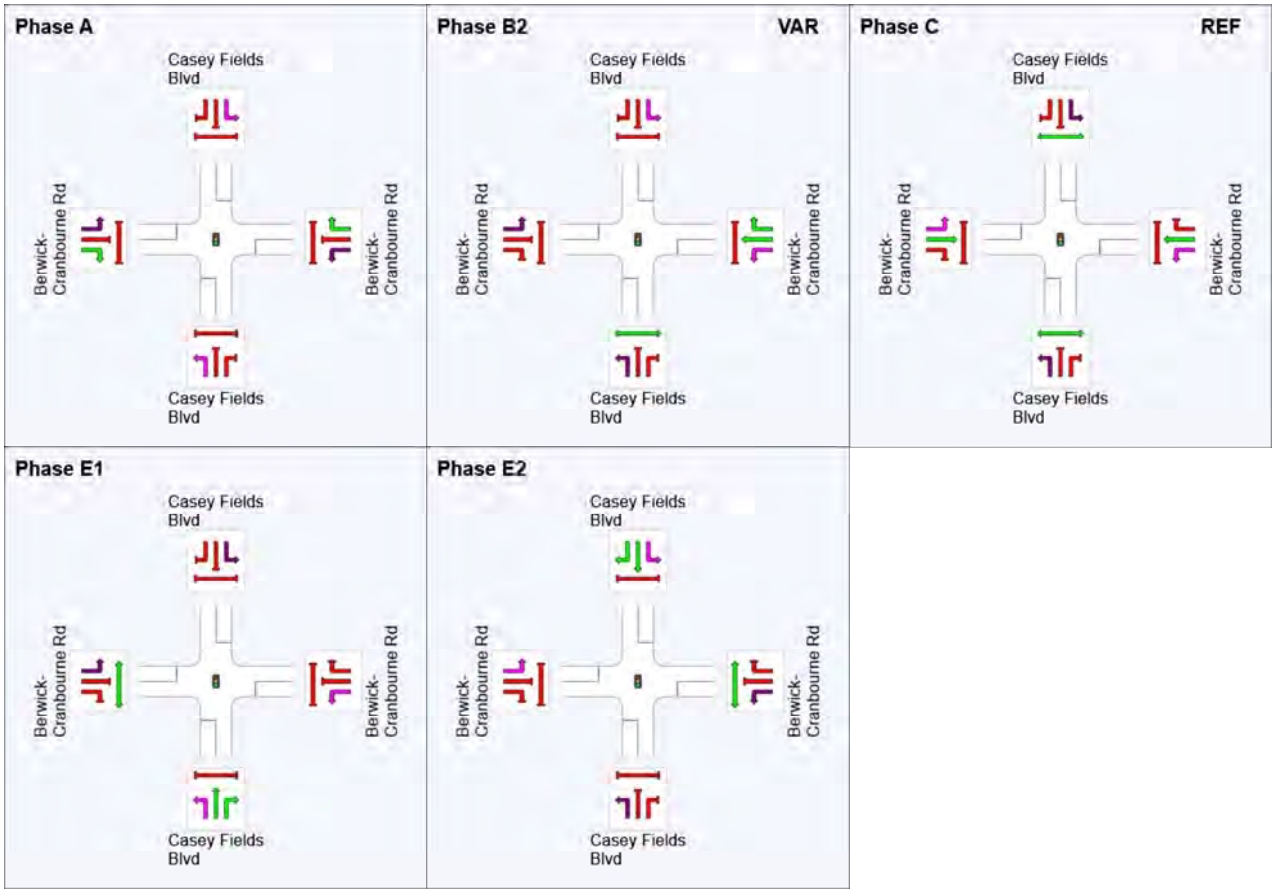
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, B1*, B2*, C, E1, E2
Output Phase Sequence: A, B2*, C, E1, E2
(* Variable Phase)

Phase Timing Summary

Phase	A	B2	C	E1	E2
Phase Change Time (sec)	100	112	0	54	78
Green Time (sec)	6	2	48	18	16
Phase Time (sec)	12	8	54	24	22
Phase Split	10%	7%	45%	20%	18%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement
Permitted/Opposed
Slip/Bypass-Lane Movement
Opposed Slip/Bypass-Lane

MOVEMENT SUMMARY

Site: 101 [Berwick-Cranbourne Rd & Casey Fields Blvd - PM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	42	3.0	0.045	7.6	LOS A	0.4	3.0	0.24	0.60	0.24	52.6
2	T1	19	3.0	0.066	47.4	LOS D	1.0	6.9	0.89	0.63	0.89	33.9
3	R2	112	3.0	0.205	54.5	LOS D	2.9	20.9	0.92	0.75	0.92	31.4
Approach		173	3.0	0.205	42.3	LOS D	2.9	20.9	0.75	0.70	0.75	35.2
East: Berwick-Cranbourne Rd												
4	L2	131	3.0	0.084	6.3	LOS A	0.7	5.0	0.15	0.59	0.15	53.6
5	T1	718	5.0	0.407	18.2	LOS B	10.5	76.7	0.54	0.47	0.54	46.3
6	R2	42	3.0	0.463	69.8	LOS E	2.6	18.5	1.00	0.73	1.00	27.7
Approach		891	4.6	0.463	18.9	LOS B	10.5	76.7	0.51	0.50	0.51	45.7
North: Casey Fields Blvd												
7	L2	79	3.0	0.097	11.9	LOS B	1.5	10.7	0.39	0.65	0.39	49.6
8	T1	52	3.0	0.203	50.8	LOS D	2.8	19.7	0.93	0.70	0.93	32.9
9	R2	49	3.0	0.203	56.5	LOS E	2.8	19.7	0.93	0.74	0.93	31.0
Approach		180	3.0	0.203	35.3	LOS D	2.8	19.7	0.69	0.69	0.69	37.8
West: Berwick-Cranbourne Rd												
10	L2	64	3.0	0.041	6.2	LOS A	0.3	2.1	0.14	0.58	0.14	53.7
11	T1	1222	5.0	0.700	21.9	LOS C	24.0	174.9	0.72	0.64	0.72	44.2
12	R2	44	3.0	0.243	68.5	LOS E	1.3	9.5	0.99	0.71	0.99	28.1
Approach		1331	4.8	0.700	22.7	LOS C	24.0	174.9	0.70	0.64	0.70	43.8
All Vehicles		2574	4.5	0.700	23.6	LOS C	24.0	174.9	0.63	0.60	0.63	43.2

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.
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 Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	54.3	LOS E			0.95	0.95

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 [Berwick-Cranbourne Rd & Casey Fields Blvd - PM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

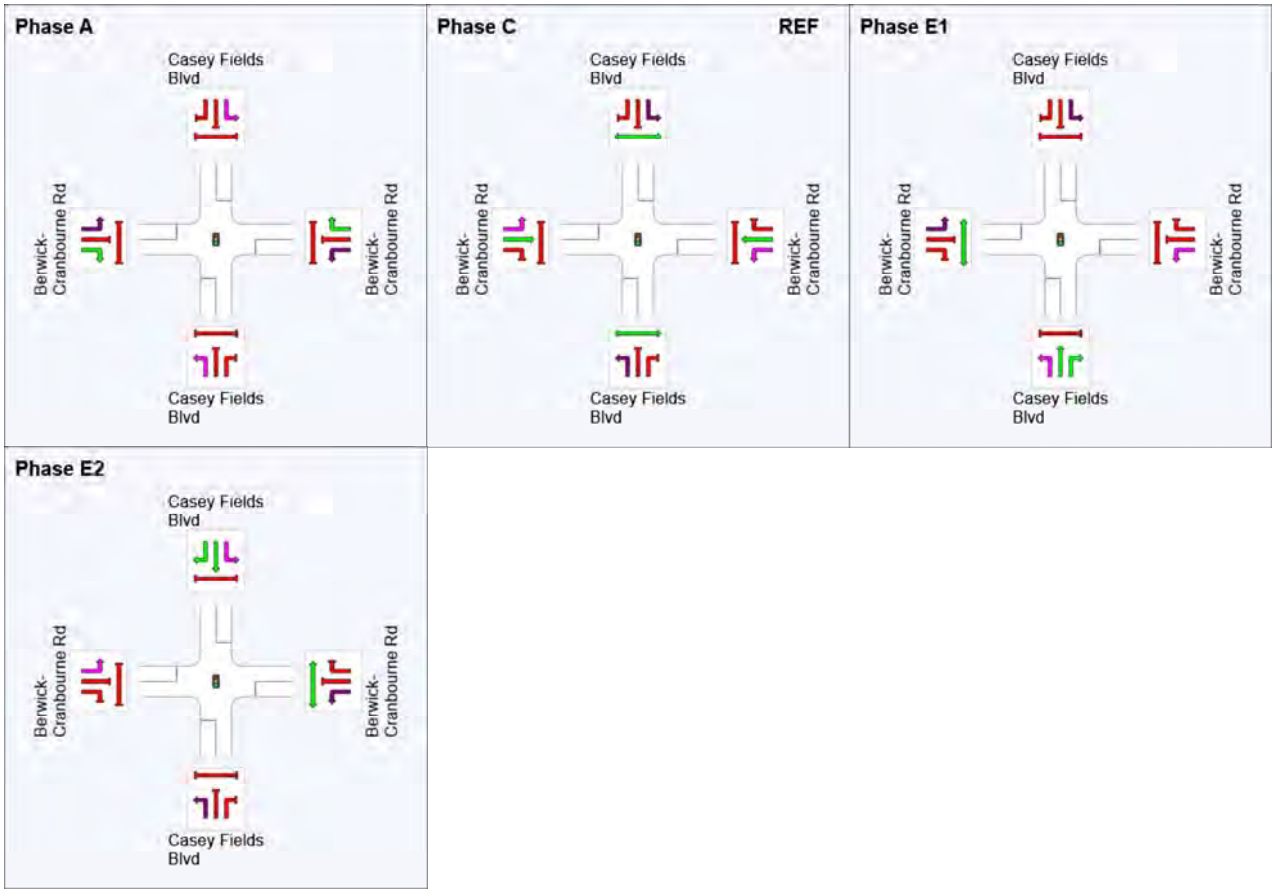
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, B1*, B2*, C, E1, E2
Output Phase Sequence: A, C, E1, E2
(* Variable Phase)

Phase Timing Summary

Phase	A	C	E1	E2
Phase Change Time (sec)	108	0	62	86
Green Time (sec)	6	56	18	16
Phase Time (sec)	12	62	24	22
Phase Split	10%	52%	20%	18%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

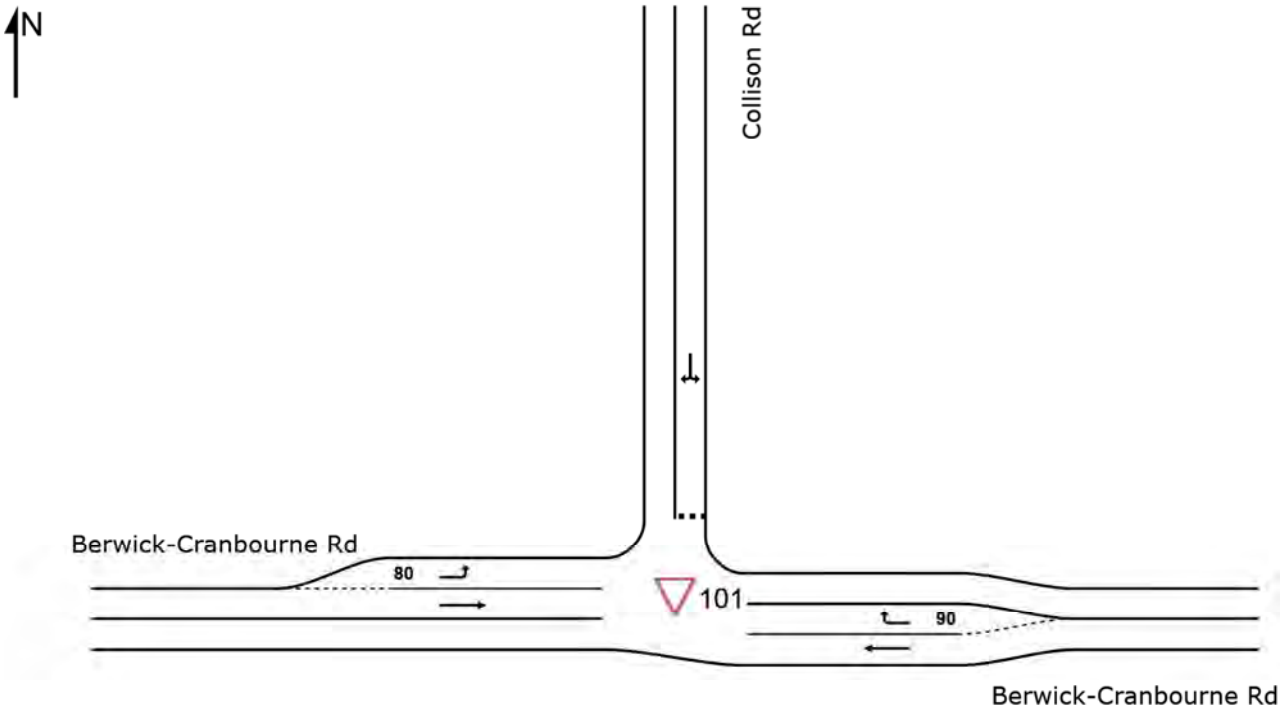


REF: Reference Phase
VAR: Variable Phase

SITE LAYOUT

Site: 101 [Berwick-Cranbourne Rd & Collison Rd - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Berwick-Cranbourne Rd & Collison Rd - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
East: Berwick-Cranbourne Rd												
5	T1	1262	5.0	0.668	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
6	R2	6	3.0	0.011	10.7	LOS B	0.0	0.3	0.69	0.77	0.69	49.2
Approach		1268	5.0	0.668	0.2	NA	0.0	0.3	0.00	0.00	0.00	59.6
North: Collison Rd												
7	L2	12	3.0	0.151	16.4	LOS C	0.4	2.8	0.91	0.96	0.91	36.1
9	R2	3	3.0	0.151	119.4	LOS F	0.4	2.8	0.91	0.96	0.91	36.0
Approach		15	3.0	0.151	38.5	LOS E	0.4	2.8	0.91	0.96	0.91	36.1
West: Berwick-Cranbourne Rd												
10	L2	6	3.0	0.003	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	944	5.0	0.500	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		951	5.0	0.500	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		2234	5.0	0.668	0.4	NA	0.4	2.8	0.01	0.01	0.01	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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: 101 [Berwick-Cranbourne Rd & Collison Rd - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

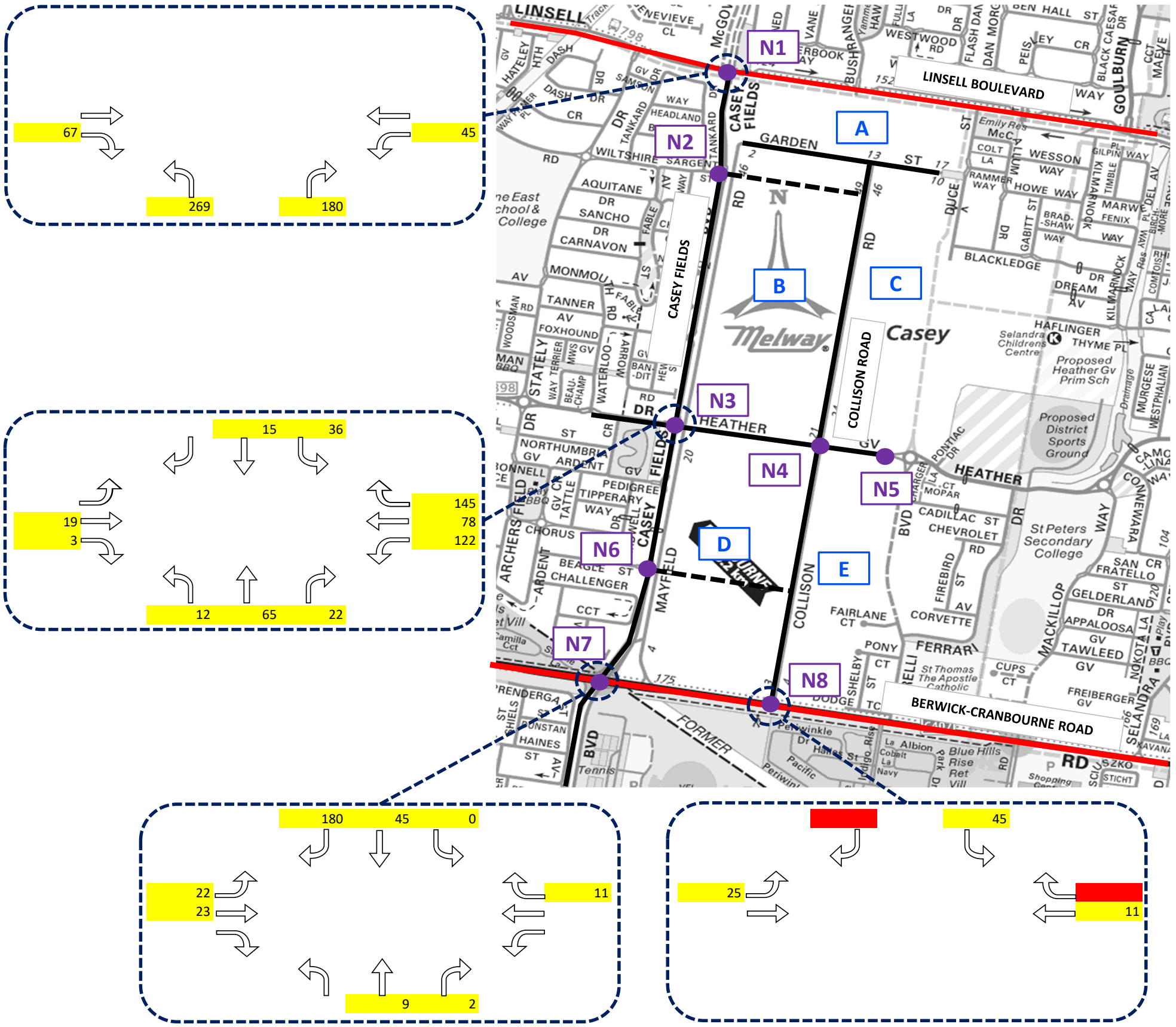
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Berwick-Cranbourne Rd												
5	T1	891	5.0	0.472	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	5	3.0	0.027	23.0	LOS C	0.1	0.6	0.90	0.96	0.90	42.2
Approach		896	5.0	0.472	0.2	NA	0.1	0.6	0.01	0.01	0.01	59.7
North: Collison Rd												
7	L2	3	3.0	0.164	62.7	LOS F	0.4	2.9	0.98	0.99	0.99	21.4
9	R2	2	3.0	0.164	175.2	LOS F	0.4	2.9	0.98	0.99	0.99	21.4
Approach		5	3.0	0.164	107.7	LOS F	0.4	2.9	0.98	0.99	0.99	21.4
West: Berwick-Cranbourne Rd												
10	L2	6	3.0	0.003	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	1396	5.0	0.739	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		1402	5.0	0.739	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		2303	5.0	0.739	0.5	NA	0.4	2.9	0.00	0.01	0.00	59.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

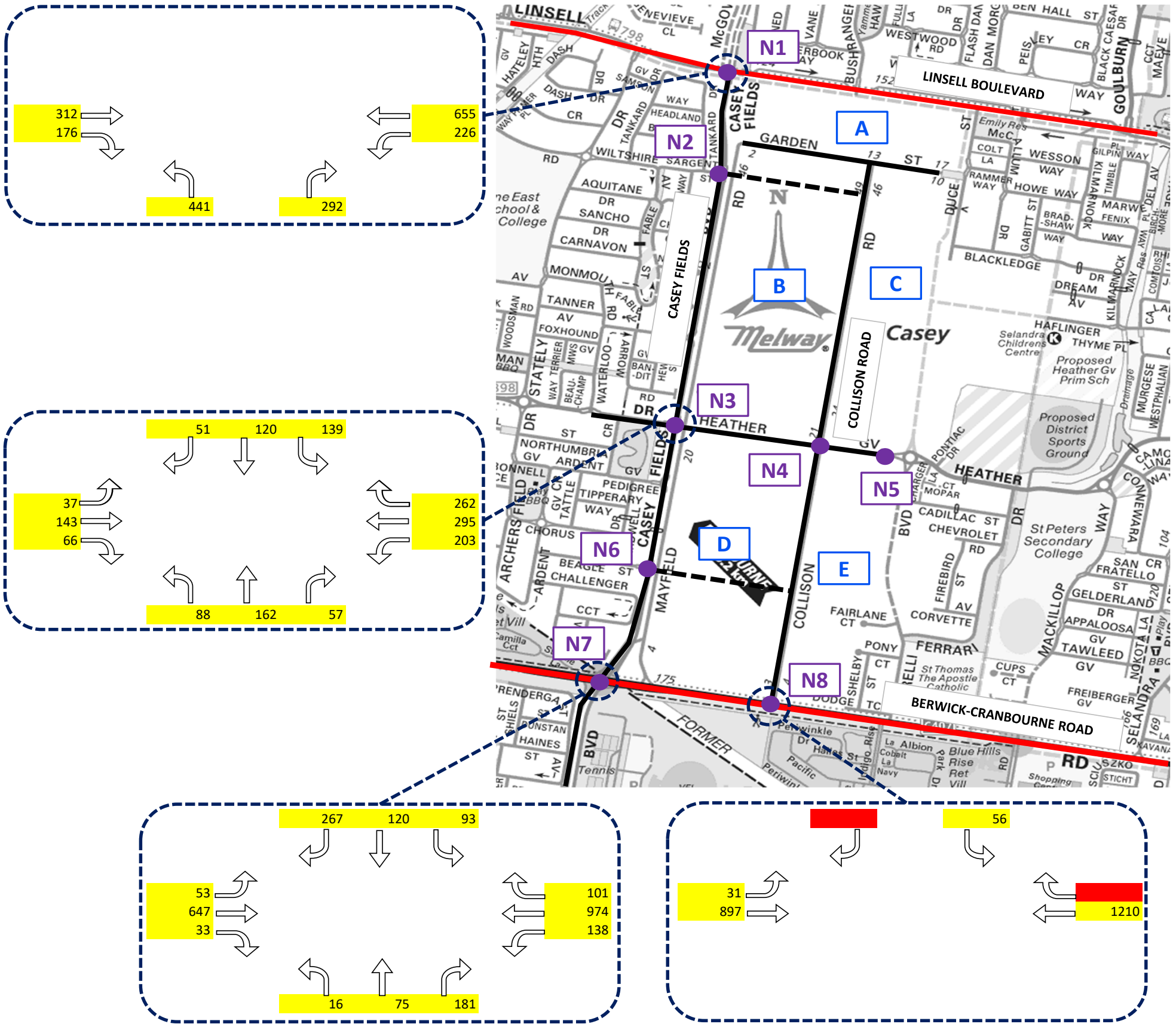
Appendix E

Collison Estate Generated and Post Development Traffic

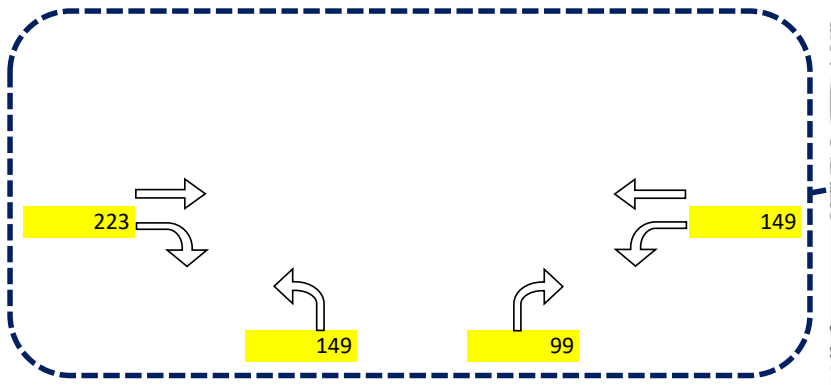
AM Peak Hour Site Generated Traffic

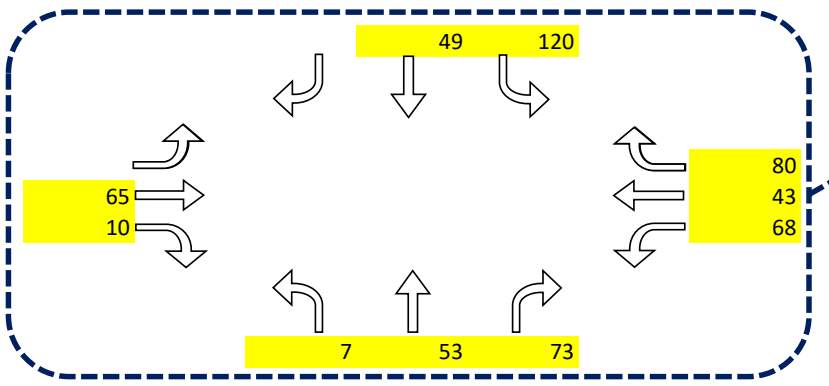


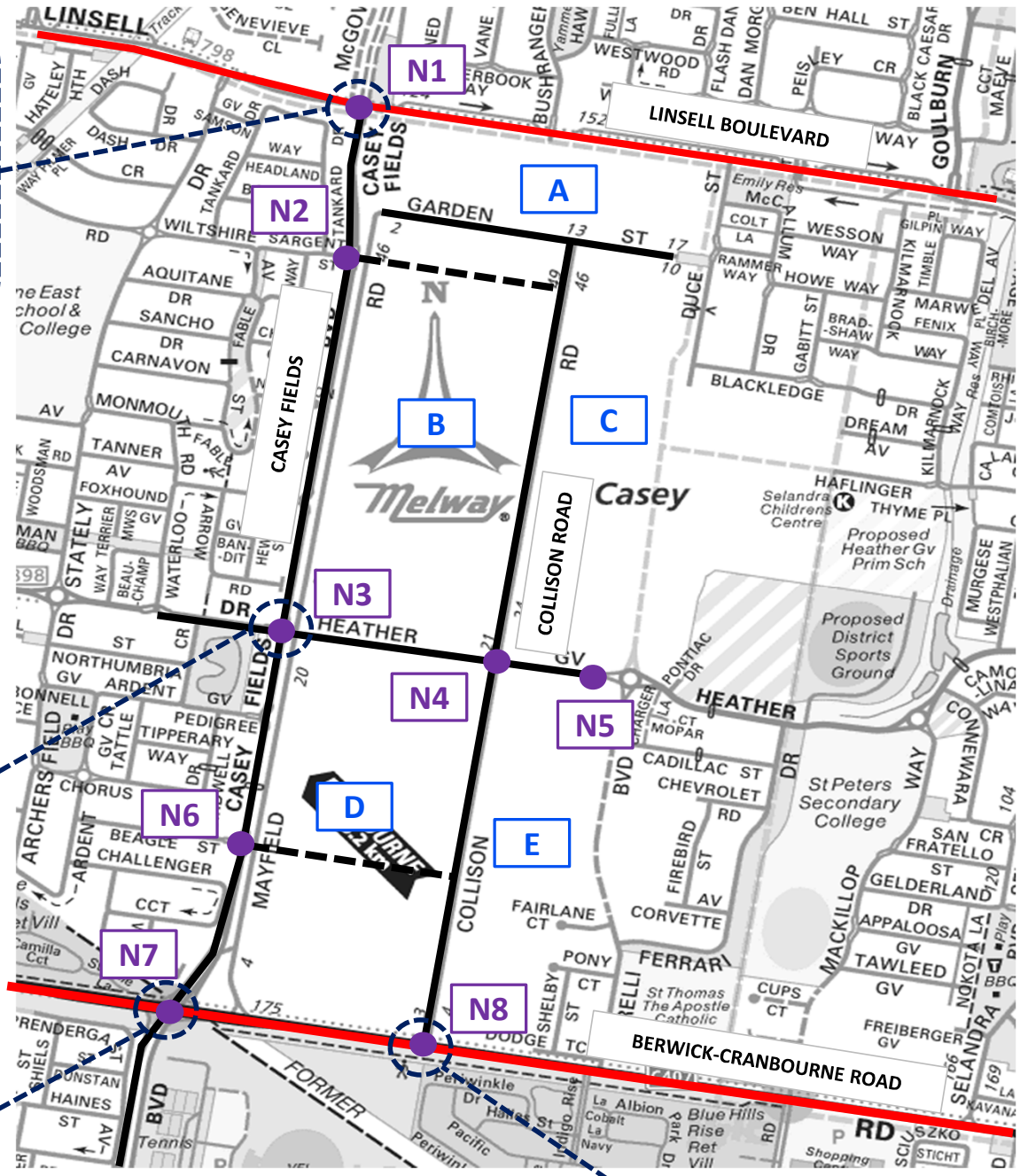
AM Peak Hour Post Development

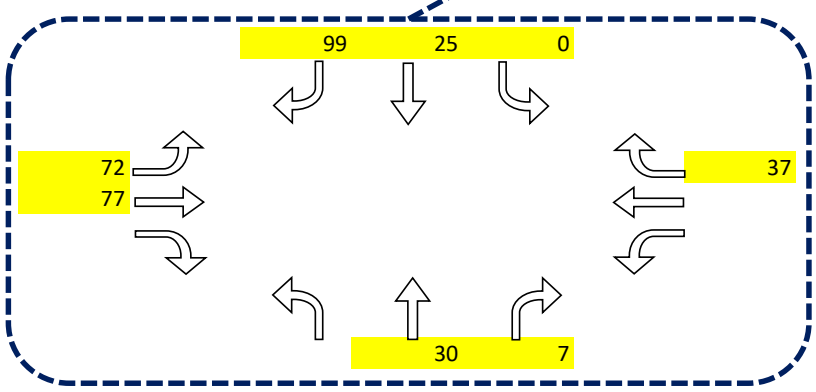


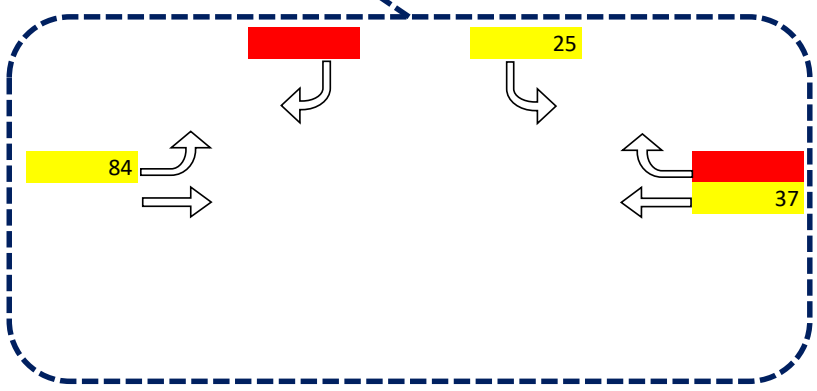
PM Peak Hour Site Generated Traffic



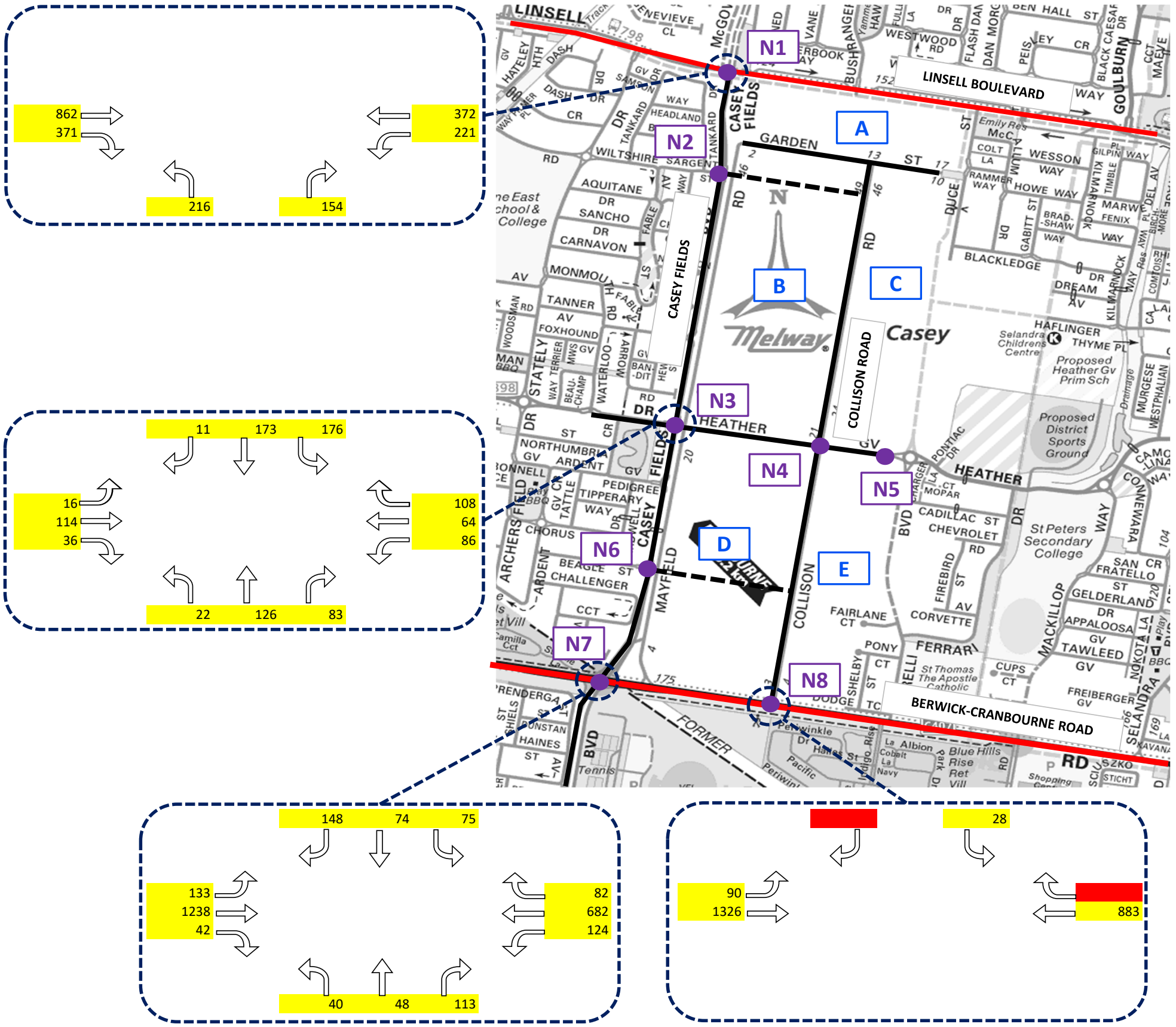




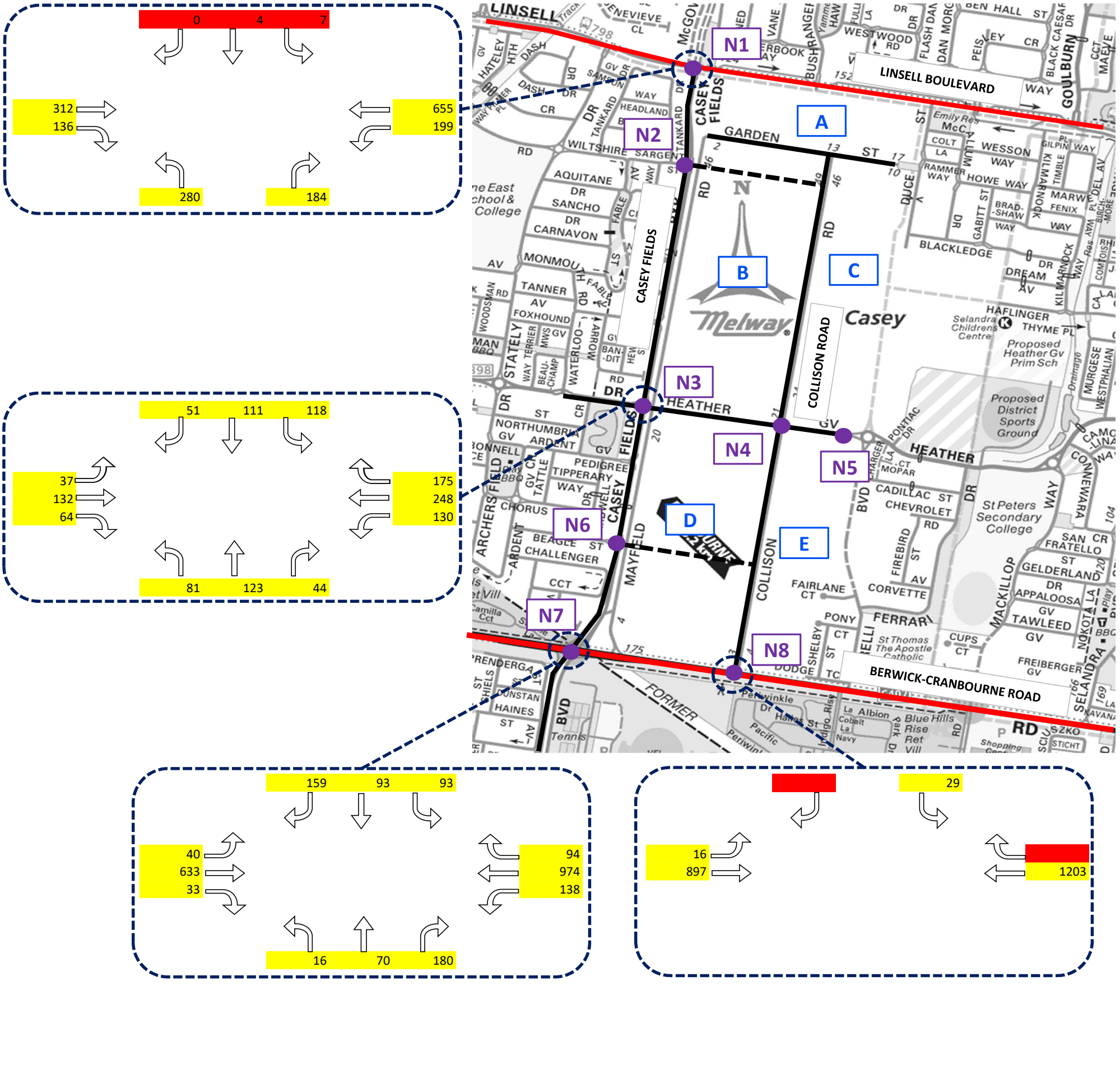




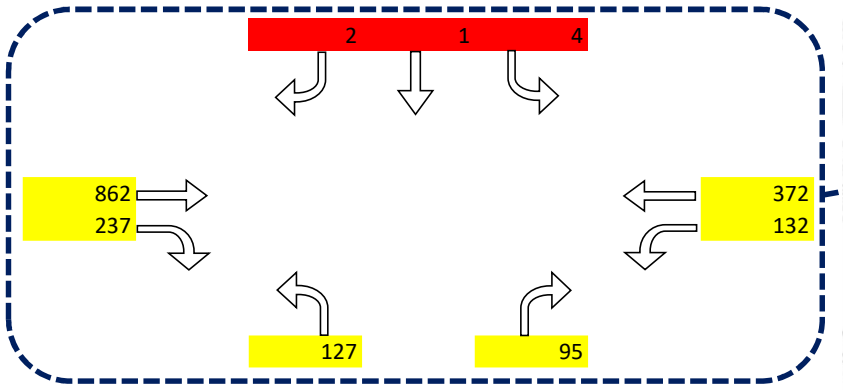
PM Peak Hour Post Development

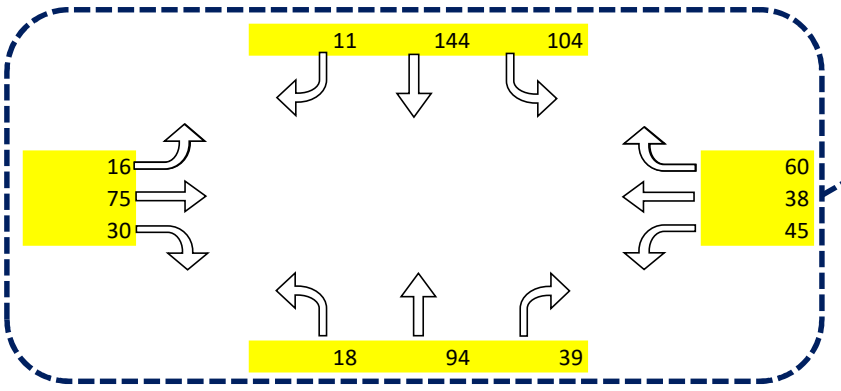


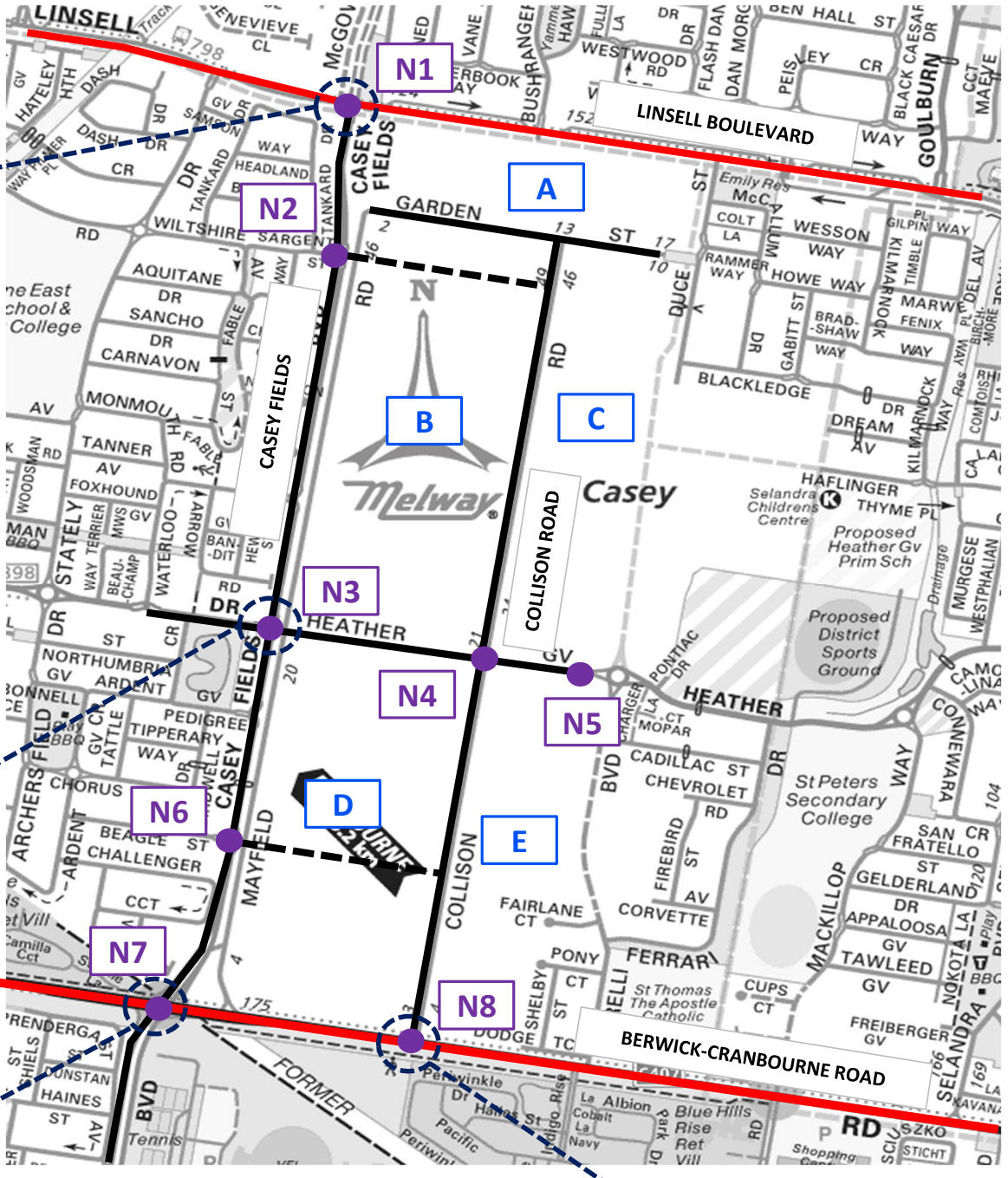
AM Peak Hour Post Development - 40% (680 lots)

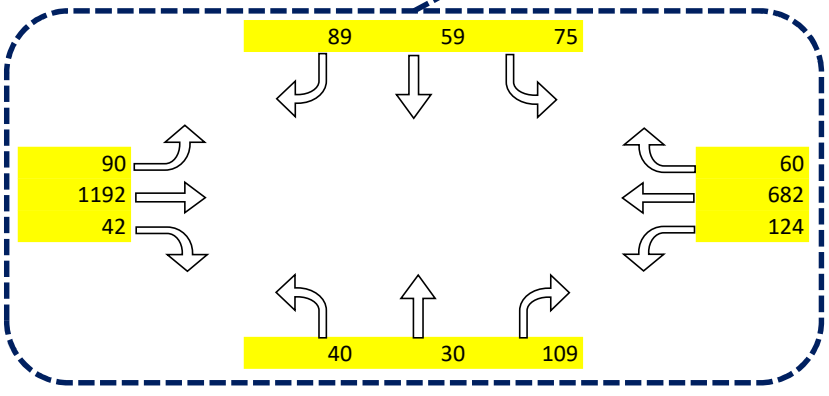


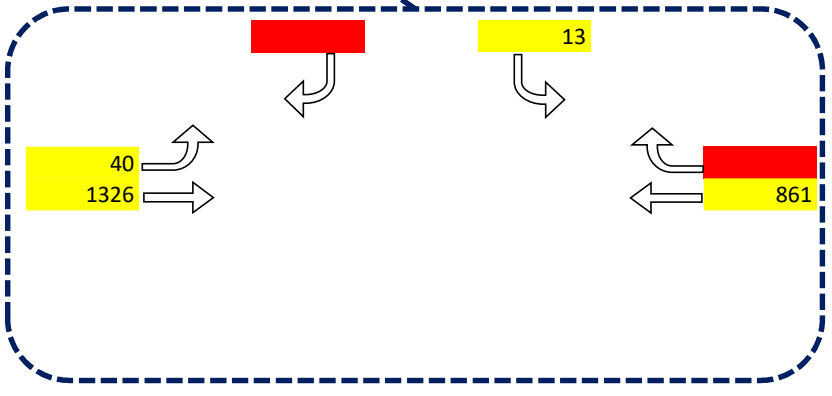
PM Peak Hour Post Development - 40% (680 lots)



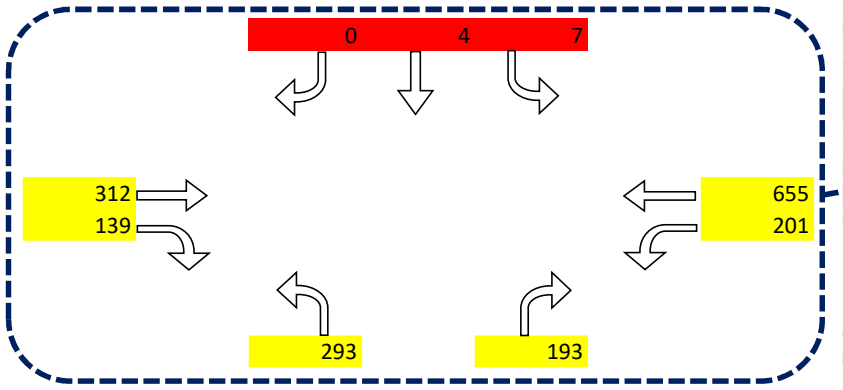


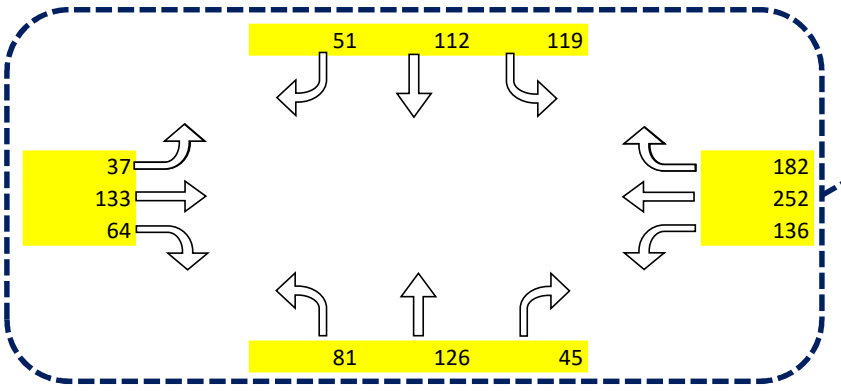


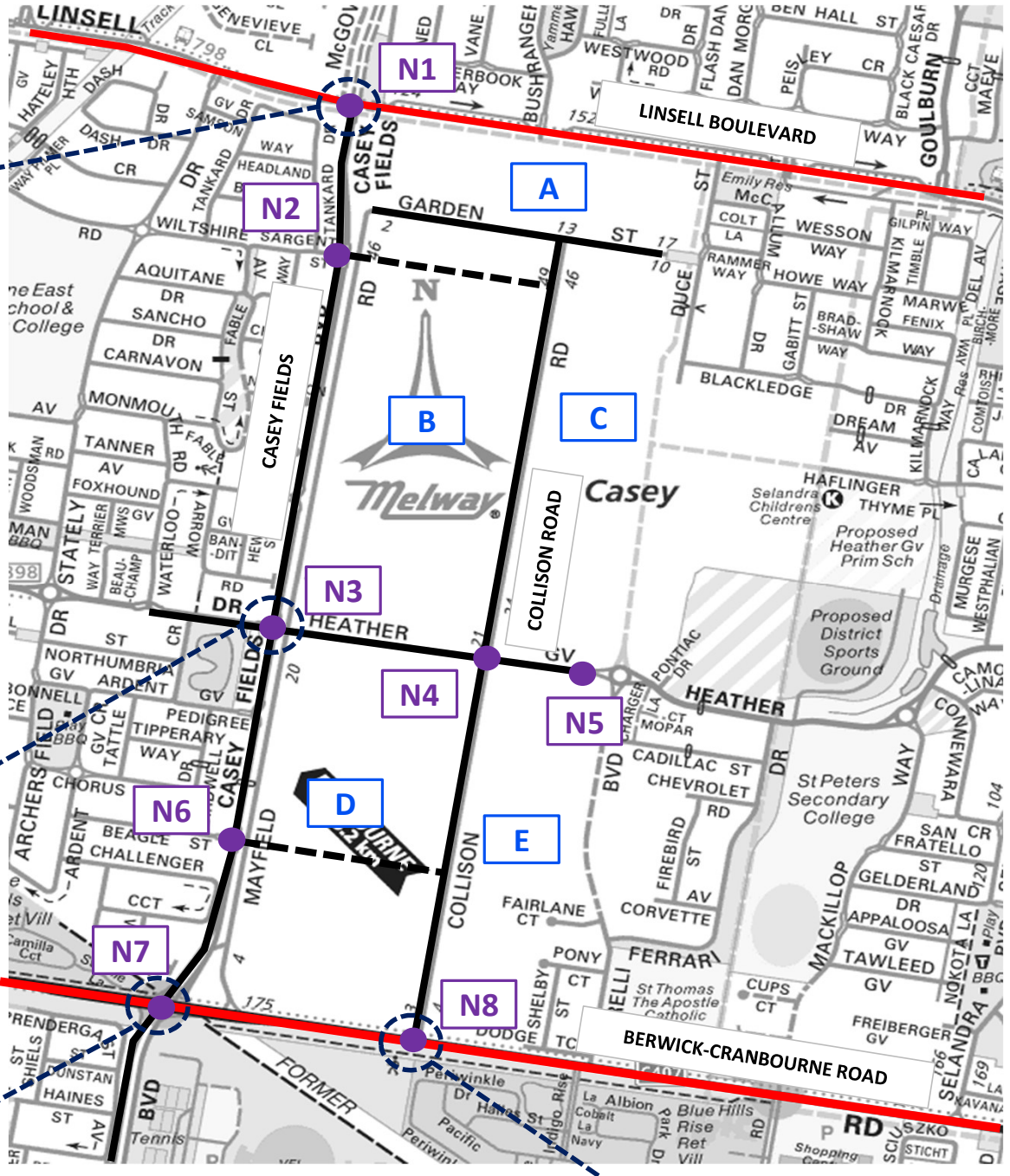


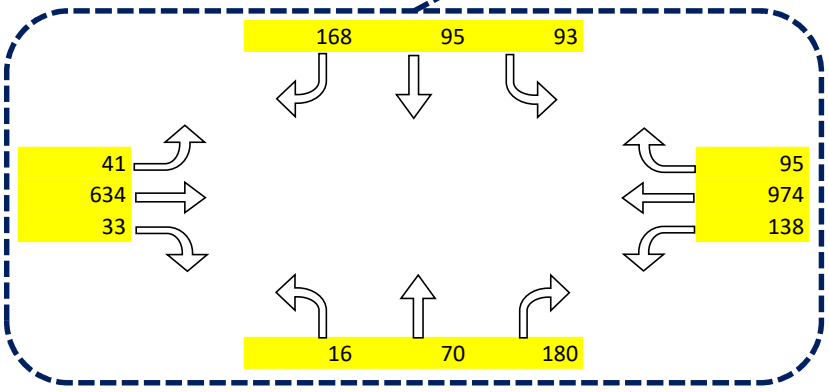


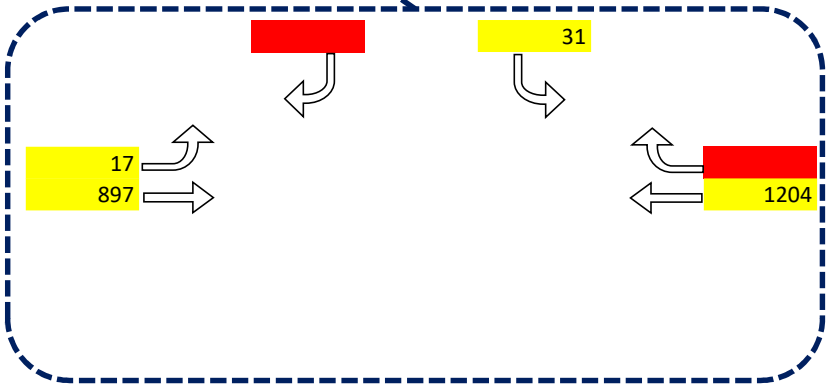
AM Peak Hour Post Development - 45% (765 lots)



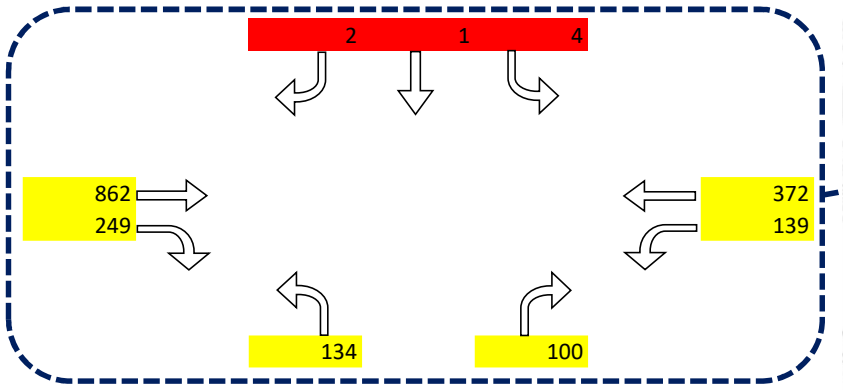


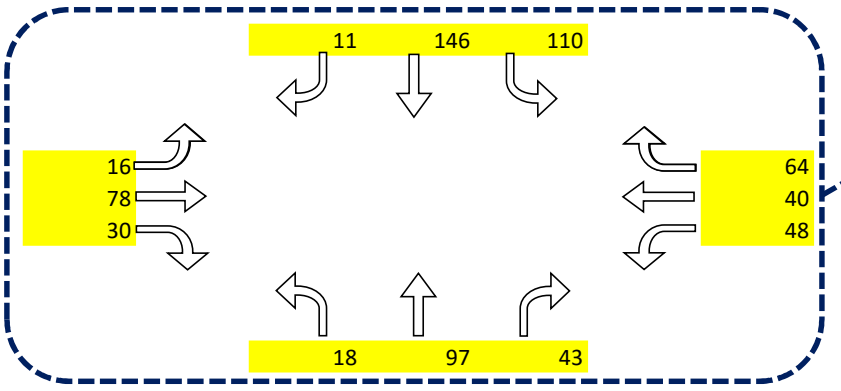


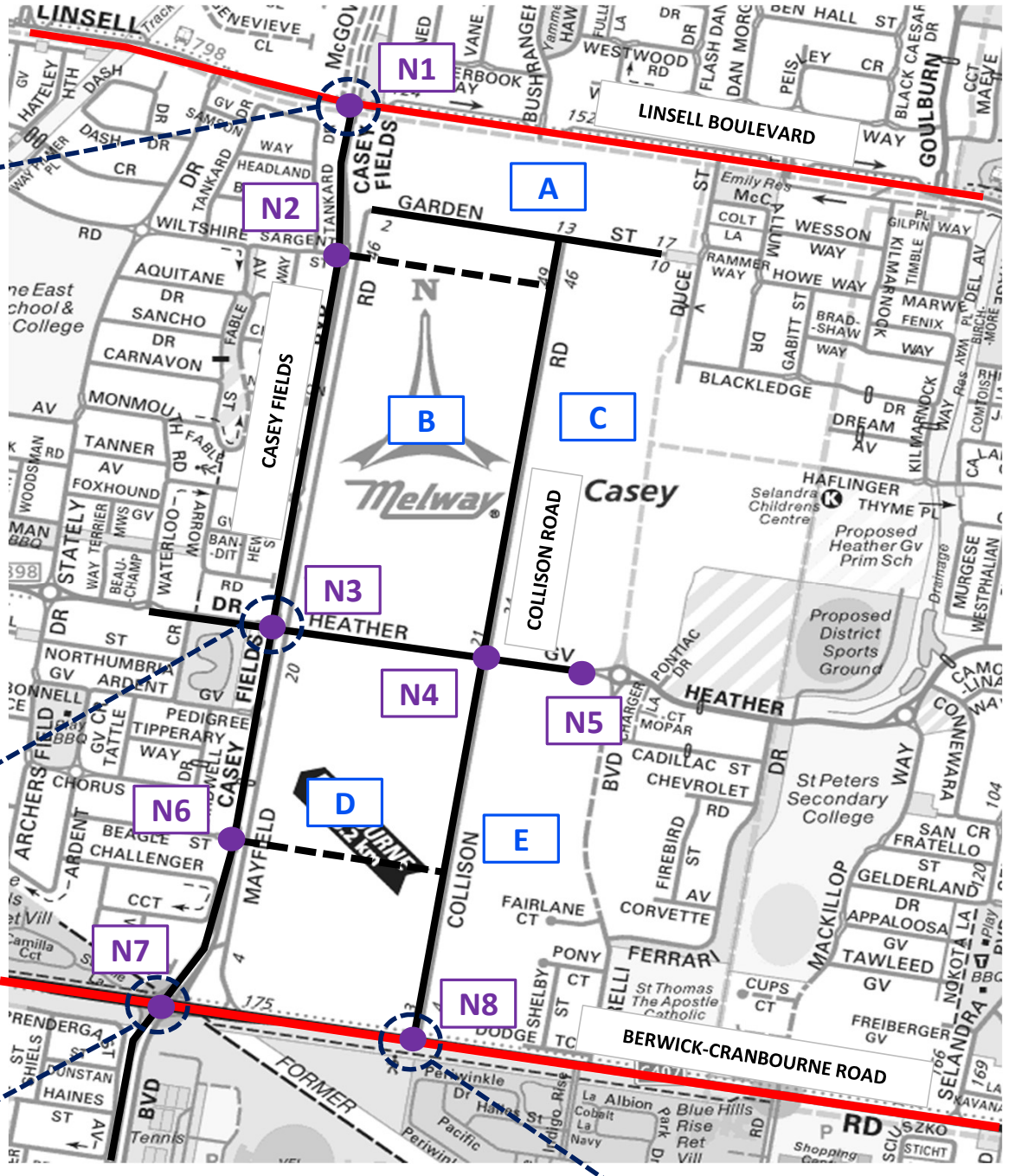


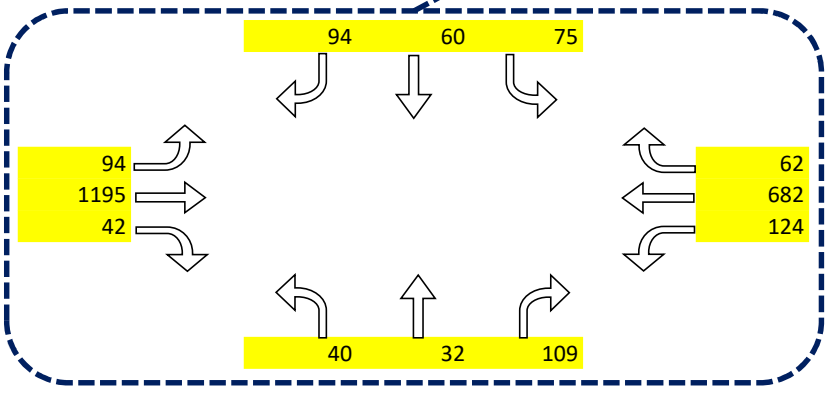


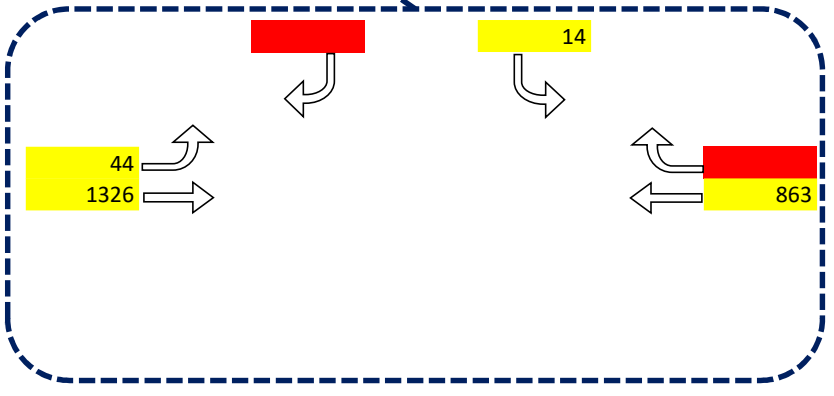
PM Peak Hour Post Development - 45% (765 lots)











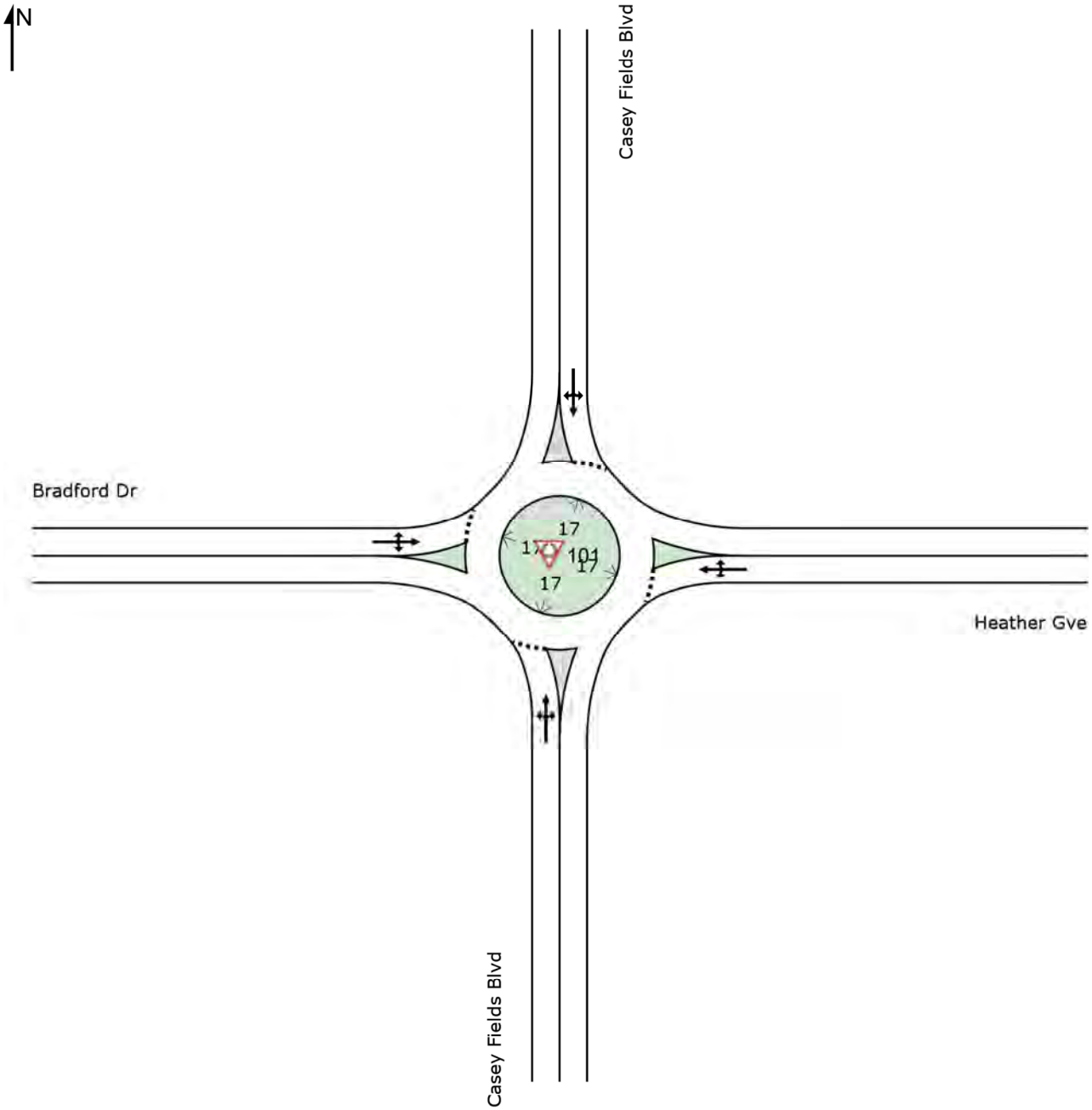
Appendix F

SIDRA Output - Post Development

SITE LAYOUT

Site: 101 [Casey Fields Blvd & Heather Gve & Bradford Dr - AM]

New Site
Site Category: (None)
Roundabout



MOVEMENT SUMMARY

Site: 101 [Casey Fields Blvd & Heather Gve & Bradford Dr - AM]

New Site
Site Category: (None)
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	93	3.0	0.465	9.8	LOS A	3.7	26.3	0.86	0.91	0.94	50.1
2	T1	171	3.0	0.465	10.0	LOS B	3.7	26.3	0.86	0.91	0.94	51.3
3	R2	60	3.0	0.465	14.3	LOS B	3.7	26.3	0.86	0.91	0.94	51.1
Approach		323	3.0	0.465	10.7	LOS B	3.7	26.3	0.86	0.91	0.94	50.9
East: Heather Gve												
4	L2	214	3.0	0.703	7.5	LOS A	8.1	58.3	0.76	0.74	0.84	51.1
5	T1	311	3.0	0.703	7.8	LOS A	8.1	58.3	0.76	0.74	0.84	52.2
6	R2	276	3.0	0.703	12.0	LOS B	8.1	58.3	0.76	0.74	0.84	52.0
Approach		800	3.0	0.703	9.2	LOS A	8.1	58.3	0.76	0.74	0.84	51.8
North: Casey Fields Blvd												
7	L2	146	3.0	0.323	5.9	LOS A	2.1	15.0	0.56	0.64	0.56	52.5
8	T1	126	3.0	0.323	6.1	LOS A	2.1	15.0	0.56	0.64	0.56	53.8
9	R2	54	3.0	0.323	10.4	LOS B	2.1	15.0	0.56	0.64	0.56	53.6
Approach		326	3.0	0.323	6.7	LOS A	2.1	15.0	0.56	0.64	0.56	53.2
West: Bradford Dr												
10	L2	39	3.0	0.299	7.3	LOS A	1.9	13.6	0.68	0.74	0.68	51.5
11	T1	151	3.0	0.299	7.5	LOS A	1.9	13.6	0.68	0.74	0.68	52.6
12	R2	69	3.0	0.299	11.8	LOS B	1.9	13.6	0.68	0.74	0.68	52.4
Approach		259	3.0	0.299	8.7	LOS A	1.9	13.6	0.68	0.74	0.68	52.4
All Vehicles		1708	3.0	0.703	8.9	LOS A	8.1	58.3	0.73	0.75	0.78	52.0

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.
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: 101 [Casey Fields Blvd & Heather Gve & Bradford Dr - PM]

New Site
Site Category: (None)
Roundabout

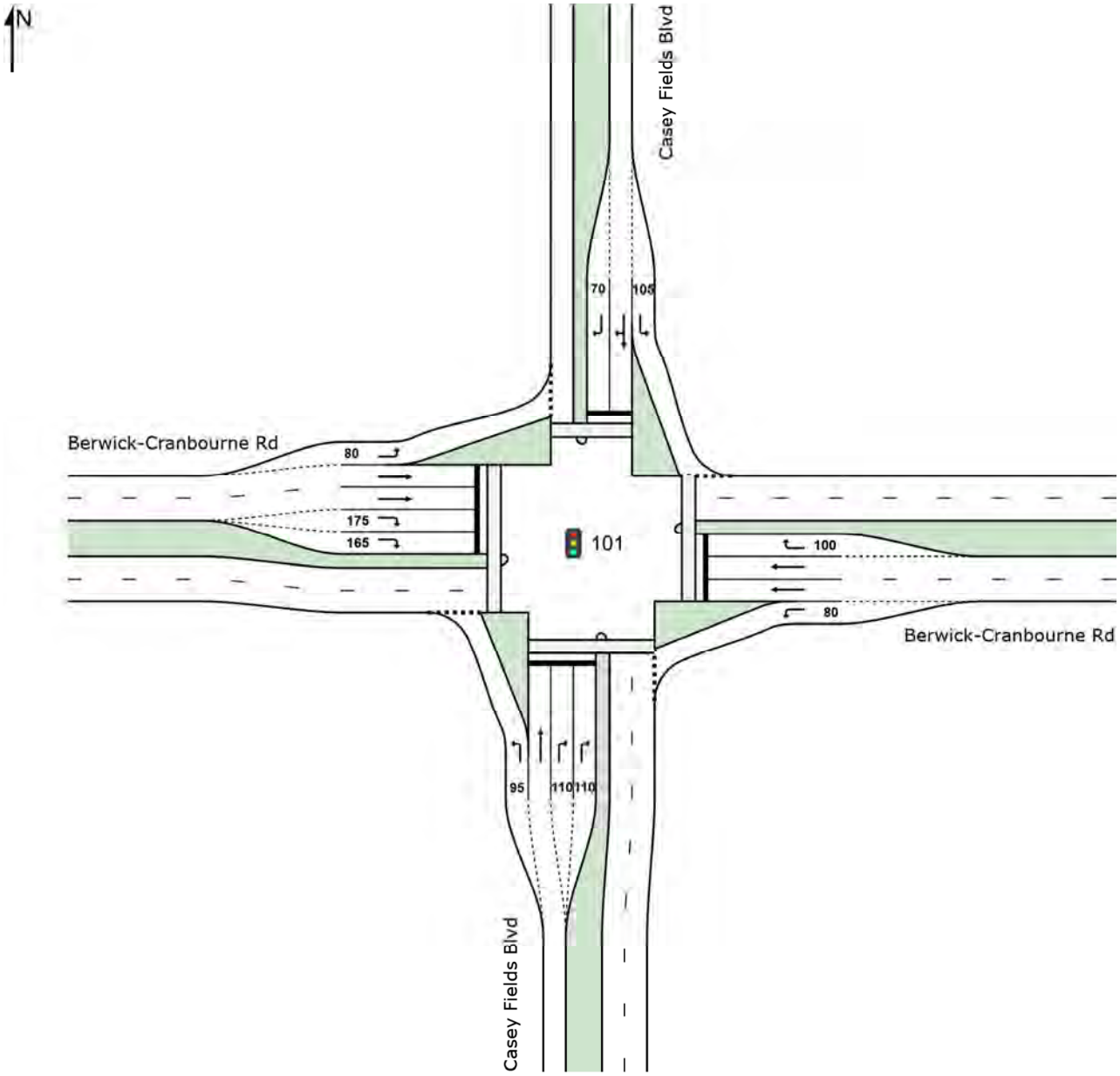
Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	23	3.0	0.219	5.2	LOS A	1.3	9.3	0.43	0.58	0.43	52.3
2	T1	133	3.0	0.219	5.4	LOS A	1.3	9.3	0.43	0.58	0.43	53.5
3	R2	87	3.0	0.219	9.7	LOS A	1.3	9.3	0.43	0.58	0.43	53.3
Approach		243	3.0	0.219	6.9	LOS A	1.3	9.3	0.43	0.58	0.43	53.4
East: Heather Gve												
4	L2	91	3.0	0.247	5.4	LOS A	1.5	10.7	0.47	0.62	0.47	52.3
5	T1	67	3.0	0.247	5.6	LOS A	1.5	10.7	0.47	0.62	0.47	53.4
6	R2	114	3.0	0.247	9.9	LOS A	1.5	10.7	0.47	0.62	0.47	53.2
Approach		272	3.0	0.247	7.4	LOS A	1.5	10.7	0.47	0.62	0.47	52.9
North: Casey Fields Blvd												
7	L2	185	3.0	0.352	5.7	LOS A	2.3	16.4	0.52	0.60	0.52	53.0
8	T1	182	3.0	0.352	5.9	LOS A	2.3	16.4	0.52	0.60	0.52	54.3
9	R2	12	3.0	0.352	10.2	LOS B	2.3	16.4	0.52	0.60	0.52	54.0
Approach		379	3.0	0.352	6.0	LOS A	2.3	16.4	0.52	0.60	0.52	53.6
West: Bradford Dr												
10	L2	17	3.0	0.171	5.9	LOS A	1.0	6.8	0.51	0.61	0.51	52.4
11	T1	120	3.0	0.171	6.1	LOS A	1.0	6.8	0.51	0.61	0.51	53.5
12	R2	38	3.0	0.171	10.4	LOS B	1.0	6.8	0.51	0.61	0.51	53.3
Approach		175	3.0	0.171	7.0	LOS A	1.0	6.8	0.51	0.61	0.51	53.4
All Vehicles		1068	3.0	0.352	6.7	LOS A	2.3	16.4	0.48	0.60	0.48	53.3

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.
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.

SITE LAYOUT

Site: 101 [Berwick-Cranbourne Rd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated



MOVEMENT SUMMARY

Site: 101 [Berwick-Cranbourne Rd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	17	3.0	0.023	13.0	LOS B	0.3	2.4	0.41	0.63	0.41	48.8
2	T1	79	3.0	0.275	49.5	LOS D	4.2	29.9	0.93	0.72	0.93	33.3
3	R2	191	3.0	0.349	55.9	LOS E	5.1	36.7	0.94	0.77	0.94	31.1
Approach		286	3.0	0.349	51.6	LOS D	5.1	36.7	0.91	0.75	0.91	32.4
East: Berwick-Cranbourne Rd												
4	L2	145	3.0	0.097	6.8	LOS A	1.1	7.9	0.19	0.60	0.19	53.2
5	T1	1025	5.0	0.644	25.2	LOS C	20.5	149.6	0.73	0.65	0.73	42.5
6	R2	106	3.0	0.501	61.0	LOS E	6.0	43.4	0.98	0.79	0.98	29.7
Approach		1277	4.6	0.644	26.1	LOS C	20.5	149.6	0.69	0.65	0.69	42.0
North: Casey Fields Blvd												
7	L2	98	3.0	0.095	9.2	LOS A	1.4	9.9	0.31	0.63	0.31	51.4
8	T1	126	3.0	0.630	50.4	LOS D	11.4	82.2	0.98	0.82	0.98	32.4
9	R2	281	3.0	0.630	56.0	LOS E	11.4	82.2	0.98	0.82	0.98	31.4
Approach		505	3.0	0.630	45.5	LOS D	11.4	82.2	0.85	0.78	0.85	34.2
West: Berwick-Cranbourne Rd												
10	L2	56	3.0	0.039	7.0	LOS A	0.4	3.2	0.20	0.59	0.20	53.1
11	T1	681	5.0	0.503	30.2	LOS C	13.6	99.6	0.73	0.63	0.73	40.2
12	R2	35	3.0	0.191	68.2	LOS E	1.0	7.4	0.99	0.69	0.99	28.1
Approach		772	4.8	0.503	30.2	LOS C	13.6	99.6	0.71	0.63	0.71	40.1
All Vehicles		2840	4.2	0.644	33.3	LOS C	20.5	149.6	0.74	0.68	0.74	38.8

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

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	54.3	LOS E			0.95	0.95

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 [Berwick-Cranbourne Rd & Casey Fields Blvd - AM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

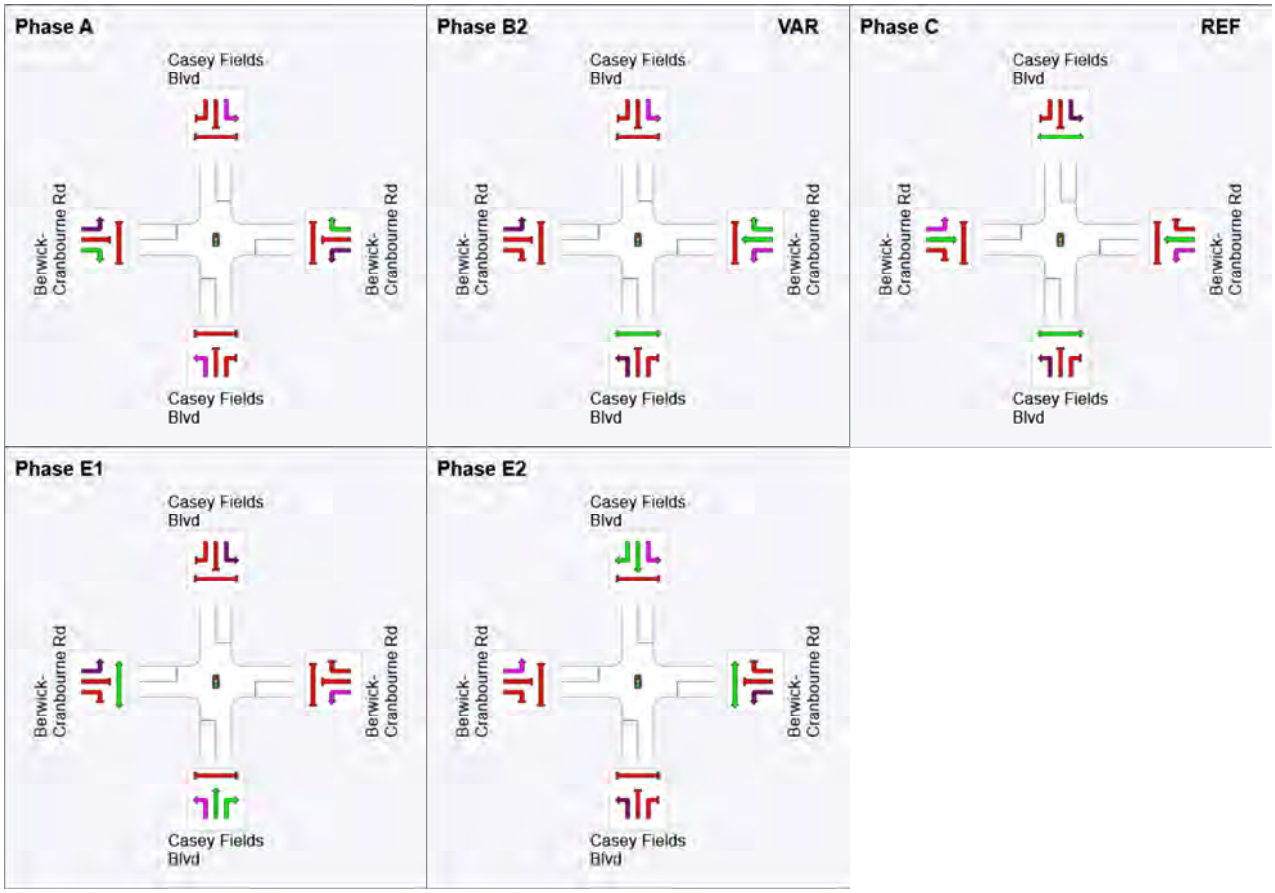
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, B1*, B2*, C, E1, E2
Output Phase Sequence: A, B2*, C, E1, E2
(* Variable Phase)

Phase Timing Summary

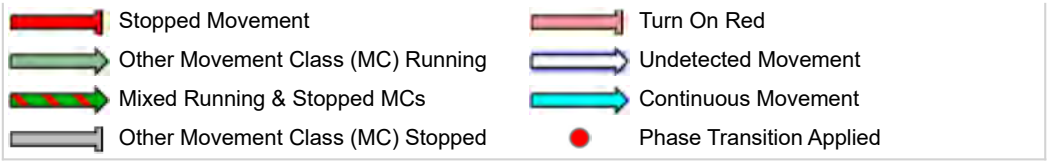
Phase	A	B2	C	E1	E2
Phase Change Time (sec)	100	112	0	49	73
Green Time (sec)	6	2	43	18	21
Phase Time (sec)	12	8	49	24	27
Phase Split	10%	7%	41%	20%	23%

See the Phase Information section in the Detailed Output 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, 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 [Berwick-Cranbourne Rd & Casey Fields Blvd - PM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	42	3.0	0.046	8.5	LOS A	0.5	3.6	0.27	0.61	0.27	52.0
2	T1	51	3.0	0.176	48.5	LOS D	2.6	18.8	0.91	0.69	0.91	33.6
3	R2	119	3.0	0.218	54.7	LOS D	3.1	22.3	0.92	0.75	0.92	31.4
Approach		212	3.0	0.218	44.0	LOS D	3.1	22.3	0.79	0.71	0.79	34.7
East: Berwick-Cranbourne Rd												
4	L2	131	3.0	0.085	6.4	LOS A	0.8	5.5	0.16	0.59	0.16	53.5
5	T1	718	5.0	0.407	18.2	LOS B	10.5	76.7	0.54	0.47	0.54	46.3
6	R2	86	3.0	0.712	69.9	LOS E	5.4	38.6	1.00	0.84	1.16	27.7
Approach		935	4.5	0.712	21.4	LOS C	10.5	76.7	0.53	0.52	0.55	44.4
North: Casey Fields Blvd												
7	L2	79	3.0	0.098	14.5	LOS B	1.8	12.8	0.46	0.67	0.46	47.9
8	T1	78	3.0	0.474	53.2	LOS D	6.6	47.4	0.97	0.78	0.97	31.7
9	R2	156	3.0	0.474	58.9	LOS E	6.6	47.4	0.97	0.79	0.97	30.6
Approach		313	3.0	0.474	46.2	LOS D	6.6	47.4	0.84	0.75	0.84	34.0
West: Berwick-Cranbourne Rd												
10	L2	140	3.0	0.094	6.8	LOS A	1.0	7.4	0.19	0.60	0.19	53.2
11	T1	1303	5.0	0.792	25.4	LOS C	30.1	219.6	0.80	0.73	0.81	42.4
12	R2	44	3.0	0.243	68.5	LOS E	1.3	9.5	0.99	0.71	0.99	28.1
Approach		1487	4.8	0.792	24.9	LOS C	30.1	219.6	0.75	0.72	0.76	42.6
All Vehicles		2946	4.4	0.792	27.4	LOS C	30.1	219.6	0.69	0.66	0.70	41.3

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

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	54.3	LOS E			0.95	0.95

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 [Berwick-Cranbourne Rd & Casey Fields Blvd - PM]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Phasing
Reference Phase: Phase C
Input Phase Sequence: A, B1*, B2*, C, E1, E2
Output Phase Sequence: A, B2*, C, E1, E2
(* Variable Phase)

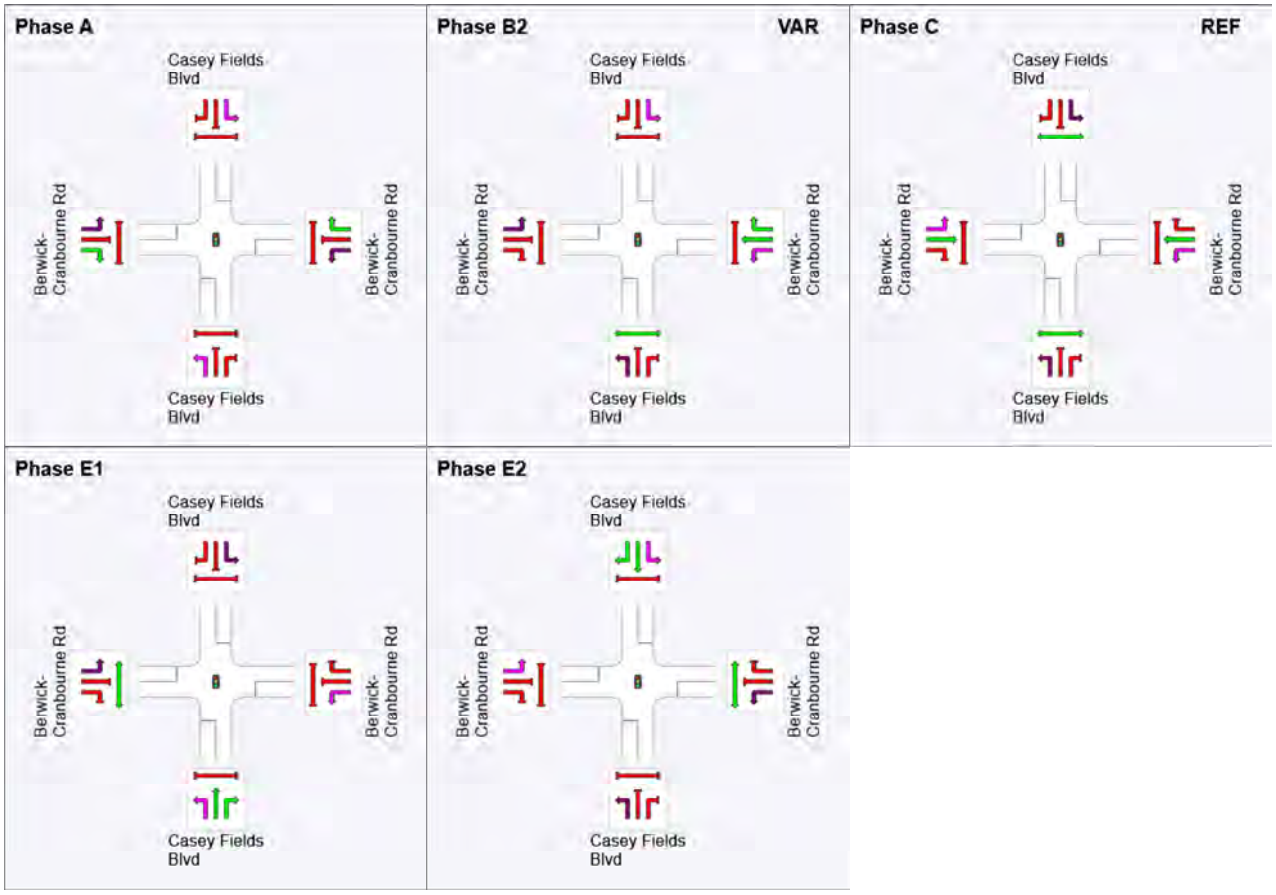
Phase Timing Summary

Phase	A	B2	C	E1	E2
Phase Change Time (sec)	106	118	0	60	84
Green Time (sec)	6	***	54	18	16
Phase Time (sec)	12	2	60	24	22
Phase Split	10%	2%	50%	20%	18%

See the Phase Information section in the Detailed Output 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, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

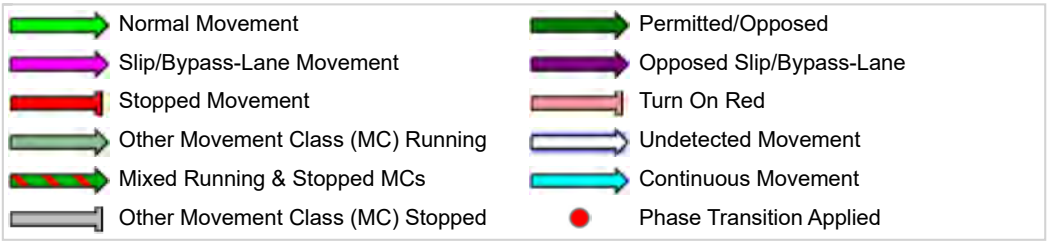
*** No green time has been calculated for this phase because the next phase starts during its intergreen time. This occurs with overlap phasing where there is no single movement connecting this phase to the next, or where the only such movement is a dummy movement with zero minimum green time specified.
If a green time is required for this phase, specify a dummy movement with a non-zero minimum green time.

Output Phase Sequence



REF: Reference Phase

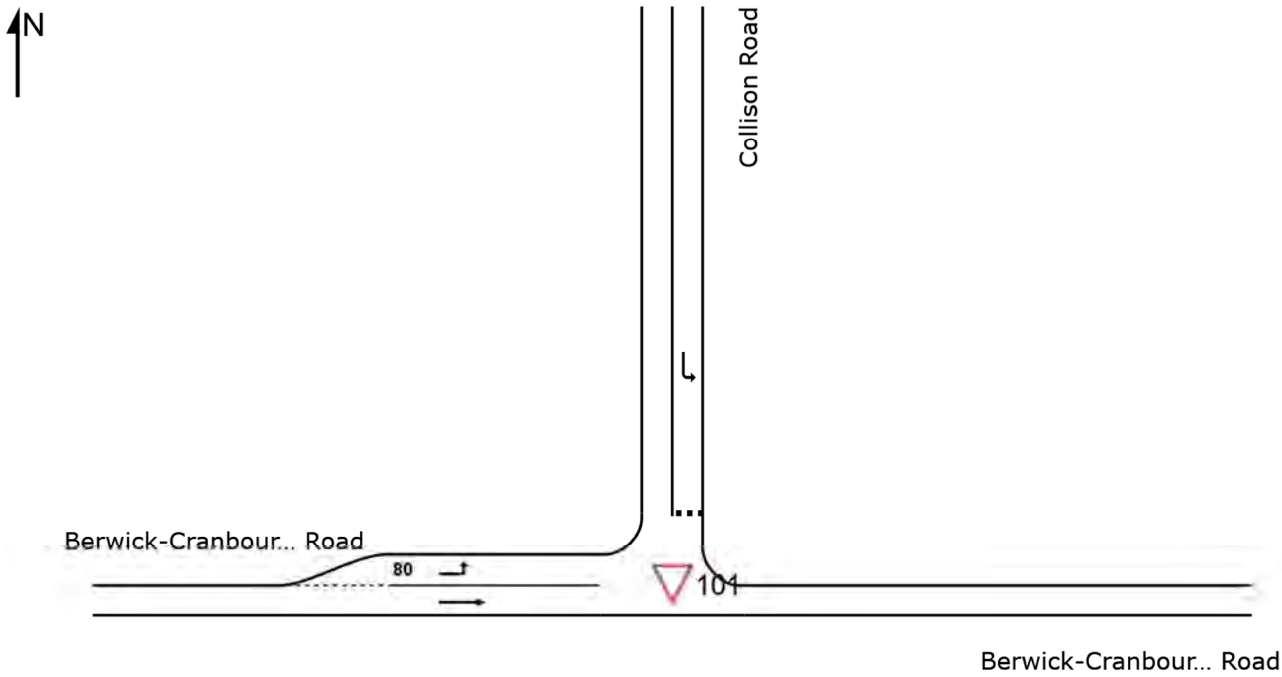
VAR: Variable Phase



SITE LAYOUT

Site: 101 [Berwick-Cranbourne Road & Collison Road - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Berwick-Cranbourne Road & Collison Road - AM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
North: Collison Road												
7	L2	59	3.0	0.120	12.5	LOS B	0.4	3.1	0.75	0.89	0.75	48.6
Approach		59	3.0	0.120	12.5	LOS B	0.4	3.1	0.75	0.89	0.75	48.6
West: Berwick-Cranbourne Road												
10	L2	33	3.0	0.018	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	944	5.0	0.500	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		977	4.9	0.500	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		1036	4.8	0.500	1.0	NA	0.4	3.1	0.04	0.07	0.04	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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: 101 [Berwick-Cranbourne Road & Collison Road - PM]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

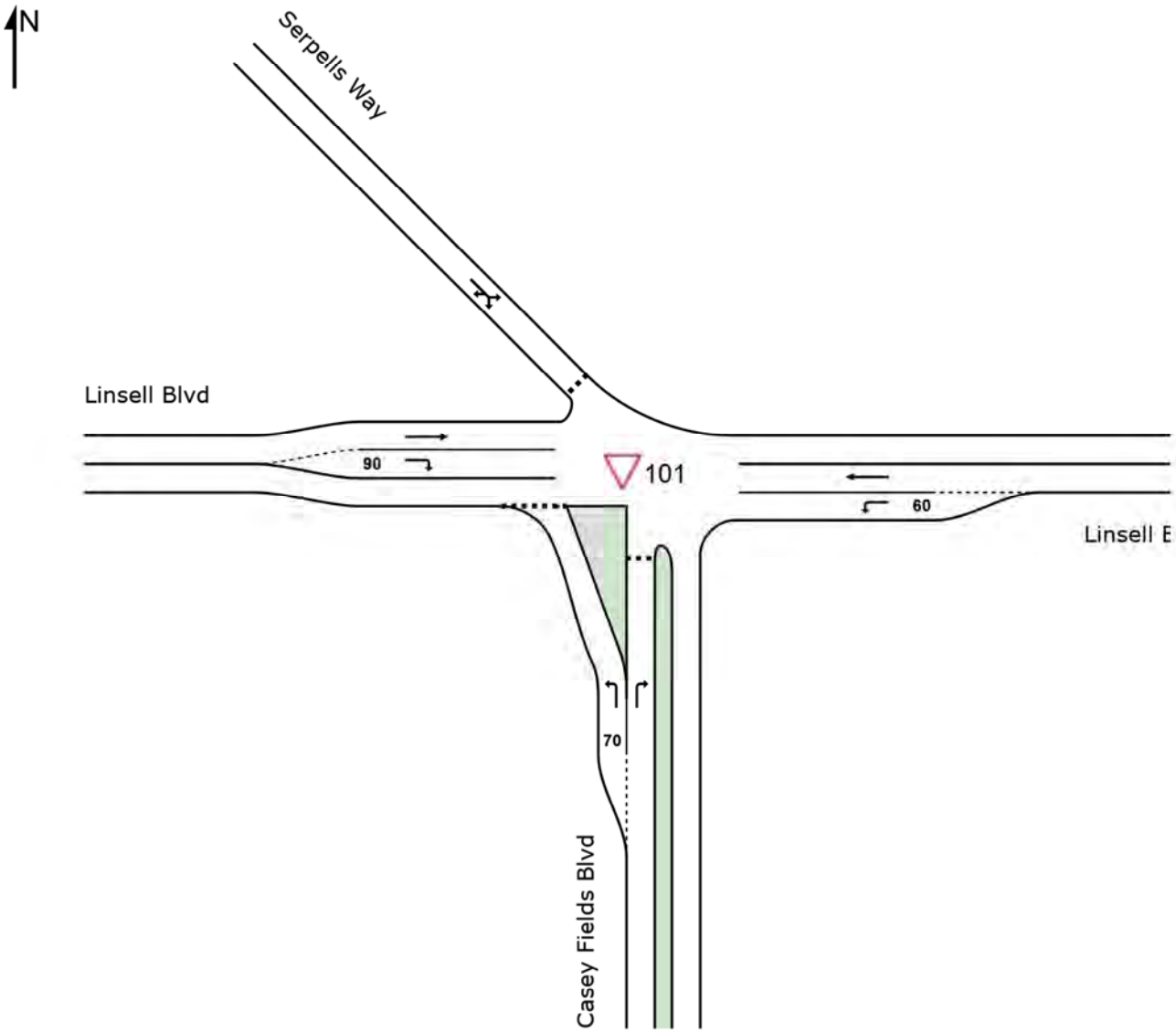
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
North: Collison Road												
7	L2	29	3.0	0.169	26.7	LOS D	0.5	3.7	0.92	0.97	0.94	40.9
Approach		29	3.0	0.169	26.7	LOS D	0.5	3.7	0.92	0.97	0.94	40.9
West: Berwick-Cranbourne Road												
10	L2	95	3.0	0.052	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
11	T1	1396	5.0	0.739	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		1491	4.9	0.739	0.6	NA	0.0	0.0	0.00	0.04	0.00	59.1
All Vehicles		1520	4.8	0.739	1.1	NA	0.5	3.7	0.02	0.05	0.02	58.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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.

SITE LAYOUT

Site: 101 [Linsell Blvd & Casey Fields Blvd - AM - 680 Lots]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)



MOVEMENT SUMMARY

Site: 101 [Linsell Blvd & Casey Fields Blvd - AM - 680 Lots]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	295	3.0	0.604	16.2	LOS C	3.5	25.2	0.79	1.08	1.38	46.9
3	R2	194	3.0	0.680	27.8	LOS D	3.5	25.0	0.92	1.17	1.69	40.2
Approach		488	3.0	0.680	20.8	LOS C	3.5	25.2	0.84	1.12	1.51	44.0
East: Linsell Blvd												
4	L2	209	3.0	0.115	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	689	3.0	0.360	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		899	3.0	0.360	1.3	NA	0.0	0.0	0.00	0.13	0.00	58.3
NorthWest: Serpells Way												
27a	L1	7	0.0	0.039	5.0	LOS A	0.1	0.8	0.60	0.71	0.60	42.1
29a	R1	4	0.0	0.039	24.1	LOS C	0.1	0.8	0.60	0.71	0.60	42.9
29b	R3	1	0.0	0.039	15.0	LOS B	0.1	0.8	0.60	0.71	0.60	41.9
Approach		13	0.0	0.039	12.2	LOS B	0.1	0.8	0.60	0.71	0.60	42.3
West: Linsell Blvd												
11	T1	328	3.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	143	3.0	0.202	10.3	LOS B	0.8	5.9	0.67	0.87	0.67	49.8
Approach		472	3.0	0.202	3.1	NA	0.8	5.9	0.20	0.26	0.20	56.5
All Vehicles		1872	3.0	0.680	6.9	NA	3.5	25.2	0.28	0.43	0.45	53.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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: 101 [Linsell Blvd & Casey Fields Blvd - PM - 680 Lots]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	134	3.0	0.175	8.2	LOS A	0.7	4.7	0.48	0.71	0.48	52.2
3	R2	100	3.0	0.661	46.2	LOS E	2.6	18.8	0.96	1.12	1.52	33.4
Approach		234	3.0	0.661	24.5	LOS C	2.6	18.8	0.68	0.88	0.92	42.1
East: Linsell Blvd												
4	L2	139	3.0	0.076	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	392	3.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		531	3.0	0.205	1.5	NA	0.0	0.0	0.00	0.15	0.00	58.1
NorthWest: Serpells Way												
27a	L1	4	0.0	0.036	12.3	LOS B	0.1	0.7	0.84	0.93	0.84	36.6
29a	R1	1	0.0	0.036	36.0	LOS E	0.1	0.7	0.84	0.93	0.84	37.2
29b	R3	2	0.0	0.036	25.2	LOS D	0.1	0.7	0.84	0.93	0.84	36.5
Approach		7	0.0	0.036	19.3	LOS C	0.1	0.7	0.84	0.93	0.84	36.7
West: Linsell Blvd												
11	T1	907	3.0	0.478	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
12	R2	249	3.0	0.228	7.8	LOS A	1.1	7.6	0.56	0.74	0.56	51.5
Approach		1157	3.0	0.478	1.8	NA	1.1	7.6	0.12	0.16	0.12	57.8
All Vehicles		1928	3.0	0.661	4.5	NA	2.6	18.8	0.16	0.25	0.19	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
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: 101 [Linsell Blvd & Casey Fields Blvd - AM - 765 Lots]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	308	3.0	0.632	16.8	LOS C	3.8	27.5	0.81	1.11	1.47	46.6
3	R2	203	3.0	0.716	29.4	LOS D	3.9	27.7	0.92	1.20	1.82	39.5
Approach		512	3.0	0.716	21.8	LOS C	3.9	27.7	0.85	1.15	1.61	43.5
East: Linsell Blvd												
4	L2	212	3.0	0.116	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	689	3.0	0.360	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		901	3.0	0.360	1.3	NA	0.0	0.0	0.00	0.14	0.00	58.3
NorthWest: Serpells Way												
27a	L1	7	0.0	0.039	5.0	LOS A	0.1	0.8	0.60	0.71	0.60	41.9
29a	R1	4	0.0	0.039	24.7	LOS C	0.1	0.8	0.60	0.71	0.60	42.7
29b	R3	1	0.0	0.039	15.0	LOS C	0.1	0.8	0.60	0.71	0.60	41.7
Approach		13	0.0	0.039	12.4	LOS B	0.1	0.8	0.60	0.71	0.60	42.2
West: Linsell Blvd												
11	T1	328	3.0	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
12	R2	146	3.0	0.207	10.3	LOS B	0.8	6.0	0.68	0.87	0.68	49.8
Approach		475	3.0	0.207	3.2	NA	0.8	6.0	0.21	0.27	0.21	56.4
All Vehicles		1900	3.0	0.716	7.4	NA	3.9	27.7	0.29	0.44	0.49	52.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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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: 101 [Linsell Blvd & Casey Fields Blvd - PM - 765 Lots]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Casey Fields Blvd												
1	L2	141	3.0	0.184	8.3	LOS A	0.7	5.0	0.48	0.71	0.48	52.2
3	R2	105	3.0	0.707	50.2	LOS F	2.9	20.9	0.96	1.15	1.64	32.3
Approach		246	3.0	0.707	26.2	LOS D	2.9	20.9	0.69	0.90	0.97	41.3
East: Linsell Blvd												
4	L2	146	3.0	0.080	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.5
5	T1	392	3.0	0.205	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		538	3.0	0.205	1.5	NA	0.0	0.0	0.00	0.16	0.00	58.0
NorthWest: Serpells Way												
27a	L1	4	0.0	0.037	12.3	LOS B	0.1	0.8	0.84	0.93	0.84	36.5
29a	R1	1	0.0	0.037	37.3	LOS E	0.1	0.8	0.84	0.93	0.84	37.0
29b	R3	2	0.0	0.037	25.6	LOS D	0.1	0.8	0.84	0.93	0.84	36.3
Approach		7	0.0	0.037	19.6	LOS C	0.1	0.8	0.84	0.93	0.84	36.5
West: Linsell Blvd												
11	T1	907	3.0	0.479	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
12	R2	262	3.0	0.241	7.9	LOS A	1.1	8.1	0.56	0.75	0.56	51.5
Approach		1169	3.0	0.479	1.8	NA	1.1	8.1	0.13	0.17	0.13	57.7
All Vehicles		1961	3.0	0.707	4.9	NA	2.9	20.9	0.16	0.26	0.20	55.0

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.
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.