



**TRAFFIC AND PARKING IMPACT ASSESSMENT OF  
SAINTS PETER AND PAUL ASSYRIAN PRIMARY SCHOOL  
AT 17 - 19 KOSOVICH PLACE, CECIL PARK**



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**Site Address:** 17 - 19 Kosovich Place, Cecil Park, 2178

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## **1 INTRODUCTION**

*McLaren Traffic Engineering (MTE)* was commissioned by *PMDL* to provide a Traffic and Parking Impact Assessment of the Saints Peter and Paul Assyrian Primary School at 17 - 19 Kosovich Place, Cecil Park as shown in **Annexure A** for reference. This report is to accompany the State Significant Development Application (SSDA) for stage one of the overall masterplan and provides an assessment of the traffic and parking impacts for both the first stage and final masterplan form of development proposed.

### **1.1 *Description and Scale of Development***

The proposed Saints Peter and Paul Primary School will be constructed and populated in multiple stages and includes the following characteristics relevant to traffic and parking impacts:

- Stage One:
  - Total of 210 students (K – 6);
  - Total of 12 staff;
  - 39 off-street car parking spaces for staff, including two disabled spaces;
  - Formalised internal kiss and ride facility for parents.
- Final Development:
  - Total of 630 students (K – 6);
  - Total of 35 school staff;
  - 39 off-street car parking spaces for staff, including two disabled spaces;
  - Formalised internal kiss and ride facility for parents.

In addition to the construction of the school, some public works are proposed to improve Kosovich Place and the surrounding road network including the following:

- Widening of Kosovich Place to provide sufficient width for bus access;
- Construction of a footpath along the frontage of the site to provide for a bus stop;
- Improvements to the Kosovich Place/Wallgrove Road intersection;
- Improvements to the Wallgrove Road/Elizabeth Drive intersection if required;
- Removal and reconstruction of two vehicular crossings on Kosovich Place.

### **1.2 *State Environmental Planning Policy (Infrastructure) 2007***

The proposed development does qualify as a development with relevant size and/or capacity under Clause 104 of the SEPP (Infrastructure) 2007 being an 'Educational Establishment' of 50 or more students. Accordingly, formal referral to the Roads and Maritime Services (RMS) is necessary.

### 1.3 Site Description

The subject site is located within the Fairfield City Council Local Government Area and has a single street frontage to Kosovich Place. Wallgrove Road, a State Classified Road, is nearby approximately 280m to the east of the site.

The school is zoned RU4 – Primary Production Small Lots under the Fairfield City Council Local Environmental Plan 2013 and is generally surrounded by rural properties and low-density residential dwellings.

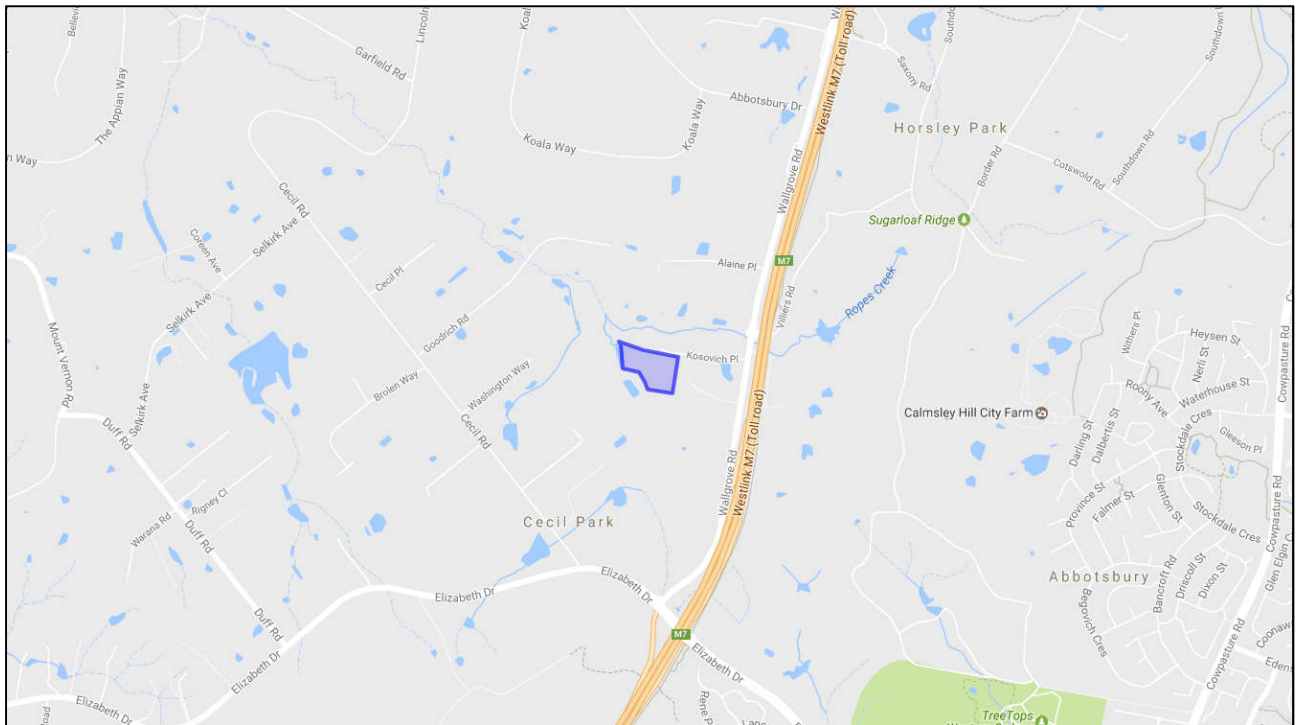
### 1.4 Site Context

The location of the site is shown on aerial imagery and a map in **Figure 1** & **Figure 2** respectively.



— Site Location

**FIGURE 1: SITE CONTEXT – AERIAL IMAGE**



Site Location

**FIGURE 2: SITE CONTEXT – MAP**

## **2 EXISTING SITE & SURROUNDING CONDITIONS**

### **2.1 *Road Hierarchy***

The relevant characteristics of the road network servicing the site are summarised below.

#### **2.1.1 Wallgrove Road**

- Classified State Main Road No. 515;
- Approximately 11.5m in width facilitating one traffic and one parking lane in each direction;
- Signposted 80km/h carriageway;
- Unrestricted kerbside parking generally permitted along both sides of the road in line-marked shoulders.

#### **2.1.2 Elizabeth Drive**

- Classified State Main Road No. 535;
- Approximately 21.5m in width to the east of Wallgrove Road, facilitating two traffic lanes in each direction and a 6m wide median;
- Approximately 13m wide to the west of Wallgrove Road, facilitating one traffic lane and one parking lane in each direction;
- Signposted 70km/h carriageway;
- No parking permitted to the east of Wallgrove Road, unrestricted parking generally permitted along both sides of the road to the west of Wallgrove Road in line-marked shoulders.

#### **2.1.3 The Horsley Drive**

- Classified State Main Road No. 609;
- Approximately 13m wide to the east of Wallgrove Road, facilitating one traffic lane eastbound and two traffic lanes westbound and a 2m wide median;
- Approximately 11m wide to the west of Wallgrove Road, facilitating one traffic lane and a formalised shoulder in either direction;
- Signposted 70km/h carriageway to the east of Wallgrove Road, 50km/h to the west of Wallgrove Road;
- No parking permitted to the east of Wallgrove Road, unrestricted parking generally permitted along both sides of the road to the west of Wallgrove Road in line-marked shoulders.



#### 2.1.4 Kosovich Place

- Unclassified Local Road;
- Approximately 6.5m in width, providing for two-way passing of traffic;
- 50km/h speed limit applies;
- No kerbs are provided and some informal parking may occur on either side of the road, partially using the verge.

### 2.2 **Existing Traffic Management**

- Signalised intersection of Wallgrove Road/Elizabeth Drive;
- Signalised intersection of Wallgrove Road/The Horsley Drive;
- “GIVE WAY” controlled intersection of Kosovich Place/Wallgrove Road;
- Roundabout controlled intersection at Wallgrove Road/Villiers Road.

### 2.3 **Existing Traffic Environment**

#### 2.3.1 Turning Movement Counts

Turning movement counts were completed on Thursday 26 and Friday 27 July 2018 between the times of 7:00 am – 9:30 am and 2:00 pm – 4:30 pm to capture the key school peak times at the intersections of:

- Elizabeth Drive/Wallgrove Road;
- The Horsley Drive/Wallgrove Road;
- Kosovich Place/Wallgrove Road.

Detailed results from these surveys are provided in **Annexure B** for reference.

Growth rates have been provided by the Roads and Maritime Services for the roads and intersections in the surrounds of the site, as reproduced in **Annexure C**. The growth rates for each intersection have been applied to the existing traffic counts to produce predicted turning movement counts for 2028.

#### 2.3.2 Intersection Performances

Existing (2018) and future (2028) intersection performances have been assessed using SIDRA INTERSECTION 8. The results of the analysis are summarised in **Table 1**. The SIDRA output summaries are provided in **Annexure D**.

**TABLE 1: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 7)**

Intersection	Peak Hour	Degree of Saturation <sup>(1)</sup>	Average Delay <sup>(2)</sup> (sec/veh)	Level of Service <sup>(3)</sup>	Control Type	Worst Movement	95th Percentile Queue
<b>EXISTING PERFORMANCE</b>							
M7 Exit / Elizabeth Drive	AM	0.93	37.2	<b>C</b>	Signals	RT from Wallgrove Road (N)	33.2 veh (248.2m) Elizabeth Drive (W)
	PM	0.90	46.9	<b>D</b>		LT from M7 Exit (S)	34.2 veh (259.7m) Elizabeth Drive (W)
Wallgrove Road / The Horsely Drive	AM	0.80	40	<b>C</b>	Signals	LT from The Horsely Drive (W)	18.7 veh (139m) Wallgrove Road (S)
	PM	0.82	36.2	<b>C</b>		LT from The Horsely Drive (E)	21.9 veh (160.9m) Wallgrove Road (N)
Wallgrove Road / Kosovich Place	AM	0.49	0.1 (Worst: 17.3)	<b>NA</b> (Worst: B)	Give Way	RT from Kosovich Place (E)	0 veh (0.2m) Wallgrove Road (S)
	PM	0.51	0.1 (Worst: 19.4)	<b>NA</b> (Worst: B)		RT from Kosovich Place (E)	0 veh (0.3m) Wallgrove Road (S)
Wallgrove Road / Villiers Road	AM	0.54	4.1 (Worst: 10.8)	<b>A</b> (Worst: A)	Roundabout	UT from Wallgrove Road (S)	1.1 veh (8.5m) Wallgrove Road (N)
	PM	0.56	4.2 (Worst: 10.8)	<b>A</b> (Worst: A)		UT from Wallgrove Road (S)	4.9 veh (36.1m) Wallgrove Road (N)

**NOTES:**

(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) The level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

As shown above, other than the intersection of Elizabeth Drive and Wallgrove Road, the surrounding intersections are operating satisfactorily at Level of Service (LoS) C or better during the morning and afternoon peak periods. This represents adequate performance.

The intersection of Elizabeth Drive and Wallgrove Road is nearing its existing capacity in the weekday PM peak, with a Level of Service of D reflected, which indicates that the intersection is operating near to its capacity.

## 2.4 Public Transport

The subject site is poorly served by existing public transport and is not within walking distance of any bus stops or other public transport facilities. It is intended that a school bus service be established to provide transport to and from the finished school and consultation has been undertaken with the local operator, Transit Systems, to achieve this outcome.

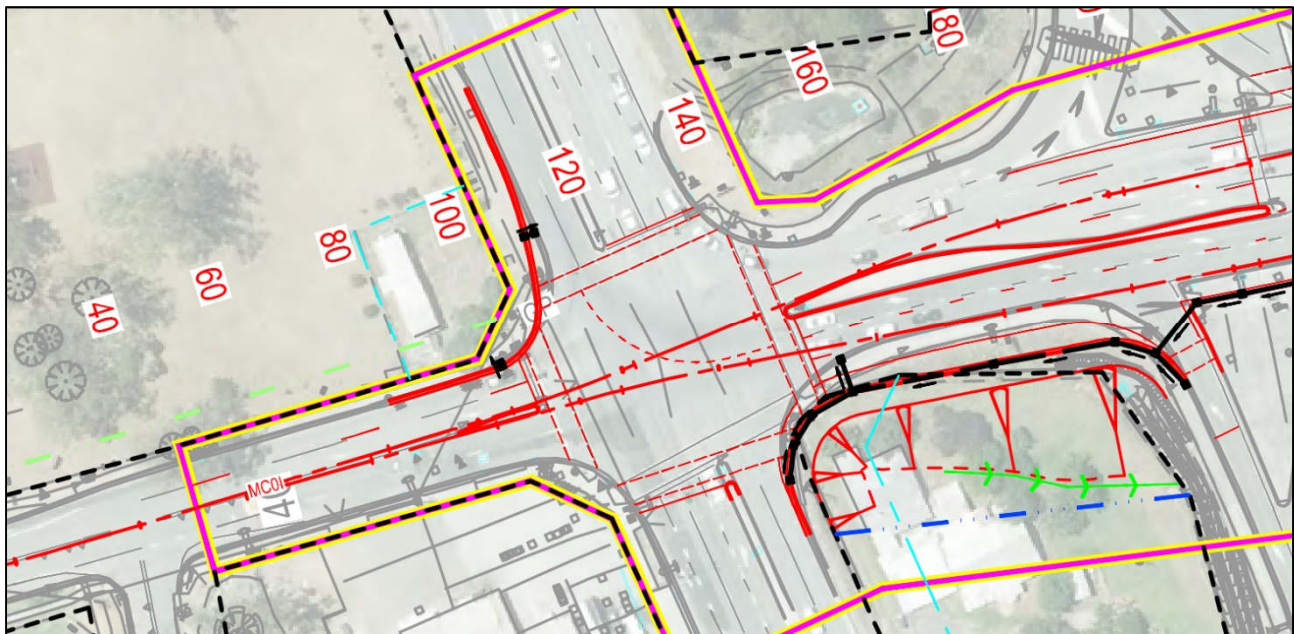
## 2.5 Future Road and Infrastructure Upgrades

From the Fairfield Council Development Application tracker and website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

From a review of the Roads and Maritime Services Sydney West projects register, there are two proposed upgrades that may affect the traffic conditions surrounding the proposed school including the upgrade to the Horsley Drive and the M12 Motorway.

The upgrades to the Horsley Drive will include an upgrade of the Wallgrove Road/The Horsley Drive intersection, with the future geometry of the intersection depicted in **Figure 3**. As shown, a lane will be added to the eastern approach to the intersection. The upgraded layout of the intersection has been considered in the modelling of the 10 year scenarios in **Section 4.3** of this report.

The RMS has been contacted to provide comment on the impacts of the M12 Motorway on Wallgrove Road and the intersection of Elizabeth Drive and Wallgrove Road, but to date no response has been received.



**FIGURE 3: THE HORSLEY DRIVE/WALLGROVE ROAD UPGRADED GEOMETRY**

### 3 PARKING IMPACT ASSESSMENT

#### 3.1 Council Parking Requirement

Reference is made to the Fairfield Council Development Control Plan (2015) which provides the following parking requirements relevant to the subject development:

*Educational Establishment*

*Schools*

*1 space per employee plus 1 space per 10 students in Year 12 (where applicable)*

The resulting parking requirement is provided in **Table 2**.

**TABLE 2: DCP PARKING REQUIREMENTS**

Land Use	Type	Scale	Rate	Spaces Required
<b>STAGE 1</b>				
School	Staff	12	1 space per staff member	12
<b>Total for Stage 1</b>				<b>12</b>
<b>FINAL DEVELOPMENT</b>				
School	Staff	35	1 space per staff member	35
<b>Future Total</b>				<b>35</b>

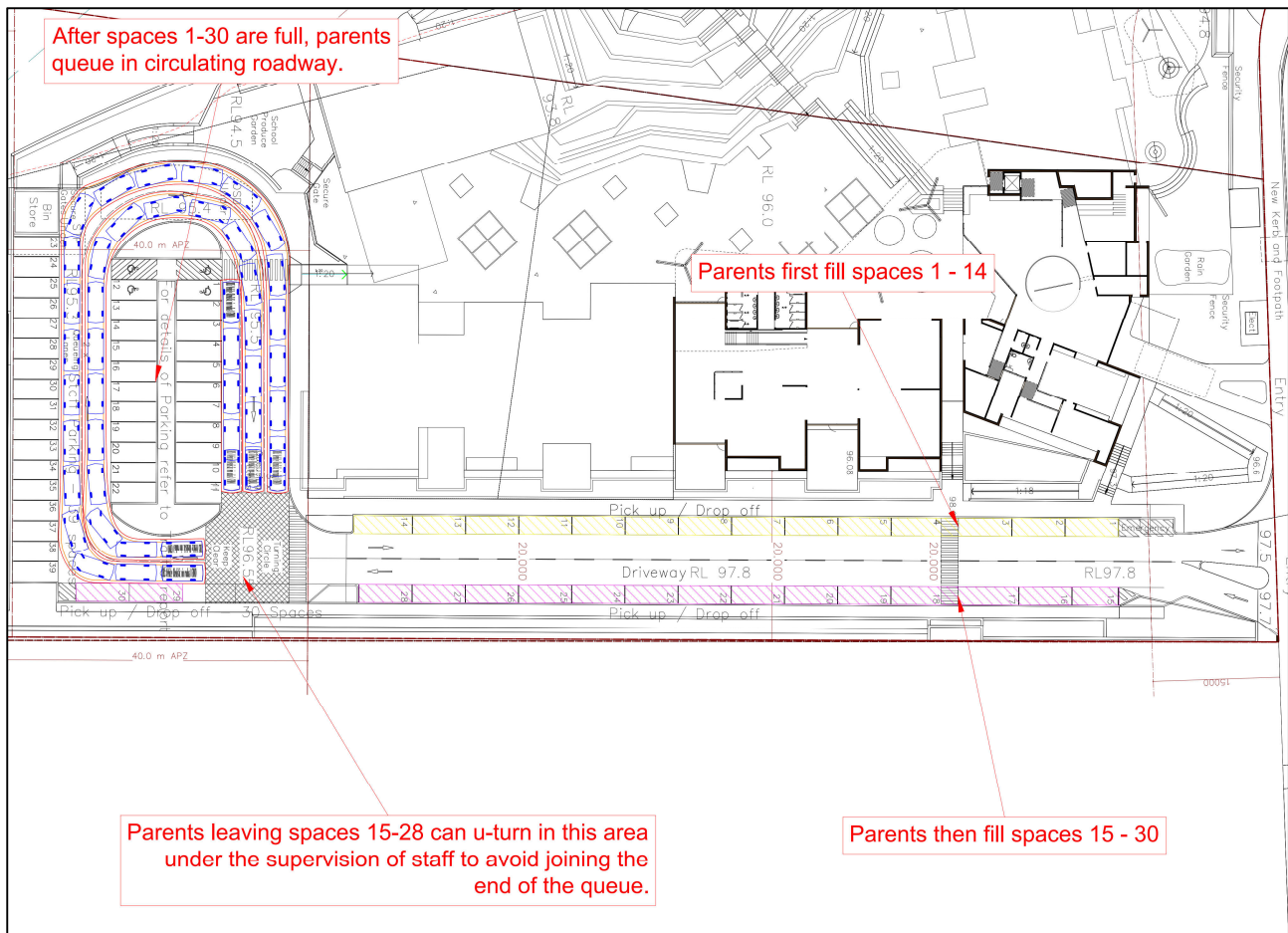
As shown, under the requirements of the Fairfield City Council DCP the site requires a total of 12 parking spaces for staff for the first stage of development, with a final projected parking requirement of 35 spaces for staff for the final development scale.

School parking is proposed to be accommodated completely on-site in both Stage 1 and the final form of development. The parking and kiss and drop facility will be completed for the opening of the first Stage of the development and will incorporate:

- 30 kiss and drop spaces;
- 39 parking spaces for staff and disabled visitors;
- Internal queueing areas for up to 44 additional vehicles without affecting the efficacy of the kiss and drop operations of the site.

**Figure 4** illustrates the function of the proposed parking and kiss and drop areas on the site.





**FIGURE 4: KISS AND DROP OPERATIONS**

### 3.2 Parent Pick-Up Queue Analysis

Surveys of the associated St Hermizd Primary School have been undertaken to ascertain the characteristics of schools operated by the applicant. These surveys reflect that on average, 1.85 children are enrolled by each family at the St Hermizd Primary School.

The potential queue lengths for both the Stage 1 and completed school have been considered based on the following assumptions:

- Stage 1:
  - 100% of children travel from school by private car;
  - Car occupancy rate of 1.85 children per car;
  - Picking up operations take an average of 4 minutes;
  - Parents begin to arrive 15 minutes prior to bell times.

- Completed school:
  - 80% of children travel from school by private car, 20% by bus;
  - Car occupancy rate of 1.85 children per car;
  - Picking up operations take an average of 4 minutes;
  - Parents begin to arrive 15 minutes prior to bell times.

Considering that a total of 30 kiss and drop spaces are proposed, on average the service rate of this system will be one vehicle every 8 seconds.

Typically for primary schools the afternoon pick-up operation has the highest demand for parking and occurs in two phases:

- a) Prior to school pick-up, with parents arriving approximately 15 minutes prior to the bell ringing;
- b) During the pick up period after the bell has rung.

The greatest queue length can occur in either of the above phases depending on the efficiency of the kiss and drop operations. **Table 3** provides a simplistic estimate for the maximum queue predicted in each phase.

**TABLE 3: QUEUEING ANALYSIS – SIMPLE CASE**

Phase	Vehicle Arrival Rate (vehicles per minute)	Vehicle Service Rate (vehicles per minute)	Duration	Estimated Vehicles in Kiss and Drop Spaces	Estimated Queued Vehicles
<b>Development Stage 1 (210 Children)</b>					
<b>Prior to Pick Up</b>	2.35	0	15 Minutes	30	5
<b>During Pick Up</b>	2.35	7.5	45 Minutes	3	0
<b>Final Development Stage (630 Children)</b>					
<b>Prior to Pick Up</b>	4.53	0	15 Minutes	30	36
<b>During Pick Up</b>	4.53	7.5	45 Minutes	7	0

The results in **Table 3** indicate that the proposed design will completely contain the parking demands of the development but do not provide an assessment of the interaction between the two phases. An Aimsun microsimulation model has been used to simulate the operation of this kiss and drop system, resulting in a maximum queue of 35 vehicles for the final stage of development, all of which can be accommodated within the site.

The design of the kiss and drop facilities is therefore sufficient to completely accommodate the demands of the final 630 student population of the school. In the experience of *McLaren Traffic Engineering* it is extremely unusual for a primary school to be provided with a kiss and drop facility of this capacity and this should be considered favourably during the assessment of the development on the whole.

### 3.3 Management of Kiss and Drop Operations

To ensure that the proposed kiss and drop facilities operate with high levels of both efficiency and safety, some management practices will be implemented, including:

- Traffic control by school staff at internal pedestrian crossing locations;
- Traffic control by school staff to direct queued vehicles into vacant kiss and drop spaces;
- Organisation of students into general kiss and drop areas by year-group to speed pick-up operations;
- Assistance of school staff to load vehicles with children and bags.

### 3.4 Bicycle & Motorcycle Parking Requirements

The Fairfield City Council DCP does not provide a rate for the provision of bicycle storage facilities, stating the following:

*To encourage the use of bicycles, new developments should incorporate appropriate bicycle parking/storage facilities.*

*Bicycle racks can be placed around the perimeter of a building in areas where they will not act as obstructions. Bicycle parking is often in high demand at educational or recreation facilities, corner shops and civic buildings*

The New South Wales Educational Facilities Standards and Guidelines (EFSG) provide rates of suggested bicycle storage provision for Primary Schools, as shown in **Figure 5**.

Room ID	Room name	Measure	Sq M	School size — Core (No. Home Bases)						
				1	3	7	14	21	28	35
				(1)	(2-4)	(5-10)	(11-17)	(18-24)	(25-30)	(31-40)
PS609.41	Bicycle Storage Area	No of Bicycle	-	-	-	12	24	36	-	

**FIGURE 5: EFSG BICYCLE PARKING RECOMMENDATION**

The proposed school will include some 630 students in 21 home bases when complete, corresponding to a bicycle storage provision of 36 spaces. Considering the lack of bicycle facilities surrounding the school and the considerable distance from the school to residential centres, there is likely to be a very low or no use of bicycles to travel to and from the site and the omission of bicycle storage from the site would be acceptable.

The Fairfield City Council DCP does not require that schools provide motorcycle parking spaces and the nil provision is considered to be acceptable. Any staff who travel to and from work using motorcycles can utilise the car parking spaces provided.

### **3.5 Servicing & Loading**

The Fairfield City Council DCP does not provide requirements for loading facilities for schools and the provision of on-site loading and servicing facilities has been based on the typical requirements of a Primary School. Appropriate access and loading facilities are proposed for vehicles up to a 12.5m length Heavy Rigid Vehicle, such that a large vehicle can undertake deliveries to the school. The access from Kosovich Place will also connect to an emergency access path through the school to outdoor play areas for ambulance use if required. A dedicated Emergency Vehicle parking space has also been provided. Swept path testing has been undertaken to demonstrate that the design can accommodate the forward entry and exit of a Heavy Rigid Vehicle and is provided in **Annexure E**.

Garbage collection will occur within the site outside of peak school hours, usually once or twice per week.

### **3.6 Disabled Parking**

The Building Code of Australia (BCA) classifies the assembly hall of a school as a 9b building and provides the following disabled parking requirement:

#### *Class 9b*

*an assembly building, including a trade workshop, laboratory or the like in a primary or secondary school, but excluding any other parts of the building that are of another Class*

*(a) School            1 space for every 100 carparking spaces or part thereof.*

The design proposes two (2) disabled parking spaces. This provision exceeds the single space required by the BCA.



### **3.7 Car Park Design & Compliance**

The car parking areas, both on and off-street, have been designed to meet or exceed the requirements of the relevant standards, being AS2890.1 and AS2890.6. The car parking design includes the following features:

- Minimum car parking aisle widths of 6.5m;
- Parallel kiss and drop spaces of 6.3m length and 2.1m width;
- 90° car parking spaces for staff of 5.4m length and 2.4m width;
- Circulating aisles of minimum 6.5m width and turning radii sufficient to satisfy the requirements of NSW Rural Fire Service' *Planning for Bushfire Protection* document;
- Two-way, median separated driveway to Kosovich Place;
- Disabled 90° parking spaces of minimum 5.4m length and 2.4m width, with appropriately dimensioned shared area to satisfy the objectives of AS2890.6;
- Compliant driveway and circulation roadway gradients throughout the site.

## 4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

### 4.1 *Traffic Generation*

Considering the location of the school and the poor access to public transport, it is assumed that all students and staff in Stage 1 will drive to and from school. Based on surveys of the associated St Hermizd Assyrian Primary School families in the community have 1.85 children on average, which can be conservatively assumed as the average vehicle occupancy.

In addition to the above assumptions, a conservative 80% student private vehicle use rate has been assumed for the completed school (at which time it is expected a bus service will be in operation). The resulting estimated AM and PM peak hourly traffic generations are provided in **Table 4** and **Table 5** respectively.

**TABLE 4: ESTIMATED TRAFFIC GENERATION (AM)**

Type	Scale	Rate	Trips	Direction
<b>STAGE 1</b>				
Staff	12	1 per staff	12	12 IN, 0 OUT
Student	210	0.54 two-way trips per student <sup>(1)</sup>	227	113 IN, 113 OUT
<b>Total</b>			<b>239</b>	<b>125 IN, 113 OUT</b>
<b>FINAL DEVELOPMENT</b>				
Staff	35	1 per staff	35	35 IN, 0 OUT
Student	630	0.43 two-way trips per student <sup>(2)</sup>	544	272 IN, 272 OUT
<b>Total</b>			<b>579</b>	<b>307 IN / 272 OUT</b>

Notes:

- (1) Based on 1.85 children per vehicle;
- (2) Based on 1.85 children per vehicle, and a 20% use of public transport.

**TABLE 5: ESTIMATED TRAFFIC GENERATION (PM)**

Type	Scale	Rate	Trips	Direction
<b>STAGE 1</b>				
Staff	12	1 per staff	12	0 IN, 12 OUT
Student	210	0.54 two-way trips per student <sup>(1)</sup>	227	113 IN, 113 OUT
<b>Total</b>			<b>239</b>	<b>113 IN, 125 OUT</b>
<b>FINAL DEVELOPMENT</b>				
Staff	35	1 per staff	35	0 IN, 35 OUT
Student	630	0.53 two-way trips per student <sup>(2)</sup>	544	272 IN, 272 OUT
<b>Total</b>			<b>579</b>	<b>272 IN / 307 OUT</b>

Notes:

- (1) Based on 1.85 children per vehicle;
- (2) Based on 1.85 children per vehicle, and a 20% use of public transport.

As shown, the traffic generation has been estimated at some 239 trips for Stage 1 and 579 trips for the final development scale. The AM peak hour has, for the purposes of traffic modelling, been assumed to be similar to the PM with the direction of staff travel reversed. The PM peak is a worst case as students will typically arrive for school over a longer period of time than when departing in the afternoon.

## **4.2 Traffic Assignment**

The surrounding road network, the routes to and from the site, school catchment areas (reproduced in **Annexure F**) and Journey to Work data as provided by the NSW Bureau of Transport Statistics have been examined and the following trip assignment assumed:

### **4.2.1 AM Traffic to the Site**

- 30% from the north via The Horsley Drive:
  - 20% from the east;
  - 10% from the west.
- 70% from the south via Elizabeth Drive:
  - 50% from the east;
  - 10% from the west;
  - 10% from the south (via the M7 exit).

### **4.2.2 AM Traffic from the Site**

- 40% to the north:
  - 35% to the east at The Horsley Drive;
  - 5% to the west at The Horsley Drive.
- 60% to the south
  - 55% to the east at Elizabeth Drive;
  - 5% to the west at Elizabeth Drive.

The above distribution is reversed in the PM when parents will typically be returning from their place of work to collect their child and then driving home.

## **4.3 Traffic Impact**

The traffic generation estimated previously in **Section 4.1** has been distributed into the existing traffic volumes as per the traffic assignment provided in **Section 4.2** and assessed using SIDRA Intersection 7.0. The results of this assessment are summarised in the subsections below.

### **4.3.1 Stage 1 Development – School for 210 Students**

The impacts of Stage 1 of the development on the surrounding road network have been assessed using the existing traffic volumes. The results of the SIDRA Intersection analysis are summarised in **Table 6**.

**TABLE 6: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8)  
DEVELOPMENT STAGE 1**

Intersection	Peak Hour	Degree of Saturation <sup>(1)</sup>	Average Delay <sup>(2)</sup> (sec/veh)	Level of Service <sup>(3)</sup>	Control Type	Worst Movement	95th Percentile Queue
EXISTING VOLUMES							
M7 Exit / Elizabeth Drive	AM	0.93	37.2	C	Signals	RT from Wallgrove Road (N)	33.2 veh (248.2m) Elizabeth Drive (W)
	PM	0.90	46.9	D		LT from M7 Exit (S)	34.2 veh (259.7m) Elizabeth Drive (W)
Wallgrove Road / The Horsely Drive	AM	0.80	40	C	Signals	LT from The Horsely Drive (W)	18.7 veh (139m) Wallgrove Road (S)
	PM	0.82	36.2	C		LT from The Horsely Drive (E)	21.9 veh (160.9m) Wallgrove Road (N)
Wallgrove Road / Kosovich Place	AM	0.49	0.1 (Worst: 17.3)	NA (Worst: B)	Give Way	RT from Kosovich Place (E)	0 veh (0.2m) Wallgrove Road (S)
	PM	0.51	0.1 (Worst: 19.4)	NA (Worst: B)		RT from Kosovich Place (E)	0 veh (0.3m) Wallgrove Road (S)
Wallgrove Road / Villiers Road	AM	0.54	4.1 (Worst: 10.8)	A (Worst: A)	Roundabout	UT from Wallgrove Road (S)	1.1 veh (8.5m) Wallgrove Road (N)
	PM	0.56	4.2 (Worst: 10.8)	A (Worst: A)		UT from Wallgrove Road (S)	4.9 veh (36.1m) Wallgrove Road (N)
EXISTING VOLUMES + STAGE 1 GENERATION							
M7 Exit / Elizabeth Drive	AM	0.99	40.7	C	Signals	LT from M7 Exit (S)	36.7 veh (274.6m) Elizabeth Drive (W)
	PM	0.98	55.3	D		LT from M7 Exit (S)	38.2 veh (276.9m) Wallgrove Road (N)
Wallgrove Road / The Horsley Drive	AM	0.80	39.2	C	Signals	LT from The Horsley Drive (W)	18.7 veh (139m) Wallgrove Road (S)
	PM	0.91	36.3	C		LT from The Horsley Drive (E)	25.4 veh (196m) Wallgrove Road (N)
Wallgrove Road / Kosovich Place	AM	0.55	1.9 (Worst: 13.6)	NA (Worst: A)	Give Way	RT from Wallgrove Road (N)	1.1 veh (7.6m) Kosovich Place (E)
	PM	0.57	1.1 (Worst: 7.2)	NA (Worst: A)		RT from Wallgrove Road (N)	0.5 veh (3.8m) Kosovich Place (E)
Wallgrove Road / Villiers Road	AM	0.62	4.7 (Worst: 10.8)	A (Worst: A)	Roundabout	UT from Wallgrove Road (S)	2 veh (15.4m) Wallgrove Road (N)
	PM	0.77	5.5 (Worst: 10.8)	A (Worst: A)		UT from Wallgrove Road (S)	9.7 veh (72.3m) Wallgrove Road (N)

**NOTES:**

(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) The level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.



As shown, there is a minor increase to approach delays at each of the intersections modelled, but no change in Level of Service (LoS) is predicted as a result of the traffic generation of Stage 1 of development.

It should be noted that this modelling has been completed with the assumption of a “No Right Turn” restriction at the intersection of Kosovich Place/Wallgrove Road, as is discussed in **Section 5** of this report.

#### 4.3.2 Final Development – Completed School for 630 Students

The impacts of the final stage of development on the surrounding road network have been assessed using 10-year projected traffic volumes. The growth on each of the roads and intersections surrounding the site were provided by the Roads and Maritime Services and were used to scale the existing traffic volumes to reflect the predicted volumes for 2028. For the purposes of the 2028 modelling the upgraded layout of the intersection of the Horsley Drive/Wallgrove Road has been used for both the 2028 and 2028 plus development scenarios. The results of this modelling are summarised in **Table 7**.

As shown, the traffic associated with the proposed school will not substantially change the operation of the intersections surrounding the site and all intersections will remain at their present Level of Service other than the intersection of Elizabeth Drive/Wallgrove Road in the PM peak hour, which is predicted to operate with a Level of Service of E.

As discussed in **Section 5** of this report, the modification of the intersection to include a high angle left turn slip lane would provide additional capacity at the intersection. Further analysis of the PM peak hour traffic has been undertaken to examine the impact of the addition of a left turn slip lane on the performance of the intersection. The results of this analysis are summarised in **Table 8**.

As shown, with the addition of a left turn slip lane on the northern approach to the intersection, the Level of Service of the intersection will be D in both peak hours, a decrease in average delays when compared to the predicted operation of the intersection in 2028 (without the proposed school).

Based on the data received to date from the RMS, it is therefore suggested that such an upgrade should be performed to the intersection prior to the opening of the completed school. However, analysis should be undertaken with the latest traffic volumes and projections nearer to the time of construction of the final stage of the school to confirm that such an upgrade is necessary, as there may be significant reductions in the traffic using the Elizabeth Drive/Wallgrove Road intersection after the construction of the M12 Motorway.

**TABLE 7: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8)  
FINAL DEVELOPMENT**

Intersection	Peak Hour	Degree of Saturation <sup>(1)</sup>	Average Delay <sup>(2)</sup> (sec/veh)	Level of Service <sup>(3)</sup>	Control Type	Worst Movement	95th Percentile Queue
EXISTING PERFORMANCE + 10 YEARS GROWTH							
M7 Exit / Elizabeth Drive	AM	0.91	32.9	C	Signals	LT from M7 Exit (S)	37.3 veh (278.9m) Elizabeth Drive (W)
	PM	1.00	60.4	E		LT from M7 Exit (S)	55.2 veh (419.7m) Elizabeth Drive (W)
Wallgrove Road / The Horsley Drive	AM	0.81	38.6	C	Signals	LT from The Horsley Drive (W)	19.1 veh (141.4m) Wallgrove Road (S)
	PM	1.00	46	D		T from The Horsley Drive (E)	32.5 veh (251m) The Horsley Drive (E)
Wallgrove Road / Kosovich Place	AM	0.48	0.1 (Worst: 17.2)	NA (Worst: B)	Give Way	RT from Kosovich Place (E)	0 veh (0.2m) Wallgrove Road (S)
	PM	0.52	0.1 (Worst: 20.6)	NA (Worst: B)		RT from Kosovich Place (E)	0 veh (0.3m) Wallgrove Road (S)
Wallgrove Road / Villiers Road	AM	0.53	4.1 (Worst: 10.8)	A (Worst: A)	Roundabout	UT from Wallgrove Road (S)	1.1 veh (8.5m) Wallgrove Road (N)
	PM	0.57	4.2 (Worst: 10.8)	A (Worst: A)		UT from Wallgrove Road (S)	5.1 veh (37.6m) Wallgrove Road (N)
EXISTING VOLUMES + 10 YEARS GROWTH + FINAL DEVELOPMENT GENERATION							
M7 Exit / Elizabeth Drive	AM	1.00	48.7	D	Signals	T from Elizabeth Drive (W)	56.8 veh (425.2m) Elizabeth Drive (W)
	PM	1.10	99.3	F		LT from M7 Exit (S)	84.4 veh (611.4m) Wallgrove Road (N)
Wallgrove Road / The Horsley Drive	AM	0.77	37.6	C	Signals	T from Wallgrove Road (N)	15.8 veh (117m) Wallgrove Road (S)
	PM	1.00	45.6	D		T from The Horsley Drive (E)	32.5 veh (251m) The Horsley Drive (E)
Wallgrove Road / Kosovich Place	AM	0.60	3.4 (Worst: 17.5)	NA (Worst: B)	Give Way	RT from Wallgrove Road (N)	2.7 veh (18.8m) Kosovich Place (E)
	PM	0.64	1.8 (Worst: 7.9)	NA (Worst: A)		RT from Wallgrove Road (N)	1.2 veh (8.5m) Kosovich Place (E)
Wallgrove Road / Villiers Road	AM	0.67	5.1 (Worst: 10.7)	A (Worst: A)	Roundabout	UT from Wallgrove Road (S)	2.8 veh (21.3m) Wallgrove Road (N)
	PM	0.91	10.4 (Worst: 12.9)	A (Worst: A)		T from Wallgrove Road (N)	22.9 veh (160.3m) Wallgrove Road (N)

**NOTES:**

(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) The level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

**TABLE 8: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8)  
FINAL DEVELOPMENT W/ LEFT SLIP LANE**

Intersection	Peak Hour	Degree of Saturation <sup>(1)</sup>	Average Delay <sup>(2)</sup> (sec/veh)	Level of Service <sup>(3)</sup>	Control Type	Worst Movement	95th Percentile Queue
<b>EXISTING PERFORMANCE + 10 YEARS GROWTH</b>							
M7 Exit / Elizabeth Drive	AM	1.05	43.4	<b>D</b>	Signals	RT from Wallgrove Road (N)	44.9 veh (336.1m) Elizabeth Drive (W)
	PM	0.96	47.3	<b>D</b>		LT from M7 Exit (S)	52.3 veh (378.8m) Wallgrove Road (N)

## **5 PROPOSED INFRASTRUCTURE WORKS**

The provide suitable facilities and capacity within the road network, a number of improvements are proposed. Each proposed improvement is outlined below and illustrated in **Annexure G** for reference.

### **5.1 *Road Width***

The 6.5m width of Kosovich Place is insufficient to accommodate the standing of buses and two-way passing of traffic. The implementation of a bus zone should be accompanied by the widening of Kosovich Place to 7.0m width from the intersection of Wallgrove Road to the boundary of the site and 10m from the driveway to the termination of the street. This road widening will enable bus access and provide sufficient width for up to four buses to pick up or drop off passengers without interrupting traffic flow along the street. It has been advised by the bus operator, Transit Systems, that the existing turning bulb is sufficient to facilitate U-turns by buses.

### **5.2 *Pedestrian Facilities***

Pedestrian footpaths will be constructed along the frontage of the site to Kosovich Place to provide safe passage for pedestrians to and from the bus zone. Considering that all parent kiss and drop operations will be undertaken on-site, no formal footpath is necessary other than along the frontage of the site.

### **5.3 *Parking Restrictions***

The following parking restrictions should be implemented to ensure parking does not occur in locations that will compromise traffic flow:

- “Bus Zone” signage, which acts as a “No Stopping” restriction with buses excluded;
- “No Stopping” signage around the circumference of the turning bulb;
- “No Stopping - 8:00 AM – 9:30 AM & 2:30 PM – 4:00 PM” signage is proposed along the southern side of Kosovich Place to ensure that two-way passing will be maintained at all school drop-off and pick-up times.

### **5.4 *Intersection Works***

#### **5.4.1 Kosovich Place/Wallgrove Road**

Whilst the traffic modelling completed does not indicate that the intersection of Kosovich Place/Wallgrove Road will be pushed to capacity by the traffic associated with the site, the Austroads Guide to Road Design suggests that a CHR treatment is appropriate for an intersection with the traffic volumes that are proposed. Consequently, it is proposed that the intersection be adjusted to include a CHR treatment. The traffic modelling outlined in **Section 4** of this report demonstrates that the intersection will perform satisfactorily with the proposed layout.

#### 5.4.2 Wallgrove Road/Elizabeth Drive

The traffic modelling indicates that the completed school may cause a significant increase in delays at the intersection of Wallgrove Road/Elizabeth Drive, depending on the future traffic flows along Elizabeth Drive and Wallgrove Road. To relieve these delays, a high-angle slip lane could be added to the northern approach of the intersection. The necessity of this treatment should be confirmed prior to the issue of a construction certificate for the final stage of the school, as it is expected that the traffic projections will change between the submission of the State Significant Development Application and the construction of the final stage of the school. The traffic modelling outlined in **Section 4** of this report demonstrates that the intersection will perform satisfactorily with the proposed layout.



## 6 **SEARS**

The Secretary's Environmental Assessment Requirements (SEARs) relevant to this traffic and parking impact assessment are reproduced in italics in the following sub-sections and responded to thereafter.

### *6. Transport and Accessibility (Construction and Operation)*

*Include a transport and accessibility impact assessment, which details, but not limited to the following:*

#### **6.1 Existing Vehicle Movements**

*accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development;*

Please refer to **Annexure B** which provides an outline of the existing vehicle movements in the surrounds of the site. No existing public transport routes exist, there are no pedestrian paths along either Wallgrove Road or Kosovich Place and there are no notable cycling routes in the surrounds of the site.

#### **6.2 Existing and Future Public Transport Networks**

*an assessment of the operation of existing and future transport networks including public transport networks, and their ability to accommodate the forecast number of trips to and from the development;*

Transport for New South Wales (TFNSW) was consulted as part of this proposal and it was indicated that there are no current or future public transport routes within safe walking distance of the site. Transit Systems, the local bus operator, is in the process of consulting with TFNSW to provide school buses for the site.

#### **6.3 Traffic Generation**

*details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips based on surveys of the existing and similar schools within the local area;*

The traffic generation of the site has been estimated in **Section 4.1** of this report. Considering the isolation of the school, the traffic generation has been based on a first principles assessment rather than surveys of other schools. The site is not expected to generate any pedestrian or cycling trips due to the lack of facilities for each of these travel modes and the young age of primary school children.

#### **6.4 Adequacy of Existing Alternative Transport Facilities**

*the adequacy of public transport, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand of the proposed development;*

See **Sections 6.1, 6.2 & 6.3.**

#### **6.5 Impact of Proposed Development**

*the impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site in consultation with Council, Roads and Maritime Services and Transport for NSW and identify measures to integrate the development with the transport network;*

The impacts of the site have been assessed using SIDRA Intersection, with the results provided in **Section 4.3** of this report. Several infrastructure works are proposed as outlined in **Section 5** of this report.

#### **6.6 Infrastructure Works**

*the identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development, including details on improvements required to affected intersections;*

Several infrastructure works are proposed as outlined in **Section 5** of this report.

#### **6.7 Travel Demand Management**

*details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location-specific sustainable travel plan and the provision of facilities to increase the non-car mode share for travel to and from the site;*

The site is isolated from public transport, pedestrian and cycling networks. School buses are proposed for the site and are currently the subject of consultation between the local bus operator and TFNSW. To ameliorate impacts on the road network, it is proposed that school start and finish times be staggered to reduce the ultimate peak of kiss and drop traffic and parking demand. School management will propose and promote that parents arrange car-share pools in order to reduce the traffic and number of trips per week.

#### **6.8 Traffic Impact Assessment**

*the impact of trips generated by the development on nearby intersections, (including but not limited to the intersection of Wallgrove Road with Kosovich Place), with consideration of the cumulative impacts from other approved developments in the vicinity;*

The impacts of the site have been assessed using SIDRA Intersection, with the results provided in **Section 4.3** of this report.

## **6.9 Funding of Road Improvements**

*details of any need/associated funding for, upgrades or road improvement works, if required;*

Funding of the proposed improvement works is yet to be determined.

## **6.10 Traffic Modelling**

*Traffic modelling is to be undertaken using SIDRA network modelling for current and future years;*

Traffic modelling has been undertaken using SIDRA for the existing and future cases, with 10-year future traffic growth provided by the RMS.

## **6.11 Walking, Cycling and Public Transport Access**

*the proposed walking and cycling access arrangements and connections to public transport services;*

See **Sections 6.1, 6.2 & 6.3.**

## **6.12 Proposed School Bus Routes**

*details of any proposed school bus routes along bus capable roads (i.e. travel lanes of 3.5m minimum) and infrastructure (bus stops, bus layovers etc.);*

School bus routes are currently in development by the local bus operator, Transit Systems.

## **6.13 Access Arrangements**

*the proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones;*

All kiss and drop operations will be provided for on-site, with internal traffic management and pedestrian crossing arrangements facilitating efficient and safe drop-off and pick-up of children. Buses will collect students from the site's frontage to Kosovich Place, where a footpath will be provided.

## **6.14 Kiss and Drop Operations**

*details of any traffic management measures to ensure the safe and efficient operation of student pick-up/drop-off;*

Kiss and drop operations will occur on both sides of the proposed circulating roadway, with footpaths proposed on both sides. Two pedestrian crossings are proposed and will be controlled by school staff to facilitate the safe crossing of the internal road during kiss and drop hours.

## 6.15 CPTED

*measures to maintain road and personal safety in line with CPTED principles;*

All vehicular and pedestrian facilities associated with the site are designed both to meet the relevant Australian Standards and in response to the context and nature of the proposed school. In particular:

- Clear sight lines have been considered in the design of all driveways and pedestrian crossing locations, including the height of proposed landscaping;
- All vehicular and pedestrian facilities will be clearly signposted and linemarked;
- Pedestrian crossings and traffic control staff will be implemented to increase the safety of the proposed kiss and drop zone for pedestrians.

## 6.16 Parking and End of Trip Facilities

*the proposed car and bicycle parking provision, including end of trip facilities, which must be taken into consideration of the availability of public transport and the requirements of Council's relevant parking codes and Australian Standards;*

37 parking spaces are provided for staff, two spaces are provided for disabled staff and/or visitors and 30 spaces provided for parent drop-off and pick-up. No bicycle facilities are proposed as there are no safe cycling routes to and from the site. Refer to **Section 3** of this report for analysis of the parking proposed.

## 6.17 Bicycle Parking and Facilities

*proposed bicycle parking provision, including end of trip facilities, in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance;*

No bicycle facilities are proposed as there are no safe cycling routes to and from the site.

## 6.18 Proposed Car Parking

*proposed number of on-site car parking spaces for teaching staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site;*

37 parking spaces are provided for staff, two spaces are provided for disabled staff and/or visitors and 30 spaces provided for parent drop-off and pick-up. The proposed provision of parking meets the requirements of the Council. No bicycle facilities are proposed as there are no safe cycling routes to and from the site. Refer to **Section 3** of this report for analysis of the parking proposed.

### **6.19 On-Street Parking Impact**

*an assessment of the cumulative on-street parking impacts of cars and bus pick-up/drop-off, staff parking and any other parking demands associated with the existing and proposed development;*

Sufficient car parking and queueing areas are proposed to accommodate all private vehicle operations on the site. A queueing assessment has been undertaken to confirm this, with the results provided in **Section 3.2** of this report.

### **6.20 Emergency Vehicle Access**

*details of emergency vehicle access arrangements;*

Emergency vehicles are able to access the site via the main driveway, with sufficient driveway width provided to meet the requirements of the Rural Fire Service, who operate the largest vehicles of any of the local emergency services. Access for emergency vehicles is also provided from the car park directly onto the hard-paved Civic Heart as well as down to the flood plain area.

### **6.21 Road and Pedestrian Safety Assessment**

*an assessment of road and pedestrian safety adjacent to the proposed development and the details of required road safety measures;*

The proposed school is well self-contained and the design effectively separates the movements of vehicles and pedestrians along Kosovich Place. The design includes the following measures:

- An indented bus bay with sufficient length to contain up to four buses. Light vehicles are able to enter and depart the site without conflicting with queued or manoeuvring buses.
- A two-way driveway, with a median separating entering and exiting traffic;
- Pedestrian pathway connecting directly to the footpath adjacent to the indented bus bay area.

Considering the relative isolation of the site and the inclusion of sufficient parking on the site to contain all kiss and drop operations, any pedestrians exiting the site on foot are unlikely to walk along Kosovich Place or cross the path of any vehicles entering or leaving the site.

In view of the foregoing, the design passively ensures the safety of both drivers and pedestrians and no road safety measures are necessary. It is noted that a 40km/h school zone speed restriction will be implemented along Kosovich Place during peak school drop-off and pick-up times which will also act to improve vehicular and pedestrian safety.



## 6.22 Service Vehicle Operations

*service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times);*

An assessment of service vehicle operations is provided in **Section 3.5** of this report.

## 6.23 Construction Traffic Impacts and Management

*in relation to construction traffic:*

- *assessment of cumulative impacts associated with other construction activities (if any);*
- *an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity;*
- *details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process;*
- *details of anticipated peak hour and daily construction vehicle movements to and from the site;*
- *details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle;*
- *details of temporary cycling and pedestrian access during construction; and*
- *traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan in line with Council's Construction Management Plan Checklist to demonstrate the proposed management of the impact*

A construction traffic management plan satisfying each of the above requirements has been completed and will be submitted separately with the SSDA submission.

## 7 **CONCLUSION**

The traffic and parking impacts of the proposed Saints Peter and Paul Primary School, which as shown in **Annexure A**, have been assessed. The proposed school will be completed in a number of stages which includes an initial student population of 210 students and a final population of 630 students.

The peak parent parking demand of the school has been estimated as some 65 vehicles, ascertained by the use of a microsimulation Aimsun model. Parent parking will be accommodated completely within the site, with no queueing of vehicles into Kosovich Place expected.

All 35 school staff will be provided with a dedicated parking space within the grounds of the school, satisfying the requirement of the Fairfield City Council Development Control Plan. A total of 39 angle parking spaces are provided within the site for staff and disabled visitors.

The traffic generation of the site, estimated at some 579 vehicles (272 IN / 307 OUT) in the PM peak period, has been assessed, with the following results:

- The intersection of Wallgrove Road and Kosovich Place is proposed to be upgraded to include an auxiliary right turn lane and a “No Right Turn” restriction from the Kosovich Place approach. These works will be completed prior to the opening of Stage 1 of the development.
- The intersection of Wallgrove Road / Elizabeth Drive is proposed to be upgraded with a left turn high angle slip lane. These works will be completed prior to the opening of the final stage of development, subject to modelling completed closer to the time which may demonstrate that the works are not needed.
- The intersection of Wallgrove Road/The Horseley Drive will not be noticeably impacted by the proposal either in its current or future layout (as shown on the most recently available RMS documentation).

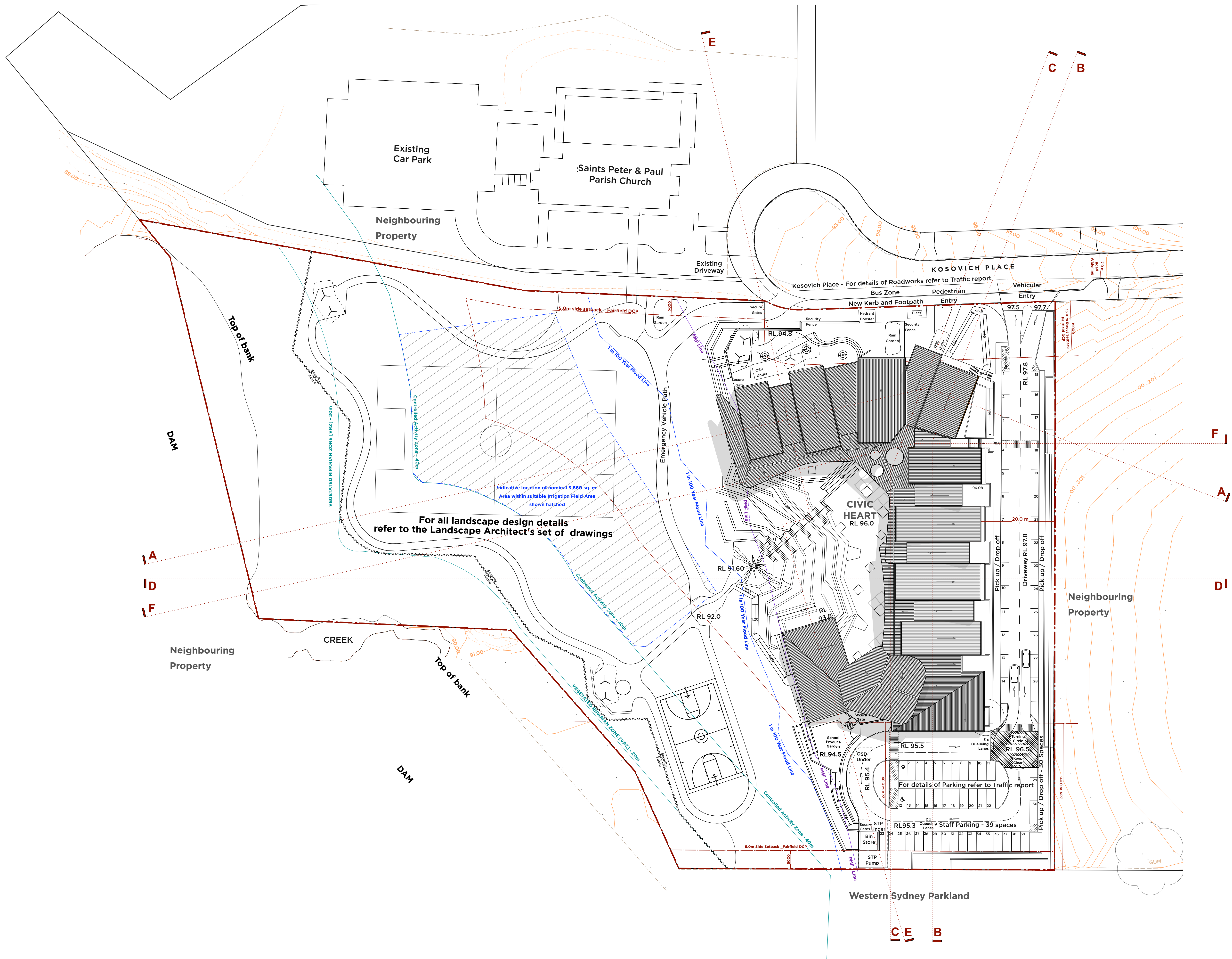
In addition to upgrades of intersections, Kosovich Place will be upgraded to cater for bus traffic and a bus stop along the frontage of the site. The proposed infrastructure works are depicted in **Annexure G** for reference.

In view of the foregoing, the subject proposed development is fully supported in terms of its traffic and parking impacts.

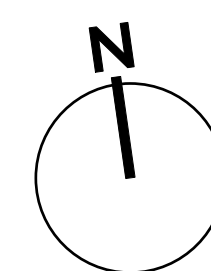


## **ANNEXURE A: PROPOSED PLAN**





A		DA Issue	
ISSUE	DATE	REVISION	
0mm		50mm	100mm
DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY. CHECK ALL DIMENSIONS ON SITE BEFORE MANUFACTURE OR CONSTRUCTION.			
PROJECT	Ss Peter & Paul Primary School		PROJECT # 2639
CLIENT	Assyrian Schools Ltd		DWG # DA101
DWG	Masterplan		
CLIENT REF & CONTACT	DATE April 2018	DRAWN TW	REVISION
Cecil Park	SCALE 1:500 @ A1	CHKD TW	A



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NSW NOMINATED ARCHITECTS ANDREW PENDER SPT DAVID MORRIS SENG PETER DOORELL 3134





**ANNEXURE B: TURNING MOVEMENT COUNT RESULTS**  
**(6 SHEETS)**



Intersection of The Horsley Dr and Wallgrove Rd , Cecil Park

GPS -33.841556, 150.854022  
Date: Wed 25/07/18  
Weather: Overcast  
Suburban: Cecil Park  
Customer: McLaren

North: Wallgrove Rd  
East: The Horsley Dr  
South: Wallgrove Rd  
West: The Horsley Dr

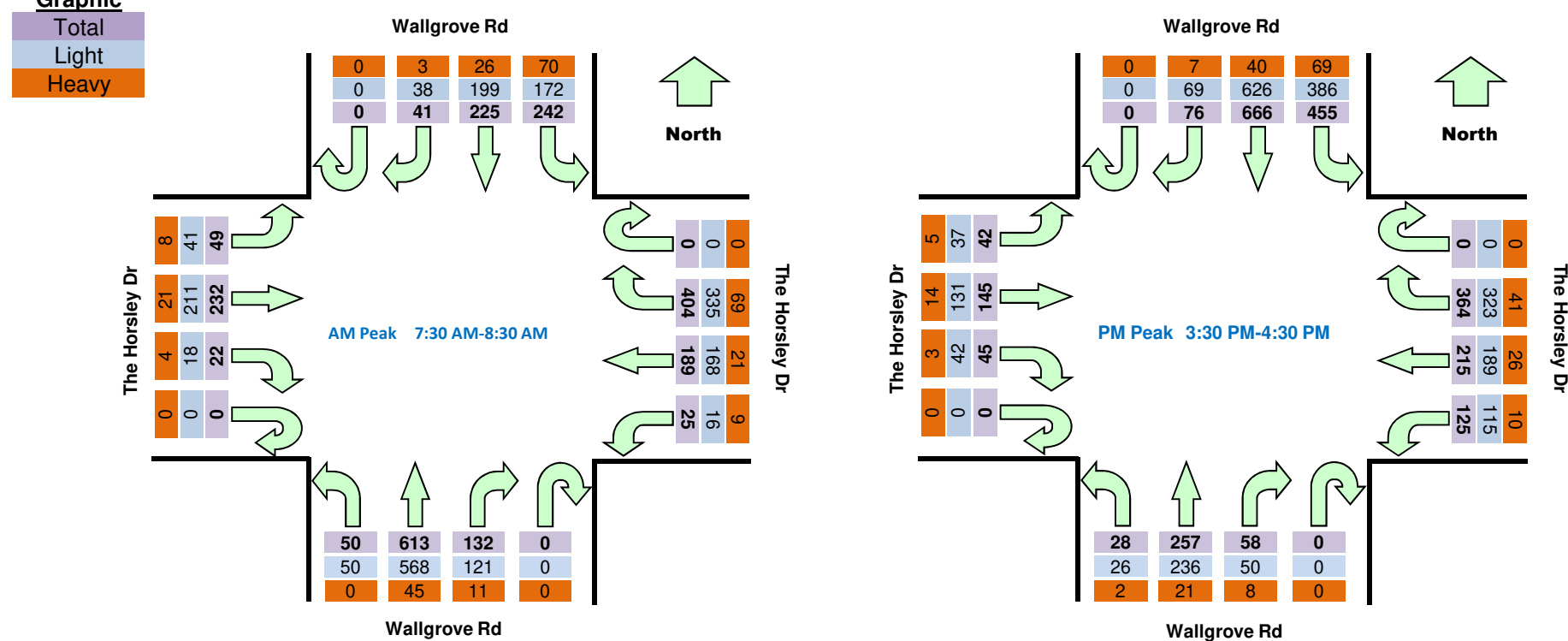
Survey Period AM: 7:00 AM-9:30 AM  
PM: 2:00 PM-4:30 PM  
Traffic Peak AM: 7:30 AM-8:30 AM  
PM: 3:30 PM-4:30 PM

All Vehicles		Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	6	77	50	0	97	24	13	0	24	129	7	0	6	41	10	2051			
7:15	7:30	0	10	69	59	0	88	24	6	0	25	165	3	0	4	28	16	2157			
7:30	7:45	0	12	51	61	0	105	32	5	0	33	172	10	0	3	36	12	2224			
7:45	8:00	0	8	56	60	0	88	39	5	0	37	169	7	0	3	52	14	2186			
8:00	8:15	0	13	62	52	0	114	59	6	0	26	156	13	0	10	65	14	2182			
8:15	8:30	0	8	56	69	0	97	59	9	0	36	116	20	0	6	79	9	2019			
8:30	8:45	0	8	51	47	0	96	54	8	0	18	120	19	0	8	45	20	1836			
8:45	9:00	0	10	65	58	0	83	50	7	0	24	122	23	0	21	56	15				
9:00	9:15	0	18	45	58	0	73	31	9	0	12	76	18	0	14	57	16				
9:15	9:30	0	10	42	66	0	62	23	7	0	18	75	9	0	8	48	13				
14:00	14:15	0	17	109	66	0	67	36	14	0	14	57	4	0	6	22	7	1845			
14:15	14:30	0	18	122	85	0	67	38	13	0	20	52	4	0	10	33	10	1910			
14:30	14:45	0	15	110	88	0	69	70	12	0	12	47	8	0	11	38	9	2030			
14:45	15:00	0	16	113	60	0	59	70	20	0	21	46	14	0	7	35	4	2081			
15:00	15:15	0	20	113	48	0	88	44	21	0	16	63	20	0	5	41	5	2260			
15:15	15:30	0	21	171	99	0	80	37	32	0	17	45	3	0	23	54	10	2403			
15:30	15:45	0	17	127	94	0	81	46	25	0	9	71	9	0	10	40	11	2476			
15:45	16:00	0	20	182	110	0	95	58	35	0	16	67	10	0	9	32	10				
16:00	16:15	0	23	177	128	0	88	45	39	0	14	57	7	0	10	26	13				
16:15	16:30	0	16	180	123	0	100	66	26	0	19	62	2	0	16	47	8				

Peak Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
7:30	8:30	0	41	225	242	0	404	189	25	0	132	613	50	0	22	232	49	2224
15:30	16:30	0	76	666	455	0	364	215	125	0	58	237	28	0	45	145	42	2476

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic  
Total  
Light  
Heavy



Light Vehicles		Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L				
7:00	7:15	0	2	69	35	0	86	15	7	0	23	120	6	0	6	34	10				
7:15	7:30	0	7	60	40	0	69	21	4	0	23	147	3	0	3	22	14				
7:30	7:45	0	12	41	48	0	86	25	4	0	33	163	10	0	2	32	7				
7:45	8:00	0	7	55	40	0	72	36	3	0	34	159	7	0	3	44	12				
8:00	8:15	0	12	53	39	0	97	52	3	0	24	141	13	0	8	60	13				
8:15	8:30	0	7	50	45	0	80	55	6	0	30	105	20	0	5	75	9				
8:30	8:45	0	5	43	36	0	77	52	6	0	17	108	19	0	8	43	17				
8:45	9:00	0	9	49	36	0	59	45	6	0	22	110	22	0	16	52	15				
9:00	9:15	0	16	38	38	0	51	29	7	0	7	70	17	0	12	54	14				
9:15	9:30	0	8	36	44	0	47	22	4	0	15	67	8	0	7	44	11				
14:00	14:15	0	14	96	51	0	57	32	12	0	13	48	4	0	6	20	5				
14:15	14:30	0	16	112	73	0	47	31	13	0	17	39	4	0	7	32	9				
14:30	14:45	0	14	94	68	0	55	65	10	0	10	38	7	0	9	37	9				
14:45	15:00	0	14	107	50	0	48	66	18	0	19	35	13	0	7	30	3				
15:00	15:15	0	17	99	34	0	66	40	18	0	16	59	20	0	5	33	5				
15:15	15:30	0	18	159	84	0	65	31	29	0	14	37	3	0	22	53	10				
15:30	15:45	0	17	122	79	0	73	42	22	0	8	68	7	0	8	34	9				
15:45	16:00	0	19	167	94	0	80	50	35	0	15	60	10	0	9	30	7				
16:00	16:15	0	20	162	116	0	78	38	34	0	12	51	7	0	10	23	13				
16:15	16:30	0	13	175	97	0	92	59	24	0	15	57	2	0	15	44	8				

Peak Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
7:30	8:30	0	38	199	172	0	335	168	16	0	121	568	50	0	18	211	41	1937
15:30	16:30	0	69	626	386	0	323	189	115	0	50	236	26	0	42	131	37	2230

Heavy Vehicles		Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L				
7:00	7:15	0	3	8	14	0	10	9	6	0	1	9	1	0	0	6	0				
7:15	7:30	0	3	9	19	0	19	3	2	0	2	17	0	0	1	6	2				
7:30	7:45	0	0	10	13	0	19	5	1	0	0	9	0	0	1	3	4				
7:45	8:00	0	1	1	19	0	15	2	2	0	3	10	0	0	0	4	2				
8:00	8:15	0	1	9	13	0	17	4	3	0	2	15	0	0	2	3	1				
8:15	8:30	0	1	6	23	0	17	3	3	0	6	11	0	0	0	4	0				
8:30	8:45	0	3	8	11	0	17	2	2	0	1	12	0	0	0	2	3				
8:45	9:00	0	1	16	21	0	24	5	1	0	2	12	1	0	2	4	0				
9:00	9:15	0	2	7	20	0	22	1	2	0	5	6	1	0	2	3	2				
9:15	9:30	0	2	6	21	0	15	1	3	0	3	8	1	0	1	3	2				
14:00	14:15	0	3	13	15	0	10	4	2	0	1	9	0	0	0	2	2				
14:15	14:30	0	2	10	12	0	20	7	0	0	3	13	0	0	3	1	0				
14:30	14:45	0	1	16	20	0	12	4	2	0	2	8	1	0	2	1	0				
14:45	15:00	0	1	6	10	0	11	4	2	0	2	10	1	0	0	4	1				
15:00	15:15	0	2	14	13	0	19	4	3	0	0	4	0	0	0	5	0				
15:15	15:30	0	3	12	15	0	15	6	3	0	3	7	0	0	0	1	1	0			
15:30	15:45	0	0	5	14	0	7	4	3	0	1	2	2	0	2	2	2				
15:45	16:00	0	1	15	16	0	15	7	0	0	1	7	0	0	0	1	3				
16:00	16:15	0	3	15	12	0	9	4	5	0	2	6	0	0	0	1	0				
16:15	16:30	0	3	5	25	0	8	6	2	0	4	5	0	0	0	1	3	0			

Peak Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
7:30	8:30	0	3	26	70	0	69	21	9	0	11	45	0	0	4	21	8	287
15:30	16:30	0	7	40	69	0	41	26	10	0	8	21	2	0	3	14	5	246



GPS -33.841556, 150.854022  
Date: Thu 26/07/18  
Weather: Overcast  
Suburban: Cecil Park  
Customer: McLaren

North: Wallgrove Rd  
East: The Horsley Dr  
South: Wallgrove Rd  
West: The Horsley Dr

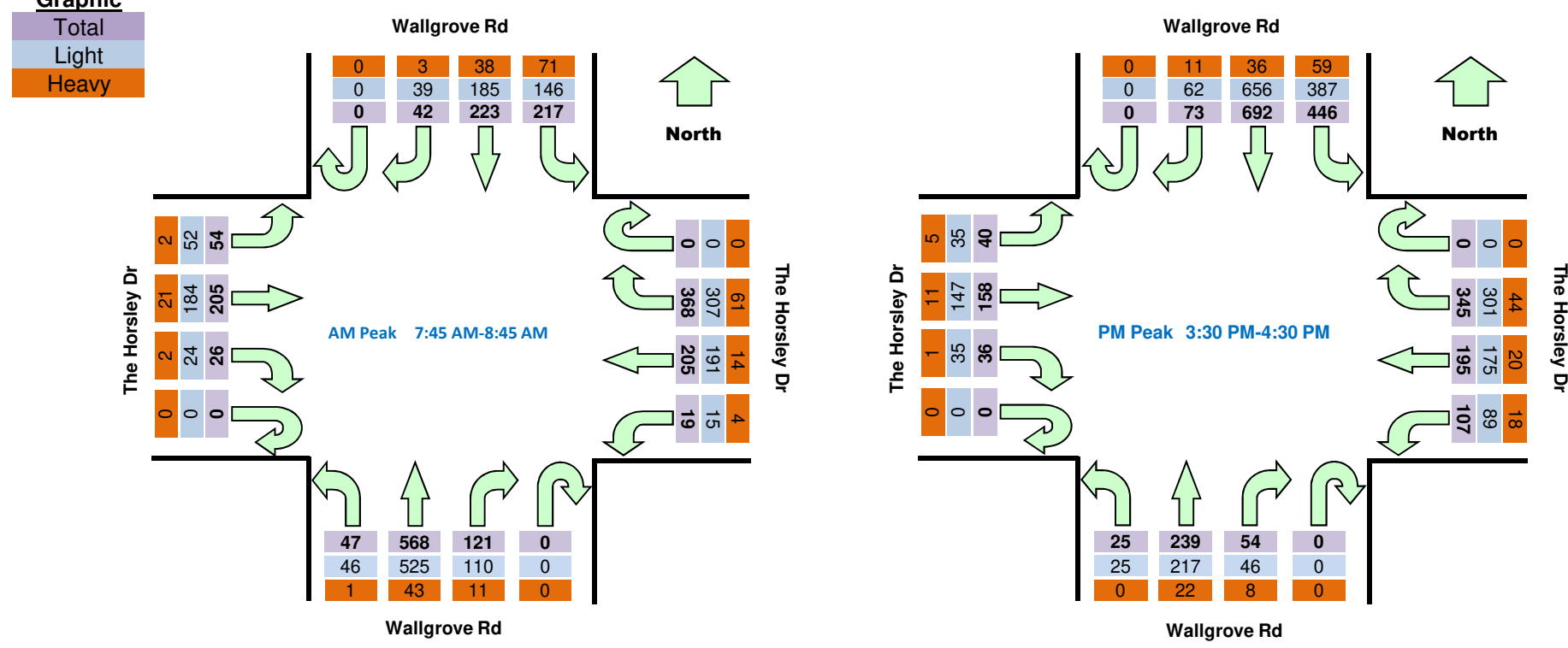
Survey AM: 7:00 AM-9:30 AM  
Period PM: 2:00 PM-4:30 PM  
Traffic AM: 7:45 AM-8:45 AM  
Peak PM: 3:30 PM-4:30 PM

All Vehicles		Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	3	49	46	0	84	24	11	0	23	152	7	0	2	35	9	1900			
7:15	7:30	0	7	67	60	0	71	21	8	0	22	146	4	0	7	37	12	1989			
7:30	7:45	0	10	56	57	0	90	20	5	0	28	142	6	0	7	34	11	2083			
7:45	8:00	0	7	60	63	0	112	39	8	0	36	146	8	0	6	23	9	2095	Peak		
8:00	8:15	0	7	56	59	0	87	52	1	0	30	155	13	0	7	47	20	2073			
8:15	8:30	0	17	65	52	0	78	69	5	0	30	129	15	0	4	76	16	1971			
8:30	8:45	0	11	42	43	0	91	45	5	0	25	138	11	0	9	49	9	1800			
8:45	9:00	0	13	48	53	0	86	46	3	0	23	112	30	0	12	65	14				
9:00	9:15	0	18	52	46	0	71	35	5	0	26	93	10	0	14	49	13				
9:15	9:30	0	14	55	77	0	53	22	5	0	25	78	2	0	3	36	15				
14:00	14:15	0	9	80	73	0	80	27	16	0	14	54	7	0	15	28	7	1934			
14:15	14:30	0	9	123	101	0	51	53	14	0	19	56	4	0	12	38	17	2081			
14:30	14:45	0	19	112	86	0	65	67	16	0	16	54	8	0	4	34	11	2198			
14:45	15:00	0	22	106	74	0	83	77	15	0	18	69	15	0	9	42	5	2250			
15:00	15:15	0	14	108	57	0	73	66	22	0	25	47	6	0	28	94	17	2287			
15:15	15:30	0	14	178	110	0	79	51	31	0	14	41	4	0	23	55	14	2366			
15:30	15:45	0	15	113	98	0	96	54	19	0	13	59	10	0	11	47	9	2410	Peak		
15:45	16:00	0	12	159	106	0	73	55	30	0	14	63	9	0	5	34	12				
16:00	16:15	0	26	190	114	0	92	50	33	0	12	61	4	0	8	36	10				
16:15	16:30	0	20	230	128	0	84	36	25	0	15	56	2	0	12	41	9				

Peak Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
7:45	8:45	0	42	223	217	0	368	205	19	0	121	568	47	0	26	205	54	2095
15:30	16:30	0	73	692	446	0	345	195	107	0	54	239	25	0	36	158	40	2410

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic  
Total  
Light  
Heavy



Light Vehicles		Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	2	40	32	0	69	20	9	0	22	137	6	0	2	26	9				
7:15	7:30	0	6	52	47	0	58	19	4	0	19	137	3	0	6	32	12				
7:30	7:45	0	9	48	45	0	72	17	5	0	24	130	6	0	7	32	8				
7:45	8:00	0	6	55	44	0	92	36	8	0	35	136	8	0	5	24	9				
8:00	8:15	0	7	45	41	0	76	47	1	0	26	144	13	0	7	40	18				
8:15	8:30	0	15	54	31	0	68	65	3	0	27	124	15	0	4	72	16				
8:30	8:45	0	11	31	30	0	71	43	3	0	22	121	10	0	8	48	9				
8:45	9:00	0	11	38	39	0	85	42	1	0	17	95	30	0	11	60	12				
9:00	9:15	0	16	40	35	0	58	31	3	0	23	80	10	0	14	46	10				
9:15	9:30	0	10	47	52	0	37	21	5	0	21	67	2	0	3	34	14				
14:00	14:15	0	5	74	58	0	68	21	11	0	8	45	5	0	12	24	5				
14:15	14:30	0	9	114	83	0	38	49	12	0	16	49	4	0	9	36	15				
14:30	14:45	0	17	103	76	0	53	64	12	0	12	47	7	0	4	31	10				
14:45	15:00	0	14	96	66	0	65	70	14	0	15	58	15	0	7	37	5				
15:00	15:15	0	11	96	45	0	59	62	20	0	18	37	5	0	27	87	15				
15:15	15:30	0	13	166	98	0	62	49	30	0	13	35	3	0	22	50	14				
15:30	15:45	0	13	107	84	0	81	49	15	0	11	51	10	0	11	43	9				
15:45	16:00	0	11	151	87	0	63	53	24	0	11	59	9	0	4	33	10				
16:00	16:15	0	21	182	99	0	84	41	28	0	12	55	4	0	8	34	8				
16:15	16:30	0	17	216	117	0	73	32	22	0	12	52	2	0	12	37	8				

Peak Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
7:45	8:45	0	39	185	146	0	307	191	15	0	110	525	46	0	24	184	52	1824
15:30	16:30	0	62	656	387	0	301	175	89	0	46	217	25	0	35	147	35	2175

Heavy Vehicles		Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	1	9	14	0	15	4	2	0	1	15	1	0	0	8	0				
7:15	7:30	0	1	15	12	0	13	2	4	0	3	8	1	0	1	5	0				
7:30	7:45	0	1	8	12	0	17	1	0	0	4	12	0	0	0	1	3				
7:45	8:00	0	1	5	18	0	20	0	0	0	1	10	0	0	1	5	0				
8:00	8:15	0	0	11	18	0	10	5	0	0	4	11	0	0	0	5	2				
8:15	8:30	0	2	11	20	0	10	2	2	0	3	5	0	0	0	4	0				
8:30	8:45	0	0	11	12	0	18	1	2	0	3	17	1	0	0	1	0				
8:45	9:00	0	2	10	14	0	21	4	2	0	6	17	0	0	0	4	2				
9:00	9:15	0	2	12	11	0	13	3	2	0	3	13	0	0	0	3	3				
9:15	9:30	0	4	8	24	0	16	1	0	0	4	11	0	0	0	2	1				
14:00	14:15	0	4	6	15	0	12	5	5	0	6	9	2	0	3	4	2				
14:15	14:30	0	0	9	18	0	11	4	2	0	3	7	0	0	3	2	1				
14:30	14:45	0	2	9	10	0	10	3	4	0	4	6	1	0	0	3	1				
14:45	15:00	0	8	10	8	0	16	6	1	0	3	11	0	0	2	5	0				
15:00	15:15	0	3	12	11	0	12	3	2	0	7	10	1	0	1	2	2				
15:15	15:30	0	1	12	12	0	15	2	1	0	1	6	1	0	1	3	0				
15:30	15:45	0	2	6	12	0	14	5	4	0	2	8	0	0	0	4	0				
15:45	16:00	0	1	8	19	0	10	1	6	0	3	4	0	0	1	0	2				
16:00	16:15	0	5	8	15	0	7	6	5	0	0	6	0	0	0	1	2				
16:15	16:30	0	3	13	10	0	11	4	3	0	3	4	0	0	0	3	1				

Peak Time		North Approach Wallgrove Rd				East Approach The Horsley Dr				South Approach Wallgrove Rd				West Approach The Horsley Dr				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
7:45	8:45	0	3	38	71	0	61	14	4	0	11	43	1	0	2	21	2	271
15:30	16:30	0	11	36	59	0	44	20	18	0	8	22	0	0	1	11	5	235



GPS: -33.876094, 150.842310  
Date: Wed 25/07/18  
Weather: Overcast  
Suburban: Cecil Park  
Customer: McLaren

North: Wallgrove Rd  
East: Elizabeth Dr  
South: Wallgrove Rd  
West: Elizabeth Dr

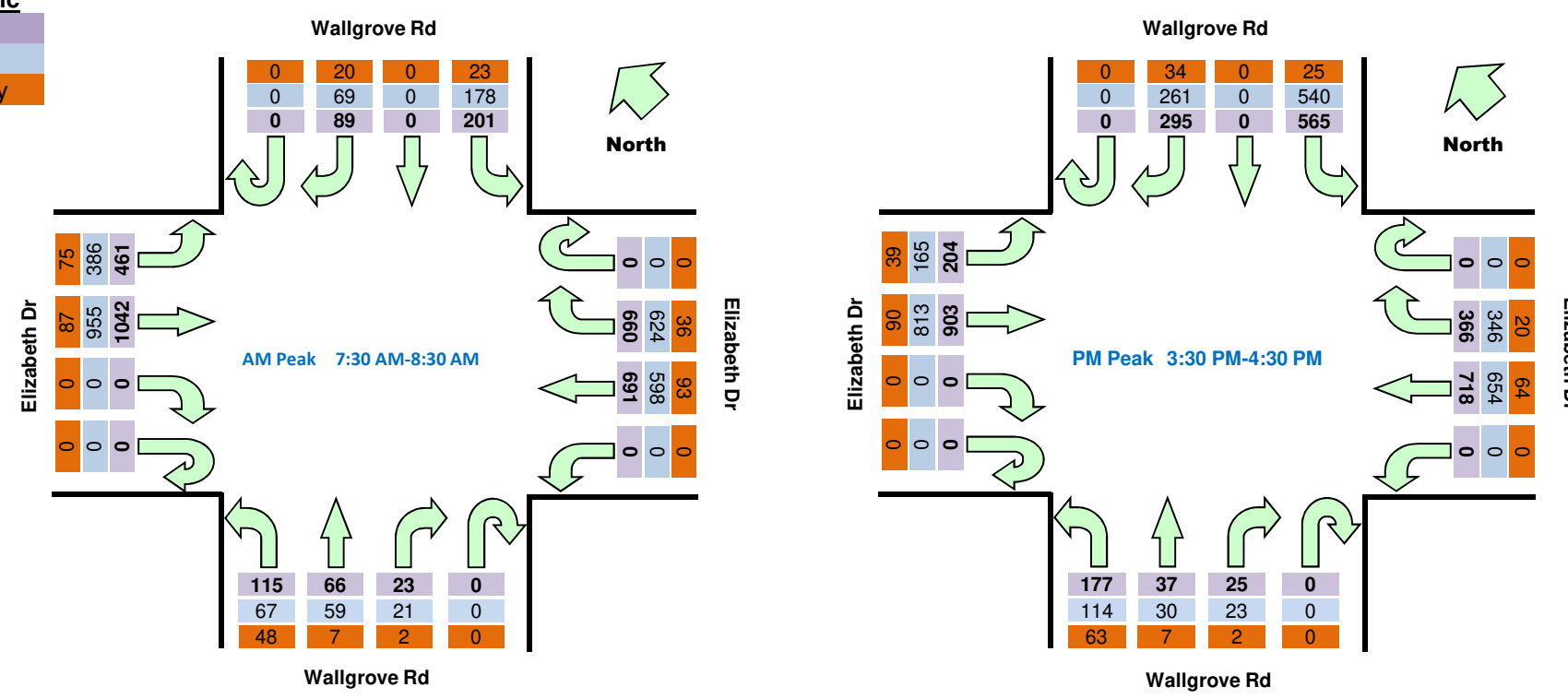
Survey Period: AM: 7:00 AM-9:30 AM  
PM: 2:00 PM-4:30 PM  
Traffic Peak: AM: 7:30 AM-8:30 AM  
PM: 3:30 PM-4:30 PM

All Vehicles		Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	19	0	47	0	145	144	0	0	2	8	19	0	0	173	105	3015			
7:15	7:30	0	22	0	57	0	163	114	0	0	4	18	22	0	0	180	135	3264			
7:30	7:45	0	12	0	53	0	156	190	0	0	2	16	25	0	0	281	119	3348	Peak		
7:45	8:00	0	22	0	40	0	168	156	0	0	6	10	23	0	0	225	124	3213			
8:00	8:15	0	23	0	49	0	189	188	0	0	5	23	26	0	0	287	121	3081			
8:15	8:30	0	32	0	59	0	147	157	0	0	10	17	41	0	0	239	97	2751			
8:30	8:45	0	18	0	51	0	144	180	0	0	4	11	26	0	0	183	102	2421			
8:45	9:00	0	23	0	47	0	119	133	0	0	5	14	26	0	0	199	86				
9:00	9:15	0	14	0	50	0	120	118	0	0	7	16	39	0	0	152	65				
9:15	9:30	0	14	0	36	0	92	97	0	0	2	9	19	0	0	145	55				
14:00	14:15	0	36	0	60	0	68	112	0	0	4	8	21	0	0	135	35	2365			
14:15	14:30	0	41	0	125	0	66	159	0	0	7	9	47	0	0	152	47	2579			
14:30	14:45	0	36	0	107	0	78	140	0	0	11	8	35	0	0	152	47	2643			
14:45	15:00	0	45	0	86	0	57	159	0	0	7	10	35	0	0	169	51	2869			
15:00	15:15	0	53	0	83	0	91	180	0	0	9	10	47	0	0	187	33	3004			
15:15	15:30	0	79	0	120	0	62	173	0	0	3	8	40	0	0	182	50	3172			
15:30	15:45	0	73	0	134	0	91	203	0	0	5	13	44	0	0	213	64	3290	Peak		
15:45	16:00	0	63	0	116	0	100	172	0	0	4	6	35	0	0	210	48				
16:00	16:15	0	85	0	162	0	88	191	0	0	4	9	46	0	0	230	46				
16:15	16:30	0	74	0	153	0	87	152	0	0	12	9	52	0	0	250	46				

Peak Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Peak total	
7:30	8:30	0	89	0	201	0	660	691	0	0	23	65	115	0	0	1042	461	3348	
15:30	16:30	0	295	0	565	0	366	718	0	0	25	37	177	0	0	903	204	3290	

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic  
Total  
Light  
Heavy



Light Vehicles		Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	17	0	38	0	136	121	0	0	2	7	12	0	0	138	83				
7:15	7:30	0	18	0	50	0	150	100	0	0	3	17	13	0	0	160	113				
7:30	7:45	0	9	0	41	0	151	166	0	0	2	16	14	0	0	255	105				
7:45	8:00	0	17	0	37	0	156	136	0	0	6	9	15	0	0	210	108				
8:00	8:15	0	18	0	44	0	182	163	0	0	4	19	17	0	0	268	95				
8:15	8:30	0	25	0	56	0	135	133	0	0	9	15	21	0	0	222	78				
8:30	8:45	0	16	0	46	0	140	155	0	0	1	7	10	0	0	154	87				
8:45	9:00	0	16	0	37	0	104	108	0	0	3	14	15	0	0	173	67				
9:00	9:15	0	9	0	41	0	103	91	0	0	5	14	21	0	0	125	44				
9:15	9:30	0	9	0	31	0	77	71	0	0	2	8	7	0	0	109	39				
14:00	14:15	0	29	0	56	0	58	86	0	0	3	5	15	0	0	116	23				
14:15	14:30	0	34	0	119	0	55	138	0	0	6	6	25	0	0	137	29				
14:30	14:45	0	27	0	94	0	72	110	0	0	11	6	18	0	0	136	28				
14:45	15:00	0	38	0	79	0	51	129	0	0	6	10	18	0	0	149	40				
15:00	15:15	0	48	0	75	0	77	152	0	0	8	8	29	0	0	167	22				
15:15	15:30	0	68	0	112	0	56	149	0	0	3	4	25	0	0	151	41				
15:30	15:45	0	62	0	128	0	88	178	0	0	5	11	21	0	0	198	49				
15:45	16:00	0	56	0	110	0	89	157	0	0	4	5	23	0	0	187	38				
16:00	16:15	0	75	0	153	0	82	178	0	0	4	6	32	0	0	204	39				
16:15	16:30	0	68	0	149	0	87	141	0	0	10	8	38	0	0	224	39				

Peak Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Peak total	
7:30	8:30	0	89	0	178	0	624	598	0	0	23	59	67	0	0	955	386	2957	
15:30	16:30	0	261	0	540	0	346	654	0	0	23	30	114	0	0	813	165	2946	

Heavy Vehicles		Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	2	0	9	0	7	22	0	0	0	1	7	0	0	35	22				
7:15	7:30	0	4	0	7	0	13	13	0	0	1	1	9	0	0	18	22				
7:30	7:45	0	3	0	12	0	5	22	0	0	0	0	11	0	0	25	14				
7:45	8:00	0	4	0	3	0	12	20	0	0	0	1	8	0	0	24	16				
8:00	8:15	0	5	0	5	0	7	21	0	0	1	4	9	0	0	18	26				
8:15	8:30	0	6	0	3	0	12	22	0	0	1	2	20	0	0	16	19				
8:30	8:45	0	2	0	5	0	4	23	0	0	3	4	16	0	0	28	15				
8:45	9:00	0	7	0	8	0	15	25	0	0	2	0	11	0	0	26	19				
9:00	9:15	0	5	0	9	0	17	27	0	0	2	2	18	0	0	27	21				
9:15	9:30	0	5	0	5	0	15	25	0	0	0	1	12	0	0	35	16				
14:00	14:15	0	7	0	4	0	10	25	0	0	1	3	6	0	0	19	12				
14:15	14:30	0	7	0	6	0	10	19	0	0	1	3	22	0	0	15	18				
14:30	14:45	0	9	0	13	0	5	29	0	0	0	2	17	0	0	16	19				
14:45	15:00	0	7	0	7	0	6	30	0	0	1	0	17	0	0	20	11				
15:00	15:15	0	5	0	8	0	12	27	0	0	1	2	18	0	0	20	11				
15:15	15:30	0	11	0	8	0	6	21	0	0	0	4	15	0	0	30	9				
15:30	15:45	0	10	0	6	0	3	25	0	0	0	2	23	0	0	15	13				
15:45	16:00	0	7	0	6	0	11	15	0	0	1	12	0	0	0	20	10				
16:00	16:15	0	10	0	9	0	6	13	0	0	0	3	14	0	0	22	7				
16:15	16:30	0	6	0	4	0	0	11	0	0	2	1	14	0	0	26	7				

Peak Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Peak total	
7:30	8:30	0	20	0	23	0	36	93	0	0	2	7	48	0	0	87	75	391	
15:30	16:30	0	34	0	25	0	20	64	0	0	2	7	63	0	0	90	39	344	

Bus		Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd
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Intersection of Elizabeth Dr and Wallgrove Rd, Cecil Park

GPS: -33.876094, 150.842310  
Date: Thu 26/07/18  
Weather: Overcast  
Suburban: Cecil Park  
Customer: McLaren

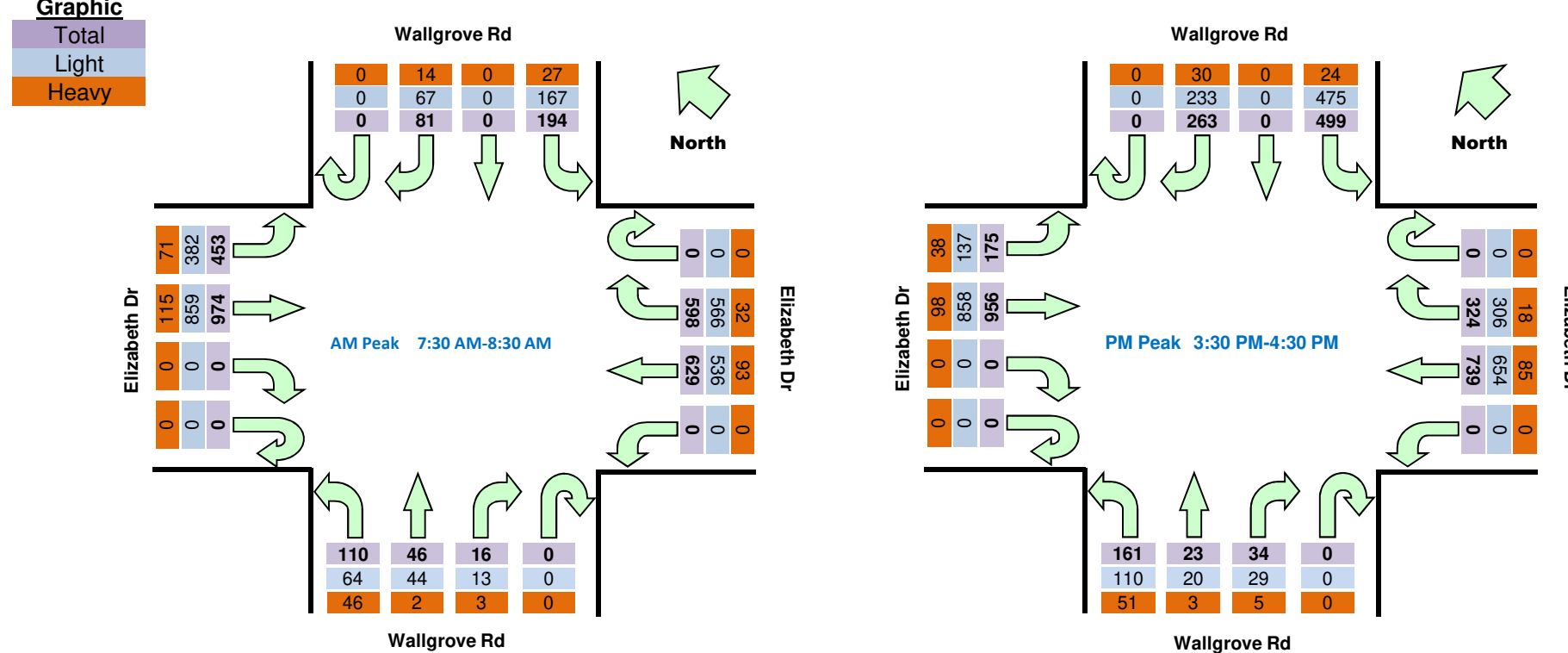
North: Wallgrove Rd  
East: Elizabeth Dr  
South: Wallgrove Rd  
West: Elizabeth Dr

Survey Period: AM: 7:00 AM-9:30 AM  
PM: 2:00 PM-4:30 PM  
Traffic Peak: AM: 7:30 AM-8:30 AM  
PM: 3:30 PM-4:30 PM

All Vehicles		Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	28	0	41	0	151	129	0	0	2	10	28	0	0	164	103	2871			
7:15	7:30	0	20	0	42	0	133	118	0	0	1	23	30	0	0	214	99	3041			
7:30	7:45	0	18	0	56	0	126	142	0	0	3	14	27	0	0	213	105	3101	Peak		
7:45	8:00	0	20	0	33	0	182	180	0	0	2	10	28	0	0	256	120	3101	Peak		
8:00	8:15	0	20	0	37	0	191	155	0	0	4	14	32	0	0	259	114	2899			
8:15	8:30	0	23	0	68	0	99	152	0	0	7	8	23	0	0	246	114	2653			
8:30	8:45	0	17	0	44	0	105	185	0	0	6	9	21	0	0	208	109	2420			
8:45	9:00	0	17	0	34	0	118	134	0	0	5	4	31	0	1	175	110				
9:00	9:15	0	13	0	43	0	117	122	0	0	7	12	32	0	0	168	66				
9:15	9:30	0	16	0	55	0	100	92	0	0	8	7	29	0	0	143	57				
14:00	14:15	0	36	0	59	0	59	99	0	0	6	7	33	0	0	145	42	2364			
14:15	14:30	0	38	0	97	0	68	157	0	0	5	7	58	0	0	179	53	2556			
14:30	14:45	0	49	0	78	0	67	124	0	0	11	11	41	0	0	152	47	2636			
14:45	15:00	0	35	0	91	0	93	147	0	0	7	7	37	0	0	174	45	2813			
15:00	15:15	0	45	0	98	0	69	170	0	0	9	5	51	0	0	179	52	2983			
15:15	15:30	0	66	0	126	0	80	187	0	0	8	5	59	0	0	173	38	3045			
15:30	15:45	0	51	0	107	0	68	176	0	0	11	7	41	0	0	253	43	3174	Peak		
15:45	16:00	0	64	0	111	0	89	201	0	0	13	3	30	0	0	245	50				
16:00	16:15	0	69	0	153	0	73	168	0	0	1	6	33	0	0	201	36				
16:15	16:30	0	79	0	128	0	94	194	0	0	9	7	57	0	0	257	46				

Peak Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
7:30	8:30	0	81	0	194	0	598	629	0	0	16	46	110	0	0	974	453	3101	
15:30	16:30	0	263	0	499	0	324	738	0	0	34	23	161	0	0	956	179	3174	

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	20	0	36	0	136	111	0	0	2	10	14	0	0	140	78				
7:15	7:30	0	15	0	38	0	123	98	0	0	1	18	14	0	0	185	84				
7:30	7:45	0	14	0	46	0	120	120	0	0	3	13	17	0	0	197	84				
7:45	8:00	0	18	0	30	0	172	156	0	0	1	9	15	0	0	229	105				
8:00	8:15	0	17	0	34	0	184	128	0	0	4	14	21	0	0	222	96				
8:15	8:30	0	18	0	57	0	90	132	0	0	5	8	11	0	0	211	97				
8:30	8:45	0	16	0	33	0	91	151	0	0	4	8	13	0	0	181	79				
8:45	9:00	0	12	0	27	0	104	114	0	0	5	4	13	0	0	149	88				
9:00	9:15	0	10	0	38	0	95	94	0	0	7	12	11	0	0	138	47				
9:15	9:30	0	11	0	47	0	83	76	0	0	7	6	12	0	0	107	45				
14:00	14:15	0	24	0	55	0	52	75	0	0	2	6	20	0	0	115	27				
14:15	14:30	0	27	0	94	0	61	129	0	0	5	6	28	0	0	161	36				
14:30	14:45	0	39	0	74	0	56	93	0	0	7	9	22	0	0	132	27				
14:45	15:00	0	27	0	86	0	85	122	0	0	5	6	20	0	0	149	33				
15:00	15:15	0	38	0	90	0	61	143	0	0	6	4	26	0	0	152	34				
15:15	15:30	0	63	0	118	0	74	167	0	0	7	4	39	0	0	157	26				
15:30	15:45	0	46	0	102	0	64	148	0	0	9	6	25	0	0	221	32				
15:45	16:00	0	58	0	101	0	86	181	0	0	12	3	20	0	0	219	39				
16:00	16:15	0	58	0	146	0	68	149	0	0	1	5	20	0	0	181	28				
16:15	16:30	0	71	0	126	0	88	176	0	0	7	6	45	0	0	237	38				

Peak Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
7:30	8:30	0	67	0	167	0	566	536	0	0	13	44	64	0	0	859	382	2698	
15:30	16:30	0	233	0	475	0	306	654	0	0	29	20	110	0	0	856	137	2822	

Heavy Vehicles		Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak		
7:00	7:15	0	8	0	5	0	14	17	0	0	0	0	14	0	0	23	25				
7:15	7:30	0	5	0	4	0	9	19	0	0	0	5	16	0	0	29	15				
7:30	7:45	0	4	0	10	0	5	22	0	0	0	1	10	0	0	16	21				
7:45	8:00	0	2	0	3	0	10	24	0	0	1	1	13	0	0	25	15				
8:00	8:15	0	3	0	3	0	7	24	0	0	0	0	11	0	0	36	18				
8:15	8:30	0	5	0	11	0	9	19	0	0	2	0	12	0	0	34	17				
8:30	8:45	0	1	0	10	0	14	32	0	0	2	1	8	0	0	26	30				
8:45	9:00	0	5	0	6	0	14	20	0	0	0	0	18	0	1	26	22				
9:00	9:15	0	3	0	5	0	22	28	0	0	0	0	21	0	0	30	18				
9:15	9:30	0	5	0	8	0	17	16	0	0	1	1	17	0	0	35	12				
14:00	14:15	0	12	0	4	0	7	24	0	0	4	1	13	0	0	30	15				
14:15	14:30	0	11	0	3	0	6	27	0	0	0	1	30	0	0	18	17				
14:30	14:45	0	10	0	4	0	9	31	0	0	4	2	17	0	0	20	20				
14:45	15:00	0	8	0	5	0	8	23	0	0	2	1	17	0	0	25	12				
15:00	15:15	0	7	0	8	0	8	27	0	0	3	1	25	0	0	26	18				
15:15	15:30	0	3	0	8	0	6	17	0	0	1	1	20	0	0	15	12				
15:30	15:45	0	5	0	5	0	4	25	0	0	2	1	16	0	0	32	11				
15:45	16:00	0	6	0	10	0	3	20	0	0	1	0	10	0	0	23	11				
16:00	16:15	0	11	0	7	0	5	17	0	0	0	1	13	0	0	17	8				
16:15	16:30	0	8	0	2	0	6	17	0	0	2	1	12	0	0	16	8				

Peak Time		North Approach Wallgrove Rd				East Approach Elizabeth Dr				South Approach Wallgrove Rd				West Approach Elizabeth Dr				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
7:30	8:30	0	14	0	27	0	32	93	0	0	3	2	46	0	0	115	71	403
15:30	16:30	0	30	0	24	0	18	85	0	0	5	3	51	0	0	98	38	352





TRANS TRAFFIC SURVEY  
TURNING MOVEMENT SURVEY



Intersection of Kosovich Pl and Wallgrove Rd, Cecil Park

GPS: -31.866948, 150.846288  
Date: Thu 26/07/18  
Weather: Overcast  
Suburban: Cecil Park  
Customer: McLaren

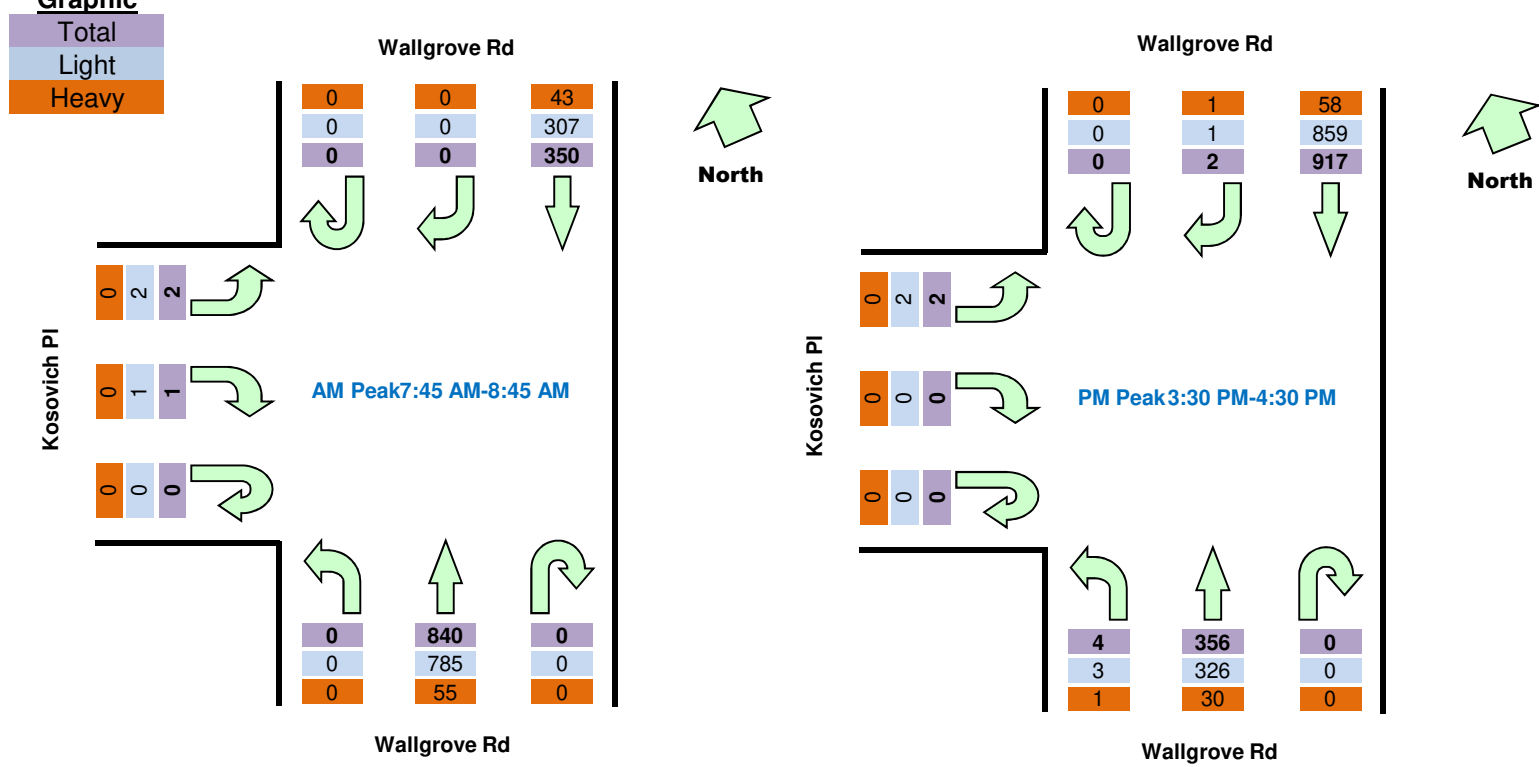
North: Wallgrove Rd  
East: N/A  
South: Wallgrove Rd  
West: Kosovich Pl

Survey: AM: 7:00 AM-9:30 AM  
Period: PM: 2:00 PM-4:30 PM  
Traffic Peak: AM: 7:45 AM-8:45 AM  
PM: 3:30 PM-4:30 PM

All Vehicles		Time		North Approach Wallgrove Rd		Rbuth Approach Wallgrove Rd		West Approach Kosovich Pl		Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Peak
7:00	7:15	0	0	142	0	193	0	0	0	0	1179
7:15	7:30	0	0	86	0	179	0	0	0	0	1154
7:30	7:45	0	0	83	0	182	0	0	0	0	1192
7:45	8:00	0	0	81	0	232	0	0	0	1	1193
8:00	8:15	0	0	81	0	228	0	0	1	0	1133
8:15	8:30	0	0	114	0	189	0	0	0	0	1019
8:30	8:45	0	0	74	0	191	0	0	0	1	909
8:45	9:00	0	1	71	0	180	0	0	2	0	
9:00	9:15	0	1	66	0	127	1	0	1	0	
9:15	9:30	0	0	74	0	118	1	0	0	0	
14:00	14:15	0	1	110	0	62	0	0	0	0	915
14:15	14:30	0	1	175	0	83	1	0	0	1	1004
14:30	14:45	0	0	140	0	89	0	0	1	0	1082
14:45	15:00	0	0	153	0	95	2	0	1	0	1134
15:00	15:15	0	0	185	0	74	2	0	1	0	1186
15:15	15:30	0	1	258	0	78	0	0	0	2	1253
15:30	15:45	0	0	176	0	104	2	0	0	0	1281
15:45	16:00	0	0	218	0	85	0	0	0	0	
16:00	16:15	0	0	250	0	79	0	0	0	0	
16:15	16:30	0	2	273	0	88	2	0	0	2	

Peak Time		North Approach Wallgrove Rd			South Approach Wallgrove Rd			West Approach Kosovich Pl			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
7:45	8:45	0	0	350	0	840	0	0	1	2	1193
15:30	16:30	0	2	917	0	356	4	0	0	2	1281

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles		Time		North Approach Wallgrove Rd		Rbuth Approach Wallgrove Rd		West Approach Kosovich Pl		Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Peak
7:00	7:15	0	0	121	0	178	0	0	0	0	
7:15	7:30	0	0	73	0	163	0	0	0	0	
7:30	7:45	0	0	69	0	170	0	0	0	0	
7:45	8:00	0	0	76	0	220	0	0	0	1	
8:00	8:15	0	0	66	0	215	0	0	1	0	
8:15	8:30	0	0	101	0	181	0	0	0	0	
8:30	8:45	0	0	64	0	169	0	0	0	1	
8:45	9:00	0	1	57	0	163	0	0	2	0	
9:00	9:15	0	0	55	0	116	1	0	1	0	
9:15	9:30	0	0	63	0	103	0	0	0	0	
14:00	14:15	0	1	94	0	52	0	0	0	0	
14:15	14:30	0	1	162	0	71	1	0	0	1	
14:30	14:45	0	0	128	0	75	0	0	1	0	
14:45	15:00	0	0	139	0	89	1	0	1	0	
15:00	15:15	0	0	169	0	58	2	0	1	0	
15:15	15:30	0	1	244	0	69	0	0	0	2	
15:30	15:45	0	0	166	0	94	2	0	0	0	
15:45	16:00	0	0	195	0	80	0	0	0	0	
16:00	16:15	0	0	237	0	73	0	0	0	0	
16:15	16:30	0	1	261	0	79	1	0	0	2	

Peak Time		North Approach Wallgrove Rd			Routh Approach Wallgrove Rd			West Approach Kosovich Pl			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
7:45	8:45	0	0	307	0	785	0	0	1	2	1095
15:30	16:30	0	1	859	0	326	3	0	0	2	1191

Heavy Vehicles		Time		North Approach Wallgrove Rd		Rbuth Approach Wallgrove Rd		West Approach Kosovich Pl		Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Peak
7:00	7:15	0	0	21	0	14	0	0	0	0	
7:15	7:30	0	0	13	0	15	0	0	0	0	
7:30	7:45	0	0	14	0	11	0	0	0	0	
7:45	8:00	0	0	5	0	12	0	0	0	0	
8:00	8:15	0	0	13	0	13	0	0	0	0	
8:15	8:30	0	0	13	0	8	0	0	0	0	
8:30	8:45	0	0	9	0	22	0	0	0	0	
8:45	9:00	0	0	13	0	17	0	0	0	0	
9:00	9:15	0	1	11	0	11	0	0	0	0	
9:15	9:30	0	0	11	0	15	1	0	0	0	
14:00	14:15	0	0	16	0	10	0	0	0	0	
14:15	14:30	0	0	13	0	11	0	0	0	0	
14:30	14:45	0	0	12	0	12	0	0	0	0	
14:45	15:00	0	0	14	0	6	1	0	0	0	
15:00	15:15	0	0	16	0	16	0	0	0	0	
15:15	15:30	0	0	14	0	9	0	0	0	0	
15:30	15:45	0	0	10	0	9	0	0	0	0	
15:45	16:00	0	0	23	0	5	0	0	0	0	
16:00	16:15	0	0	13	0	6	0	0	0	0	
16:15	16:30	0	1	11	0	9	1	0	0	0	

Peak Time		North Approach Wallgrove Rd			Routh Approach Wallgrove Rd			West Approach Kosovich Pl			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
7:45	8:45	0	0	43	0	55	0	0	0	0	98
15:30	16:30	0	1	58	0	30	1	0	0	0	90

Bus		Time		North Approach Wallgrove Rd		Rbuth Approach Wallgrove Rd		West Approach Kosovich Pl		Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Peak
7:00	7:15	0	0	0	0	1	0	0	0	0	
7:15	7:30	0	0	0	0	1	0	0	0	0	
7:30	7:45	0	0	0	0	1	0	0	0	0	
7:45	8:00	0	0	0	0	0	0	0	0	0	
8:00	8:15	0	0	2	0	0	0	0	0	0	
8:15	8:30	0	0	0	0	0	0	0	0	0	
8:30	8:45	0	0	1	0	0	0	0	0	0	
8:45	9:00	0	0	1	0	0	0	0	0	0	
9:00	9:15	0	0	0	0	0	0	0	0	0	
9:15	9:30	0	0	0	0	0	0	0	0	0	
14:00	14:15	0	0	0	0	0	0	0	0	0	
14:15	14:30	0	0	0	0	1	0	0	0	0	
14:30	14:45	0	0	0	0	2	0	0	0	0	
14:45	15:00	0	0	0	0	0	0	0	0	0	
15:00	15:15	0	0	0	0	0	0	0	0	0	
15:15	15:30	0	0	0	0	0	0	0	0	0	
15:30	15:45	0	0	0	0	1	0	0	0	0	
15:45	16:00	0	0	0	0	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	0	0	0	0	
16:15	16:30	0	0	1	0	0	0	0	0	0	

Peak Time		North Approach Wallgrove Rd			Rbuth Approach Wallgrove Rd			West Approach Kosovich Pl			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
7:45	8:45	0	0	3	0	0	0	0	0	0	3
15:30	16:30	0	0	1	0	1	0	0	0	0	2

Cyclists		Time		North Approach Wallgrove Rd		Rbuth Approach Wallgrove Rd		West Approach Kosovich Pl		Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Peak
7:00	7:15	0	0	0	0	0	0	0	0	0	
7:15	7:30	0	0	0	0	0	0	0	0	0	
7:30	7:45	0	0	0	0	0	0	0	0	0	
7:45	8:00	0	0	0	0	0	0	0	0	0	
8:00	8:15	0	0	0	0	0	0	0	0	0	
8:15	8:30	0	0	0	0	0	0	0	0	0	
8:30	8:45	0	0	0	0	0	0	0	0	0	
8:45	9:00	0	0	0	0	0	0	0	0	0	
9:00	9:15	0	0	0	0	0	0	0	0	0	
9:15	9:30	0	0	0	0	0	0	0	0	0	
14:00	14:15	0	0	0	0	0	0	0	0	0	
14:15	14:30	0	0	0	0	0	0	0	0	0	
14:30	14:45	0	0	0	0	0	0	0	0	0	
14:45	15:00	0	0	0	0	0	0	0	0	0	
15:00	15:15	0	0	0	0	0	0	0	0	0	
15:15	15:30	0	0	0	0	0	0	0	0	0	
15:30	15:45	0	0	0	0	0	0	0	0	0	
15:45	16:00	0	0	0	0	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	0	0	0	0	
16:15	16:30	0	0	0	0	0	0	0	0	0	

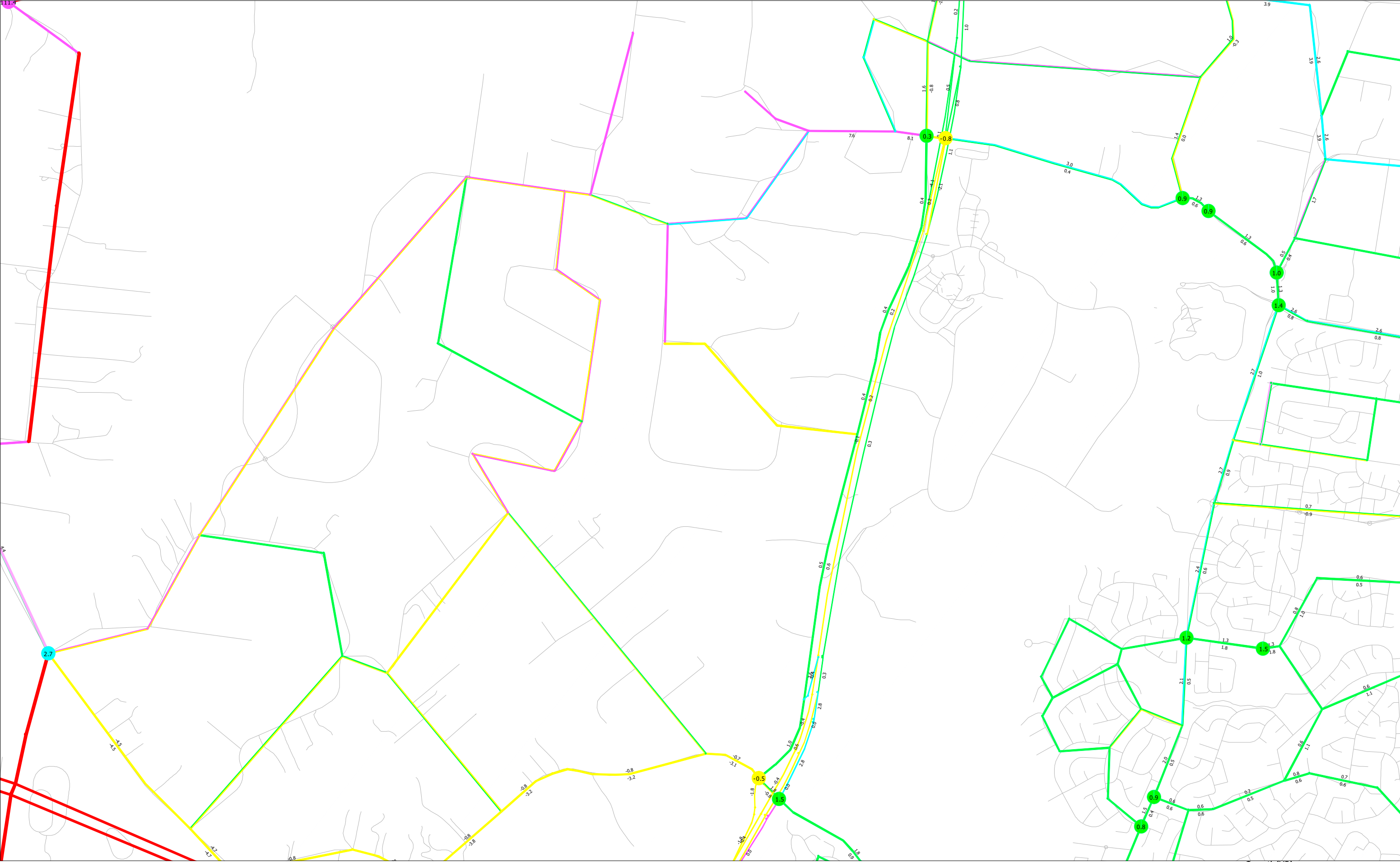
Pedestrians Crossing		Time		North Approach Wallgrove Rd		South Approach Wallgrove Rd		West Approach Kosovich Pl		Hourly Total
Period Start	Period End	Westbound	Eastbound	Southbound	Northbound	Southbound	Northbound			
7:00	7:15	0	0	0	0	0	0	0	0	
7:15	7:30	0	0	0	0	0	0	0	0	
7:30	7:45	0	0	0	0	0	0	0	0	
7:45	8:00	0	0	0	0	0	0	0	0	
8:00	8:15	0	0	0	0	0	0	0	0	
8:15	8:30	0	0	0	0	0	0	0	0	
8:30	8:45	0	0	0	0	0	0	0	0	
8:45	9:00	0	0	0	0	0	0	0	0	
9:00	9:15	0	0	0	0	0	0	0	0	
9:15	9:30	0	0	0	0	0	0	0	0	
14:00	14:15	0	0	0	0	0	0	0	0	
14:15	14:30	0	0	0	0	0	0	0	0	
14:30	14:45	0	0	0	0	0	0	0	0	
14:45	15:00	0	0	0	0	0	0	0	0	
15:00	15:15	0	0	0	0	0	0	0	0	
15:15	15:30	0	0	0	0	0	0	0	0	
15:30	15:45	0	0	0	0	0	0	0	0	
15:45	16:00	0	0	0	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	0	0	0	
16:15	16:30	0	0	0	0	0	0	0	0	



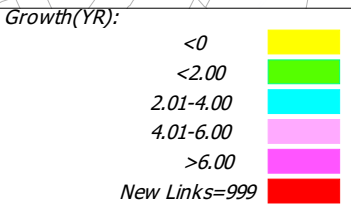


**ANNEXURE C: RMS GROWTH RATES**  
**(2 SHEETS)**

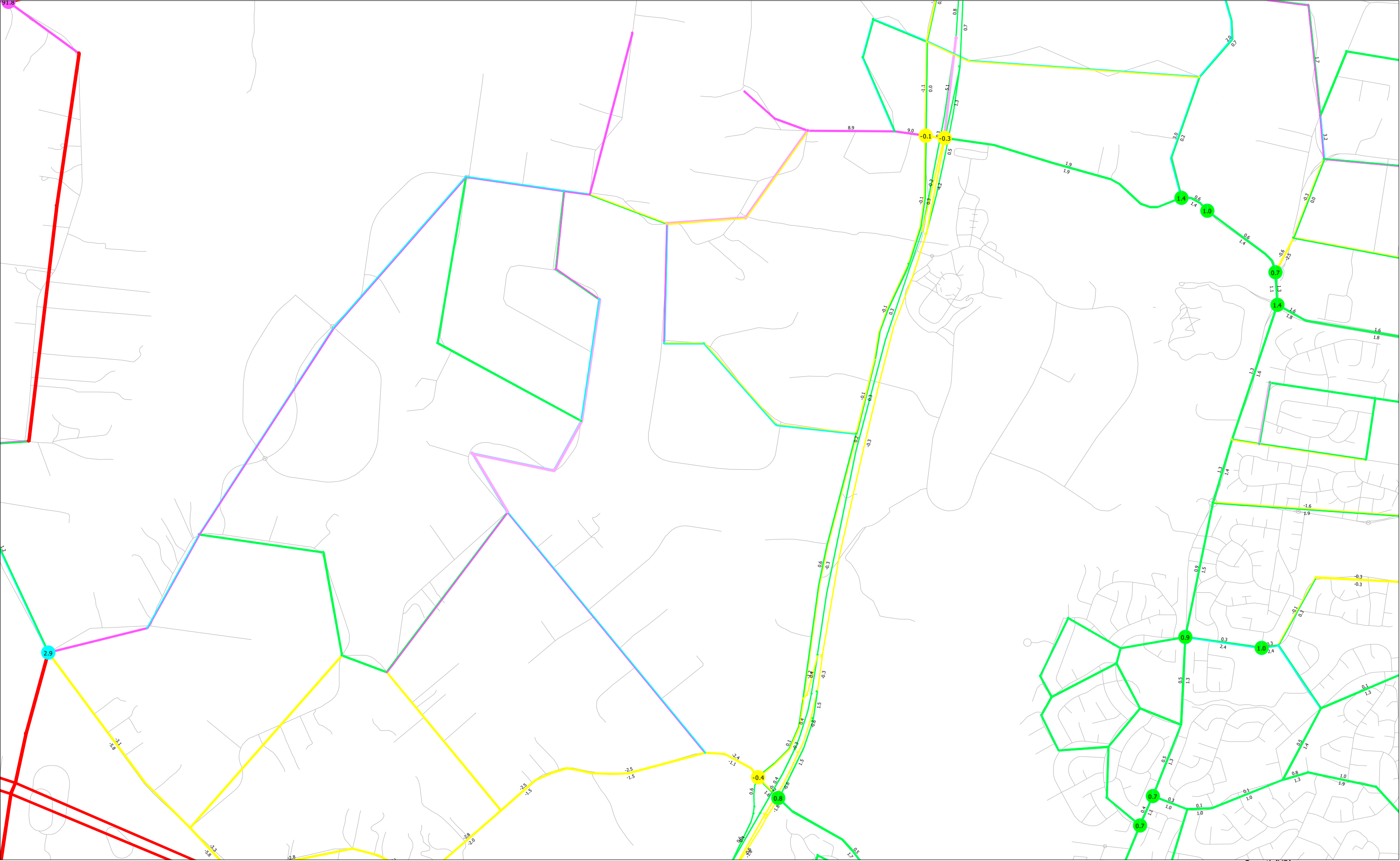
ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS



2011TZ SYDNEY GMA STRATEGIC TRAFFIC FORECASTING MODEL  
Scenario 20260: 2026 SYDNEY TRAFFIC FORECASTING MODEL(LU2016V1.3)4-6PM(mf54)  
2018-06-12 15:32



## ROAD TRAFFIC GROWTH (%YR, 2HRSPK) LINKS & INTERSECTIONS



2011TZ SYDNEY GMA STRATEGIC TRAFFIC FORECASTING MODEL  
Scenario 2026: 2026 SYDNEY TRAFFIC FORECASTING MODEL(LU2016V1.3)7-9AM(mf34)  
2018-06-12 15:39

*Growth(YR):*

 $\leq 0$ 

<2.00

2.01-4.00

4.01-6.00

>6.00

*New Links=999*



**ANNEXURE D: SIDRA MOVEMENT SUMMARIES**  
**(94 SHEETS)**

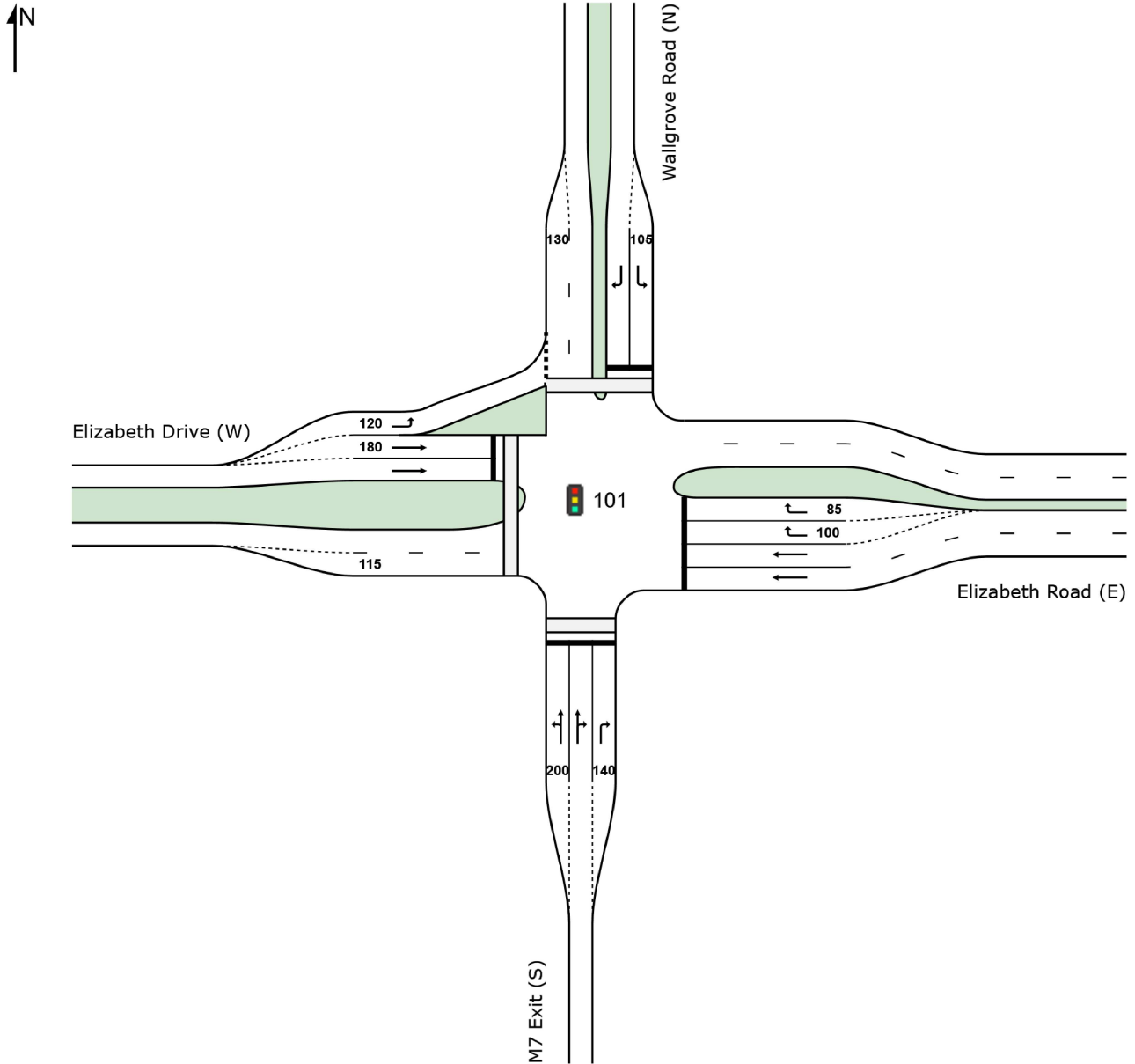
# SITE LAYOUT

 **Site: 101 [PM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated



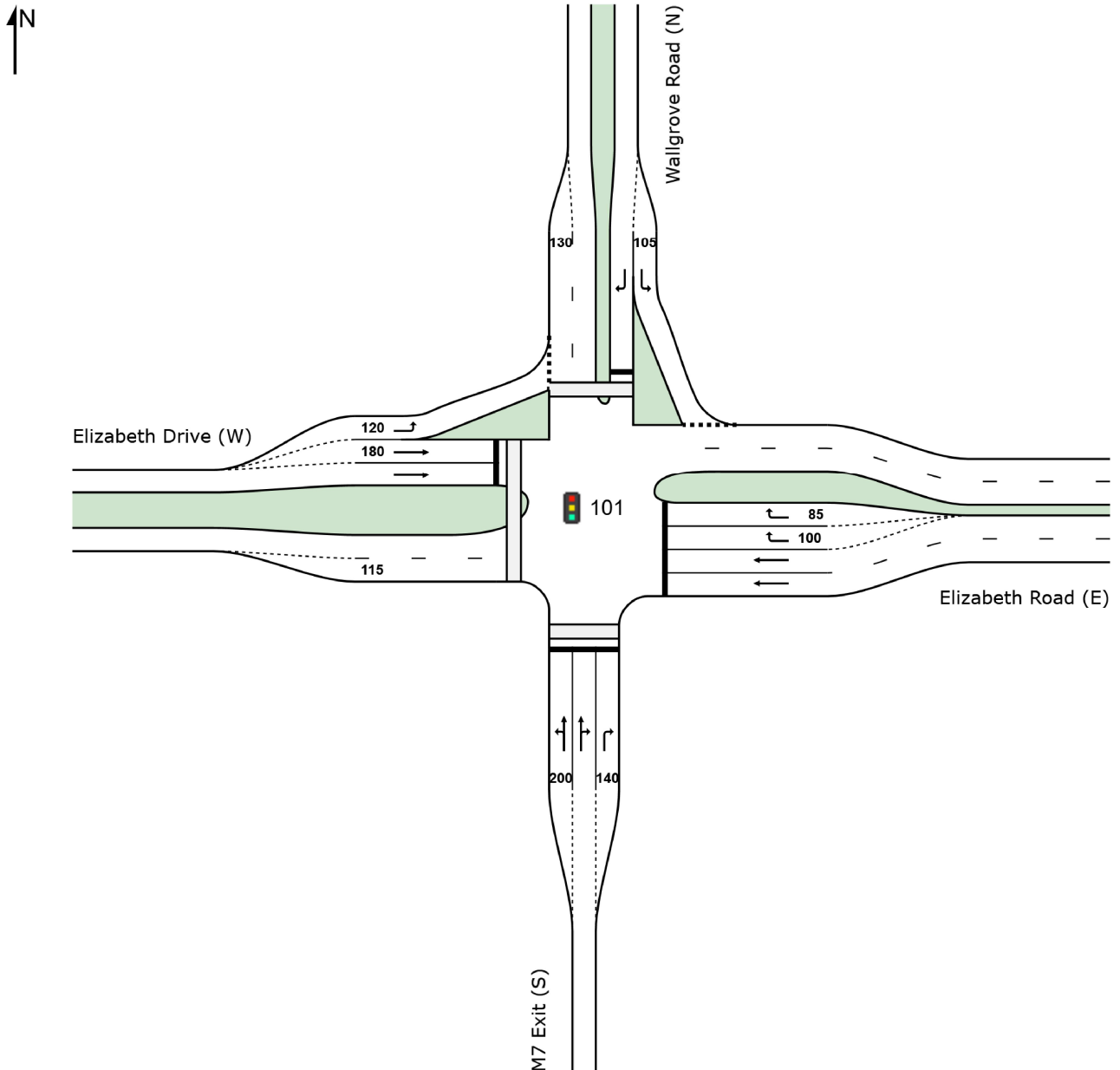
# SITE LAYOUT

 **Site: 101 [AM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd - LT Slip]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated





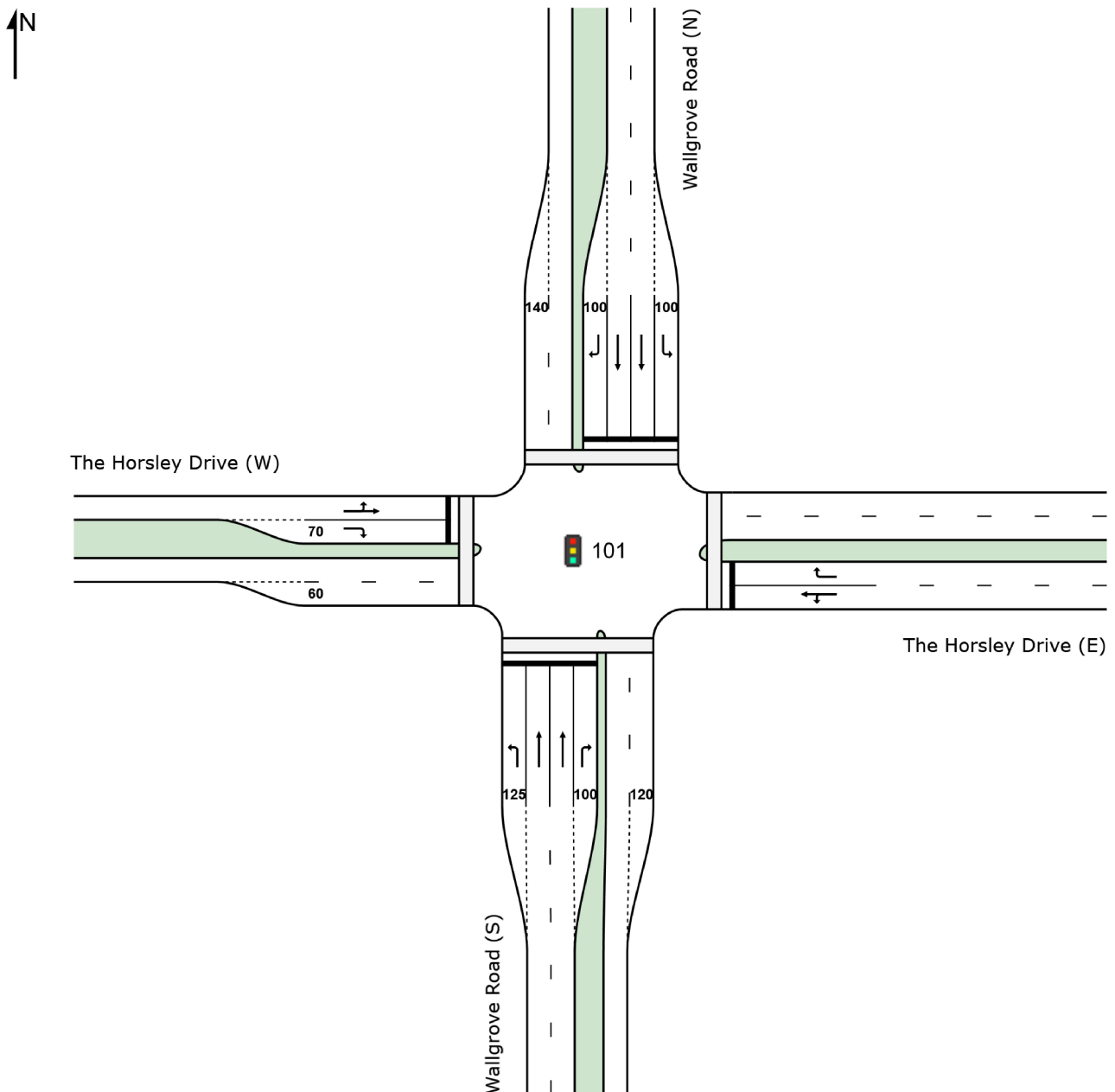
# SITE LAYOUT

 **Site: 101 [AM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated



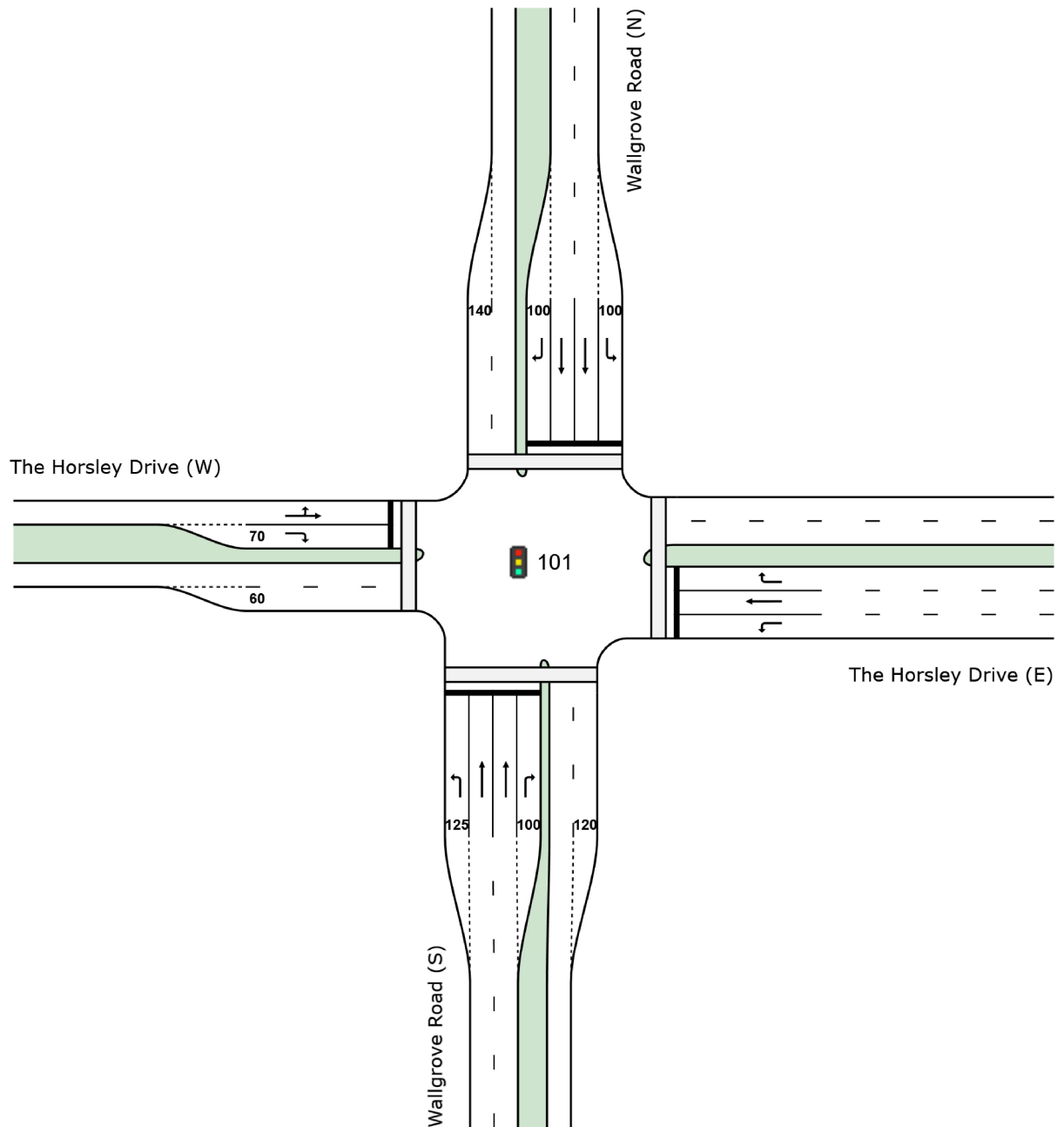
# SITE LAYOUT

 **Site: 101 [AM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated



# MOVEMENT SUMMARY

## Site: 101 [AM Existing Elizabeth Dr/ Wallgrove Rd]

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 105 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	121	42.0	0.889	70.6	LOS F	7.4	70.0	1.00	1.01	1.52	27.1
2	T1	69	11.0	0.401	50.4	LOS D	3.5	26.9	0.98	0.75	0.98	32.9
3	R2	24	9.0	0.146	54.4	LOS D	1.2	8.9	0.95	0.71	0.95	31.3
Approach		215	28.3	0.889	62.3	LOS E	7.4	70.0	0.99	0.89	1.28	29.2
East: Elizabeth Road (E)												
5	T1	727	4.0	0.352	7.7	LOS A	9.8	70.8	0.45	0.39	0.45	53.2
6	R2	695	12.0	0.871	49.6	LOS D	23.1	178.1	0.97	0.91	1.11	32.4
Approach		1422	7.9	0.871	28.2	LOS B	23.1	178.1	0.70	0.65	0.77	40.5
North: Wallgrove Road (N)												
7	L2	212	11.0	0.307	28.8	LOS C	7.4	56.6	0.73	0.77	0.73	39.8
9	R2	94	22.0	0.875	69.8	LOS E	5.6	46.4	1.00	0.98	1.52	27.5
Approach		305	14.4	0.875	41.4	LOS C	7.4	56.6	0.81	0.84	0.97	35.0
West: Elizabeth Drive (W)												
10	L2	485	16.0	0.480	14.3	LOS A	11.6	92.6	0.58	0.74	0.58	47.6
11	T1	1097	8.0	0.888	47.4	LOS D	31.5	235.9	1.00	1.06	1.22	33.7
Approach		1582	10.5	0.888	37.3	LOS C	31.5	235.9	0.87	0.96	1.02	37.1
All Vehicles		3524	10.9	0.889	35.5	LOS C	31.5	235.9	0.80	0.82	0.93	37.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	46.7	LOS E	0.0	0.0	0.94	0.94
P3	North Full Crossing	1	46.7	LOS E	0.0	0.0	0.94	0.94
P4	West Full Crossing	1	46.7	LOS E	0.0	0.0	0.94	0.94
All Pedestrians		3	46.7	LOS E			0.94	0.94

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 [AM Existing Elizabeth Dr/ Wallgrove Rd]

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 105 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B, C, D, E\***

**Output Phase Sequence: A, B, C, D**

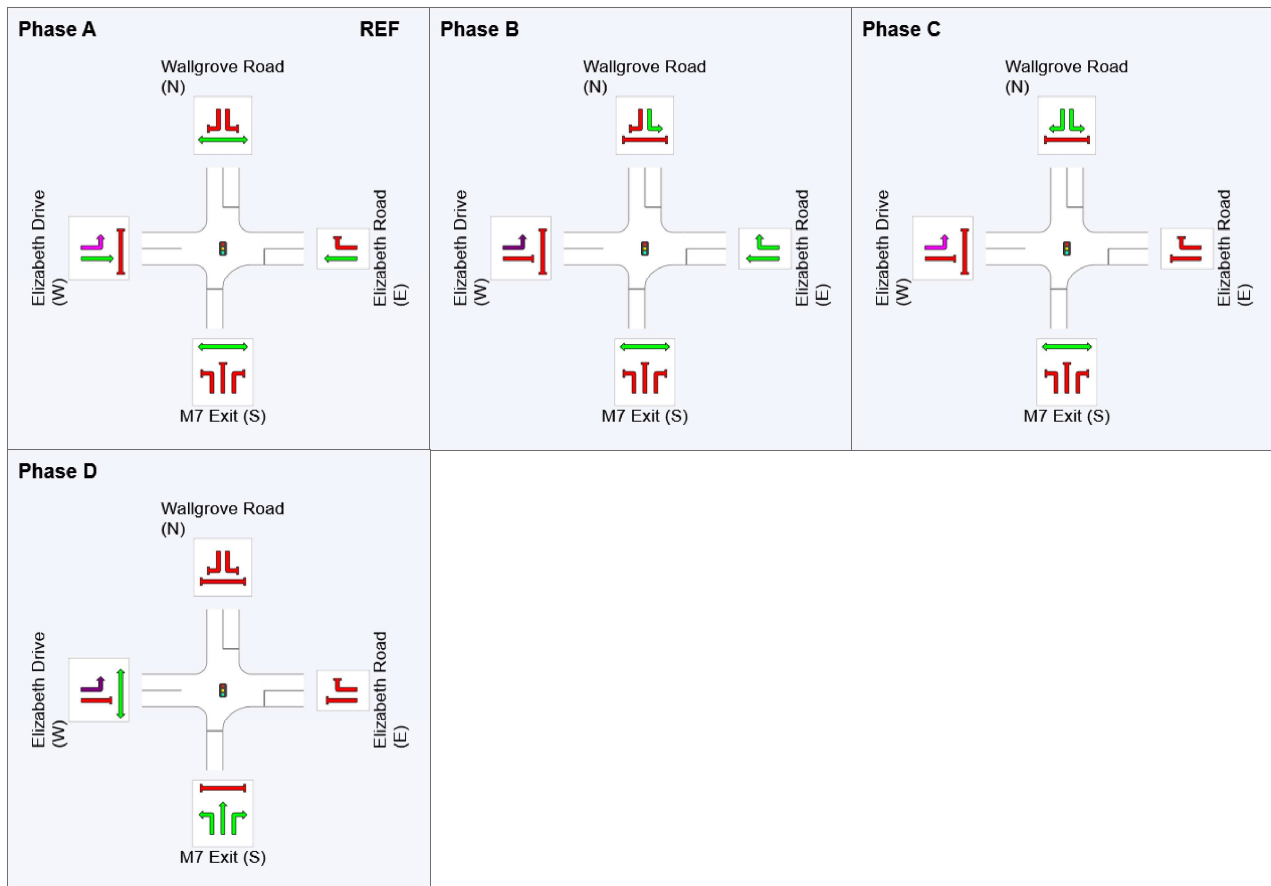
(\* Variable Phase)

### Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	0	41	76	89
Green Time (sec)	35	29	7	10
Phase Time (sec)	41	35	13	16
Phase Split	39%	33%	12%	15%

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%.

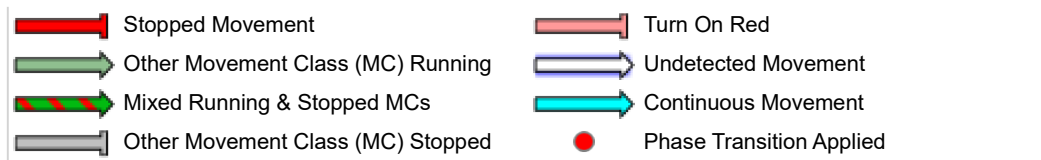
### Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Thursday, 23 August 2018 2:06:38 PM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Elizabeth Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [AM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	107	42.0	0.956	103.6	LOS F	9.2	87.7	1.00	1.05	1.63	21.8
2	T1	102	11.0	0.714	72.4	LOS F	7.3	55.6	1.00	0.84	1.12	27.5
3	R2	24	9.0	0.177	72.7	LOS F	1.6	12.0	0.97	0.71	0.97	27.0
Approach		234	25.0	0.956	86.8	LOS F	9.2	87.7	1.00	0.93	1.34	24.5
East: Elizabeth Road (E)												
5	T1	647	4.0	0.287	0.5	LOS A	0.7	5.3	0.03	0.02	0.03	59.5
6	R2	863	12.0	0.901	26.8	LOS B	21.9	168.8	0.87	0.86	0.93	40.6
Approach		1511	8.6	0.901	15.5	LOS B	21.9	168.8	0.51	0.50	0.54	47.0
North: Wallgrove Road (N)												
7	L2	365	11.0	0.487	23.6	LOS B	12.7	97.0	0.76	0.80	0.76	42.1
9	R2	98	22.0	0.949	100.1	LOS F	8.2	68.0	1.00	1.05	1.61	22.4
Approach		463	13.3	0.949	39.8	LOS C	12.7	97.0	0.81	0.85	0.94	35.5
West: Elizabeth Drive (W)												
10	L2	522	16.0	0.553	21.1	LOS B	20.0	159.2	0.66	0.77	0.66	43.8
11	T1	1075	8.0	1.002	104.3	LOS F	56.8	425.2	1.00	1.28	1.50	22.1
Approach		1597	10.6	1.002	77.1	LOS F	56.8	425.2	0.89	1.12	1.22	26.4
All Vehicles		3804	11.0	1.002	48.7	LOS D	56.8	425.2	0.74	0.83	0.93	33.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	64.1	LOS F	0.0	0.0	0.96	0.96	
P3	North Full Crossing	1	64.1	LOS F	0.0	0.0	0.96	0.96	
P4	West Full Crossing	1	64.1	LOS F	0.0	0.0	0.96	0.96	
All Pedestrians		3	64.1	LOS F			0.96	0.96	

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 [AM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)

**Timings based on settings in the Site Phasing & Timing dialog**

**Phase Times determined by the program**

**Green Split Priority has been specified**

**Phase Sequence: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B, C, D, E**

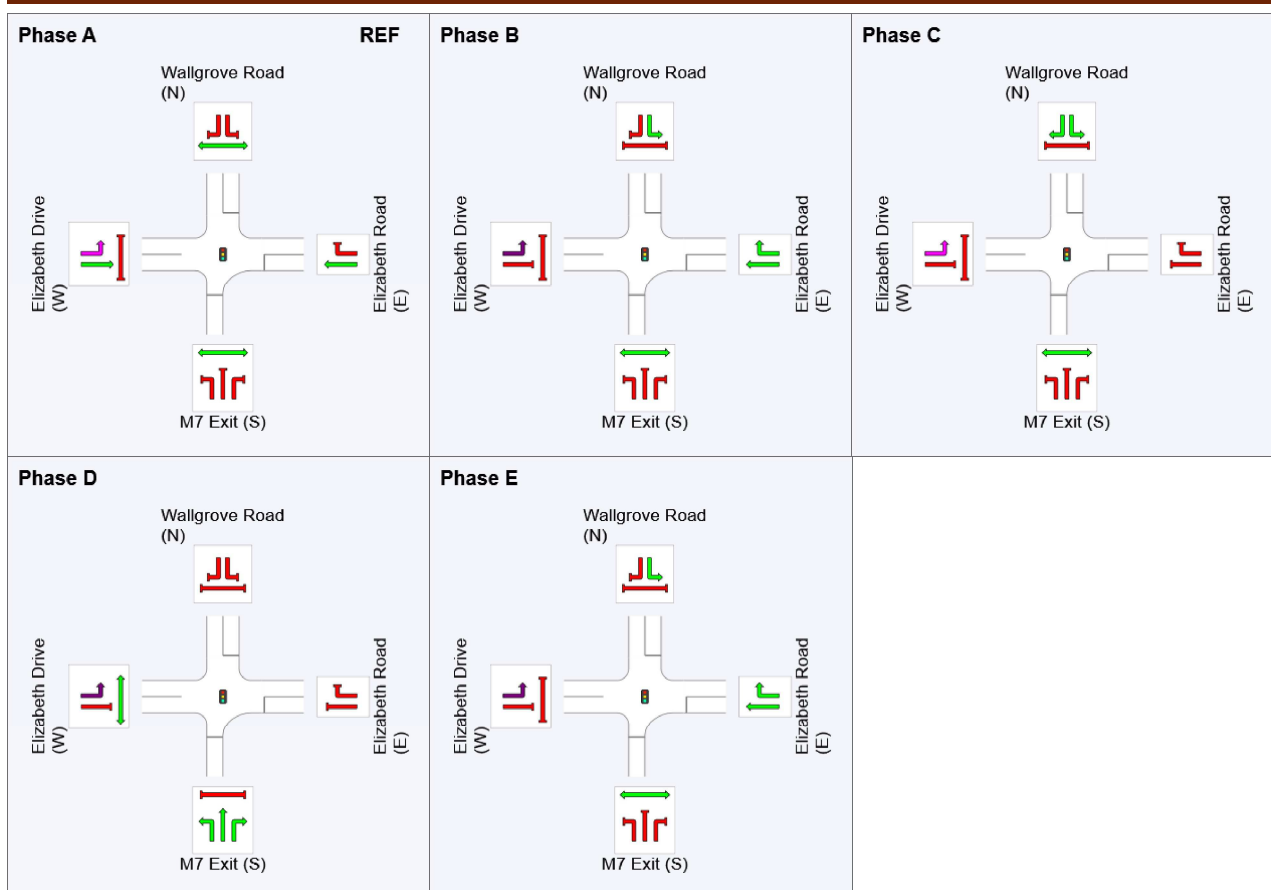
**Output Phase Sequence: A, B, C, D, E**

## Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	50	83	98	115
Green Time (sec)	44	27	9	11	19
Phase Time (sec)	50	33	15	17	25
Phase Split	36%	24%	11%	12%	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%.

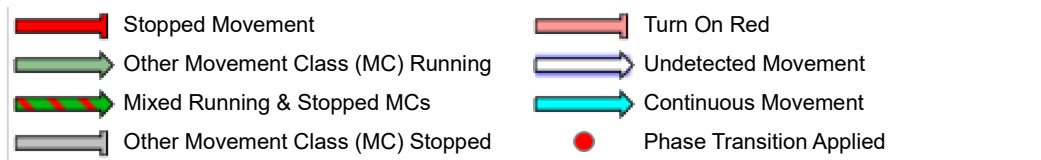
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Wednesday, 22 August 2018 12:31:26 PM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Elizabeth Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [PM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 139 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	128	36.0	1.098	181.9	LOS F	15.3	140.1	1.00	1.26	2.12	14.5
2	T1	43	19.0	0.314	67.7	LOS E	2.9	23.4	0.98	0.73	0.98	28.5
3	R2	32	8.0	0.227	72.6	LOS F	2.1	15.6	0.97	0.73	0.97	27.1
Approach		203	28.0	1.098	140.7	LOS F	15.3	140.1	0.99	1.06	1.70	17.6
East: Elizabeth Road (E)												
5	T1	521	9.0	0.274	0.6	LOS A	0.6	4.4	0.03	0.02	0.03	59.4
6	R2	581	5.0	0.645	37.7	LOS C	17.2	125.6	0.75	0.79	0.75	36.3
Approach		1102	6.9	0.645	20.2	LOS B	17.2	125.6	0.41	0.43	0.41	44.5
North: Wallgrove Road (N)												
7	L2	896	4.0	1.095	142.8	LOS F	84.4	611.4	1.00	1.24	1.82	15.9
9	R2	246	12.0	0.910	84.5	LOS F	19.4	149.5	1.00	0.99	1.34	24.9
Approach		1142	5.7	1.095	130.2	LOS F	84.4	611.4	1.00	1.19	1.71	17.2
West: Elizabeth Drive (W)												
10	L2	251	19.0	0.225	9.9	LOS A	4.5	36.3	0.33	0.65	0.33	50.5
11	T1	1122	10.0	1.084	158.1	LOS F	69.6	529.3	1.00	1.56	1.84	16.4
Approach		1373	11.6	1.084	131.1	LOS F	69.6	529.3	0.88	1.39	1.56	18.7
All Vehicles		3820	9.4	1.098	99.3	LOS F	84.4	611.4	0.79	1.03	1.28	21.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	63.6	LOS F	0.0	0.0	0.96	0.96	
P3	North Full Crossing	1	63.6	LOS F	0.0	0.0	0.96	0.96	
P4	West Full Crossing	1	63.6	LOS F	0.0	0.0	0.96	0.96	
All Pedestrians		3	63.6	LOS F			0.96	0.96	

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 [PM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 139 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C, D, E\***

**Output Phase Sequence: A, C, D, E\***

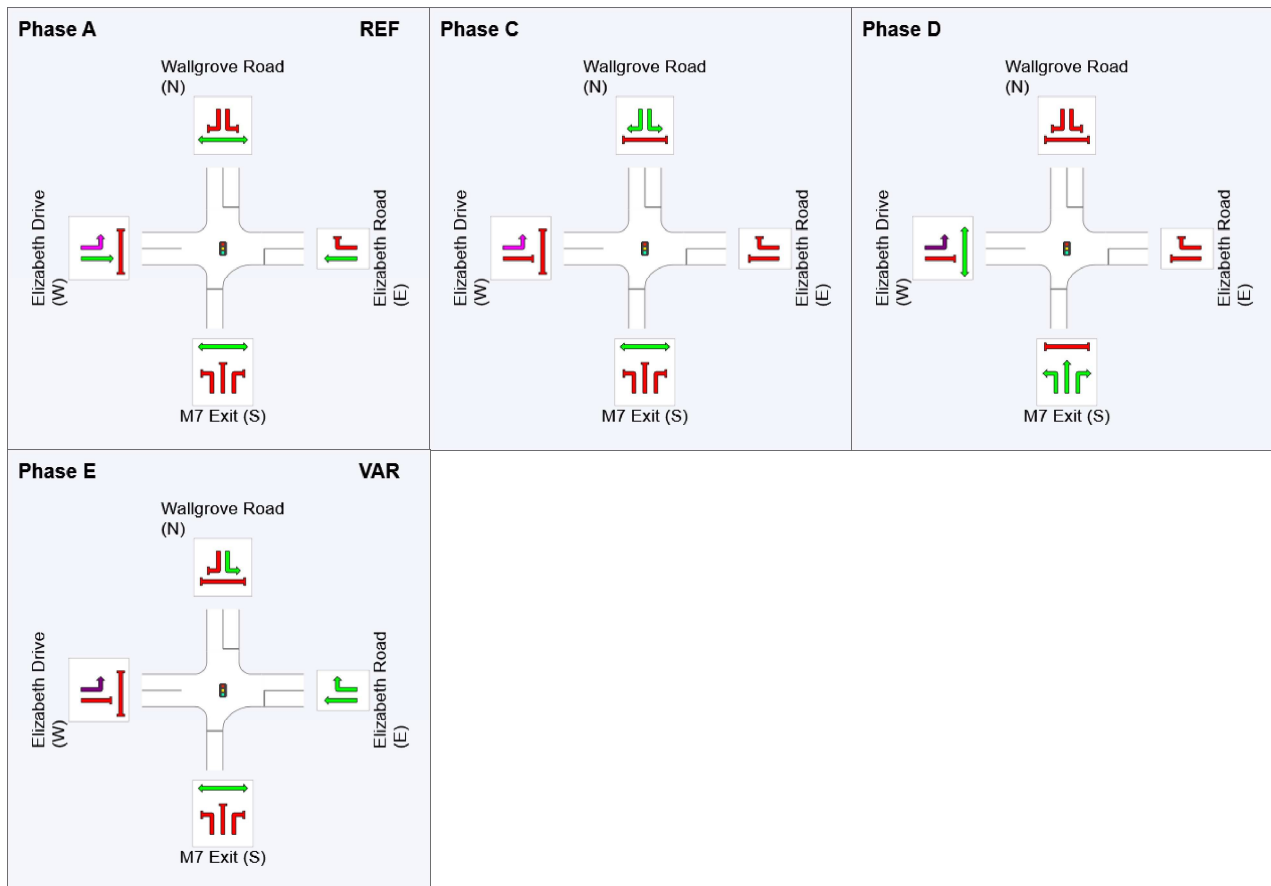
(\* Variable Phase)

## Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	47	75	92
Green Time (sec)	41	22	11	41
Phase Time (sec)	47	28	17	47
Phase Split	34%	20%	12%	34%

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%.

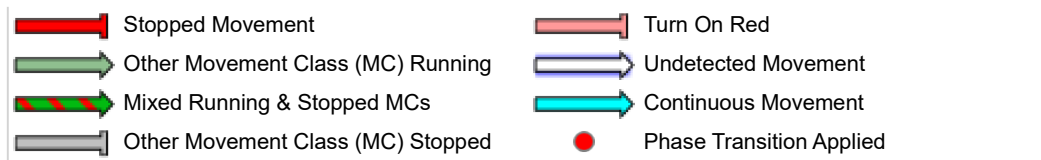
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Elizabeth Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [PM Existing +10yr Gr Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	128	36.0	1.003	128.1	LOS F	12.8	117.6	1.00	1.09	1.71	19.0
2	T1	54	19.0	0.357	71.8	LOS F	3.8	31.2	0.98	0.74	0.98	27.6
3	R2	32	8.0	0.207	76.1	LOS F	2.2	16.5	0.97	0.73	0.97	26.4
Approach		214	27.6	1.003	106.3	LOS F	12.8	117.6	0.99	0.95	1.42	21.6
East: Elizabeth Road (E)												
5	T1	521	9.0	0.265	0.6	LOS A	0.6	4.6	0.03	0.02	0.03	59.4
6	R2	424	5.0	0.595	28.1	LOS B	8.3	60.8	0.81	0.78	0.81	40.2
Approach		945	7.2	0.595	13.0	LOS A	8.3	60.8	0.38	0.36	0.38	48.9
North: Wallgrove Road (N)												
7	L2	702	4.0	0.984	76.2	LOS F	54.2	392.2	1.00	1.04	1.35	26.3
9	R2	215	12.0	0.897	88.7	LOS F	17.7	137.0	1.00	0.96	1.31	24.2
Approach		917	5.9	0.984	79.1	LOS F	54.2	392.2	1.00	1.02	1.34	25.8
West: Elizabeth Drive (W)												
10	L2	236	19.0	0.196	8.8	LOS A	3.5	28.7	0.27	0.63	0.27	51.3
11	T1	1122	10.0	0.969	87.1	LOS F	55.2	419.7	1.00	1.17	1.34	24.7
Approach		1358	11.6	0.969	73.5	LOS F	55.2	419.7	0.87	1.07	1.16	27.2
All Vehicles		3434	9.8	1.003	60.4	LOS E	55.2	419.7	0.78	0.86	1.01	29.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	69.1	LOS F	0.0	0.0	0.96	0.96	
P3	North Full Crossing	1	69.1	LOS F	0.0	0.0	0.96	0.96	
P4	West Full Crossing	1	69.1	LOS F	0.0	0.0	0.96	0.96	
All Pedestrians		3	69.1	LOS F			0.96	0.96	

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 [PM Existing +10yr Gr Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 150 seconds (Site Practical Cycle Time)

**Timings based on settings in the Site Phasing & Timing dialog**

**Phase Times determined by the program**

**Phase Sequence: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B, C, D, E**

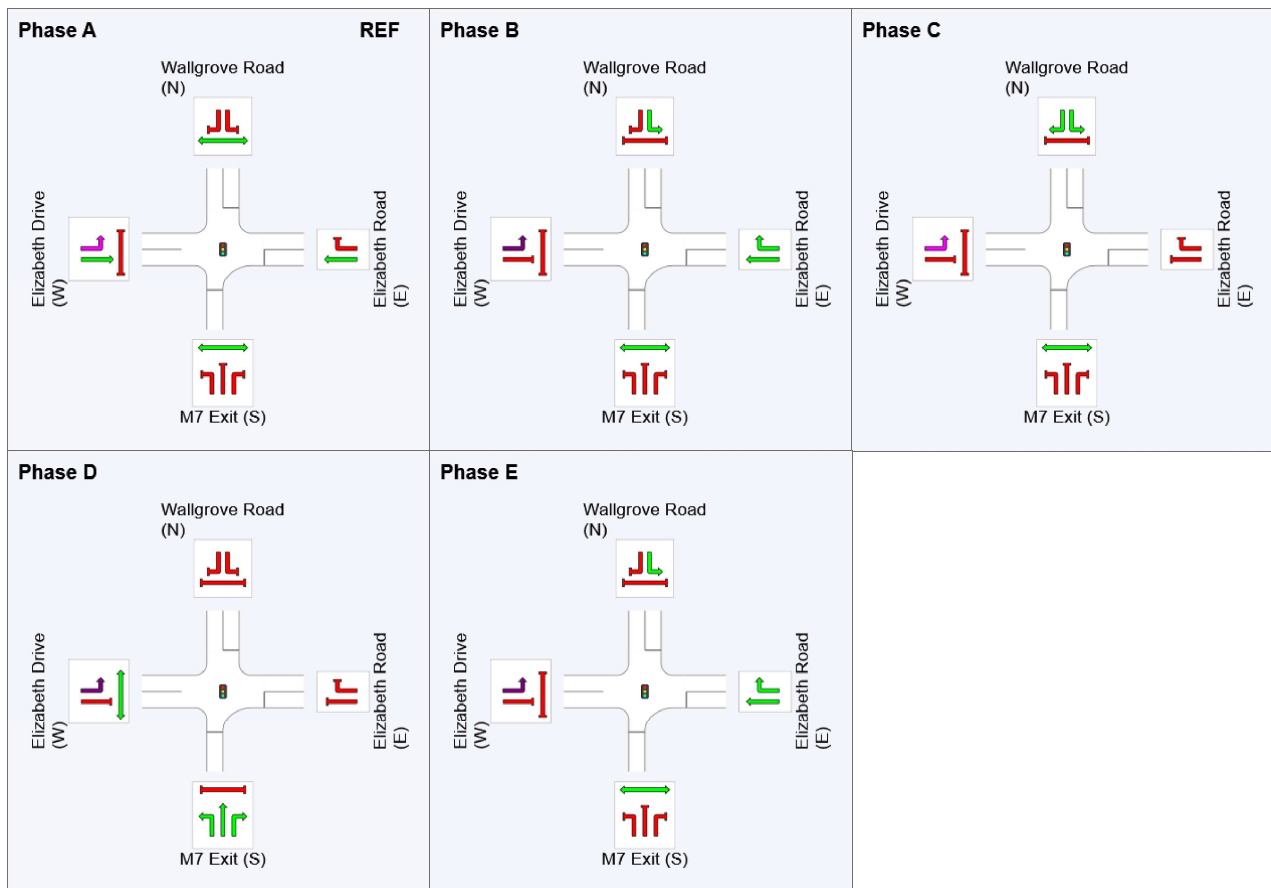
**Output Phase Sequence: A, B, C, D, E**

## Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	57	76	103	122
Green Time (sec)	51	13	21	13	22
Phase Time (sec)	57	19	27	19	28
Phase Split	38%	13%	18%	13%	19%

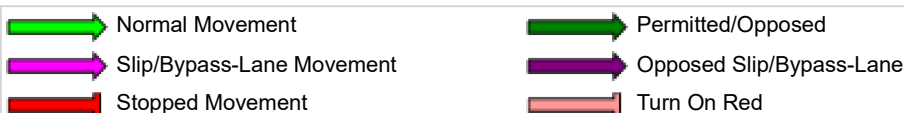
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Inter-green Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

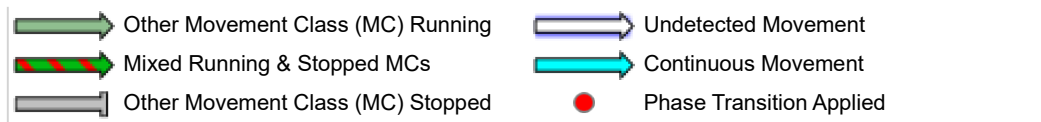
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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# MOVEMENT SUMMARY

 **Site: 101 [AM Existing +10yr Gr Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	107	42.0	0.901	80.8	LOS F	7.5	70.9	1.00	1.01	1.53	25.2
2	T1	71	11.0	0.465	59.2	LOS E	4.1	31.6	0.99	0.76	0.99	30.5
3	R2	24	9.0	0.166	62.9	LOS E	1.4	10.3	0.96	0.71	0.96	29.2
Approach		202	27.2	0.901	71.1	LOS F	7.5	70.9	0.99	0.89	1.27	27.3
East: Elizabeth Road (E)												
5	T1	647	4.0	0.295	0.4	LOS A	0.6	4.6	0.03	0.03	0.03	59.6
6	R2	702	12.0	0.850	24.7	LOS B	14.3	110.7	0.87	0.84	0.92	41.6
Approach		1349	8.2	0.850	13.0	LOS A	14.3	110.7	0.47	0.45	0.49	48.7
North: Wallgrove Road (N)												
7	L2	207	11.0	0.307	21.6	LOS B	5.9	45.2	0.73	0.76	0.73	43.2
9	R2	83	22.0	0.888	79.6	LOS F	5.7	47.1	1.00	0.98	1.53	25.6
Approach		291	14.1	0.888	38.2	LOS C	5.9	47.1	0.81	0.83	0.96	36.1
West: Elizabeth Drive (W)												
10	L2	491	16.0	0.473	14.3	LOS A	12.6	100.6	0.54	0.73	0.54	47.7
11	T1	1075	8.0	0.912	57.8	LOS E	37.3	278.9	1.00	1.08	1.25	30.8
Approach		1565	10.5	0.912	44.2	LOS D	37.3	278.9	0.86	0.97	1.03	34.7
All Vehicles		3407	10.9	0.912	32.9	LOS C	37.3	278.9	0.71	0.75	0.82	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	54.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	54.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	54.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		3	54.2	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 [AM Existing +10yr Gr Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site Practical Cycle Time)

**Timings based on settings in the Site Phasing & Timing dialog**

**Phase Times determined by the program**

**Green Split Priority has been specified**

**Phase Sequence: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B, C, D, E**

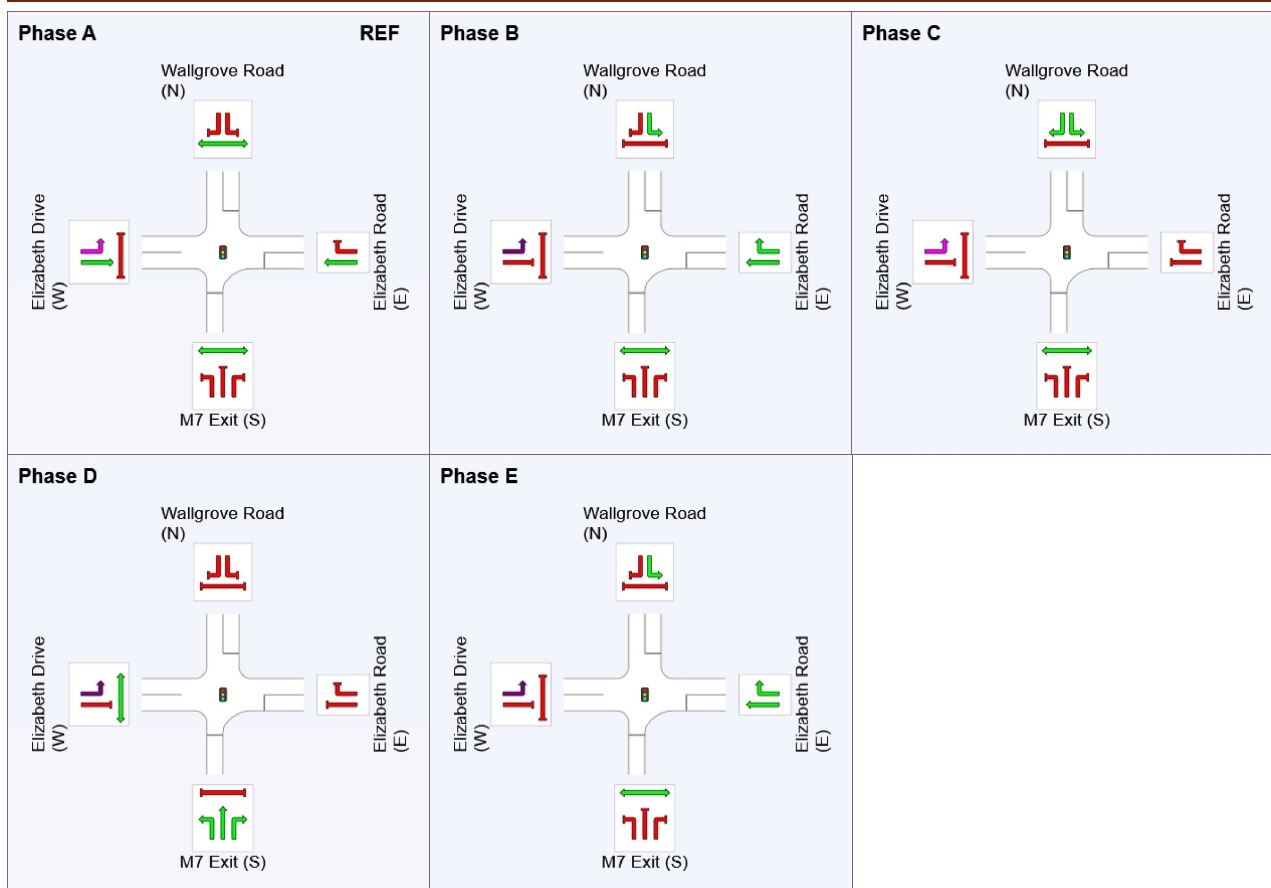
**Output Phase Sequence: A, B, C, D, E**

## Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	45	71	84	100
Green Time (sec)	39	20	7	10	14
Phase Time (sec)	45	26	13	16	20
Phase Split	38%	22%	11%	13%	17%

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%.

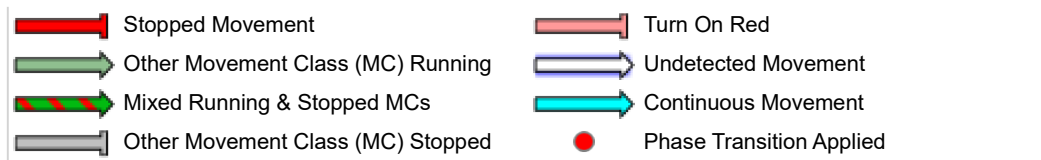
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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# MOVEMENT SUMMARY

## Site: 101 [PM Existing Elizabeth Dr/ Wallgrove Rd]

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site Practical Cycle Time)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	186	36.0	0.863	76.0	LOS F	13.2	121.0	1.00	0.95	1.30	26.1
2	T1	39	19.0	0.154	52.9	LOS D	2.2	17.8	0.91	0.68	0.91	32.2
3	R2	26	8.0	0.102	57.9	LOS E	1.5	10.9	0.90	0.71	0.90	30.4
Approach		252	30.4	0.863	70.5	LOS E	13.2	121.0	0.98	0.88	1.20	27.3
East: Elizabeth Road (E)												
5	T1	756	9.0	0.519	23.4	LOS B	20.0	150.5	0.71	0.62	0.71	43.4
6	R2	385	5.0	0.863	69.3	LOS E	15.7	115.0	0.99	0.89	1.15	27.7
Approach		1141	7.6	0.863	38.9	LOS C	20.0	150.5	0.80	0.71	0.86	36.4
North: Wallgrove Road (N)												
7	L2	595	4.0	0.874	36.3	LOS C	26.2	190.0	1.00	0.94	1.12	36.9
9	R2	311	12.0	0.787	60.2	LOS E	19.6	151.3	1.00	0.89	1.09	29.8
Approach		905	6.7	0.874	44.5	LOS D	26.2	190.0	1.00	0.92	1.11	34.1
West: Elizabeth Drive (W)												
10	L2	215	19.0	0.174	8.8	LOS A	3.0	24.3	0.28	0.63	0.28	51.2
11	T1	951	10.0	0.899	61.1	LOS E	34.2	259.7	1.00	1.05	1.21	30.0
Approach		1165	11.7	0.899	51.5	LOS D	34.2	259.7	0.87	0.97	1.04	32.5
All Vehicles		3463	10.4	0.899	46.9	LOS D	34.2	259.7	0.89	0.87	1.01	33.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	59.1	LOS E	0.0	0.0	0.95	0.95
P3	North Full Crossing	1	59.1	LOS E	0.0	0.0	0.95	0.95
P4	West Full Crossing	1	59.1	LOS E	0.0	0.0	0.95	0.95
All Pedestrians		3	59.1	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 [PM Existing Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd  
 Site Category: (None)  
 Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site Practical Cycle Time)  
 Variable Sequence Analysis applied. The results are given for the selected output sequence.

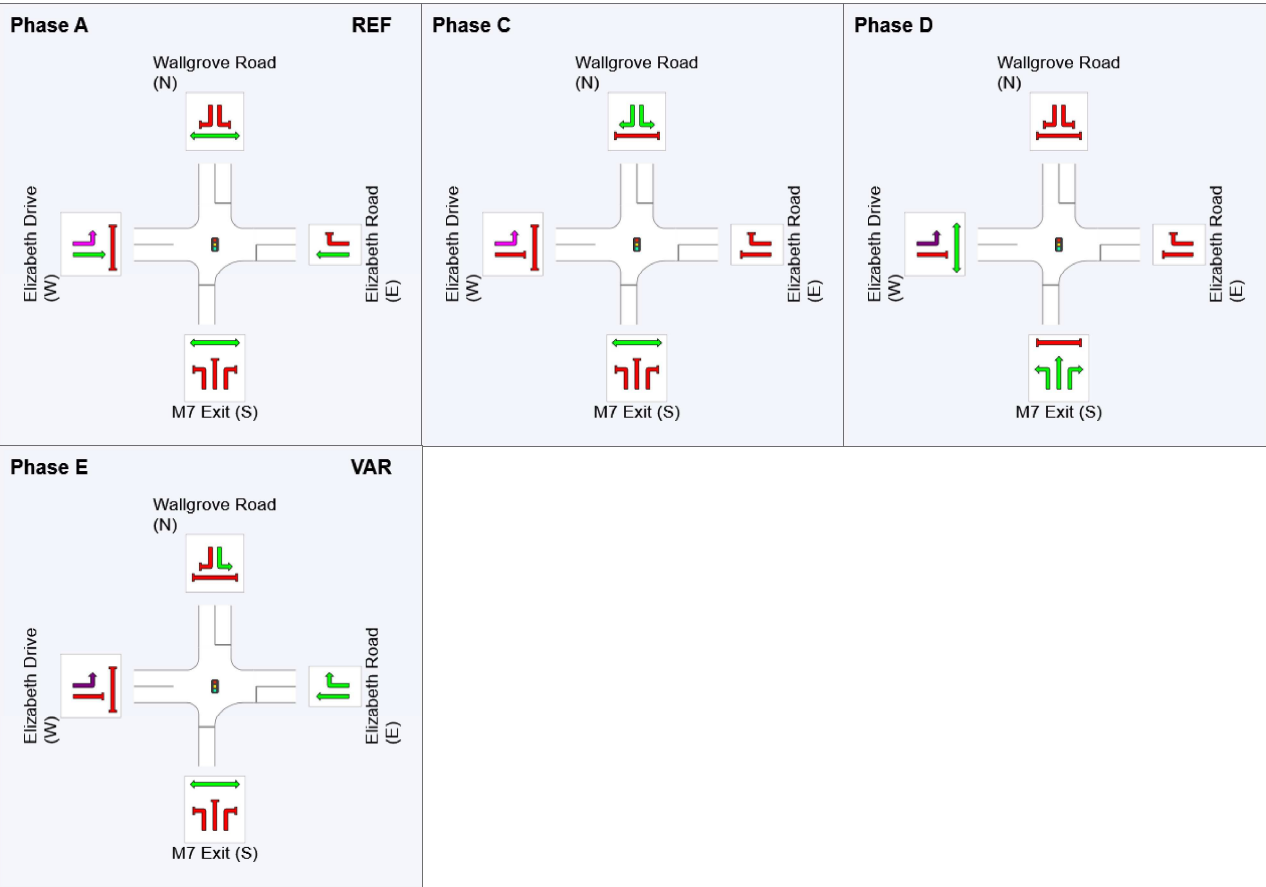
**Timings based on settings in the Site Phasing & Timing dialog**  
**Phase Times determined by the program**  
**Phase Sequence: TCS**  
**Reference Phase: Phase A**  
**Input Phase Sequence: A, B\*, C, D, E\***  
**Output Phase Sequence: A, C, D, E\***  
 (\* Variable Phase)

## Phase Timing Summary

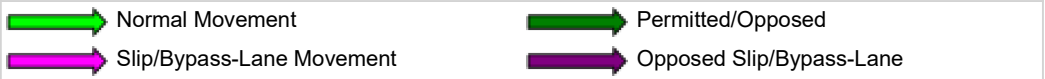
Phase	A	C	D	E
Phase Change Time (sec)	0	44	80	105
Green Time (sec)	38	30	19	19
Phase Time (sec)	44	36	25	25
Phase Split	34%	28%	19%	19%

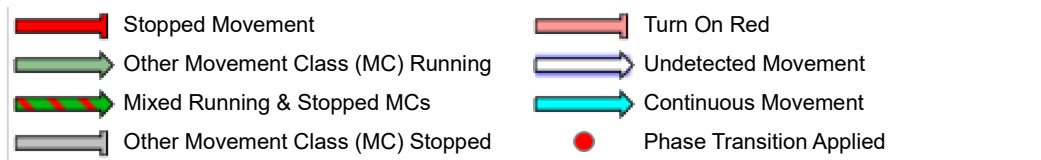
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

## Output Phase Sequence



REF: Reference Phase  
 VAR: Variable Phase





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# MOVEMENT SUMMARY



**Site: 101 [AM Existing + S1 Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	121	42.0	0.918	88.2	LOS F	9.2	87.6	1.00	1.01	1.52	24.0
2	T1	85	11.0	0.508	62.9	LOS E	5.4	41.0	1.00	0.77	1.00	29.6
3	R2	24	9.0	0.150	65.9	LOS E	1.5	11.0	0.95	0.71	0.95	28.5
Approach		231	27.1	0.918	76.5	LOS F	9.2	87.6	0.99	0.89	1.27	26.3
East: Elizabeth Road (E)												
5	T1	727	4.0	0.325	6.6	LOS A	10.0	72.2	0.37	0.33	0.37	54.2
6	R2	776	12.0	0.989	66.5	LOS E	31.0	239.2	0.98	1.03	1.42	28.2
Approach		1503	8.1	0.989	37.5	LOS C	31.0	239.2	0.69	0.69	0.91	36.7
North: Wallgrove Road (N)												
7	L2	294	11.0	0.443	25.6	LOS B	10.4	79.3	0.79	0.79	0.79	41.2
9	R2	101	22.0	0.909	86.7	LOS F	7.5	62.5	1.00	1.01	1.52	24.4
Approach		395	13.8	0.909	41.2	LOS C	10.4	79.3	0.84	0.85	0.98	35.0
West: Elizabeth Drive (W)												
10	L2	501	16.0	0.495	18.5	LOS B	16.1	128.3	0.61	0.75	0.61	45.2
11	T1	1097	8.0	0.857	47.5	LOS D	36.7	274.6	0.98	0.96	1.08	33.7
Approach		1598	10.5	0.857	38.4	LOS C	36.7	274.6	0.86	0.89	0.93	36.7
All Vehicles		3726	10.9	0.989	40.7	LOS C	36.7	274.6	0.80	0.81	0.95	35.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	59.1	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	59.1	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	59.1	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		3	59.1	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 [AM Existing + S1 Elizabeth Dr/ Wallgrove Rd]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: TCS - Copy

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, E

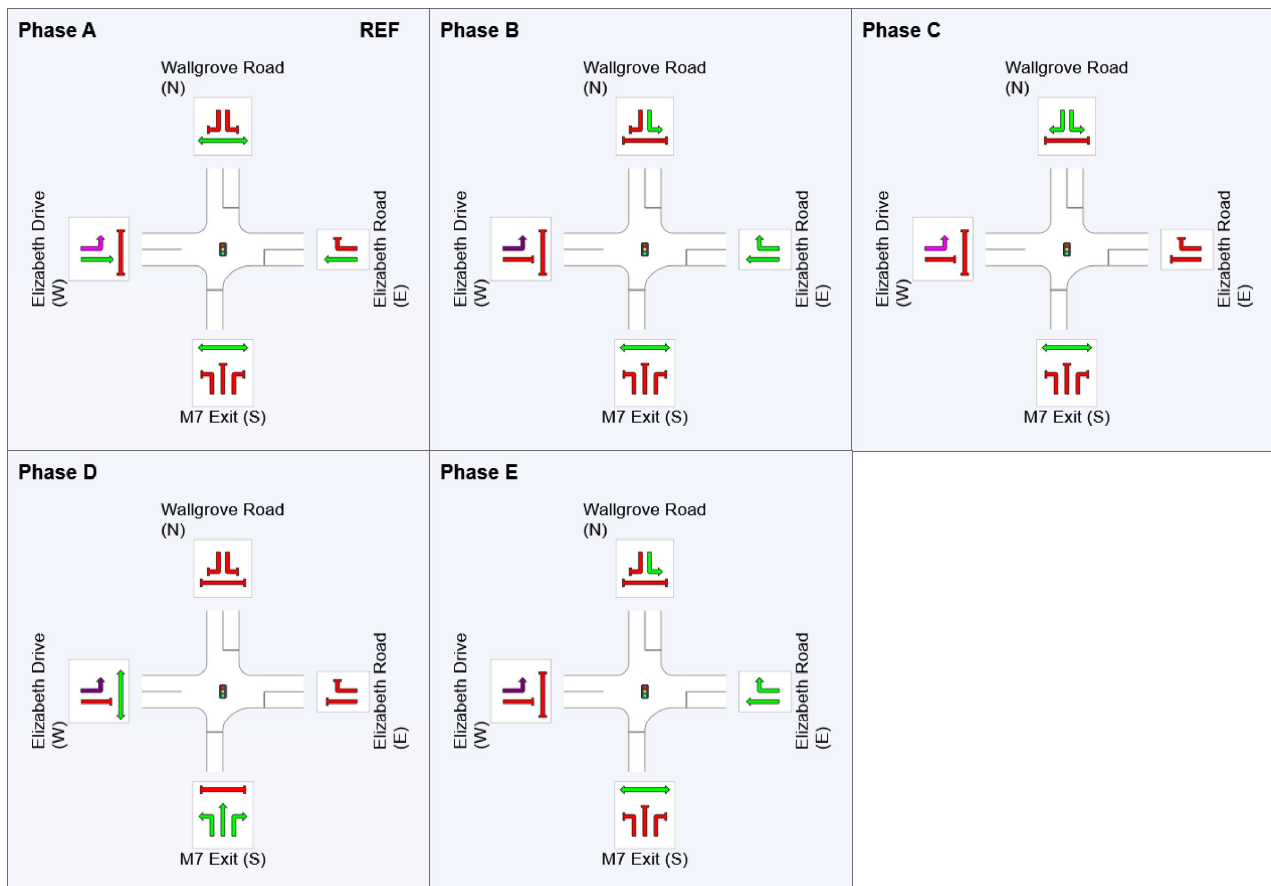
Output Phase Sequence: A, B, C, D, E

## Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	53	71	86	104
Green Time (sec)	47	12	9	12	23
Phase Time (sec)	53	18	15	15	29
Phase Split	41%	14%	12%	12%	22%

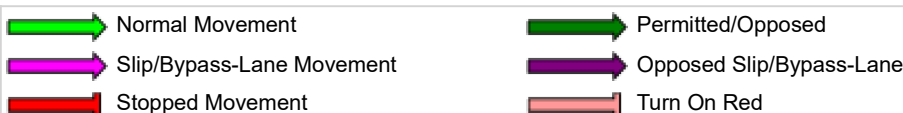
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Inter-green Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

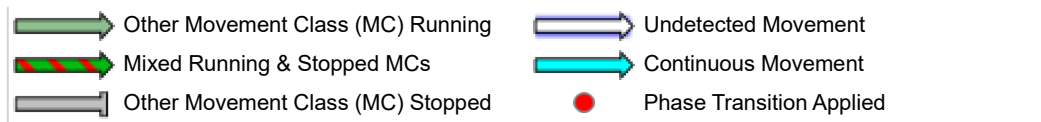
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Elizabeth Wallgrove.sip8

# MOVEMENT SUMMARY

## Site: 101 [PM Existing + S1 Elizabeth Dr/ Wallgrove Rd ]

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 124 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	186	36.0	0.977	101.1	LOS F	15.3	140.2	1.00	1.10	1.67	22.1
2	T1	39	19.0	0.174	52.9	LOS D	2.1	17.4	0.93	0.69	0.93	32.2
3	R2	26	8.0	0.116	57.9	LOS E	1.4	10.7	0.92	0.72	0.92	30.4
Approach		252	30.4	0.977	89.1	LOS F	15.3	140.2	0.98	0.99	1.47	24.0
East: Elizabeth Road (E)												
5	T1	756	9.0	0.520	22.4	LOS B	19.1	144.0	0.71	0.62	0.71	43.9
6	R2	467	5.0	0.949	75.4	LOS F	20.9	152.5	1.00	0.95	1.29	26.4
Approach		1223	7.5	0.949	42.7	LOS D	20.9	152.5	0.82	0.75	0.93	35.0
North: Wallgrove Road (N)												
7	L2	692	4.0	0.950	53.7	LOS D	38.2	276.7	1.00	1.02	1.30	31.4
9	R2	326	12.0	0.788	57.0	LOS E	19.7	151.7	1.00	0.90	1.09	30.5
Approach		1018	6.6	0.950	54.8	LOS D	38.2	276.7	1.00	0.98	1.23	31.1
West: Elizabeth Drive (W)												
10	L2	222	19.0	0.186	9.8	LOS A	3.5	28.4	0.33	0.64	0.33	50.6
11	T1	951	10.0	0.948	73.7	LOS F	36.4	276.9	1.00	1.17	1.37	27.2
Approach		1173	11.7	0.948	61.6	LOS E	36.4	276.9	0.87	1.07	1.17	29.8
All Vehicles		3665	10.2	0.977	55.3	LOS D	38.2	276.9	0.90	0.93	1.13	31.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	56.1	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	56.1	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	56.1	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		3	56.1	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 [PM Existing + S1 Elizabeth Dr/ Wallgrove Rd ]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 124 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C, D, E\***

**Output Phase Sequence: A, C, D, E\***

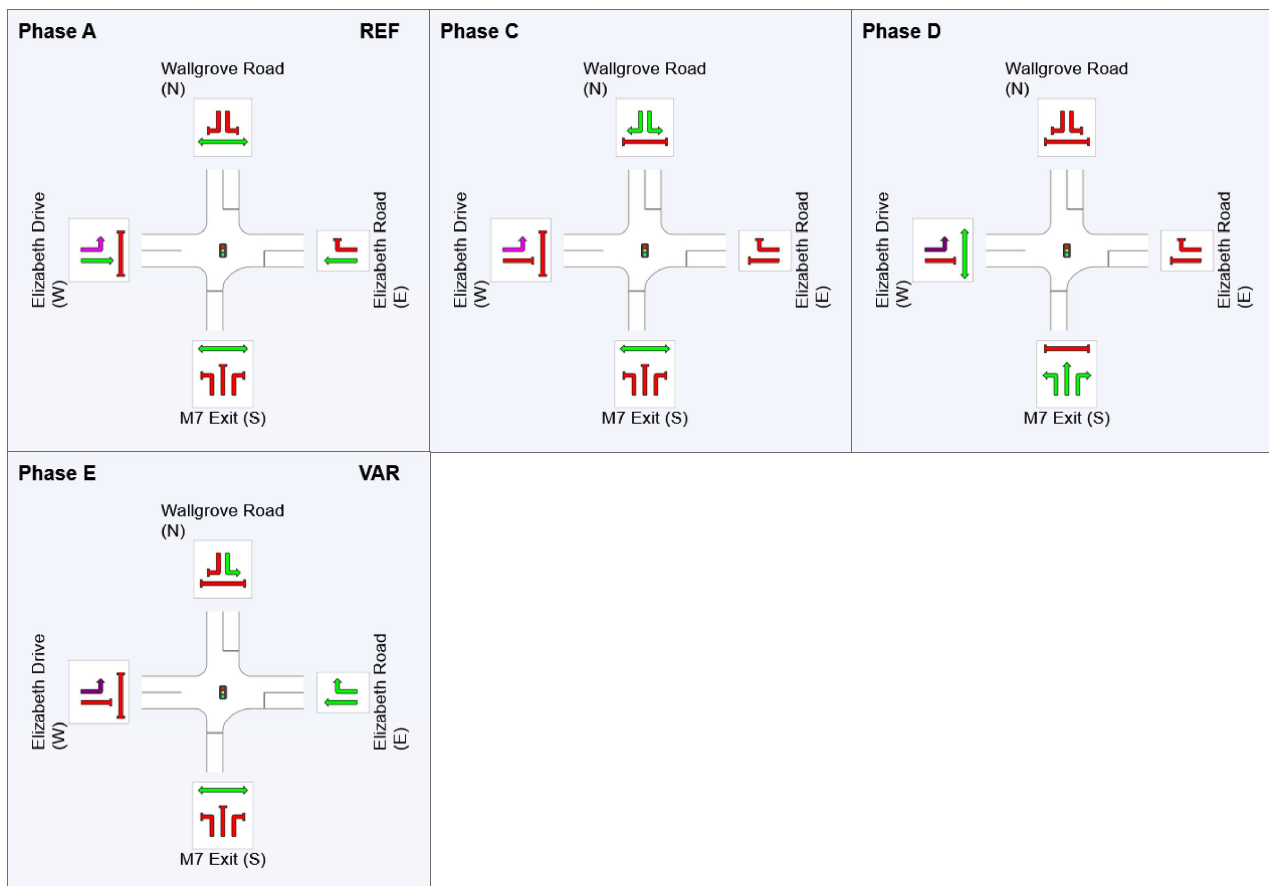
(\* Variable Phase)

## Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	40	76	98
Green Time (sec)	34	30	16	20
Phase Time (sec)	40	36	22	26
Phase Split	32%	29%	18%	21%

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%.

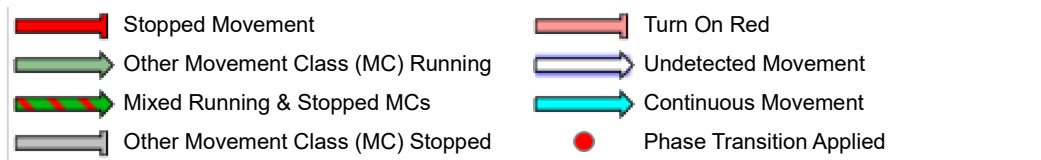
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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# MOVEMENT SUMMARY

 **Site: 101 [PM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd - LT Slip]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	128	36.0	0.956	86.1	LOS F	9.0	82.2	1.00	1.09	1.72	24.3
2	T1	43	19.0	0.274	52.5	LOS D	2.3	18.4	0.97	0.72	0.97	32.3
3	R2	32	8.0	0.198	57.6	LOS E	1.6	12.2	0.96	0.72	0.96	30.5
Approach		203	28.0	0.956	74.5	LOS F	9.0	82.2	0.99	0.96	1.44	26.6
East: Elizabeth Road (E)												
5	T1	521	9.0	0.293	0.6	LOS A	0.5	3.6	0.03	0.02	0.03	59.5
6	R2	581	5.0	0.910	47.8	LOS D	19.8	144.4	0.95	0.88	1.07	33.0
Approach		1102	6.9	0.910	25.5	LOS B	19.8	144.4	0.52	0.48	0.58	41.8
North: Wallgrove Road (N)												
7	L2	896	4.0	0.939	47.5	LOS D	52.3	378.8	0.95	1.01	1.20	33.5
9	R2	246	12.0	0.932	75.7	LOS F	16.4	126.8	1.00	1.05	1.49	26.4
Approach		1142	5.7	0.939	53.6	LOS D	52.3	378.8	0.96	1.02	1.26	31.7
West: Elizabeth Drive (W)												
10	L2	251	19.0	0.223	10.8	LOS A	4.2	34.5	0.39	0.66	0.39	49.9
11	T1	1122	10.0	0.949	65.4	LOS E	39.7	301.9	1.00	1.19	1.39	28.9
Approach		1373	11.6	0.949	55.4	LOS D	39.7	301.9	0.89	1.10	1.20	31.4
All Vehicles		3820	9.4	0.956	47.3	LOS D	52.3	378.8	0.81	0.89	1.05	33.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		3	49.2	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 [PM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd - LT Slip]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

**Timings based on settings in the Site Phasing & Timing dialog**

**Phase Times determined by the program**

**Green Split Priority has been specified**

**Phase Sequence: TCS Manual Phase Times**

**Reference Phase: Phase A**

**Input Phase Sequence: A, C, D, E**

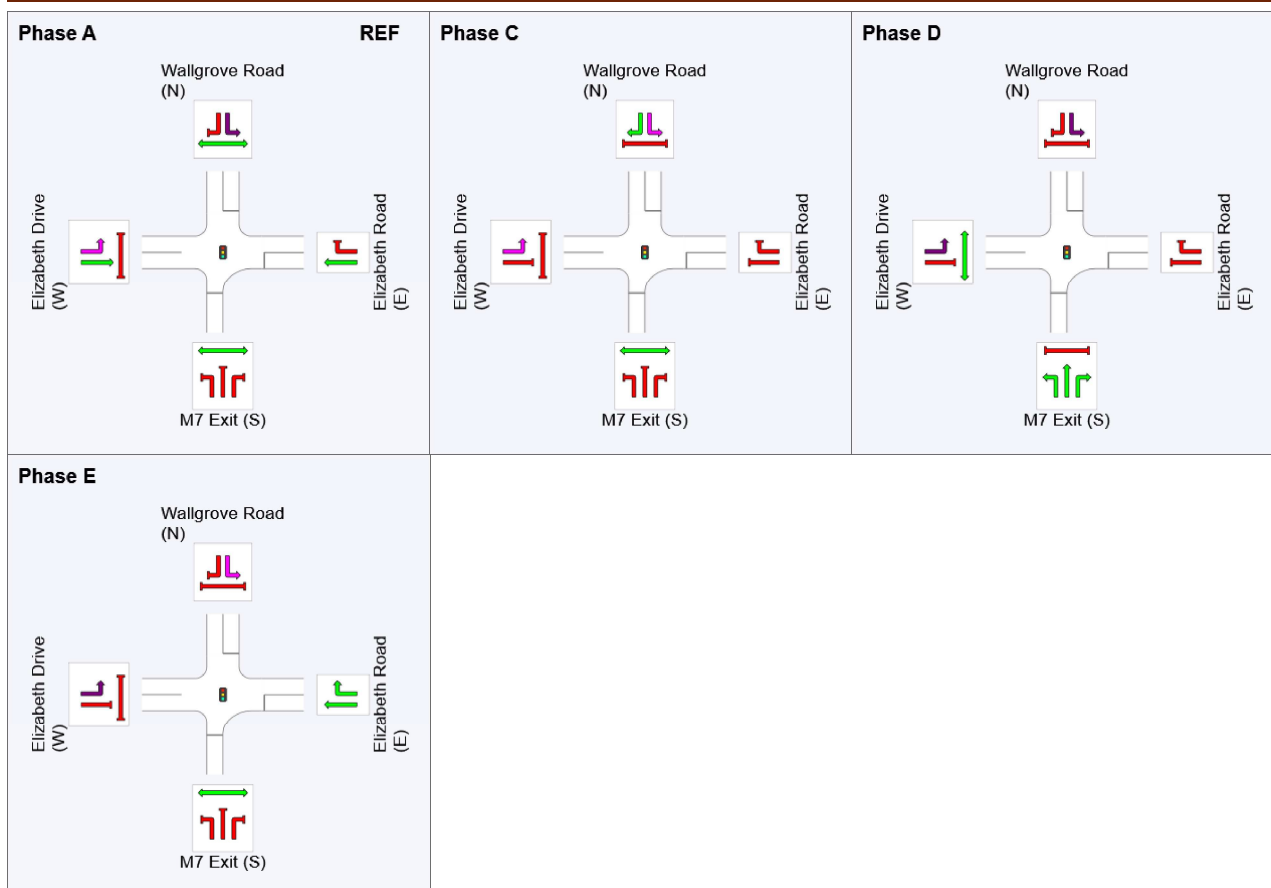
**Output Phase Sequence: A, C, D, E**

## Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	42	65	81
Green Time (sec)	36	17	10	23
Phase Time (sec)	42	23	16	29
Phase Split	38%	21%	15%	26%

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%.

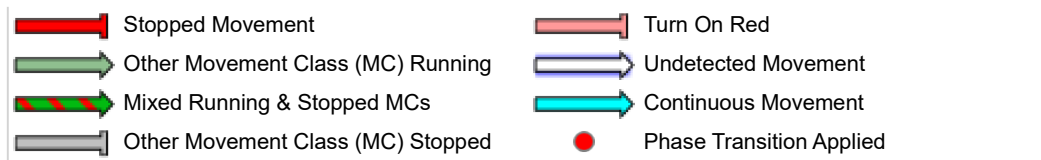
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Elizabeth Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [AM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd - LT Slip]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: M7 Exit (S)												
1	L2	107	42.0	1.002	110.9	LOS F	9.0	85.2	1.00	1.15	1.89	20.8
2	T1	102	11.0	0.748	64.1	LOS E	6.4	48.8	1.00	0.87	1.19	29.4
3	R2	24	9.0	0.185	64.2	LOS E	1.4	10.5	0.97	0.71	0.97	28.8
Approach		234	25.0	1.002	85.6	LOS F	9.0	85.2	1.00	0.98	1.49	24.7
East: Elizabeth Road (E)												
5	T1	647	4.0	0.291	0.4	LOS A	0.6	4.6	0.03	0.02	0.03	59.6
6	R2	863	12.0	0.901	33.1	LOS C	24.1	185.7	0.75	0.84	0.83	38.0
Approach		1511	8.6	0.901	19.1	LOS B	24.1	185.7	0.44	0.49	0.49	45.0
North: Wallgrove Road (N)												
7	L2	365	11.0	0.359	16.3	LOS B	9.6	73.6	0.56	0.73	0.56	46.6
9	R2	98	22.0	1.045	133.0	LOS F	9.1	75.5	1.00	1.21	2.08	18.4
Approach		463	13.3	1.045	41.0	LOS C	9.6	75.5	0.65	0.83	0.88	35.2
West: Elizabeth Drive (W)												
10	L2	522	16.0	0.559	19.1	LOS B	17.1	136.4	0.69	0.82	0.76	45.0
11	T1	1075	8.0	0.976	81.3	LOS F	44.9	336.1	1.00	1.25	1.46	25.7
Approach		1597	10.6	0.976	61.0	LOS E	44.9	336.1	0.90	1.11	1.23	29.9
All Vehicles		3804	11.0	1.045	43.4	LOS D	44.9	336.1	0.69	0.82	0.91	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	54.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	54.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	54.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		3	54.2	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 [AM Existing +10yr Gr + S2 Elizabeth Dr/ Wallgrove Rd - LT Slip]**

Elizabeth Dr/ Wallgrove Rd

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

**Timings based on settings in the Site Phasing & Timing dialog**

**Phase Times determined by the program**

**Green Split Priority has been specified**

**Phase Sequence: TCS Manual Phase Times**

**Reference Phase: Phase A**

**Input Phase Sequence: A, C, D, E**

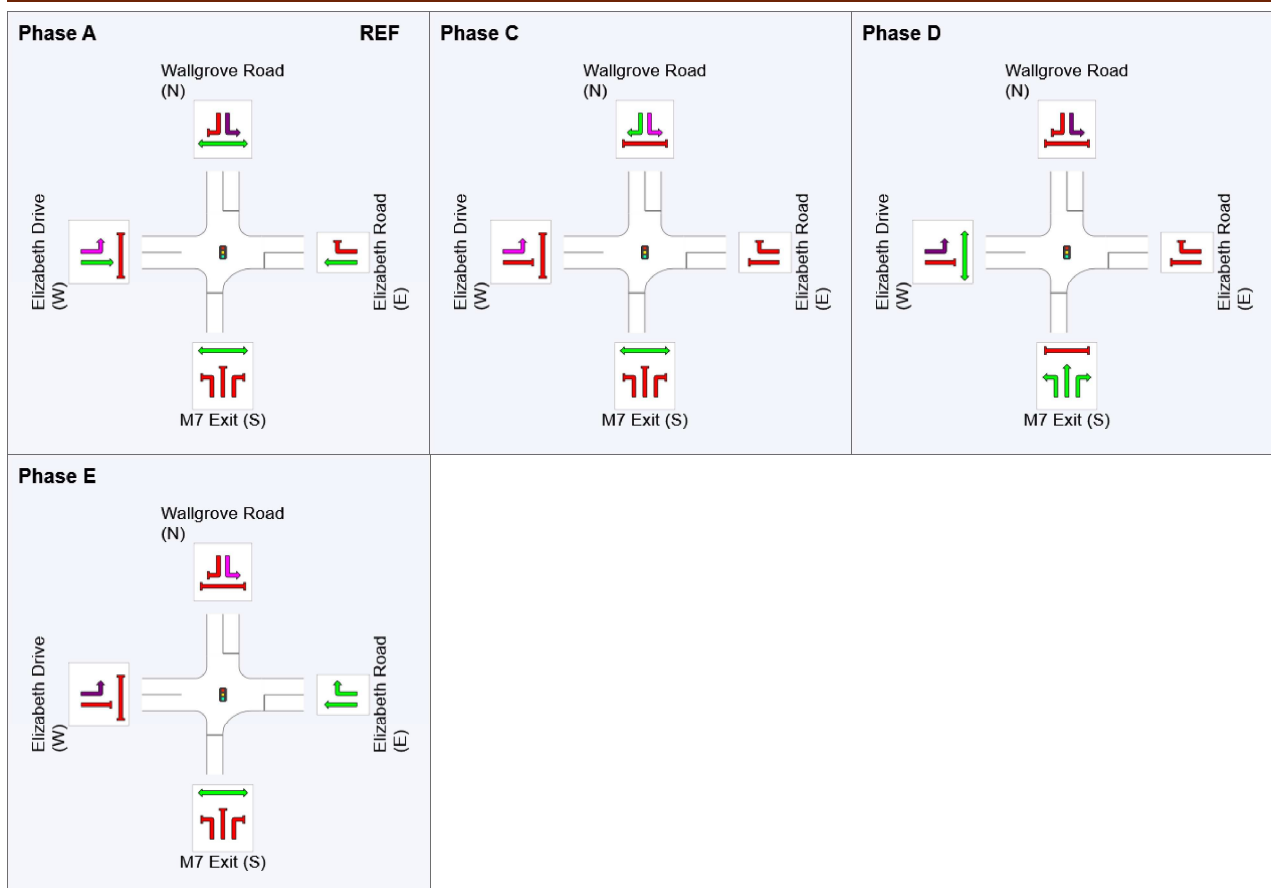
**Output Phase Sequence: A, C, D, E**

## Phase Timing Summary

Phase	A	C	D	E
Phase Change Time (sec)	0	43	56	71
Green Time (sec)	37	7	9	43
Phase Time (sec)	43	13	15	49
Phase Split	36%	11%	13%	41%

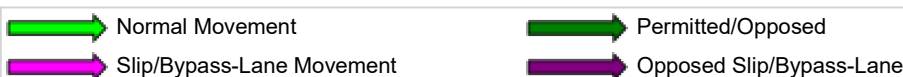
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

## Output Phase Sequence

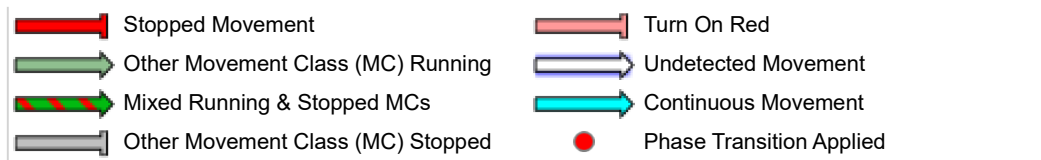


REF: Reference Phase

VAR: Variable Phase







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# MOVEMENT SUMMARY



**Site: 101 [AM Existing Wallgrove Rd/ The Horsley Drive]**

Data from 25/7/18

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	50	0.0	0.067	19.6	LOS B	1.3	9.1	0.64	0.69	0.64	44.5
2	T1	613	7.0	0.790	43.9	LOS D	18.7	139.0	0.98	0.87	1.03	34.9
3	R2	132	8.0	0.326	34.7	LOS C	5.1	38.2	0.88	0.77	0.88	37.4
Approach		795	6.7	0.790	40.8	LOS C	18.7	139.0	0.94	0.84	0.98	35.8
East: The Horsely Drive (E)												
4	L2	25	36.0	0.609	49.5	LOS D	10.0	78.4	0.92	0.79	1.08	33.8
5	T1	189	11.0	0.609	43.5	LOS D	10.0	78.4	0.92	0.79	1.08	34.9
6	R2	404	17.0	0.656	29.0	LOS C	14.6	117.3	0.78	0.80	0.78	39.9
Approach		618	15.9	0.656	34.3	LOS C	14.6	117.3	0.83	0.80	0.89	38.0
North: Wallgrove Road (N)												
7	L2	242	29.0	0.346	26.7	LOS B	8.4	73.2	0.69	0.77	0.69	40.4
8	T1	225	12.0	0.751	55.1	LOS D	7.7	59.4	1.00	0.84	1.10	31.5
9	R2	41	7.0	0.217	37.0	LOS C	1.6	11.8	0.94	0.73	0.94	36.6
Approach		508	19.7	0.751	40.1	LOS C	8.4	73.2	0.85	0.80	0.89	35.6
West: The Horsely Drive (W)												
10	L2	49	16.0	0.798	55.8	LOS D	15.6	118.7	1.00	0.94	1.14	32.0
11	T1	232	9.0	0.798	50.1	LOS D	15.6	118.7	1.00	0.94	1.14	32.8
12	R2	22	18.0	0.064	24.6	LOS B	0.6	4.7	0.79	0.68	0.79	41.9
Approach		303	10.8	0.798	49.2	LOS D	15.6	118.7	0.98	0.92	1.12	33.2
All Vehicles		2224	12.8	0.798	40.0	LOS C	18.7	139.0	0.89	0.83	0.95	35.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [AM Existing Wallgrove Rd/ The Horsley Drive]**

Data from 25/7/18

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C\*, D, D1\*, D2\*, E, F1\*, F2\*, G, G1\*, G2\***

**Output Phase Sequence: A, D, D1\*, E, F2\*, G, G2\***

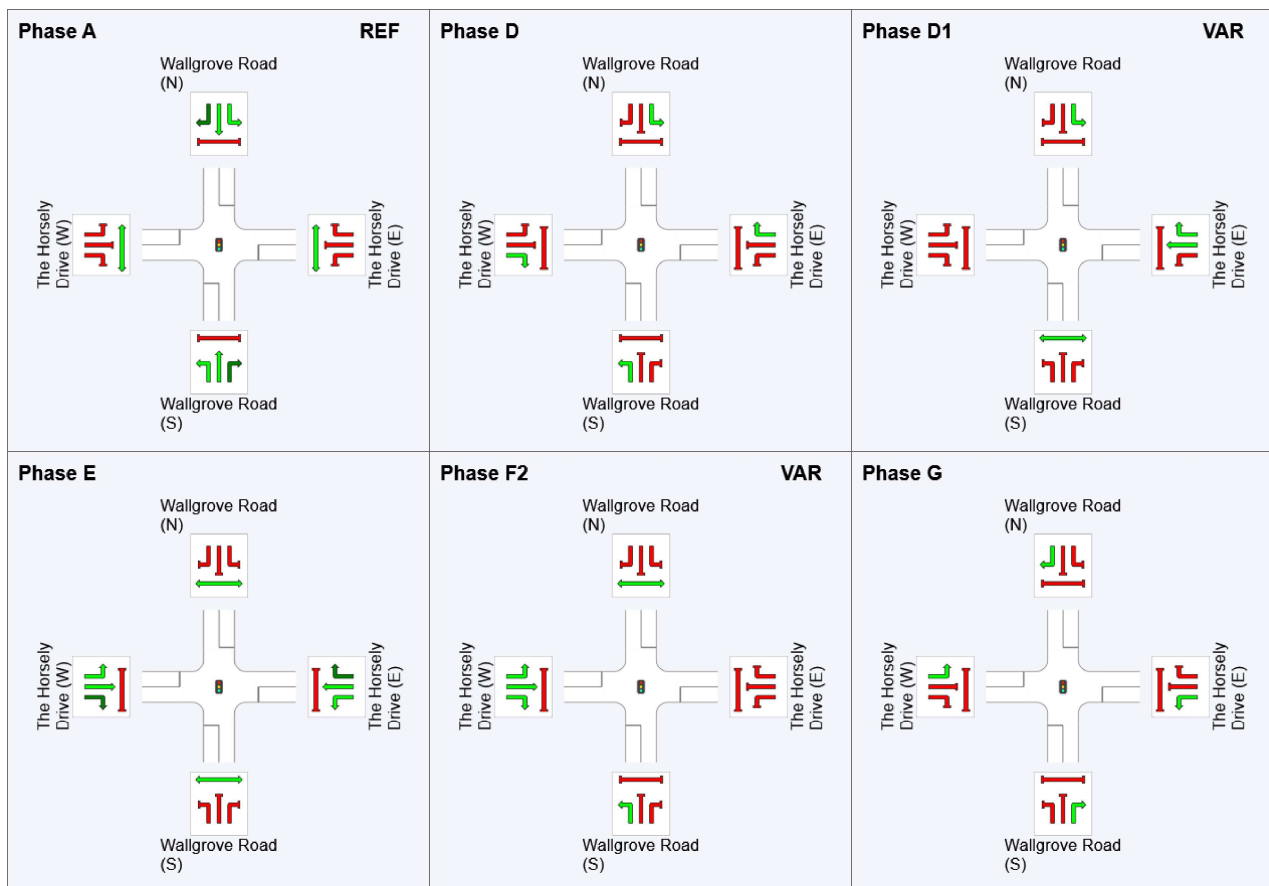
(\* Variable Phase)

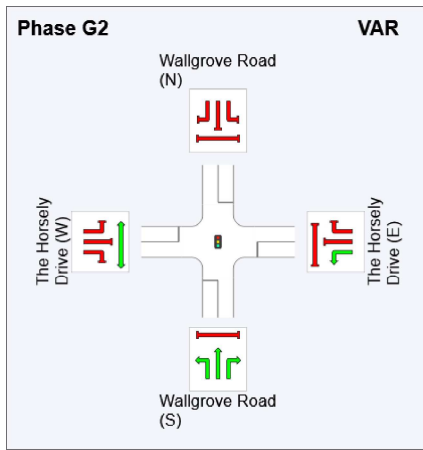
## Phase Timing Summary

Phase	A	D	D1	E	F2	G	G2
Phase Change Time (sec)	0	17	29	56	71	83	95
Green Time (sec)	11	6	21	9	6	6	9
Phase Time (sec)	17	12	27	15	12	12	15
Phase Split	15%	11%	25%	14%	11%	11%	14%

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



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Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Wednesday, 22 August 2018 11:38:23 AM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

## MOVEMENT SUMMARY



**Site: 101 [AM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	64	0.0	0.102	32.3	LOS C	2.3	16.4	0.72	0.72	0.72	38.5
2	T1	546	7.0	0.731	42.9	LOS D	16.0	118.8	0.96	0.83	0.99	35.2
3	R2	227	8.0	0.583	37.5	LOS C	9.5	71.3	0.95	0.81	0.95	36.4
Approach		837	6.7	0.731	40.6	LOS C	16.0	118.8	0.94	0.82	0.96	35.8
East: The Horsley Drive (E)												
4	L2	87	36.0	0.649	45.3	LOS D	13.4	108.7	0.94	0.82	0.94	34.8
5	T1	189	11.0	0.649	39.3	LOS C	13.4	108.7	0.94	0.82	0.94	36.0
6	R2	360	17.0	0.611	24.3	LOS B	11.1	89.2	0.88	0.82	0.88	42.1
Approach		636	17.8	0.649	31.6	LOS C	13.4	108.7	0.91	0.82	0.91	39.0
North: Wallgrove Road (N)												
7	L2	242	29.0	0.346	26.7	LOS B	8.4	73.2	0.69	0.77	0.69	40.4
8	T1	232	12.0	0.774	55.6	LOS D	8.0	61.8	1.00	0.85	1.12	31.4
9	R2	41	7.0	0.205	37.0	LOS C	1.6	12.0	0.92	0.72	0.92	36.6
Approach		515	19.6	0.774	40.6	LOS C	8.4	73.2	0.85	0.80	0.90	35.5
West: The Horsley Drive (W)												
10	L2	44	16.0	0.749	52.6	LOS D	14.7	111.6	1.00	0.90	1.08	33.0
11	T1	232	9.0	0.749	46.9	LOS D	14.7	111.6	1.00	0.90	1.08	33.8
12	R2	53	18.0	0.141	24.6	LOS B	1.4	11.5	0.80	0.72	0.80	41.9
Approach		329	11.4	0.749	44.0	LOS D	14.7	111.6	0.96	0.87	1.03	34.7
All Vehicles		2317	13.3	0.774	38.6	LOS C	16.0	118.8	0.91	0.82	0.94	36.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [AM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C\*, D, D1\*, D2\*, E, F1\*, F2\*, G, G1\*, G2\***

**Output Phase Sequence: A, D, D1\*, E, G, G2\***

(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	D1	E	G	G2
Phase Change Time (sec)	0	17	29	56	84	96
Green Time (sec)	11	6	21	22	6	8
Phase Time (sec)	17	12	27	28	12	14
Phase Split	15%	11%	25%	25%	11%	13%

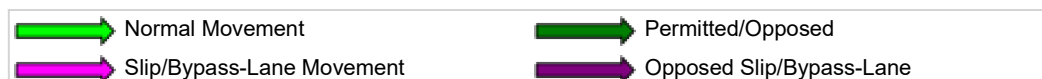
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

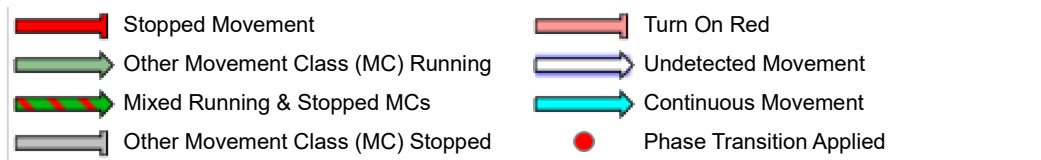
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Wednesday, 22 August 2018 11:38:30 AM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [PM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	61	7.0	0.071	25.7	LOS B	2.2	16.1	0.56	0.69	0.56	41.2
2	T1	298	8.0	0.426	50.8	LOS D	10.0	75.0	0.90	0.74	0.90	32.7
3	R2	119	14.0	0.682	50.3	LOS D	6.3	49.6	1.00	0.81	1.07	32.2
Approach		478	9.4	0.682	47.5	LOS D	10.0	75.0	0.88	0.75	0.90	33.5
East: The Horsley Drive (E)												
4	L2	223	8.0	1.060	136.6	LOS F	67.2	513.1	1.00	1.33	1.65	18.4
5	T1	389	12.0	1.060	131.0	LOS F	67.2	513.1	1.00	1.33	1.65	18.6
6	R2	422	11.0	0.628	21.3	LOS B	13.2	101.0	0.65	0.76	0.65	43.7
Approach		1034	10.7	1.060	87.5	LOS F	67.2	513.1	0.86	1.10	1.24	24.3
North: Wallgrove Road (N)												
7	L2	455	15.0	0.558	32.7	LOS C	21.6	171.0	0.76	0.82	0.76	38.1
8	T1	679	6.0	1.049	103.4	LOS F	43.6	320.6	0.99	1.17	1.43	22.0
9	R2	138	9.0	0.487	46.1	LOS D	7.3	54.9	0.91	0.78	0.91	33.5
Approach		1272	9.5	1.049	71.9	LOS F	43.6	320.6	0.90	1.00	1.13	27.1
West: The Horsley Drive (W)												
10	L2	49	12.0	0.338	44.3	LOS D	10.0	76.4	0.81	0.71	0.81	35.5
11	T1	145	10.0	0.338	38.6	LOS C	10.0	76.4	0.81	0.71	0.81	36.3
12	R2	60	7.0	0.094	19.2	LOS B	1.8	13.0	0.50	0.67	0.50	44.9
Approach		254	9.7	0.338	35.1	LOS C	10.0	76.4	0.73	0.70	0.73	37.9
All Vehicles		3038	9.9	1.060	70.3	LOS E	67.2	513.1	0.87	0.97	1.10	27.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	64.1	LOS F	0.0	0.0	0.96	0.96	
P2	East Full Crossing	1	64.1	LOS F	0.0	0.0	0.96	0.96	
P3	North Full Crossing	1	64.1	LOS F	0.0	0.0	0.96	0.96	
P4	West Full Crossing	1	64.1	LOS F	0.0	0.0	0.96	0.96	
All Pedestrians		4	64.1	LOS F			0.96	0.96	

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 [PM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive]**

New Site  
Site Category: (None)  
Signals - Fixed Time Coordinated    Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)

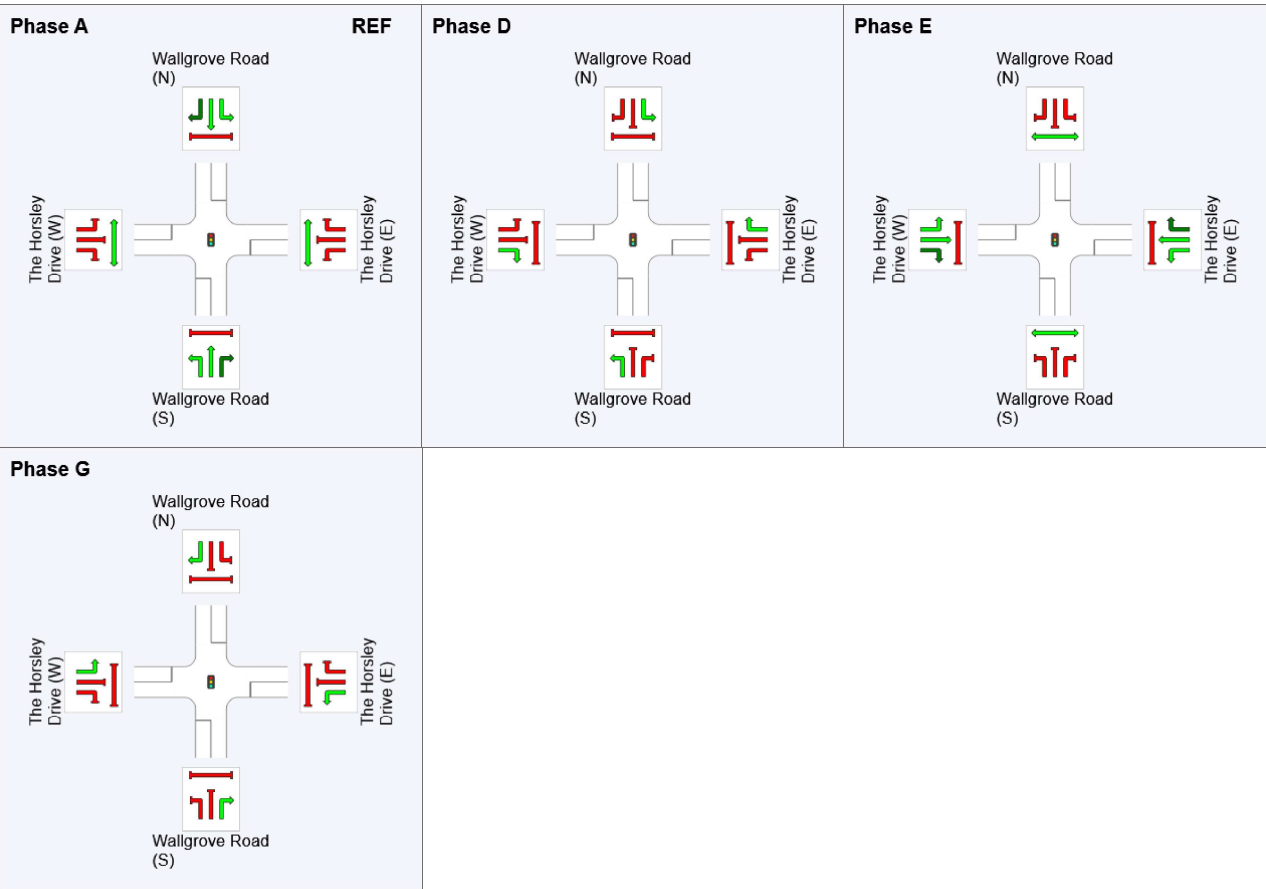
Timings based on settings in the Site Phasing & Timing dialog  
Phase Times determined by the program  
Green Split Priority has been specified  
Phase Sequence: TCS - Tom Edit  
Reference Phase: Phase A  
Input Phase Sequence: A, D, E, G  
Output Phase Sequence: A, D, E, G

## Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	36	74	124
Green Time (sec)	30	32	44	10
Phase Time (sec)	36	38	50	16
Phase Split	26%	27%	36%	11%

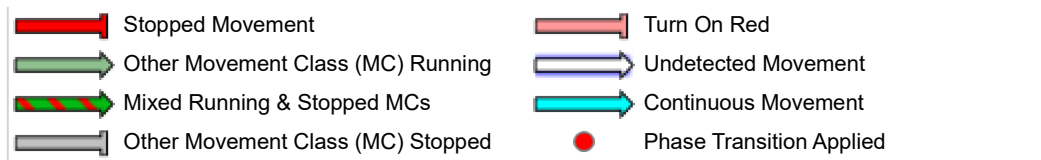
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

## Output Phase Sequence



REF: Reference Phase  
VAR: Variable Phase





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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [PM Existing + S1 Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 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 Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	43	0.0	0.028	7.1	LOS A	0.4	2.6	0.18	0.61	0.18	52.4
2	T1	257	7.0	0.146	13.4	LOS A	3.9	28.7	0.53	0.43	0.53	49.2
3	R2	89	8.0	0.534	38.8	LOS C	3.5	26.5	1.00	0.77	1.00	35.9
Approach		389	6.5	0.534	18.5	LOS B	3.9	28.7	0.60	0.53	0.60	45.6
East: The Horsley Drive (E)												
4	L2	174	36.0	0.903	60.8	LOS E	23.5	195.6	1.00	1.03	1.25	30.2
5	T1	215	11.0	0.903	54.9	LOS D	23.5	195.6	1.00	1.03	1.25	31.1
6	R2	364	17.0	0.612	22.2	LOS B	10.3	82.9	0.73	0.78	0.73	43.2
Approach		753	19.7	0.903	40.4	LOS C	23.5	195.6	0.87	0.91	1.00	35.7
North: Wallgrove Road (N)												
7	L2	455	29.0	0.551	23.8	LOS B	16.0	139.7	0.71	0.80	0.71	41.7
8	T1	666	12.0	0.906	51.3	LOS D	25.4	196.0	0.98	0.97	1.16	32.6
9	R2	76	7.0	0.221	34.2	LOS C	3.0	22.2	0.80	0.73	0.80	37.6
Approach		1197	18.1	0.906	39.8	LOS C	25.4	196.0	0.86	0.89	0.97	35.9
West: The Horsley Drive (W)												
10	L2	42	16.0	0.414	42.8	LOS D	8.4	64.4	0.88	0.75	0.88	36.0
11	T1	145	9.0	0.414	37.1	LOS C	8.4	64.4	0.88	0.75	0.88	36.9
12	R2	52	18.0	0.115	24.0	LOS B	1.3	10.9	0.79	0.71	0.79	42.2
Approach		239	12.2	0.414	35.3	LOS C	8.4	64.4	0.86	0.74	0.86	37.8
All Vehicles		2578	16.3	0.906	36.3	LOS C	25.4	196.0	0.82	0.83	0.91	37.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [PM Existing + S1 Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C\*, D, D1\*, D2\*, E, F1\*, F2\*, G, G1\*, G2\***

**Output Phase Sequence: A, D, E, G**

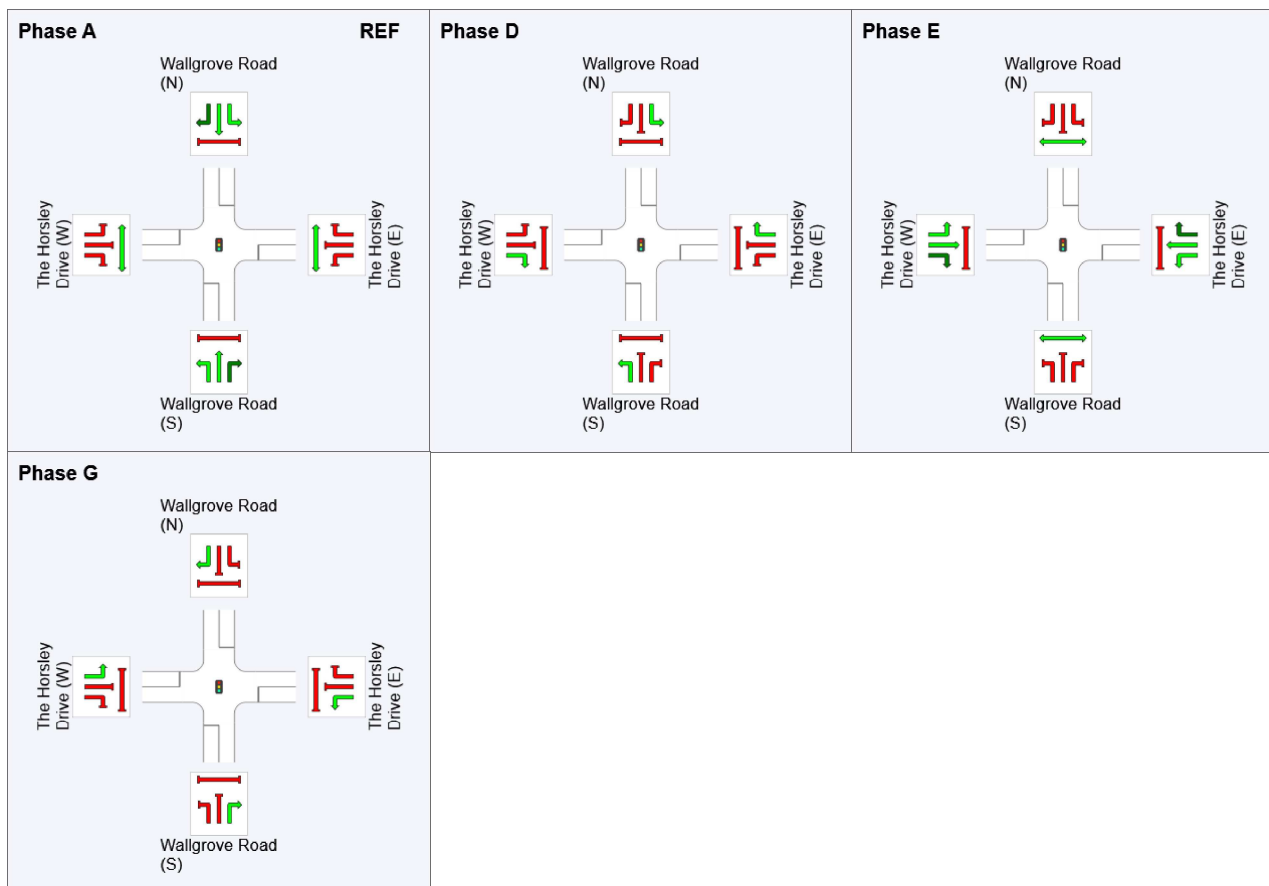
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	33	65	98
Green Time (sec)	27	26	27	6
Phase Time (sec)	33	32	33	12
Phase Split	30%	29%	30%	11%

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%.

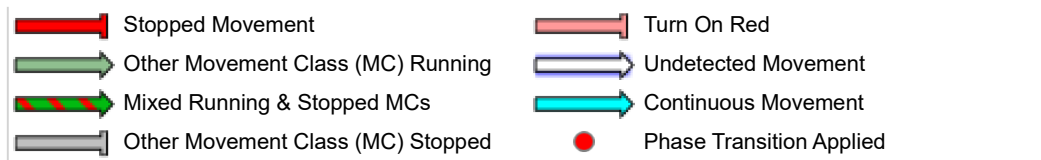
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [AM Existing + S1 Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	57	0.0	0.102	35.2	LOS C	2.2	15.4	0.76	0.72	0.76	37.4
2	T1	613	7.0	1.140	133.9	LOS F	40.5	300.6	1.00	1.40	1.93	18.4
3	R2	181	8.0	0.282	24.3	LOS B	5.7	42.3	0.74	0.76	0.74	41.9
Approach		851	6.7	1.140	104.0	LOS F	40.5	300.6	0.93	1.22	1.59	21.8
East: The Horsley Drive (E)												
4	L2	56	36.0	1.917	857.2	LOS F	57.4	459.2	1.00	2.11	5.05	3.8
5	T1	189	11.0	1.917	851.2	LOS F	57.4	459.2	1.00	2.11	5.05	3.8
6	R2	404	17.0	0.980	79.8	LOS F	23.9	191.7	1.00	1.24	1.84	25.7
Approach		649	16.9	1.917	371.6	LOS F	57.4	459.2	1.00	1.57	3.05	8.1
North: Wallgrove Road (N)												
7	L2	242	29.0	1.153	184.6	LOS F	26.3	229.8	1.00	1.41	2.54	12.9
8	T1	225	12.0	1.377	263.6	LOS F	23.5	181.5	1.00	1.46	2.79	10.9
9	R2	41	7.0	0.076	29.7	LOS C	1.4	10.5	0.75	0.71	0.75	39.4
Approach		508	19.7	1.377	207.1	LOS F	26.3	229.8	0.98	1.38	2.50	12.6
West: The Horsley Drive (W)												
10	L2	49	16.0	1.819	776.0	LOS F	64.5	491.2	1.00	2.25	4.87	4.2
11	T1	232	9.0	1.819	770.3	LOS F	64.5	491.2	1.00	2.25	4.87	4.2
12	R2	37	18.0	0.072	28.3	LOS B	1.3	10.2	0.69	0.68	0.69	40.2
Approach		318	11.1	1.819	684.8	LOS F	64.5	491.2	0.96	2.07	4.38	4.7
All Vehicles		2326	13.0	1.917	280.6	LOS F	64.5	491.2	0.96	1.47	2.58	10.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [AM Existing + S1 Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS - Copy**

**Reference Phase: Phase A**

**Input Phase Sequence: A, C\*, D, E, G**

**Output Phase Sequence: A, C\*, D, E, G**

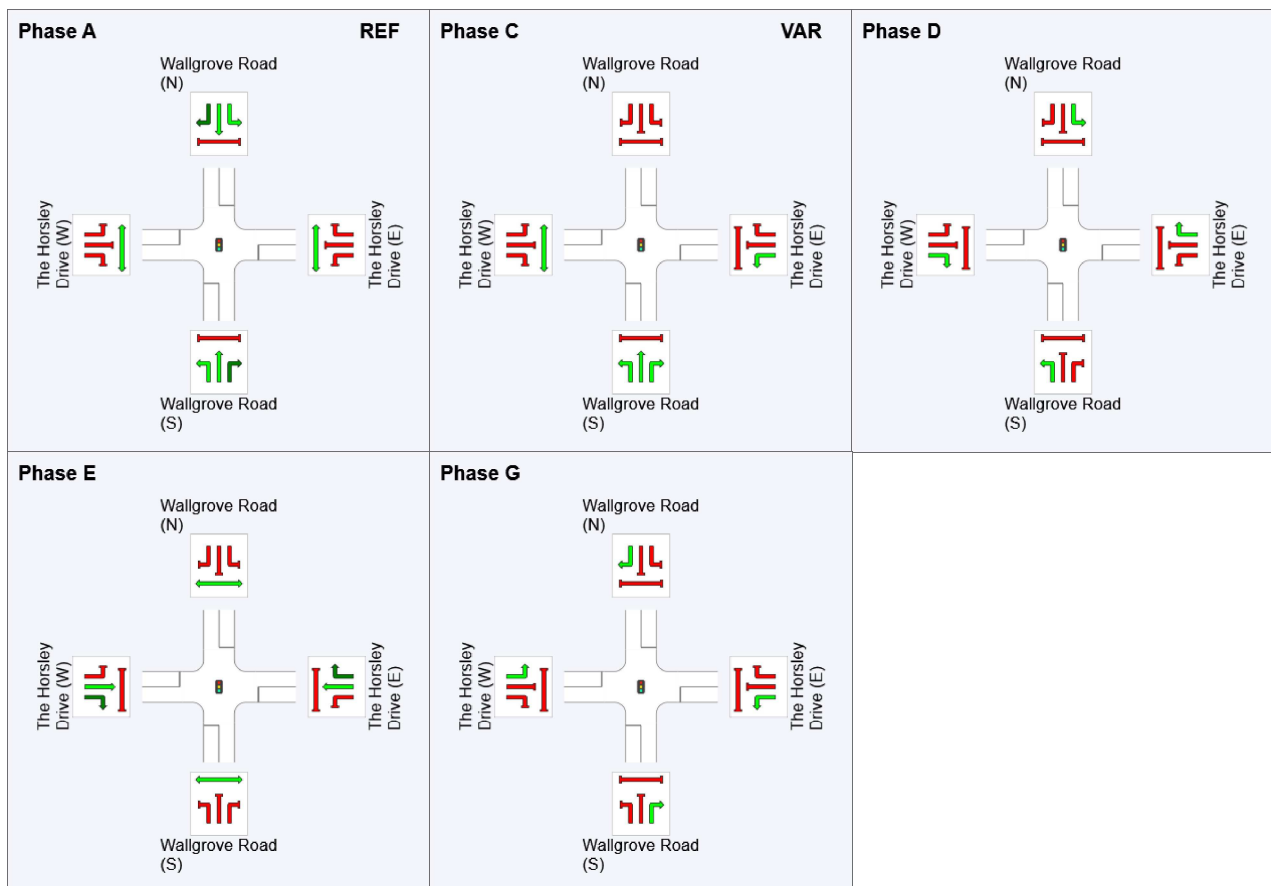
(\* Variable Phase)

## Phase Timing Summary

Phase	A	C	D	E	G
Phase Change Time (sec)	0	12	24	39	75
Green Time (sec)	6	6	9	30	29
Phase Time (sec)	12	12	15	36	35
Phase Split	11%	11%	14%	33%	32%

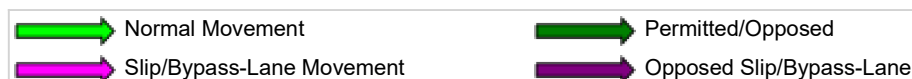
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

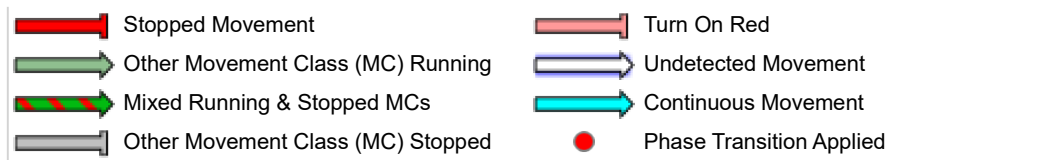
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Thursday, 23 August 2018 2:05:00 PM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [PM Existing Wallgrove Rd/ The Horsley Drive]**

Data from 26/7/18

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 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 Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	28	7.0	0.060	38.0	LOS C	1.1	8.3	0.78	0.70	0.78	36.2
2	T1	257	8.0	0.509	46.7	LOS D	7.4	55.2	0.96	0.77	0.96	34.0
3	R2	58	14.0	0.295	35.3	LOS C	2.1	16.8	0.94	0.74	0.94	37.1
Approach		343	8.9	0.509	44.1	LOS D	7.4	55.2	0.94	0.76	0.94	34.7
East: The Horsley Drive (E)												
4	L2	125	8.0	0.816	52.4	LOS D	18.1	138.2	0.98	0.92	1.09	32.7
5	T1	215	12.0	0.816	46.7	LOS D	18.1	138.2	0.98	0.92	1.09	33.4
6	R2	364	11.0	0.609	24.5	LOS B	11.0	84.5	0.78	0.79	0.78	42.1
Approach		704	10.8	0.816	36.2	LOS C	18.1	138.2	0.88	0.85	0.93	37.2
North: Wallgrove Road (N)												
7	L2	455	15.0	0.466	19.8	LOS B	13.9	109.5	0.62	0.77	0.62	44.0
8	T1	666	6.0	0.813	42.4	LOS C	21.9	160.9	0.96	0.88	1.03	35.4
9	R2	76	9.0	0.179	30.7	LOS C	2.7	20.2	0.81	0.74	0.81	39.0
Approach		1197	9.6	0.813	33.1	LOS C	21.9	160.9	0.82	0.83	0.86	38.5
West: The Horsley Drive (W)												
10	L2	42	12.0	0.529	48.9	LOS D	9.2	69.8	0.95	0.79	0.95	34.0
11	T1	145	10.0	0.529	43.2	LOS D	9.2	69.8	0.95	0.79	0.95	34.8
12	R2	45	7.0	0.117	25.8	LOS B	1.3	9.7	0.81	0.71	0.81	41.6
Approach		232	9.8	0.529	40.8	LOS C	9.2	69.8	0.92	0.77	0.92	35.8
All Vehicles		2476	9.9	0.816	36.2	LOS C	21.9	160.9	0.86	0.82	0.90	37.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [PM Existing Wallgrove Rd/ The Horsley Drive]**

Data from 26/7/18

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C\*, D, D1\*, D2\*, E, F1\*, F2\*, G, G1\*, G2\***

**Output Phase Sequence: A, D, D1\*, E, G, G1\***

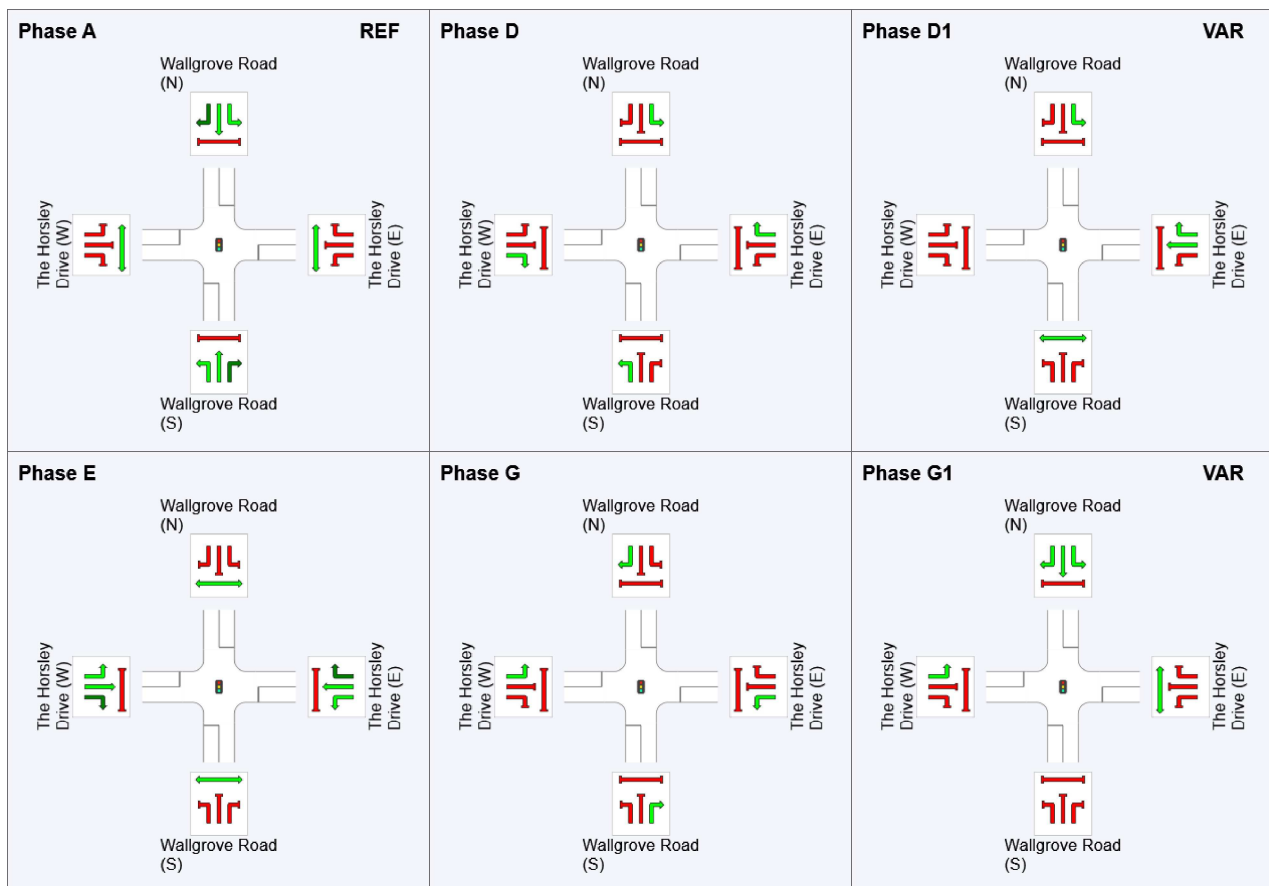
(\* Variable Phase)

## Phase Timing Summary

Phase	A	D	D1	E	G	G1
Phase Change Time (sec)	0	23	35	58	85	98
Green Time (sec)	17	6	17	21	7	6
Phase Time (sec)	23	12	23	27	13	12
Phase Split	21%	11%	21%	25%	12%	11%

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%.

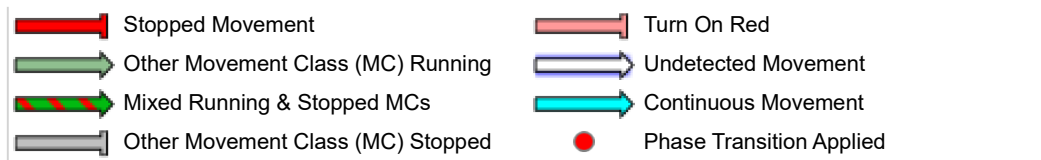
## Output Phase Sequence



REF: Reference Phase

VAR: Variable Phase





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Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Wednesday, 22 August 2018 11:38:24 AM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY

 **Site: 101 [PM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 130 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	51	7.0	0.058	23.2	LOS B	1.6	12.1	0.54	0.69	0.54	42.5
2	T1	298	8.0	0.424	47.2	LOS D	9.3	69.7	0.90	0.74	0.90	33.8
3	R2	58	14.0	0.308	43.5	LOS D	2.7	20.8	0.97	0.74	0.97	34.2
Approach		407	8.7	0.424	43.6	LOS D	9.3	69.7	0.87	0.73	0.87	34.8
East: The Horsley Drive (E)												
4	L2	128	8.0	0.994	95.2	LOS F	44.8	343.4	1.00	1.19	1.44	23.8
5	T1	389	12.0	0.994	89.5	LOS F	44.8	343.4	1.00	1.19	1.44	24.1
6	R2	422	11.0	0.643	22.2	LOS B	13.2	100.9	0.70	0.78	0.70	43.3
Approach		939	11.0	0.994	60.0	LOS E	44.8	343.4	0.87	1.01	1.11	30.1
North: Wallgrove Road (N)												
7	L2	455	15.0	0.542	29.4	LOS C	19.6	154.6	0.74	0.81	0.74	39.4
8	T1	679	6.0	1.029	91.8	LOS F	39.7	292.2	0.99	1.15	1.41	23.8
9	R2	138	9.0	0.464	42.1	LOS C	6.7	50.3	0.90	0.78	0.90	34.8
Approach		1272	9.5	1.029	64.1	LOS E	39.7	292.2	0.89	0.99	1.11	28.9
West: The Horsley Drive (W)												
10	L2	49	12.0	0.372	44.9	LOS D	9.7	74.4	0.84	0.73	0.84	35.3
11	T1	145	10.0	0.372	39.2	LOS C	9.7	74.4	0.84	0.73	0.84	36.1
12	R2	46	7.0	0.096	26.3	LOS B	1.3	9.5	0.79	0.70	0.79	41.3
Approach		240	9.8	0.372	37.9	LOS C	9.7	74.4	0.83	0.72	0.83	36.8
All Vehicles		2858	9.9	1.029	57.7	LOS E	44.8	343.4	0.87	0.93	1.05	30.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	59.1	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	59.1	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	59.1	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	59.1	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	59.1	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 [PM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive]**

New Site  
Site Category: (None)  
Signals - Fixed Time Coordinated    Cycle Time = 130 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog  
Phase Times determined by the program  
Green Split Priority has been specified  
Phase Sequence: TCS - Cut Down  
Reference Phase: Phase A  
Input Phase Sequence: A, D, E, G  
Output Phase Sequence: A, D, E, G

## Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	34	71	114
Green Time (sec)	28	31	37	10
Phase Time (sec)	34	37	43	16
Phase Split	26%	28%	33%	12%

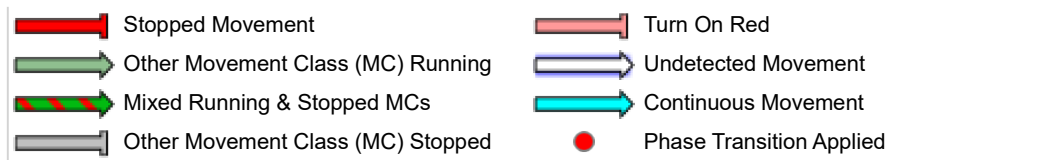
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

## Output Phase Sequence



REF: Reference Phase  
VAR: Variable Phase





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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [AM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	50	0.0	0.067	19.6	LOS B	1.3	9.1	0.64	0.69	0.64	44.5
2	T1	613	7.0	0.790	43.9	LOS D	18.7	139.0	0.98	0.87	1.03	34.9
3	R2	132	8.0	0.326	34.7	LOS C	5.1	38.2	0.88	0.77	0.88	37.4
Approach		795	6.7	0.790	40.8	LOS C	18.7	139.0	0.94	0.84	0.98	35.8
East: The Horsley Drive (E)												
4	L2	25	36.0	0.609	49.5	LOS D	10.0	78.4	0.92	0.79	1.08	33.8
5	T1	189	11.0	0.609	43.5	LOS D	10.0	78.4	0.92	0.79	1.08	34.9
6	R2	404	17.0	0.656	29.0	LOS C	14.6	117.3	0.78	0.80	0.78	39.9
Approach		618	15.9	0.656	34.3	LOS C	14.6	117.3	0.83	0.80	0.89	38.0
North: Wallgrove Road (N)												
7	L2	242	29.0	0.346	26.7	LOS B	8.4	73.2	0.69	0.77	0.69	40.4
8	T1	225	12.0	0.751	55.1	LOS D	7.7	59.4	1.00	0.84	1.10	31.5
9	R2	41	7.0	0.217	37.0	LOS C	1.6	11.8	0.94	0.73	0.94	36.6
Approach		508	19.7	0.751	40.1	LOS C	8.4	73.2	0.85	0.80	0.89	35.6
West: The Horsley Drive (W)												
10	L2	49	16.0	0.798	55.8	LOS D	15.6	118.7	1.00	0.94	1.14	32.0
11	T1	232	9.0	0.798	50.1	LOS D	15.6	118.7	1.00	0.94	1.14	32.8
12	R2	22	18.0	0.064	24.6	LOS B	0.6	4.7	0.79	0.68	0.79	41.9
Approach		303	10.8	0.798	49.2	LOS D	15.6	118.7	0.98	0.92	1.12	33.2
All Vehicles		2224	12.8	0.798	40.0	LOS C	18.7	139.0	0.89	0.83	0.95	35.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [AM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C\*, D, D1\*, D2\*, E, F1\*, F2\*, G, G1\*, G2\***

**Output Phase Sequence: A, D, D1\*, E, F2\*, G, G2\***

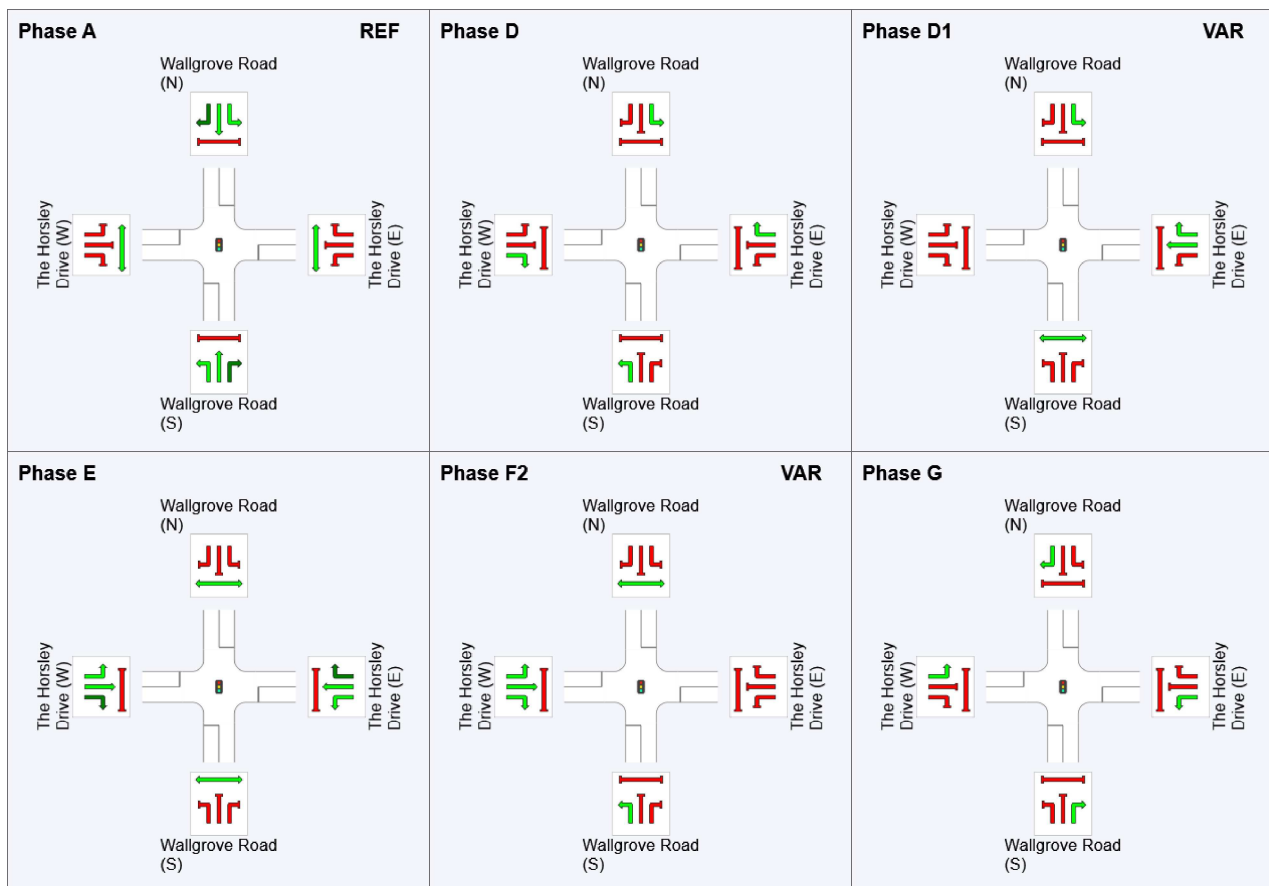
(\* Variable Phase)

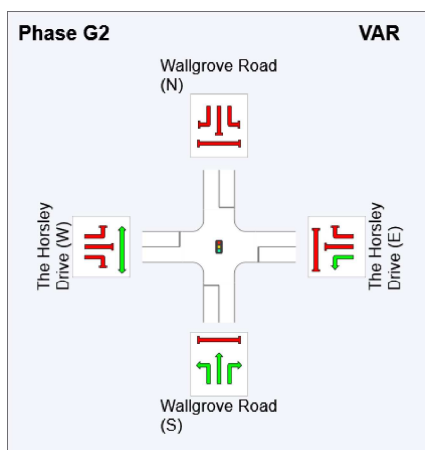
## Phase Timing Summary

Phase	A	D	D1	E	F2	G	G2
Phase Change Time (sec)	0	17	29	56	71	83	95
Green Time (sec)	11	6	21	9	6	6	9
Phase Time (sec)	17	12	27	15	12	12	15
Phase Split	15%	11%	25%	14%	11%	11%	14%

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%.

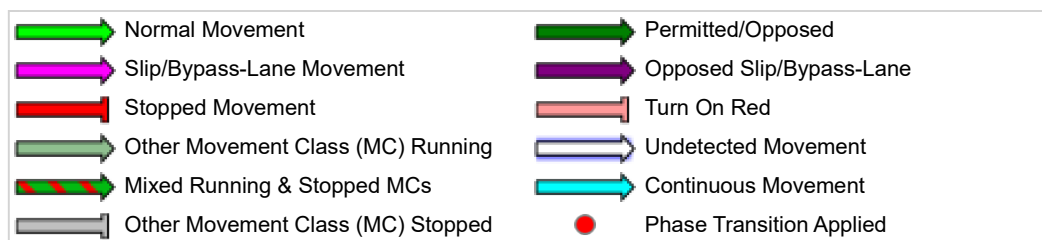
## Output Phase Sequence





REF: Reference Phase

VAR: Variable Phase



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Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Wednesday, 22 August 2018 11:38:28 AM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [AM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	50	0.0	0.064	18.3	LOS B	1.2	8.5	0.62	0.69	0.62	45.2
2	T1	613	7.0	0.813	45.6	LOS D	19.1	141.4	0.98	0.89	1.06	34.4
3	R2	132	8.0	0.391	36.2	LOS C	5.2	39.2	0.92	0.78	0.92	37.0
Approach		795	6.7	0.813	42.3	LOS C	19.1	141.4	0.95	0.86	1.01	35.3
East: The Horsley Drive (E)												
4	L2	25	36.0	0.085	32.5	LOS C	0.8	7.6	0.78	0.69	0.78	37.8
5	T1	189	11.0	0.336	30.9	LOS C	6.9	53.1	0.72	0.60	0.72	39.9
6	R2	404	17.0	0.667	31.0	LOS C	15.3	122.6	0.81	0.81	0.81	39.1
Approach		618	15.9	0.667	31.0	LOS C	15.3	122.6	0.78	0.74	0.78	39.3
North: Wallgrove Road (N)												
7	L2	242	29.0	0.314	23.3	LOS B	7.7	66.9	0.63	0.75	0.63	41.9
8	T1	225	12.0	0.545	48.7	LOS D	7.0	53.7	0.97	0.77	0.97	33.4
9	R2	41	7.0	0.224	37.8	LOS C	1.6	12.0	0.95	0.73	0.95	36.3
Approach		508	19.7	0.545	35.7	LOS C	7.7	66.9	0.81	0.76	0.81	37.2
West: The Horsley Drive (W)												
10	L2	49	16.0	0.798	55.8	LOS D	15.6	118.7	1.00	0.94	1.14	32.0
11	T1	232	9.0	0.798	50.1	LOS D	15.6	118.7	1.00	0.94	1.14	32.8
12	R2	22	18.0	0.064	24.8	LOS B	0.6	4.6	0.80	0.68	0.80	41.8
Approach		303	10.8	0.798	49.2	LOS D	15.6	118.7	0.99	0.92	1.12	33.2
All Vehicles		2224	12.8	0.813	38.6	LOS C	19.1	141.4	0.88	0.81	0.92	36.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [AM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

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: TCS**

**Reference Phase: Phase A**

**Input Phase Sequence: A, B\*, C\*, D, D1\*, D2\*, E, F1\*, F2\*, G, G1\*, G2\***

**Output Phase Sequence: A, D, D1\*, E, F2\*, G, G2\***

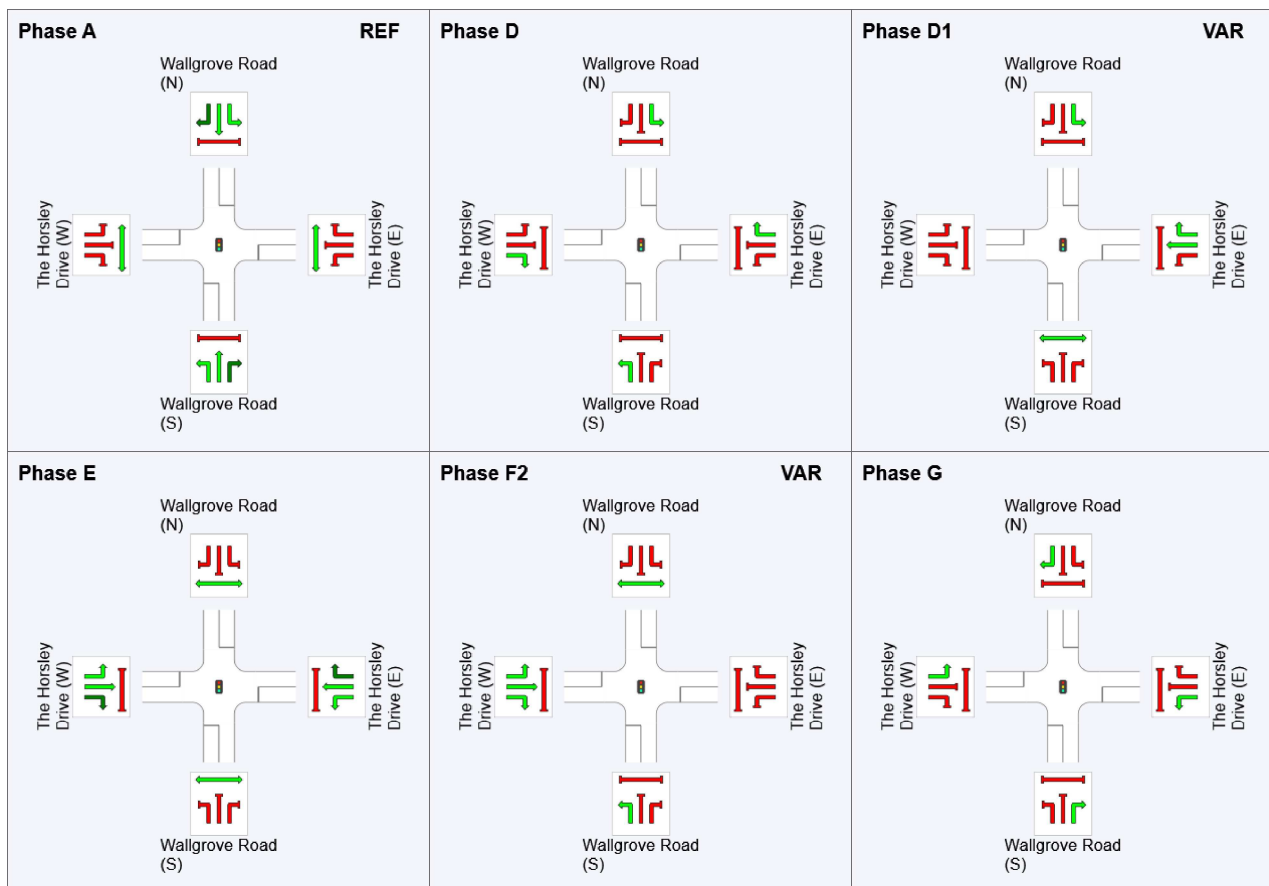
(\* Variable Phase)

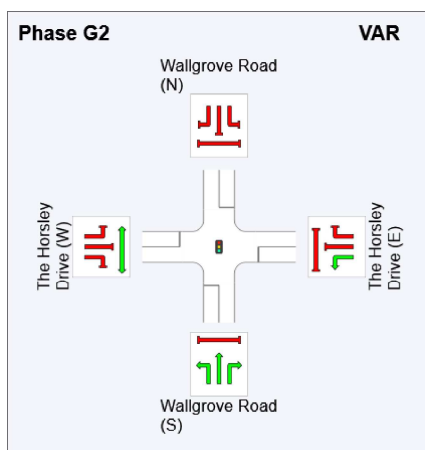
## Phase Timing Summary

Phase	A	D	D1	E	F2	G	G2
Phase Change Time (sec)	0	21	33	61	73	88	100
Green Time (sec)	15	6	22	6	9	6	4
Phase Time (sec)	21	12	28	12	15	12	10
Phase Split	19%	11%	25%	11%	14%	11%	9%

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%.

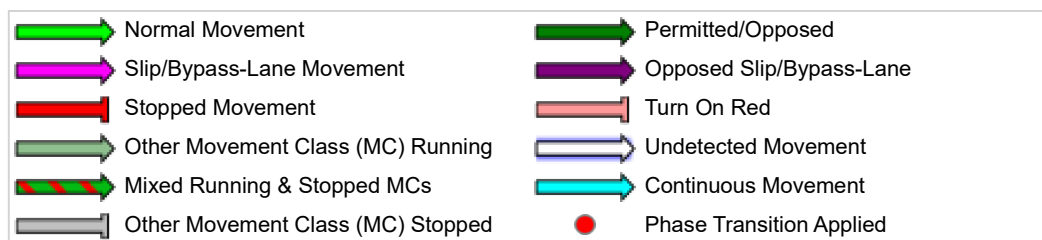
## Output Phase Sequence





REF: Reference Phase

VAR: Variable Phase



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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Horseley Wallgrove.sip8

# MOVEMENT SUMMARY



**Site: 101 [PM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	51	7.0	0.051	18.7	LOS B	1.4	10.2	0.48	0.67	0.48	44.8
2	T1	298	8.0	0.377	42.4	LOS C	8.6	64.1	0.87	0.71	0.87	35.4
3	R2	58	14.0	0.293	40.0	LOS C	2.4	19.1	0.96	0.74	0.96	35.6
Approach		407	8.7	0.377	39.1	LOS C	8.6	64.1	0.84	0.71	0.84	36.4
East: The Horsley Drive (E)												
4	L2	128	8.0	0.212	35.0	LOS C	4.6	34.7	0.63	0.73	0.63	37.3
5	T1	389	12.0	0.996	92.5	LOS F	32.5	251.0	1.00	1.23	1.51	23.9
6	R2	422	11.0	0.667	24.8	LOS B	14.1	108.2	0.77	0.80	0.77	42.0
Approach		939	11.0	0.996	54.2	LOS D	32.5	251.0	0.85	0.97	1.06	31.6
North: Wallgrove Road (N)												
7	L2	455	15.0	0.484	23.3	LOS B	16.5	130.5	0.65	0.78	0.65	42.2
8	T1	679	6.0	0.903	56.6	LOS E	28.2	207.8	0.98	0.96	1.13	31.2
9	R2	138	9.0	0.418	37.7	LOS C	6.1	46.2	0.86	0.77	0.86	36.3
Approach		1272	9.5	0.903	42.7	LOS D	28.2	207.8	0.85	0.87	0.93	35.0
West: The Horsley Drive (W)												
10	L2	49	12.0	0.487	51.6	LOS D	10.4	79.4	0.92	0.78	0.92	33.2
11	T1	145	10.0	0.487	45.9	LOS D	10.4	79.4	0.92	0.78	0.92	33.9
12	R2	46	7.0	0.085	24.8	LOS B	1.3	9.8	0.75	0.70	0.75	42.1
Approach		240	9.8	0.487	43.0	LOS D	10.4	79.4	0.89	0.76	0.89	35.0
All Vehicles		2858	9.9	0.996	46.0	LOS D	32.5	251.0	0.85	0.87	0.96	34.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	56.6	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	56.6	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	56.6	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	56.6	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	56.6	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 [PM Existing+ 10yr Gr Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site  
Site Category: (None)  
Signals - Fixed Time Coordinated    Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog  
Phase Times determined by the program  
Green Split Priority has been specified  
Phase Sequence: TCS - Cut Down  
Reference Phase: Phase A  
Input Phase Sequence: A, D, E, G  
Output Phase Sequence: A, D, E, G

## Phase Timing Summary

Phase	A	D	E	G
Phase Change Time (sec)	0	36	76	109
Green Time (sec)	30	34	27	10
Phase Time (sec)	36	40	33	16
Phase Split	29%	32%	26%	13%

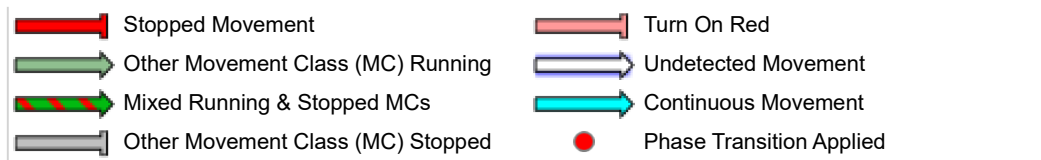
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

## Output Phase Sequence



REF: Reference Phase  
VAR: Variable Phase





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## MOVEMENT SUMMARY



**Site: 101 [AM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	64	0.0	0.082	18.7	LOS B	1.6	11.2	0.63	0.69	0.63	44.9
2	T1	546	7.0	0.724	42.7	LOS D	15.8	117.0	0.96	0.83	0.99	35.3
3	R2	227	8.0	0.583	37.6	LOS C	9.5	71.3	0.95	0.81	0.95	36.5
Approach		837	6.7	0.724	39.5	LOS C	15.8	117.0	0.94	0.82	0.95	36.2
East: The Horsley Drive (E)												
4	L2	87	36.0	0.209	28.2	LOS B	2.9	26.7	0.80	0.74	0.80	39.6
5	T1	189	11.0	0.336	31.6	LOS C	7.8	59.9	0.82	0.68	0.82	39.6
6	R2	360	17.0	0.583	29.6	LOS C	13.9	111.1	0.84	0.81	0.84	39.7
Approach		636	17.8	0.583	30.0	LOS C	13.9	111.1	0.82	0.76	0.82	39.6
North: Wallgrove Road (N)												
7	L2	242	29.0	0.353	27.4	LOS B	8.5	74.4	0.70	0.77	0.70	40.0
8	T1	232	12.0	0.766	55.5	LOS D	7.9	61.0	1.00	0.84	1.11	31.5
9	R2	41	7.0	0.203	37.0	LOS C	1.6	12.0	0.92	0.72	0.92	36.6
Approach		515	19.6	0.766	40.8	LOS C	8.5	74.4	0.85	0.80	0.90	35.4
West: The Horsley Drive (W)												
10	L2	44	16.0	0.717	50.5	LOS D	14.3	108.6	0.98	0.87	1.03	33.6
11	T1	232	9.0	0.717	44.8	LOS D	14.3	108.6	0.98	0.87	1.03	34.4
12	R2	53	18.0	0.143	24.0	LOS B	1.4	11.2	0.80	0.72	0.80	42.2
Approach		329	11.4	0.717	42.2	LOS C	14.3	108.6	0.95	0.84	0.99	35.3
All Vehicles		2317	13.3	0.766	37.6	LOS C	15.8	117.0	0.89	0.80	0.91	36.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	49.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	49.2	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 [AM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site  
Site Category: (None)  
Signals - Fixed Time Isolated    Cycle Time = 110 seconds (Site Optimum Cycle Time - Minimum Delay)  
Variable Sequence Analysis applied. The results are given for the selected output sequence.

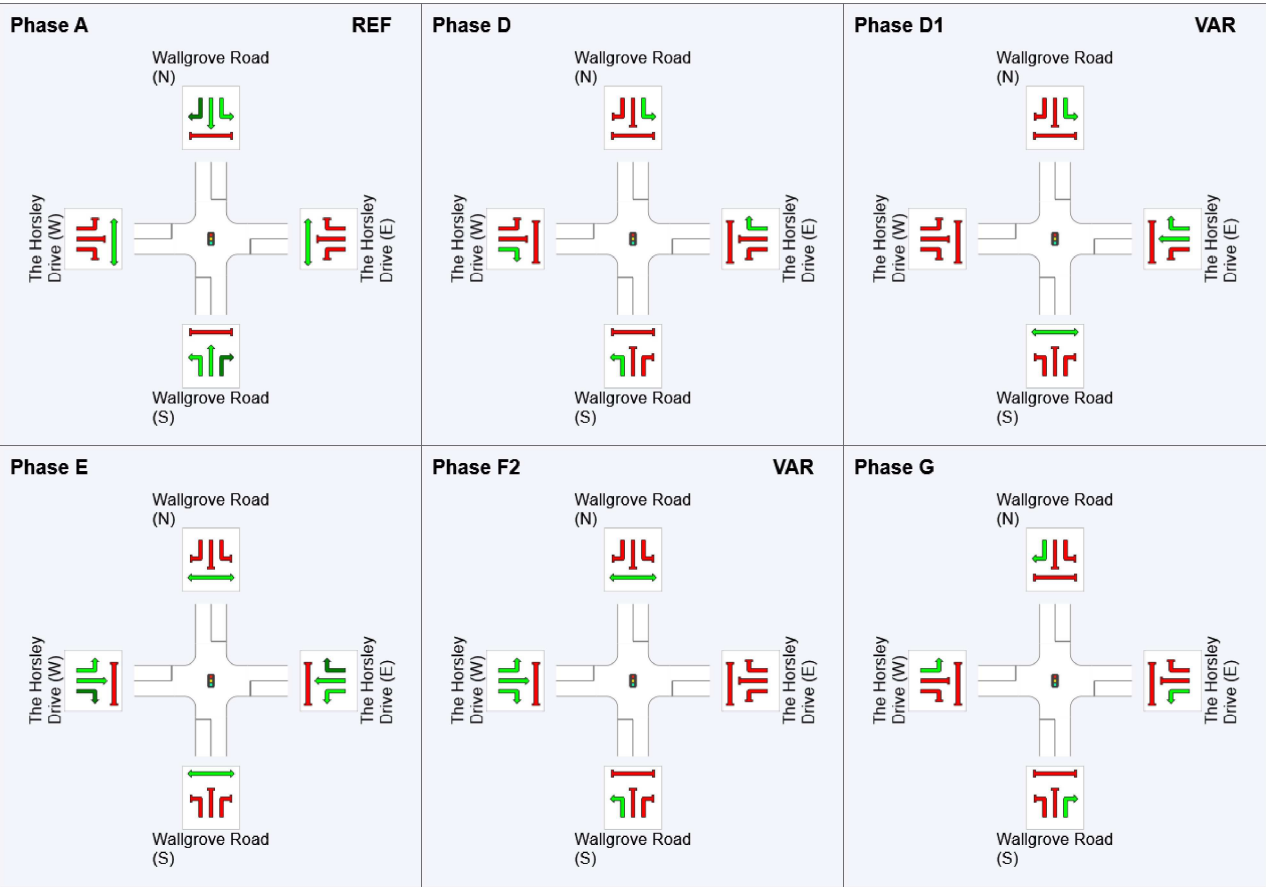
Timings based on settings in the Site Phasing & Timing dialog  
Phase Times determined by the program  
Phase Sequence: TCS  
Reference Phase: Phase A  
Input Phase Sequence: A, B\*, C\*, D, D1\*, D2\*, E, F1\*, F2\*, G, G1\*, G2\*  
Output Phase Sequence: A, D, D1\*, E, F2\*, G, G2\*  
(\* Variable Phase)

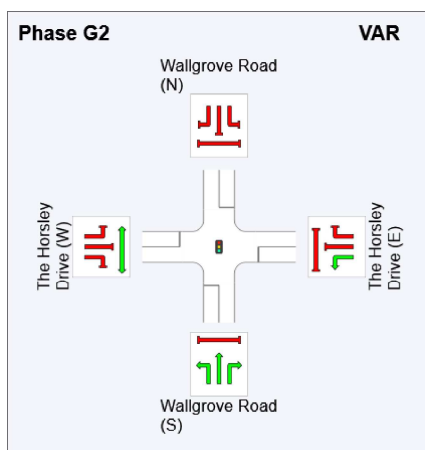
## Phase Timing Summary

Phase	A	D	D1	E	F2	G	G2
Phase Change Time (sec)	0	17	32	55	72	84	96
Green Time (sec)	11	9	17	11	6	6	8
Phase Time (sec)	17	15	23	17	12	12	14
Phase Split	15%	14%	21%	15%	11%	11%	13%

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%.

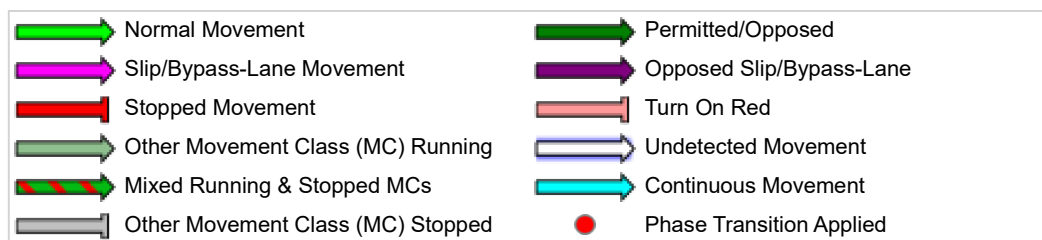
## Output Phase Sequence





REF: Reference Phase

VAR: Variable Phase



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# MOVEMENT SUMMARY



**Site: 101 [PM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows 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: Wallgrove Road (S)												
1	L2	61	7.0	0.062	18.8	LOS B	1.7	12.3	0.48	0.68	0.48	44.7
2	T1	298	8.0	0.377	42.4	LOS C	8.6	64.1	0.87	0.71	0.87	35.4
3	R2	119	14.0	0.602	41.7	LOS C	5.2	41.1	1.00	0.79	1.01	35.0
Approach		478	9.4	0.602	39.2	LOS C	8.6	64.1	0.85	0.73	0.86	36.3
East: The Horsley Drive (E)												
4	L2	223	8.0	0.369	37.0	LOS C	8.8	66.0	0.69	0.76	0.69	36.6
5	T1	389	12.0	0.996	92.5	LOS F	32.5	251.0	1.00	1.23	1.51	23.9
6	R2	422	11.0	0.667	24.8	LOS B	14.1	108.2	0.77	0.80	0.77	42.0
Approach		1034	10.7	0.996	52.9	LOS D	32.5	251.0	0.84	0.95	1.03	31.9
North: Wallgrove Road (N)												
7	L2	455	15.0	0.484	23.3	LOS B	16.5	130.5	0.65	0.78	0.65	42.2
8	T1	679	6.0	0.903	56.6	LOS E	28.2	207.8	0.98	0.96	1.13	31.2
9	R2	138	9.0	0.420	37.7	LOS C	6.1	46.2	0.86	0.77	0.86	36.3
Approach		1272	9.5	0.903	42.7	LOS D	28.2	207.8	0.85	0.87	0.93	35.0
West: The Horsley Drive (W)												
10	L2	49	12.0	0.487	51.6	LOS D	10.4	79.4	0.92	0.78	0.92	33.2
11	T1	145	10.0	0.487	45.9	LOS D	10.4	79.4	0.92	0.78	0.92	33.9
12	R2	60	7.0	0.110	24.9	LOS B	1.7	13.0	0.76	0.71	0.76	42.0
Approach		254	9.7	0.487	42.0	LOS C	10.4	79.4	0.88	0.76	0.88	35.3
All Vehicles		3038	9.9	0.996	45.6	LOS D	32.5	251.0	0.85	0.87	0.95	34.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	1	56.6	LOS E	0.0	0.0	0.95	0.95	
P2	East Full Crossing	1	56.6	LOS E	0.0	0.0	0.95	0.95	
P3	North Full Crossing	1	56.6	LOS E	0.0	0.0	0.95	0.95	
P4	West Full Crossing	1	56.6	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		4	56.6	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 [PM Existing+ 10y Gr + S2 Wallgrove Rd/ The Horsley Drive - Upgraded]**

New Site  
Site Category: (None)  
Signals - Fixed Time Coordinated    Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog  
Phase Times determined by the program  
Green Split Priority has been specified  
Phase Sequence: TCS - Tom Edit  
Reference Phase: Phase A  
Input Phase Sequence: A, D, E, G  
Output Phase Sequence: A, D, E, G

## Phase Timing Summary

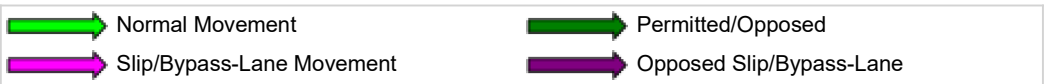
Phase	A	D	E	G
Phase Change Time (sec)	0	36	76	109
Green Time (sec)	30	34	27	10
Phase Time (sec)	36	40	33	16
Phase Split	29%	32%	26%	13%

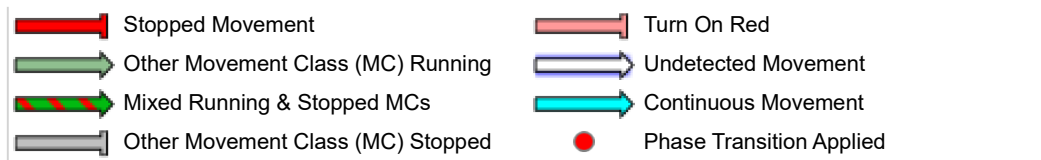
See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency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

## Output Phase Sequence



REF: Reference Phase  
VAR: Variable Phase





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# MOVEMENT SUMMARY

Site: 101 [Existing AM - Wallgrove/Kosovich]

Network: N101 [Existing AM]

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

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed	
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m			km/h	
South: Wallgrove Road (S)														
1	L2	1	0.0	1	0.0	0.488	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.2
2	T1	914	6.0	914	6.0	0.488	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		915	6.0	915	6.0	0.488	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Wallgrove Road (N)														
8	T1	341	12.0	341	12.0	0.190	0.1	LOS A	0.0	0.1	0.01	0.00	0.01	59.8
9	R2	1	0.0	1	0.0	0.190	13.3	LOS A	0.0	0.1	0.01	0.00	0.01	56.2
Approach		342	12.0	342	12.0	0.190	0.1	NA	0.0	0.1	0.01	0.00	0.01	59.8
West: Kosovich Place (E)														
10	L2	1	0.0	1	0.0	0.006	10.2	LOS A	0.0	0.1	0.77	0.81	0.77	36.4
12	R2	1	0.0	1	0.0	0.006	17.3	LOS B	0.0	0.1	0.77	0.81	0.77	41.4
Approach		2	0.0	2	0.0	0.006	13.7	LOS A	0.0	0.1	0.77	0.81	0.77	39.6
All Vehicles		1259	7.6	1259	7.6	0.488	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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 [Existing AM- Wallgrove/ Villiers]

 Network: N101 [Existing AM]

New Site  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		veh	m				km/h
South: Wallgrove Road (S)														
2	T1	915	6.0	915	6.0	0.539	4.1	LOS A	0.0	0.0	0.00	0.41	0.00	54.9
3u	U	1	0.0	1	0.0	0.539	10.8	LOS A	0.0	0.0	0.00	0.41	0.00	39.7
Approach		916	6.0	916	6.0	0.539	4.1	LOS A	0.0	0.0	0.00	0.41	0.00	54.9
North: Wallgrove Road (N)														
8	T1	342	12.0	342	12.0	0.208	4.2	LOS A	0.4	3.4	0.02	0.40	0.02	53.0
Approach		342	12.0	342	12.0	0.208	4.2	LOS A	0.4	3.4	0.02	0.40	0.02	53.0
All Vehicles		1258	7.6	1258	7.6	0.539	4.1	LOS A	0.4	3.4	0.00	0.41	0.00	54.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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.

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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

# MOVEMENT SUMMARY

Site: 101 [Existing PM - Wallgrove/Kosovich]

Network: N101 [Existing PM]

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

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed	
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m			km/h	
South: Wallgrove Road (S)														
1	L2	2	0.0	2	0.0	0.200	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.3
2	T1	366	9.0	366	9.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		368	9.0	368	9.0	0.200	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Wallgrove Road (N)														
8	T1	946	7.0	946	7.0	0.509	0.0	LOS A	0.0	0.1	0.00	0.00	0.01	59.9
9	R2	2	0.0	2	0.0	0.509	8.3	LOS A	0.0	0.1	0.00	0.00	0.01	56.3
Approach		948	7.0	948	7.0	0.509	0.0	NA	0.0	0.1	0.00	0.00	0.01	59.9
West: Kosovich Place (E)														
10	L2	2	0.0	2	0.0	0.011	5.8	LOS A	0.0	0.1	0.63	0.70	0.63	37.3
12	R2	2	0.0	2	0.0	0.011	19.4	LOS B	0.0	0.1	0.63	0.70	0.63	41.9
Approach		4	0.0	4	0.0	0.011	12.6	LOS A	0.0	0.1	0.63	0.70	0.63	40.3
All Vehicles		1320	7.5	1320	7.5	0.509	0.1	NA	0.0	0.1	0.00	0.00	0.01	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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 [Existing PM- Wallgrove/ Villiers]

 Network: N101 [Existing PM]

New Site  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		veh	m				km/h
South: Wallgrove Road (S)														
2	T1	368	9.0	368	9.0	0.220	4.1	LOS A	0.0	0.0	0.00	0.41	0.00	54.8
3u	U	1	0.0	1	0.0	0.220	10.8	LOS A	0.0	0.0	0.00	0.41	0.00	39.6
Approach		369	9.0	369	9.0	0.220	4.1	LOS A	0.0	0.0	0.00	0.41	0.00	54.8
North: Wallgrove Road (N)														
8	T1	947	7.0	947	7.0	0.560	4.2	LOS A	2.0	14.5	0.03	0.40	0.03	53.0
Approach		947	7.0	947	7.0	0.560	4.2	LOS A	2.0	14.5	0.03	0.40	0.03	53.0
All Vehicles		1316	7.6	1316	7.6	0.560	4.2	LOS A	2.0	14.5	0.02	0.40	0.02	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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.

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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

# MOVEMENT SUMMARY

Site: 101 [NRT Existing AM+ S1 - Wallgrove/Kosovich]

Network: N101 [AM + S1]

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

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Queue	Back of Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	m				km/h
South: Wallgrove Road (S)														
1	L2	107	0.0	107	0.0	0.545	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	57.6
2	T1	914	6.0	914	6.0	0.545	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	58.6
Approach		1021	5.4	1021	5.4	0.545	0.7	NA	0.0	0.0	0.00	0.06	0.00	58.4
North: Wallgrove Road (N)														
8	T1	426	12.0	426	12.0	0.237	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	47	0.0	47	0.0	0.110	13.6	LOS A	0.4	2.7	0.78	0.91	0.78	41.8
Approach		473	10.8	473	10.8	0.237	1.4	NA	0.4	2.7	0.08	0.09	0.08	57.5
West: Kosovich Place (E)														
10	L2	142	0.0	142	0.0	0.282	11.9	LOS A	1.1	7.6	0.76	0.93	0.88	37.8
Approach		142	0.0	142	0.0	0.282	11.9	LOS A	1.1	7.6	0.76	0.93	0.88	37.8
All Vehicles		1636	6.5	1636	6.5	0.545	1.9	NA	1.1	7.6	0.09	0.15	0.10	55.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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 [FU AM- Wallgrove/ Villiers + S1]**

 **Network: N101 [AM + S1]**

New Site  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Wallgrove Road (S)														
2	T1	971	6.0	971	6.0	0.620	4.1	LOS A	0.0	0.0	0.00	0.44	0.00	54.2
3u	U	85	0.0	85	0.0	0.620	10.8	LOS A	0.0	0.0	0.00	0.44	0.00	38.3
Approach		1056	5.5	1056	5.5	0.620	4.6	LOS A	0.0	0.0	0.00	0.44	0.00	53.8
North: Wallgrove Road (N)														
8	T1	436	12.0	436	12.0	0.328	4.7	LOS A	2.0	15.4	0.27	0.43	0.27	50.9
Approach		436	12.0	436	12.0	0.328	4.7	LOS A	2.0	15.4	0.27	0.43	0.27	50.9
All Vehicles		1492	7.4	1492	7.4	0.620	4.7	LOS A	2.0	15.4	0.08	0.44	0.08	53.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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.

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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

# MOVEMENT SUMMARY

Site: 101 [NRT Existing PM+ S1 + Wallgrove/Kosovich]

Network: N101 [PM + S1]

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

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed	
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m			km/h	
South: Wallgrove Road (S)														
1	L2	87	0.0	87	0.0	0.246	5.6	LOS A	0.0	0.0	0.00	0.11	0.00	57.3
2	T1	366	9.0	366	9.0	0.246	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	57.8
Approach		453	7.3	453	7.3	0.246	1.1	NA	0.0	0.0	0.00	0.11	0.00	57.6
North: Wallgrove Road (N)														
8	T1	1053	7.0	1053	7.0	0.569	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	57	0.0	57	0.0	0.051	7.2	LOS A	0.2	1.5	0.48	0.67	0.48	47.5
Approach		1110	6.6	1110	6.6	0.569	0.4	NA	0.2	1.5	0.02	0.03	0.02	59.0
West: Kosovich Place (E)														
10	L2	155	0.0	155	0.0	0.136	6.0	LOS A	0.5	3.8	0.43	0.63	0.43	42.7
Approach		155	0.0	155	0.0	0.136	6.0	LOS A	0.5	3.8	0.43	0.63	0.43	42.7
All Vehicles		1718	6.2	1718	6.2	0.569	1.1	NA	0.5	3.8	0.06	0.11	0.06	57.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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 [FU PM- Wallgrove/ Villiers + S1]

 Network: N101 [PM + S1]

New Site  
Site Category: (None)  
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Wallgrove Road (S)														
2	T1	414	9.0	414	9.0	0.308	4.1	LOS A	0.0	0.0	0.00	0.50	0.00	53.0
3u	U	107	0.0	107	0.0	0.308	10.8	LOS A	0.0	0.0	0.00	0.50	0.00	36.3
Approach		521	7.2	521	7.2	0.308	5.5	LOS A	0.0	0.0	0.00	0.50	0.00	51.7
North: Wallgrove Road (N)														
8	T1	1072	7.0	1072	7.0	0.774	5.6	LOS A	9.7	72.3	0.60	0.50	0.60	48.4
Approach		1072	7.0	1072	7.0	0.774	5.6	LOS A	9.7	72.3	0.60	0.50	0.60	48.4
All Vehicles		1593	7.0	1593	7.0	0.774	5.5	LOS A	9.7	72.3	0.41	0.50	0.41	49.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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.

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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

# MOVEMENT SUMMARY

Site: 101 [NRT Existing AM+ 10yr Gr+ S2 - Wallgrove/  
Kosovich ]

Network: N101 [AM + Grwth  
+ S2]

Site Category: (None)  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Wallgrove Road (S)														
1	L2	215	0.0	215	0.0	0.598	5.6	LOS A	0.0	0.0	0.00	0.11	0.00	57.1
2	T1	905	6.0	905	6.0	0.598	0.1	LOS A	0.0	0.0	0.00	0.11	0.00	57.7
Approach		1120	4.8	1120	4.8	0.598	1.2	NA	0.0	0.0	0.00	0.11	0.00	57.5
North: Wallgrove Road (N)														
8	T1	514	12.0	514	12.0	0.286	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	83	0.0	83	0.0	0.249	17.5	LOS B	0.9	6.3	0.85	0.97	0.95	38.9
Approach		597	10.3	597	10.3	0.286	2.4	NA	0.9	6.3	0.12	0.13	0.13	55.7
West: Kosovich Place (E)														
10	L2	273	0.0	273	0.0	0.533	14.4	LOS A	2.7	18.8	0.82	1.07	1.29	36.0
Approach		273	0.0	273	0.0	0.533	14.4	LOS A	2.7	18.8	0.82	1.07	1.29	36.0
All Vehicles		1990	5.8	1990	5.8	0.598	3.4	NA	2.7	18.8	0.15	0.25	0.22	53.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

# MOVEMENT SUMMARY



Site: 101 [FU AM- Wallgrove/ Villiers - 10Y Growth + S2]



Network: N101 [AM + Grwth + S2]

New Site

Site Category: (None)

Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Back of Queue Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		veh	m				km/h
South: Wallgrove Road (S)														
2	T1	1015	6.0	1015	6.0	0.673	4.1	LOS A	0.0	0.0	0.00	0.48	0.00	53.4
3u	U	163	0.0	163	0.0	0.673	10.7	LOS A	0.0	0.0	0.00	0.48	0.00	37.0
Approach		1178	5.2	1178	5.2	0.673	5.0	LOS A	0.0	0.0	0.00	0.48	0.00	52.7
North: Wallgrove Road (N)														
8	T1	514	12.0	514	12.0	0.419	5.4	LOS A	2.8	21.3	0.42	0.50	0.42	49.7
Approach		514	12.0	514	12.0	0.419	5.4	LOS A	2.8	21.3	0.42	0.50	0.42	49.7
All Vehicles		1692	7.2	1692	7.2	0.673	5.1	LOS A	2.8	21.3	0.13	0.48	0.13	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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.

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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

# MOVEMENT SUMMARY

Site: 101 [NRT Existing PM+ 10yr Gr+ S2- Wallgrove/  
Kosovich]

Network: N101 [PM + Grwth  
+ S2]

Site Category: (None)  
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed	
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m			km/h	
South: Wallgrove Road (S)														
1	L2	165	0.0	165	0.0	0.296	5.6	LOS A	0.0	0.0	0.00	0.18	0.00	56.7
2	T1	381	9.0	381	9.0	0.296	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	56.6
Approach		546	6.3	546	6.3	0.296	1.7	NA	0.0	0.0	0.00	0.18	0.00	56.7
North: Wallgrove Road (N)														
8	T1	1180	7.0	1180	7.0	0.638	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
9	R2	110	0.0	110	0.0	0.110	7.9	LOS A	0.5	3.2	0.55	0.74	0.55	46.9
Approach		1290	6.4	1290	6.4	0.638	0.7	NA	0.5	3.2	0.05	0.06	0.05	58.3
West: Kosovich Place (E)														
10	L2	309	0.0	309	0.0	0.275	6.3	LOS A	1.2	8.5	0.48	0.68	0.48	42.5
Approach		309	0.0	309	0.0	0.275	6.3	LOS A	1.2	8.5	0.48	0.68	0.48	42.5
All Vehicles		2145	5.4	2145	5.4	0.638	1.8	NA	1.2	8.5	0.10	0.18	0.10	55.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

# MOVEMENT SUMMARY



Site: 101 [FU PM- Wallgrove/ Villiers - 10Y Growth + S2]



Network: N101 [PM + Grwth + S2]

New Site

Site Category: (None)

Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Wallgrove Road (S)														
2	T1	475	0.0	475	0.0	0.385	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	52.4
3u	U	215	0.0	215	0.0	0.385	10.7	LOS A	0.0	0.0	0.00	0.55	0.00	34.9
Approach		690	0.0	690	0.0	0.385	6.2	LOS A	0.0	0.0	0.00	0.55	0.00	50.1
North: Wallgrove Road (N)														
8	T1	1180	0.0	1180	0.0	0.912	12.9	LOS A	22.9	160.3	1.00	0.88	1.30	42.7
Approach		1180	0.0	1180	0.0	0.912	12.9	LOS A	22.9	160.3	1.00	0.88	1.30	42.7
All Vehicles		1870	0.0	1870	0.0	0.912	10.4	LOS A	22.9	160.3	0.63	0.76	0.82	45.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

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.

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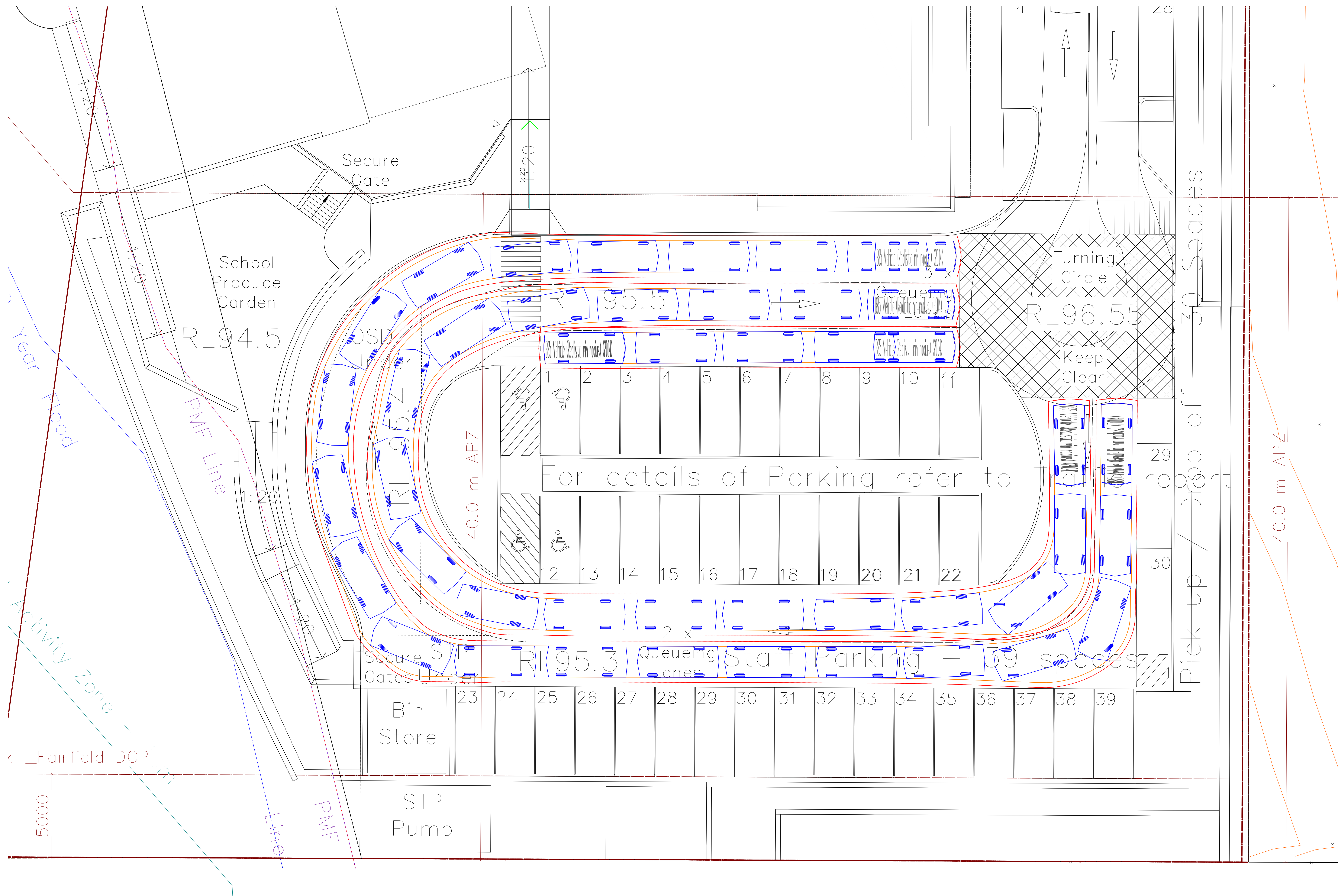
Organisation: MCLAREN TRAFFIC ENGINEERING | Processed: Wednesday, 29 August 2018 2:23:29 PM

Project: \\mteserver\mte storage\Jobs\2018\18106\MTE SIDRA\18 08 22 AM09.25 -\Kosovich Wallgrove to Roundabout Network.sip8

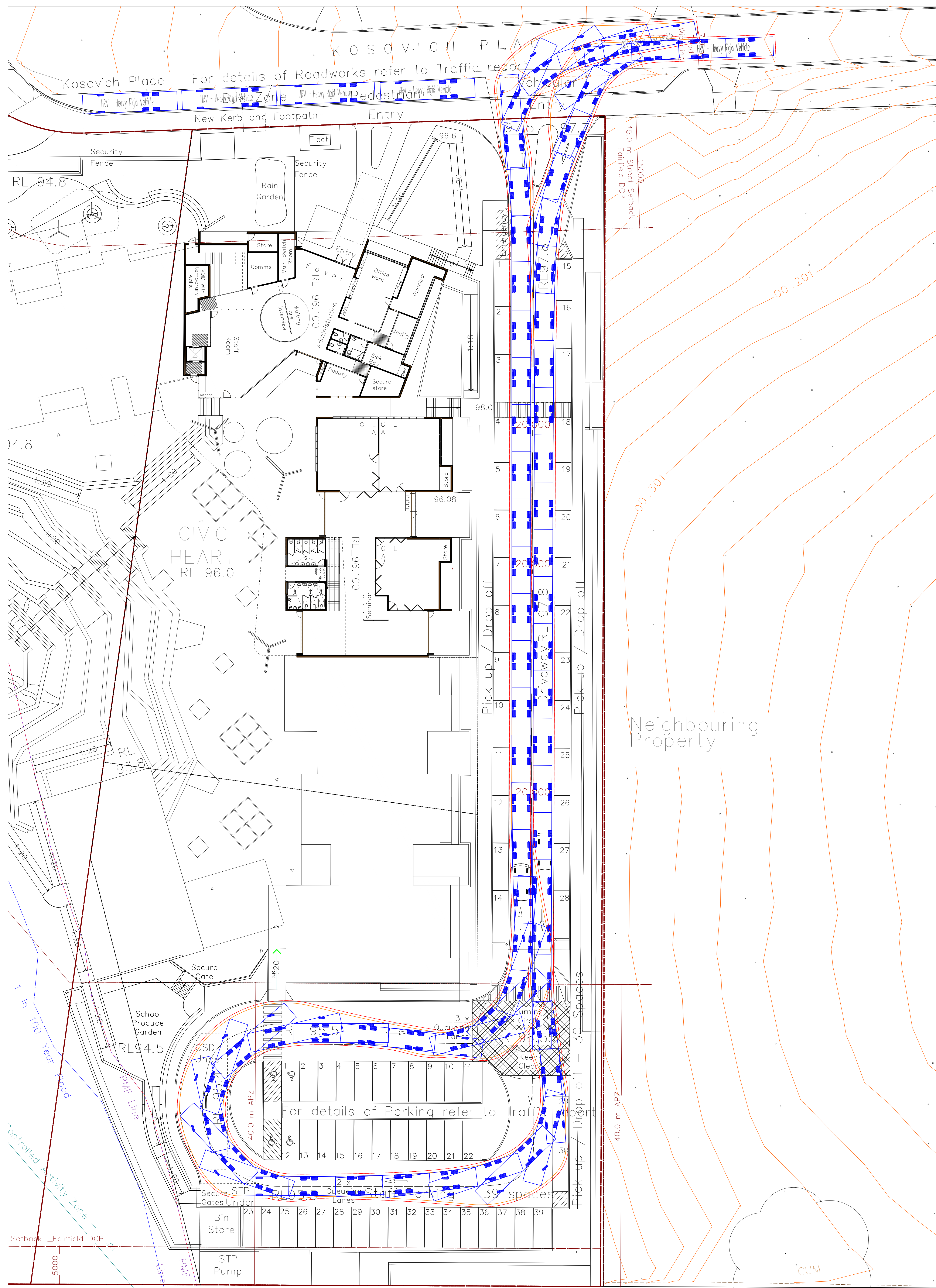


## **ANNEXURE E: SWEEP PATH TESTING**













## **ANNEXURE F: CATCHMENT AREAS**

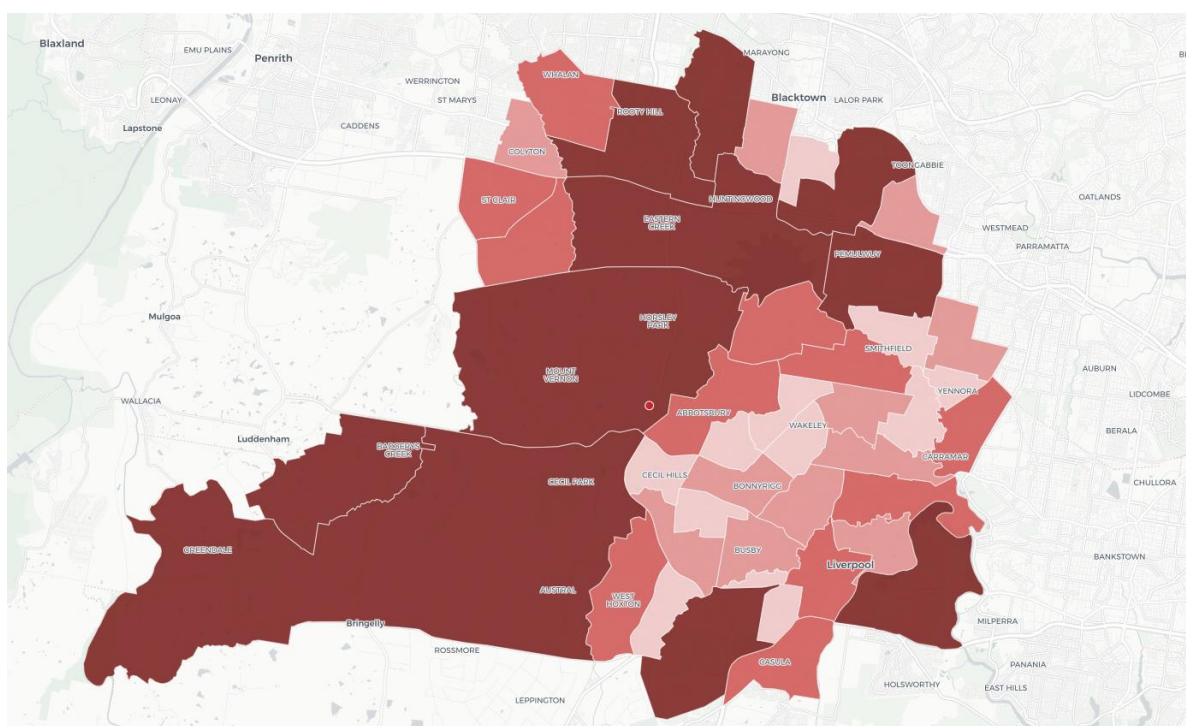
# Cecil Park Catchment Area

The map below highlights the 43 individual Statistical Areas Level 2 (SA2s) which together form the Cecil Park Catchment Area. The Cecil Park Catchment Area includes all the SA2s which are located within a 12 kilometre radius of the Cecil Park development location at Kosovich Place, Cecil Park.

Combined, the Catchment Area covers nearly 471 square kilometres of Sydney's west. Located in the outskirts of urban Sydney, the Cecil Park Catchment Area consists of a diverse array of areas including urban high-density, residential suburban, industrial and rural agriculture.

## 43 SA2s which form the Cecil Park Catchment Area

*The red dot in the centre of the map indicates the proposed development site at Kosovich Place, Cecil Park.*



## Population

The residential population of the Cecil Park Catchment Area is 599,514 people. This represents one in eight people living in Greater Sydney (12%), which had a population of 4,823,991 in 2016. The population of the Catchment Area has grown by nearly 50,000 people over the five-year period from 2011 to 2016, rising from 549,957 to 599,514.

Census population count	2011	2016	Change (2011-2016)
<b>Persons</b>	549,957	599,514	49,557

Growing at a steady pace of 9% over five years the Cecil Park Catchment Area is growing faster than New South Wales (8%), however, marginally slower than the rest of Sydney which has grown by 10% over the same five-year period (2011-2016).



**ANNEXURE G: PROPOSED INFRASTRUCTURE  
UPGRADES**









No Right Turn from Kosovich Place



7.0m



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www.mcclarentraffic.com.au

**CLIENT / Project:**  
Saint Peter & Assyrian Primary School  
  
**Project Address:**  
Kosovich Place, Cecil Park

**Notes:**  
CONCEPT PLAN ONLY.  
NOT FOR CONSTRUCTION.  
  
Tested Using:  
\* AutoCAD Version 2019  
\* Autodesk Vehicle Tracking 2019

**Drawing Title:**  
Kosovich Place - East  
  
**Project No:** 2018/106  
**Drawing No:** 2018-106-02A

Revision	Date	Details
A	11/07/2018	







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**CLIENT / Project:**  
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**Project Address:**  
Kosovich Place, Cecil Park

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NOT FOR CONSTRUCTION.

Tested Using:  
\* AutoCAD Version 2019  
\* Autodesk Vehicle Tracking 2019

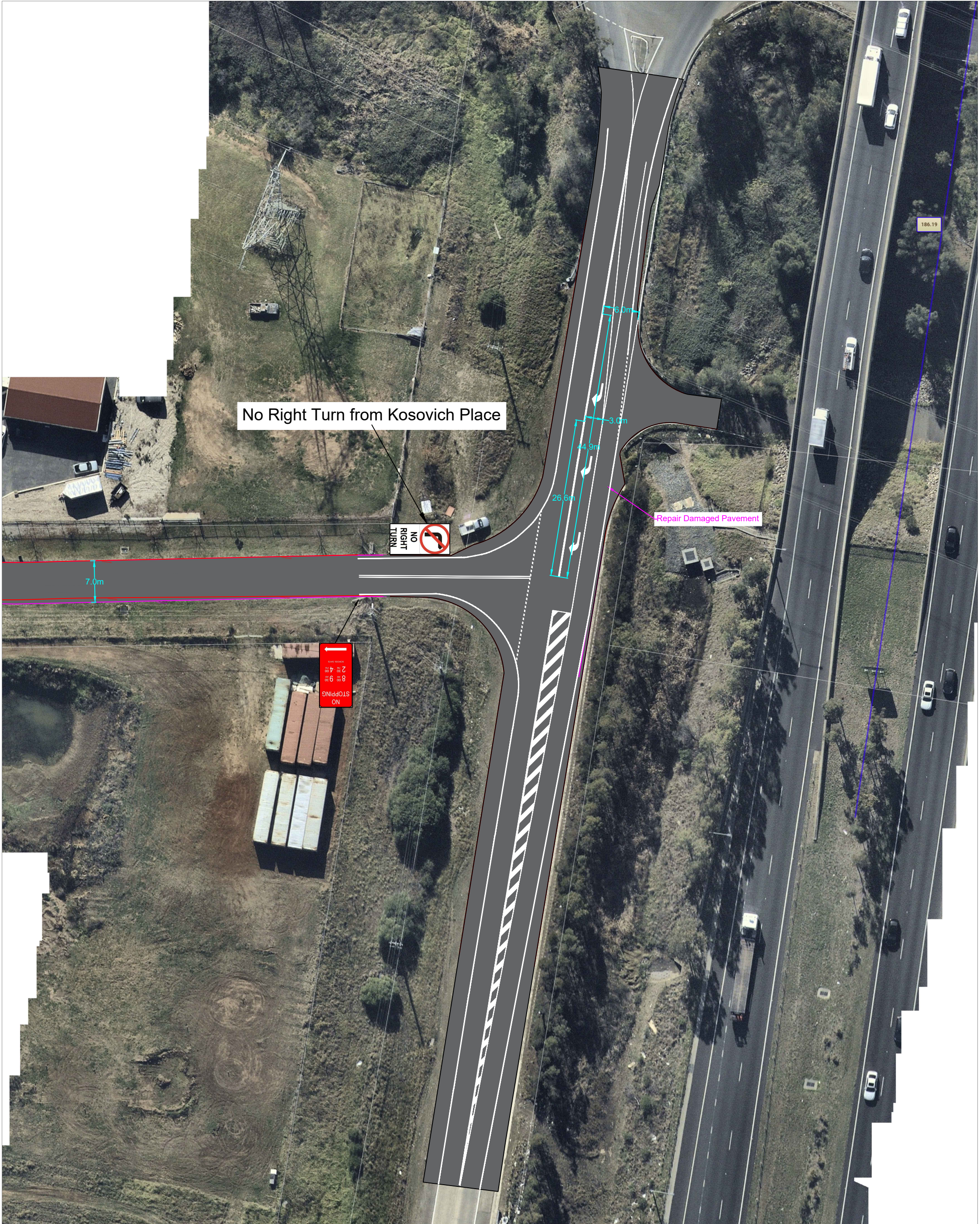
**Drawing Title:**  
Elizabeth Drive/Wallgrove Road Intersection Concept

<b>Project No:</b>	<b>Drawing No:</b>
2018/106	2018-106-03A

Revision	Date	Details
A	11/07/2018	Revision Details







No Right Turn from Kosovich Place

Repair Damaged Pavement

STOPPING  
ON



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**CLIENT / Project:**  
Saint Peter & Assyrian Primary School

**Project Address:**  
Kosovich Place, Cecil Park

**Project No:** 2018/106

**Dwg Name:** Kosovich Place/Wallgrove Road Intersection  
Concept

**Dwg No:** 2018-106-04B

Revision	Date	Details
A	12/07/2018	
B	20/07/2018	Storage length and road width shown

**Notes:**  
CONCEPT PLAN ONLY.  
NOT FOR CONSTRUCTION.

Tested Using:  
\* AutoCAD Version 2019  
\* Autodesk Vehicle Tracking 2019

