PROPOSED MINE INFRASTRUCTURE AND ROAD DIVERSION OF ROAD D2543, FARM BRAKFONTEIN 264-IR, BETWEEN DELMAS AND OGIES

TRAFFIC IMPACT ASSESSMENT REPORT

FEBRUARY 2021
REVISION 1

Issue/revision	Revision 0	Revision 1	Revision 2	Revision 3
Remarks	-	-		
Date	February 2021	February 2021		
Prepared by	J.M. van Rooyen (B.Eng)	J.M. van Rooyen (B.Eng)		
Checked by	E.D. Kotze Pr Tech Eng	E.D. Kotze Pr Tech Eng		
Signature				
Project number	21005	21005		
File reference	Z:/PROJECTS/21001-21099/	Z:/PROJECTS/21001-21099/		

EDL Engineers (Pty) Ltd
1st Floor, Block D
The Village Office Park
c/o Glenwood Rd & Oberon Ave,
Fearie Glen, 0043
Cell: +27 (0)83 564 1563
Tel: +27 (0)87 897 5074/5/6
Email: eben@edlengineers.co.za
Website: www.edlengineers.co.za

CONTENTS

Figures

Drawings

Annexures

Abbreviations

MDPWRT	Mpumalanga Department of Public Works, Roads and Transport
COTO	South Africa Committee of Transport Officials
TMH17	Technical Methods for Highways – South African Trip Data Manual
TMH16	Technical Methods for Highways – South African Traffic Impact and Site Traffic Assessment Standards and Requirements Manual
TIA	Traffic Impact Assessment
HV	Heavy Vehicles
LV	Light Vehicles
NMT	Non-motorised Transport
PT	Public Transport
Vph	Vehicles per hour
q	Lane Utilisation Factor
Qm	Access Utilisation Factor
LOS	Level of Service

1 Introduction

EDL Consulting Engineers have been appointed by Digby Wells Environmental South Africa (Pty) Ltd on behalf of Universal Coal Development III (Pty) Ltd to conduct a Traffic Impact Assessment for the proposed Ubuntu Colliery on the farm Brakfontein 264-IR and diversion of the road D2543.

The purpose of this traffic impact report is to investigate the expected peak hour traffic generated by the proposed mining development on Brakfontein 264-IR and to quantify, as well as evaluate its impact on the existing road network and the diversion of the district road D2543.

This study also evaluates the need for providing improvements to the existing road network including the key intersections.

As part of the study, we have also evaluated the NMT (Non-Motorised Transport) and Public Transport facilities for the proposed Industrial Park development.

As can be seen in the chapters that follow, we have undertaken peak period traffic counts at the key intersections, identified according to the TMH16 and analysed the key intersections for possible capacity restraints and required upgrades.

Trip generation for the mine development and road diversion is calculated from the trip rates and vehicle splits as set out in TMH17 Table 3.3. Sidra™ analyses are performed in the critical peak hours for various traffic scenarios, including the future 5-year horizon, using a compound annual growth rate.

Based on the Sidra™ analyses results, no intersection upgrades are required.

Basic road diversion alignment requirements are discussed in Chapter 8, with the proposed road diversion of D2543 shown in the enclosed **Drawing 21005/RP/01**.

Printouts of the Sidra™ analyses results of the key intersections are included in **Annexure A** at the back of the report after the Drawings.

2 Site Location

2.1 Site Location

As shown in **Figure 1,** the proposed mining development and road diversion. The proposed development is located at a distance of approximately 14,2km to the R555 T-junction and 5,9km to the T-junction with the R50 located to the south east. The site is located approx. 23km south west of Ogies and approx. 18km east of Delmas.

The proposed access point is also located approx. 3500m southeast of district road D1147 and 1550m North-west of district road D1274.

Site Location -Figure 1 (Also attached)

3 Surrounding Road Network and Traffic Flow

3.1 Surrounding Road Network

The following roads and streets are relevant to the study area.

District Road D2543: This road functions as a Rural Distributor (Class 3) road and falls under the jurisdiction of Mpumalanga Department of Public Works, Roads and Transport (MDPWRT). This road is a single carriageway road with no median and one lane in each direction. Manually undertaken traffic counts indicate that this road carries traffic volumes of between 20 and 100vph per direction during the weekday morning (AM) and afternoon (PM) peak hours.

District Road D1147: This road functions as a Rural Collector (Class 4) road and falls under the jurisdiction of Mpumalanga Department of Public Works, Roads and Transport (MDPWRT). This road is a short district road linking road D2543 and the R50 to the southwest. This road has a 'Stop' condition with D2543 having the right-of-way. D1147 is a surfaced (premix) road and carries less than 100vph during the weekday peak hours in both directions.

District Road D1274: This road functions as a Rural Collector (Class 4) road and falls under the jurisdiction of Mpumalanga Department of Public Works, Roads and Transport (MDPWRT). This road is a short rural district road linking road D2543 and the R50 the southeast. This road turns into gravel less than 100m from the D2543 and carries less than 50 vph per direction.

Other Roads: Further away the R555 to the northwest functions as a rural district distributor (class 2) road linking the N12 (and towns such as Ogies and Delmas) with the R50 and is located more than 15km from the proposed site access on Road D2543. This road is outside the study area. The D686 located about 6km to the southeast is a district distributor road linking the R50 and R555.

3.2 Future Road Network

The following roads and streets are relevant to the study area.

No new roads or alignment changes are planned for the study area, other than the proposed diversion of the D2543 is discussed in this report.

3.3 Existing Traffic Flows

Given the type and extent of the proposed development, the study area was defined to include two key intersections as required by COTO TMH and was analysed using SIDRA. Weekday Morning and Weekday Afternoon Traffic Counts were therefore carried out during the Weekday Morning (AM) and Weekday Afternoon (PM) commuter peak periods, in late January 2021, at the following identified intersections:

Key Intersections: D2543 & D1274

D2543 & D1147

The existing Weekday Morning (AM) and Weekday Afternoon (PM) peak hour traffic volumes at the above-mentioned key intersections are summarised in **Figure 2**. As the traffic counts were undertaken during the adjusted Level 3 of the Covid-19 Lockdown in January, a 20% positive adjustment to the traffic count volumes are deemed necessary as the peak hour traffic volumes have not returned to normal levels for the mining operations in the area.

3.4 Projected Future Traffic Flows

It is required to determine the Future 5-year Horizon traffic by applying an annual growth rate to the existing traffic. As the area is slowly densifying and the growth (although lower than in previous years due to slow/negative economic factors) is expected to be positive going forward, a maximum average growth rate of 3%/ Annum was adopted and applied to the existing 2021 peak hour traffic counts.

4 Proposed Development & Trip Generation

With reference to **Drawing 21005/AL/01**, the following sub-sections are relevant in respect of the proposed development and its proposed access, as well as the planned diversion of road D2543.

4.1 Proposed Development

The proposed mine development will have a monthly planned output of 100,000 tons of coal product per month. This calculates to approximately 4000 tons/ day using an average of 25 working days per month.

Table 1 below summarises the extent of the proposed mining development.

Table 1: Extent of the Proposed Development

Proposed Use	Estimated Output	Traffic/Hr
Mining	100 000 tons / month	24 Trucks/Hr (32 ton payload)
Total	**100 000 tons / month**	24 Trucks / hr

4.2 Proposed Diversion of Road D2543

As can be seen on **Drawing 21005/RP/01**, the diversion of District Road D2543 is approx. 2.35km long, have a lane width of 3.5m (7m wide in total), minimum horizontal curves of 240m and a design speed of 80km/h.

4.3 Trip Generation

The expected trip generation for the proposed land use is discussed below:

The total estimated mine peak hour traffic was calculated as 200 vehicles in, 74 vehicles out, during the AM peak hour and 74 vehicles in, 200 vehicles out, during the PM peak hour.

The expected trip generation for the proposed mine is discussed below;

Coal Output (Heavy Vehicles): The breakdown for the Heavy Vehicles is calculated in accordance with the planned coal output of 100,000 tons/month using a 25 day working month and 32 ton payload capacity as per **Table 2** on the next page.

Personnel (Light Vehicles): For the employees, who is a combination of mainly office bound engineering and admin staff as well as site and operational staff a trip rate of 0,5vph was calculated per employee, using an average occupancy of 2 people per vehicle. The max. no of employees, including site staff and contractor staff is estimated at 500 people. Using a trip rate of 0,5vph a total of 250vph was calculated during the AM and PM peak hours. This is a worst case that allow for the vehicles travelling in the weekday peak hours and not before and after the peak hours. The details are provided in **Table 3** on the next page;

Coal Output	Trips/day	Adj. Factor	Split %	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Coal Output of 100,000t/month	125 Trucks /day	-	50/50 50/50	12	12	24	12	12	24
Total Trips				**12**	**12**	**24**	**12**	**12**	**24**

Employees	Trip rate/hr	Adj. Factor	Split %	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
500	0,5vph/ employee	-	75/25 25/75	188	62	250	62	188	250
Total Trips				188	62	250	62	188	250

Figures 3 shows the estimated trip generation and distribution for the proposed development.

4.4 Latent Rights

No latent rights or latent rights upgrades were considered for the study area.

5 Queueing Analysis & Proposed Site Access

5.1 Queueing Analysis

Calculations on the expected queue length were based on a maximum arrival rate at the access, in the worst peak hour for entering vehicles (Weekday AM) at the access.

The formula used for an exceedance of 95% is as follows:

$$\frac{\ln(0.05) - \ln(Qm)}{\ln(q)} - 1$$

Where:
Utilization factor (q):

$$\frac{\text{Arrival rate}}{(\text{Number of lanes}) * (\text{Service rate per lane})}$$

And by means of interpolation, Qm is determined by using **Table 3** below:

Table 3: Tabled values of the relationship between queue length, number of lanes and utilization factor (Qm)*

Table of Qm Values							
LANES	**1**	**2**	**3**	**4**	**6**	**8**	**10**
0,0	0,0000	0,0000	0,0000	0,0000			
0,1	0,1000	0,0182	0,0037	0,0008	0,0000	0,0000	0,0000
0,2	0,2000	0,0666	0,0247	0,0096	0,0015	0,0002	0,0000
0,3	0,3000	0,1385	0,0700	0,0370	0,0111	0,0036	0,0011
0,4	0,4000	0,2286	0,1411	0,0907	0,0400	0,0185	0,0088
0,5	0,5000	0,3333	0,2368	0,1739	0,0991	0,0591	0,0360
0,6	0,6000	0,4501	0,3548	0,2870	0,1965	0,1395	0,1013
0,7	0,7000	0,5766	0,4923	0,4286	0,3359	0,2706	0,2218
0,8	0,8000	0,7111	0,6472	0,5964	0,5178	0,4576	0,4093
0,9	0,9000	0,8526	0,8172	0,7878	0,7401	0,7014	0,6687
1	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000

*Source: Transportation and Land Development (Vergil G Stover / Frank J Koepke)

D2543 Access:
Calculations on the expected queue length were based on a maximum arrival rate of 200vph, in the worst peak hour for entering vehicles (Weekday AM) at the D2543 access.

In a worst-case scenario with a 200vph service rate (Security Guard Operated Gate) at a security gate or a security boom for the Development, with two (2) entrance lanes serving vehicles at a control gate/boom, the utilization factor (q) equates to 0.5 and by then using **Table 3** above, Qm can be determined as 0.333. By solving for the exceedance of 95%, the queue length equates to 1.74 vehicles, which is rounded to 2 vehicles. This means the space required for vehicles queuing from the road edge towards the Entrance Gate is a minimum length (or stacking distance) of 2 vehicles, being a distance of 50m stacking space (25m x 2 heavy vehicles).

Please refer to the enclosed **Drawing No. 21005/AL/01** for details.

5.2 Proposed Site Access

The proposed development is planned to comprise of one (1) access point.

D2543 Access:

A 'Full' access from the D2543will be the only access available for the development.

The access will still require 2 lanes 'IN' and 2 lanes 'OUT', according to the Queue analysis done in the previous sub-chapter. This access must allow enough queueing distance in front of any security boom or gate with a minimum of 50m from the security boom to the edge of the road at the access – as per the Queueing analysis, for 2 vehicles (x25m) to queue.

All access lanes must be at least 5.0m wide and have an unobstructed height of at least 5.0m to allow for emergency vehicles to enter the proposed development in case of an emergency.

The access must be surfaced (dust free) for at least 75m from the road edge. The exit lane of the access must have a 'STOP' condition, with the D2543 having the right of way.

Please refer to **Drawing 21005/AL/01** for the access layout.

Turning circles of a Single Unit + Trailer truck (SU+T) was tracked through the access, as shown on **Drawing 21005/AL/01**, to ensure that trucks will be able to manoeuvre into and out of the site.

5.3 Sight Distance (Diverted Road)

As can be seen on **Drawing 21005/RP/01** the proposed diversion of the D2543 is relatively flat and, with an average slope of less than 3%, with straight sections of road to the east and to the west in the vicinity of the proposed access position. The Shoulder and Stopping Sight Distances to the east and west on the D2543 is more than 240m and is more than adequate for the purpose of this road and access, with a speed limit of 80 km/h.

5.4 Access Spacing

The nearest T-junction/ access to the southeast of the proposed access is spaced at approx. 1550m. The nearest access to the northwest of the proposed access is spaced at approx. 3500m.

It can be concluded that the proposed access spacing on the D2543 is acceptable for a rural class 4 road.

6 Total Future Traffic Flows

The future traffic flow was calculated with a compounding growth factor of **3.0% per annum** and was based on the background traffic from the existing 2021 counts (including a +20% adjustment factor).

Figure 4 shows the existing 2021 peak hour traffic plus estimated development traffic, which is the summation of **Figures 2** and **3.**

Figure 6 shows the future 2026 peak hour traffic plus estimated development traffic which is the summation of **Figures 3** and **5**

6.1 Trip Distribution

Assumptions on the expected trip distribution were based on the location of the proposed site access in relation to the surrounding road network, as well as possible residential locations and road network layout in particularly the roads D2543, D1147 and D1274. The traffic was distributed as shown below and on the enclosed **Figure 3**. These percentages are of the total development traffic.

Development Traffic

- D2543:
    - 40% from/to the north in the Weekday Morning and 40% in the Weekday Afternoon.
    - 30% from/to the south in the Weekday Morning and 30% in the Weekday Afternoon.
- D1147:
    - 20% from/to the east in the Weekday Morning and 20% in the Weekday Afternoon.
- D1274:
    - 10% from/to the east in the Weekday Morning and 10% in the Weekday Afternoon.

7 Traffic Impact & Capacity Analyses

In order to determine the expected traffic impact of the proposed development at the key intersections, capacity analyses were carried out by using SIDRA 9, a well-known traffic engineering software package. The following intersections were analysed:

Key Intersections: D2543 & D1147
D2543 & D1274

The following scenarios were analysed at the above-mentioned key intersections, namely:

- Existing 2021 Weekday Morning (AM) and Weekday Afternoon (PM) peak hour without the development traffic (as per **Figure 2**).
- Existing 2021 Weekday Morning (AM) and Weekday Afternoon (PM) peak hour with development traffic (as per **Figure 4**).
- Future 2026 Background Weekday Morning (AM) and Weekday Afternoon (PM) peak hour without development traffic (as per **Figure 5**).
- Future 2026 Background Weekday Morning (AM) and Weekday Afternoon (PM) peak hour with development traffic (as per **Figure 6**).

The next subsections illustrate the SIDRA results in five tables and briefly discusses the results and key conclusion at the analysed intersections, with the details of Sidra Intersection Capacity Analyses appended in Annexure A.

7.1 D2543 & D1274 –No Upgrades Required

Also see Annexures A1.1 to A1.8 have reference:

Table 4 – Results of Sidra Analyses (worst approach only)

Intersection		1. D2543 & D1274			
Scenario		Existing 2021	Exist 2021 + Dev	Future 2026	Future 2026 + Dev
Level of Service	Weekday Morning AM Peak Hour	A	A	A	A
	Weekday Afternoon PM Peak Hour	A	A	A	A
Average Delays	Weekday Morning AM Peak Hour	5.7	6.0	5.9	6.0
	Weekday Afternoon PM Peak Hour	5.6	5.8	5.7	5.8
Remarks	The Intersection currently operates acceptably, with the development traffic added – no upgrades are required.				

7.2 D2543 & D1147 – No Upgrades Required

Also see Annexures A2.1 to A2.8 have reference:

Table 6 – Results of Sidra Analyses (worst approach only)

Intersection		2. D2543 & D1147			
Scenario		Existing 2021	Exist 2021 + Dev	Future 2026	Future 2026 + Dev
Level of Service	Weekday Morning AM Peak Hour	A	A	A	A
	Weekday Afternoon PM Peak Hour	A	A	A	A
Average Delays	Weekday Morning AM Peak Hour	8.8	9.4	8.9	9.5
	Weekday Afternoon PM Peak Hour	8.9	9.5	9.0	9.6
Remarks	The Intersection currently operates acceptably, with the development traffic added – no upgrades are required.				

7.3 SIDRA Analysis Conclusions

D2543 & D1274:

The intersection of D2543 & D1274 currently operates at a worst-case Level of Service (LOS) A with an average delay of 5.7 seconds. With the implementation of the proposed development and the diversion as well as the additional estimated 5-year traffic growth, this intersection will have a worst-case Level of Service of (LOS) A, with a longer average delay of 6.0 seconds. The intersection will still operate at acceptable conditions (good Levels of Service and Ave. Delays) and therefore no upgrades are proposed at this intersection for the proposed development.

D2543 & D1147:

The intersection of D2543 & D1147 currently operates at a worst-case Level of Service (LOS) A with an average delay of 8.9 seconds. With the implementation of the proposed development and the diversion as well as the additional estimated 5-year traffic growth, this intersection will have a worst-case Level of Service of (LOS) A, with a longer average delay of 9.6 seconds. The intersection will still operate at acceptable conditions (good Levels of Service and Ave. Delays) and therefore no upgrades are proposed at this intersection for the proposed development.

D2543 & Access:

With the implementation of the proposed development and the additional estimated 5-year traffic growth traffic, the access will have a worst-case Level of Service of (LOS) A with an average delay of 10.0 seconds. This access will operate at acceptable conditions (good Levels of Service and Ave. Delays) and therefore suitable for the proposed development.

8 Road and/or Intersection Alterations

8.1 Proposed Road Diversion

Road D2543 is proposed to be re-aligned for the section passing the site. The diversion is proposed for road D2543 section 040. This section is situated between the D1274 and the D1147, is approx. 2.35km long, starts approx. 250m northwest of the intersection of D1274 and ends approx. 2950m from the intersection of D1147.

8.2 Proposed Road Geometric Layout

The proposed diversion of road D2543 must adhere to the following geometric conditions:

- Lanes must be at least 3.5m wide.
- Curves in the horizontal alignment must have an inside radius of at least 240m.
- Vertical crest curves must have a minimum k-value of 33 and a minimum k-value for sag curves must be 25.
- Vertical curves must have a minimum length of 140m.

8.3 Proposed Road Safety

The proposed diversion of road D2543 must adhere to the following safety measures on both sides of the diversion:

- A maximum speed of 80km/h is allowed on the proposed road diversion, therefore:
    - A 100km/h speed limit sign must be erected at least 350m before the proposed diversion, in both directions.
    - An 80km/h speed limit sign at least 150m before the proposed diversion from both directions.
    - An 80km/h speed limit sign approx. 300m northwest of the proposed access and an 80km/h speed limit sign approx. 500m southeast of the proposed access position, both of these signs are for traffic travelling away from the proposed access position.
- A winding road warning sign at the start of the diversion on both sides (each direction).

Please refer to **Drawing 21005/RP/01** for the proposed road diversion layout and required signage.

9 Public Transport Assessment

9.1 Pedestrian Walkways & Crossings

There are no existing pedestrian walkways along the D2543. With no residential or retail area in the immediate vicinity, the addition of pedestrian walkways is not proposed.

9.2 Public Transport Facilities

In terms of the National Land Transport Transition Act (NLTTA) 22 of 2000, Section 29, it is a requirement that an assessment of the public transport issues be included in the traffic impact assessments. The Act also requires that there be public transport facilities within 1km walking distance from a development in a built-up area.

It is recommended that the proposed development need to provide a Taxi/Bus facility within the proposed development, to allow for drop-off and pick-up of employees. It is **not recommended** that a lay-by be constructed on the D2543, due to the high percentage of heavy vehicles travelling on the D2543 and the dangers associated with it (**UNSAFE**), especially in adverse weather conditions.

Please refer to **Drawing 21005/AL/01**, for the layout of the proposed access.

10 Conclusions & Recommendations

Based on the content of this traffic impact report, the following key conclusions and recommendations are relevant:

- The proposed development is for mining operations and the proposed diversion of road D2543, is to allow for mining operations through the existing alignment of road D2543.
- As shown in **Figure 1**, the proposed site is located next to road D2543 at a distance of approximately 14,2km to the R555 T-junction and 5,9km to the T-junction at the R50 located to the south east.
- It is estimated that the proposed development with the proposed mining activity will generate (as a worst case) a total of 274vph trips (total 'In' plus 'Out') during the Weekday Morning (AM) and 274vph trips (total 'In' plus 'Out') during the Weekday Afternoon (PM) peak hours.
- Sidra Intersection Capacity Analyses, were carried out for the Weekday Morning and Weekday Afternoon peak periods at the key intersections and no upgrades are proposed for the development**.**
- The diversion of road D2543 is proposed with several geometric and safety considerations, as set out in **Chapter 8**, including an 80km/h speed limit.
- There is one (1) 'full' access from the D2543 proposed, for the use of the proposed development. This access requires two (2) entry lanes and two (2) exit lanes. Refer to **Drawing 21005/AL/01** for details.
- The access on the D2543 requires a minimum of two (2) vehicles queuing (stacking) space of 50m from the road edge at the access in front of any security gates/booms.
- The access must be surfaced (dust free) for at least 75m from the road edge.
- With regards to non-motorised and public transport, no pedestrian walkways are proposed along the D2543. An internal public transport drop-off and pick-up zone is proposed for the mining development, as shown on **Drawing 21005/AL/01**.

It is therefore recommended that the proposed mining activities and road diversion are supported from a traffic engineering perspective with a speed limit of 80km/h, required minimum curve lengths and minimum radii on the D2543, as proposed in this report (and on **Drawing 21005/AL/01**) and to the relevant standards of the Mpumalanga Department of Public Works, Roads and Transport.

11 Bibliography

- TMH 17 - South African Trip Data Manual. (2013). South African Committee of Transport Officials.
- SIDRA Intersection 9. (2021). Australia: Department of Planning Transport and Infrastructure.
- TRH 26 - South African Road Classification and Access Management Manual. (2012). 1st ed. South African Committee of Transport Officials.
- TMH 16 - Traffic Impact and Site Traffic Assessment Manual. (2012). 1st ed. South African Committee of Transport Officials.

Figures

Drawings

Drawing no:	21005/AL/01	Proposed Access Layout
	21005/RP/01	Proposed Road Diversion (D2543)

Annexure A

Relevant outputs of the SIDRA9 intersection capacity analyses at the key intersections

Annexure A1:
D2543 & D1274

- A1.1 – Existing 2021 Weekday AM Peak Hour Traffic
- A1.2 – Existing 2021 Weekday PM Peak Hour Traffic
- A1.3 – Existing 2021 Plus Development Weekday AM Peak Hour Traffic
- A1.4 – Existing 2021 Plus Development Weekday PM Peak Hour Traffic
- A1.5 – Future 2026 Background Weekday AM Peak Hour Traffic
- A1.6 – Future 2026 Background Weekday PM Peak Hour Traffic
- A1.7 – Future 2026 Background Plus Development Weekday AM Peak Hour Traffic
- A1.8 – Future 2026 Background Plus Development Weekday PM Peak Hour Traffic

Annexure A1.1

Sidra Output: D2543 & D1274

Existing 2021 Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	1	0.0	1	0.0	0.021	8.4	LOS A	0.0	0.0	0.00	0.02	0.00	62.5
2	T1	35	10.0	37	10.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	119.0
Approach		36	9.7	38	9.7	0.021	0.2	NA	0.0	0.0	0.00	0.02	0.00	116.1
NorthWest: D2543														
8	T1	64	10.0	67	10.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	119.4
9	R2	1	0.0	1	0.0	0.037	8.1	LOS A	0.0	0.0	0.00	0.01	0.00	76.0
Approach		65	9.8	68	9.8	0.037	0.1	NA	0.0	0.0	0.00	0.01	0.00	118.3
SouthWest: D1274														
10	L2	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.0	0.11	0.55	0.11	53.3
12	R2	1	0.0	1	0.0	0.002	5.8	LOS A	0.0	0.0	0.11	0.55	0.11	52.8
Approach		2	0.0	2	0.0	0.002	5.7	LOS A	0.0	0.0	0.11	0.55	0.11	53.0
All Vehicles		103	9.6	108	9.6	0.037	0.3	NA	0.0	0.0	0.00	0.02	0.00	114.8

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

Annexure A1.2

Sidra Output: D2543 & D1274

Existing 2021 Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	2	0.0	2	0.0	0.011	8.4	LOS A	0.0	0.0	0.00	0.07	0.00	61.8
2	T1	18	10.0	19	10.0	0.011	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	116.4
Approach		20	9.0	21	9.0	0.011	0.8	NA	0.0	0.0	0.00	0.07	0.00	107.0
NorthWest: D2543														
8	T1	16	10.0	17	10.0	0.010	0.0	LOS A	0.0	0.0	0.01	0.04	0.01	117.7
9	R2	1	0.0	1	0.0	0.010	8.0	LOS A	0.0	0.0	0.01	0.04	0.01	75.3
Approach		17	9.4	18	9.4	0.010	0.5	NA	0.0	0.0	0.01	0.04	0.01	114.0
SouthWest: D1274														
10	L2	3	0.0	3	0.0	0.004	5.6	LOS A	0.0	0.1	0.07	0.56	0.07	53.4
12	R2	2	0.0	2	0.0	0.004	5.6	LOS A	0.0	0.1	0.07	0.56	0.07	52.9
Approach		5	0.0	5	0.0	0.004	5.6	LOS A	0.0	0.1	0.07	0.56	0.07	53.2
All Vehicles		42	8.1	44	8.1	0.011	1.3	NA	0.0	0.1	0.01	0.12	0.01	97.6

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

Annexure A1.3

Sidra Output: D2543 & D1274

Existing 2021 + Development Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	1	0.0	1	0.0	0.055	8.4	LOS A	0.0	0.0	0.00	0.01	0.00	62.6
2	T1	95	10.0	100	10.0	0.055	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	119.6
Approach		96	9.9	101	9.9	0.055	0.1	NA	0.0	0.0	0.00	0.01	0.00	118.5
NorthWest: D2543														
8	T1	86	10.0	91	10.0	0.054	0.0	LOS A	0.1	0.4	0.04	0.05	0.04	116.8
9	R2	7	10.0	7	10.0	0.054	8.7	LOS A	0.1	0.4	0.04	0.05	0.04	74.1
Approach		93	10.0	98	10.0	0.054	0.7	NA	0.1	0.4	0.04	0.05	0.04	112.0
SouthWest: D1274														
10	L2	20	10.0	21	10.0	0.016	6.0	LOS A	0.1	0.5	0.20	0.54	0.20	52.6
12	R2	1	10.0	1	10.0	0.016	6.3	LOS A	0.1	0.5	0.20	0.54	0.20	52.1
Approach		21	10.0	22	10.0	0.016	6.0	LOS A	0.1	0.5	0.20	0.54	0.20	52.6
All Vehicles		210	10.0	221	10.0	0.055	0.9	NA	0.1	0.5	0.04	0.08	0.04	102.9

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

Annexure A1.4

Sidra Output: D2543 & D1274

Existing 2021 + Development Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	2	0.0	2	0.0	0.018	8.4	LOS A	0.0	0.0	0.00	0.04	0.00	62.1
2	T1	30	10.0	32	10.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	117.7
Approach		32	9.4	34	9.4	0.018	0.5	NA	0.0	0.0	0.00	0.04	0.00	111.5
NorthWest: D2543														
8	T1	76	10.0	80	10.0	0.057	0.0	LOS A	0.1	1.0	0.05	0.14	0.05	112.8
9	R2	20	10.0	21	10.0	0.057	8.4	LOS A	0.1	1.0	0.05	0.14	0.05	72.4
Approach		96	10.0	101	10.0	0.057	1.8	NA	0.1	1.0	0.05	0.14	0.05	101.0
SouthWest: D1274														
10	L2	10	10.0	11	10.0	0.009	5.8	LOS A	0.0	0.3	0.09	0.55	0.09	52.9
12	R2	2	10.0	2	10.0	0.009	6.1	LOS A	0.0	0.3	0.09	0.55	0.09	52.4
Approach		12	10.0	13	10.0	0.009	5.8	LOS A	0.0	0.3	0.09	0.55	0.09	52.8
All Vehicles		140	9.9	147	9.9	0.057	1.8	NA	0.1	1.0	0.04	0.15	0.04	95.6

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

Annexure A1.5

Sidra Output: D2543 & D1274

Future 2026 Background Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	1	0.0	1	0.0	0.024	8.4	LOS A	0.0	0.0	0.00	0.02	0.00	62.5
2	T1	41	10.0	43	10.0	0.024	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	119.1
Approach		42	9.8	44	9.8	0.024	0.2	NA	0.0	0.0	0.00	0.02	0.00	116.6
NorthWest: D2543														
8	T1	75	10.0	79	10.0	0.044	0.0	LOS A	0.0	0.1	0.00	0.01	0.00	119.5
9	R2	1	10.0	1	10.0	0.044	8.5	LOS A	0.0	0.1	0.00	0.01	0.00	75.1
Approach		76	10.0	80	10.0	0.044	0.1	NA	0.0	0.1	0.00	0.01	0.00	118.6
SouthWest: D1274														
10	L2	1	10.0	1	10.0	0.002	5.8	LOS A	0.0	0.0	0.13	0.55	0.13	52.8
12	R2	1	10.0	1	10.0	0.002	6.0	LOS A	0.0	0.0	0.13	0.55	0.13	52.3
Approach		2	10.0	2	10.0	0.002	5.9	LOS A	0.0	0.0	0.13	0.55	0.13	52.6
All Vehicles		120	9.9	126	9.9	0.044	0.2	NA	0.0	0.1	0.00	0.02	0.00	115.5

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

Annexure A1.6

Sidra Output: D2543 & D1274

Future 2026 Background Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	2	0.0	2	0.0	0.013	8.4	LOS A	0.0	0.0	0.00	0.06	0.00	61.9
2	T1	21	10.0	22	10.0	0.013	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	116.9
Approach		23	9.1	24	9.1	0.013	0.7	NA	0.0	0.0	0.00	0.06	0.00	108.5
NorthWest: D2543														
8	T1	19	10.0	20	10.0	0.012	0.0	LOS A	0.0	0.0	0.01	0.04	0.01	118.2
9	R2	1	10.0	1	10.0	0.012	8.4	LOS A	0.0	0.0	0.01	0.04	0.01	74.6
Approach		20	10.0	21	10.0	0.012	0.4	NA	0.0	0.0	0.01	0.04	0.01	114.9
SouthWest: D1274														
10	L2	3	10.0	3	10.0	0.004	5.7	LOS A	0.0	0.1	0.08	0.55	0.08	53.0
12	R2	2	10.0	2	10.0	0.004	5.7	LOS A	0.0	0.1	0.08	0.55	0.08	52.4
Approach		5	10.0	5	10.0	0.004	5.7	LOS A	0.0	0.1	0.08	0.55	0.08	52.7
All Vehicles		48	9.6	51	9.6	0.013	1.1	NA	0.0	0.1	0.01	0.10	0.01	99.8

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

Annexure A1.7

Sidra Output: D2543 & D1274

Future 2026 Background + Development Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	1	0.0	1	0.0	0.059	8.4	LOS A	0.0	0.0	0.00	0.01	0.00	62.6
2	T1	101	10.0	106	10.0	0.059	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	119.6
Approach		102	9.9	107	9.9	0.059	0.1	NA	0.0	0.0	0.00	0.01	0.00	118.6
NorthWest: D2543														
8	T1	97	10.0	102	10.0	0.061	0.0	LOS A	0.1	0.4	0.04	0.05	0.04	117.1
9	R2	7	10.0	7	10.0	0.061	8.7	LOS A	0.1	0.4	0.04	0.05	0.04	74.2
Approach		104	10.0	109	10.0	0.061	0.6	NA	0.1	0.4	0.04	0.05	0.04	112.7
SouthWest: D1274														
10	L2	20	10.0	21	10.0	0.016	6.0	LOS A	0.1	0.5	0.20	0.54	0.20	52.6
12	R2	1	10.0	1	10.0	0.016	6.4	LOS A	0.1	0.5	0.20	0.54	0.20	52.0
Approach		21	10.0	22	10.0	0.016	6.0	LOS A	0.1	0.5	0.20	0.54	0.20	52.5
All Vehicles		227	10.0	239	10.0	0.061	0.9	NA	0.1	0.5	0.04	0.07	0.04	104.0

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

Annexure A1.8

Sidra Output: D2543 & D1274

Future 2026 Background + Development Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	2	0.0	2	0.0	0.026	8.4	LOS A	0.0	0.0	0.00	0.03	0.00	62.3
2	T1	43	10.0	45	10.0	0.026	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	118.4
Approach		45	9.6	47	9.6	0.026	0.4	NA	0.0	0.0	0.00	0.03	0.00	113.8
NorthWest: D2543														
8	T1	79	10.0	83	10.0	0.059	0.0	LOS A	0.1	1.0	0.06	0.14	0.06	112.5
9	R2	21	10.0	22	10.0	0.059	8.5	LOS A	0.1	1.0	0.06	0.14	0.06	72.3
Approach		100	10.0	105	10.0	0.059	1.8	NA	0.1	1.0	0.06	0.14	0.06	100.7
SouthWest: D1274														
10	L2	10	10.0	11	10.0	0.009	5.8	LOS A	0.0	0.3	0.12	0.54	0.12	52.8
12	R2	2	10.0	2	10.0	0.009	6.1	LOS A	0.0	0.3	0.12	0.54	0.12	52.3
Approach		12	10.0	13	10.0	0.009	5.8	LOS A	0.0	0.3	0.12	0.54	0.12	52.8
All Vehicles		157	9.9	165	9.9	0.059	1.7	NA	0.1	1.0	0.05	0.14	0.05	97.2

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

Annexure A2:
D2543 & D1147

- A2.1 – Existing 2021 Weekday AM Peak Hour Traffic
- A2.2 – Existing 2021 Weekday PM Peak Hour Traffic
- A2.3 – Existing 2021 Plus Development Weekday AM Peak Hour Traffic
- A2.4 – Existing 2021 Plus Development Weekday PM Peak Hour Traffic
- A2.5 – Future 2026 Background Weekday AM Peak Hour Traffic
- A2.6 – Future 2026 Background Weekday PM Peak Hour Traffic
- A2.7 – Future 2026 Background Plus Development Weekday AM Peak Hour Traffic
- A2.8 – Future 2026 Background Plus Development Weekday PM Peak Hour Traffic

Annexure A2.1

Sidra Output: D2543 & D1147

Existing 2021 Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	11	10.0	12	10.0	0.027	8.8	LOS A	0.0	0.0	0.00	0.16	0.00	59.4
2	T1	36	10.0	38	10.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	112.7
Approach		47	10.0	49	10.0	0.027	2.1	NA	0.0	0.0	0.00	0.16	0.00	93.1
NorthWest: D2543														
8	T1	70	10.0	74	10.0	0.041	0.0	LOS A	0.0	0.1	0.00	0.01	0.00	119.4
9	R2	1	10.0	1	10.0	0.041	8.5	LOS A	0.0	0.1	0.00	0.01	0.00	60.4
Approach		71	10.0	75	10.0	0.041	0.1	NA	0.0	0.1	0.00	0.01	0.00	117.8
SouthWest: D1147														
10	L2	5	10.0	5	10.0	0.033	8.9	LOS A	0.1	0.8	0.17	0.65	0.17	68.7
12	R2	31	10.0	33	10.0	0.033	8.8	LOS A	0.1	0.8	0.17	0.65	0.17	67.8
Approach		36	10.0	38	10.0	0.033	8.8	LOS A	0.1	0.8	0.17	0.65	0.17	67.9
All Vehicles		154	10.0	162	10.0	0.041	2.7	NA	0.1	0.8	0.04	0.21	0.04	94.0

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

Annexure A2.2

Sidra Output: D2543 & D1147

Existing 2021 Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	32	10.0	34	10.0	0.061	8.8	LOS A	0.0	0.0	0.00	0.22	0.00	58.8
2	T1	72	10.0	76	10.0	0.061	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	110.5
Approach		104	10.0	109	10.0	0.061	2.7	NA	0.0	0.0	0.00	0.22	0.00	87.0
NorthWest: D2543														
8	T1	41	10.0	43	10.0	0.027	0.1	LOS A	0.0	0.3	0.06	0.08	0.06	115.5
9	R2	5	10.0	5	10.0	0.027	8.7	LOS A	0.0	0.3	0.06	0.08	0.06	59.4
Approach		46	10.0	48	10.0	0.027	1.0	NA	0.0	0.3	0.06	0.08	0.06	104.7
SouthWest: D1147														
10	L2	3	10.0	3	10.0	0.016	9.0	LOS A	0.1	0.4	0.20	0.64	0.20	68.5
12	R2	14	10.0	15	10.0	0.016	8.9	LOS A	0.1	0.4	0.20	0.64	0.20	67.6
Approach		17	10.0	18	10.0	0.016	8.9	LOS A	0.1	0.4	0.20	0.64	0.20	67.7
All Vehicles		167	10.0	176	10.0	0.061	2.9	NA	0.1	0.4	0.04	0.22	0.04	88.6

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

Annexure A2.3

Sidra Output: D2543 & D1147

Existing 2021 + Development Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	25	10.0	26	10.0	0.053	8.8	LOS A	0.0	0.0	0.00	0.19	0.00	59.1
2	T1	66	10.0	69	10.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	111.5
Approach		91	10.0	96	10.0	0.053	2.4	NA	0.0	0.0	0.00	0.19	0.00	89.6
NorthWest: D2543														
8	T1	150	10.0	158	10.0	0.087	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	119.7
9	R2	1	10.0	1	10.0	0.087	8.7	LOS A	0.0	0.1	0.00	0.00	0.00	60.5
Approach		151	10.0	159	10.0	0.087	0.1	NA	0.0	0.1	0.00	0.00	0.00	118.9
SouthWest: D1147														
10	L2	5	10.0	5	10.0	0.081	9.0	LOS A	0.3	2.0	0.28	0.68	0.28	68.2
12	R2	71	10.0	75	10.0	0.081	9.4	LOS A	0.3	2.0	0.28	0.68	0.28	67.3
Approach		76	10.0	80	10.0	0.081	9.4	LOS A	0.3	2.0	0.28	0.68	0.28	67.3
All Vehicles		318	10.0	335	10.0	0.087	3.0	NA	0.3	2.0	0.07	0.22	0.07	93.1

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

Annexure A2.4

Sidra Output: D2543 & D1147

Existing 2021 + Development Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	72	10.0	76	10.0	0.131	8.8	LOS A	0.0	0.0	0.00	0.22	0.00	58.7
2	T1	152	10.0	160	10.0	0.131	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	110.1
Approach		224	10.0	236	10.0	0.131	2.8	NA	0.0	0.0	0.00	0.22	0.00	85.9
NorthWest: D2543														
8	T1	71	10.0	75	10.0	0.045	0.1	LOS A	0.0	0.3	0.06	0.05	0.06	116.7
9	R2	5	10.0	5	10.0	0.045	9.2	LOS A	0.0	0.3	0.06	0.05	0.06	59.7
Approach		76	10.0	80	10.0	0.045	0.7	NA	0.0	0.3	0.06	0.05	0.06	109.8
SouthWest: D1147														
10	L2	3	10.0	3	10.0	0.034	9.3	LOS A	0.1	0.8	0.32	0.67	0.32	68.0
12	R2	28	10.0	29	10.0	0.034	9.5	LOS A	0.1	0.8	0.32	0.67	0.32	67.1
Approach		31	10.0	33	10.0	0.034	9.5	LOS A	0.1	0.8	0.32	0.67	0.32	67.2
All Vehicles		331	10.0	348	10.0	0.131	3.0	NA	0.1	0.8	0.04	0.23	0.04	88.0

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

Annexure A2.5

Sidra Output: D2543 & D1147

Future 2026 Background Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	13	10.0	14	10.0	0.032	8.8	LOS A	0.0	0.0	0.00	0.17	0.00	59.4
2	T1	42	10.0	44	10.0	0.032	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	112.6
Approach		55	10.0	58	10.0	0.032	2.1	NA	0.0	0.0	0.00	0.17	0.00	92.9
NorthWest: D2543														
8	T1	81	10.0	85	10.0	0.047	0.0	LOS A	0.0	0.1	0.00	0.01	0.00	119.5
9	R2	1	10.0	1	10.0	0.047	8.5	LOS A	0.0	0.1	0.00	0.01	0.00	60.4
Approach		82	10.0	86	10.0	0.047	0.1	NA	0.0	0.1	0.00	0.01	0.00	118.1
SouthWest: D1147														
10	L2	6	10.0	6	10.0	0.039	8.9	LOS A	0.1	1.0	0.18	0.65	0.18	68.6
12	R2	36	10.0	38	10.0	0.039	8.9	LOS A	0.1	1.0	0.18	0.65	0.18	67.7
Approach		42	10.0	44	10.0	0.039	8.9	LOS A	0.1	1.0	0.18	0.65	0.18	67.8
All Vehicles		179	10.0	188	10.0	0.047	2.8	NA	0.1	1.0	0.04	0.21	0.04	93.9

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

Annexure A2.6

Sidra Output: D2543 & D1147

Future 2026 Background Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	37	10.0	39	10.0	0.070	8.8	LOS A	0.0	0.0	0.00	0.22	0.00	58.8
2	T1	83	10.0	87	10.0	0.070	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	110.5
Approach		120	10.0	126	10.0	0.070	2.7	NA	0.0	0.0	0.00	0.22	0.00	86.9
NorthWest: D2543														
8	T1	48	10.0	51	10.0	0.032	0.1	LOS A	0.0	0.3	0.06	0.08	0.06	115.3
9	R2	6	10.0	6	10.0	0.032	8.7	LOS A	0.0	0.3	0.06	0.08	0.06	59.3
Approach		54	10.0	57	10.0	0.032	1.0	NA	0.0	0.3	0.06	0.08	0.06	104.3
SouthWest: D1147														
10	L2	3	10.0	3	10.0	0.018	9.1	LOS A	0.1	0.4	0.22	0.64	0.22	68.4
12	R2	16	10.0	17	10.0	0.018	8.9	LOS A	0.1	0.4	0.22	0.64	0.22	67.5
Approach		19	10.0	20	10.0	0.018	9.0	LOS A	0.1	0.4	0.22	0.64	0.22	67.6
All Vehicles		193	10.0	203	10.0	0.070	2.9	NA	0.1	0.4	0.04	0.22	0.04	88.6

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

Annexure A2.7

Sidra Output: D2543 & D1147

Future 2026 Background + Development Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	27	10.0	28	10.0	0.058	8.8	LOS A	0.0	0.0	0.00	0.19	0.00	59.1
2	T1	72	10.0	76	10.0	0.058	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	111.5
Approach		99	10.0	104	10.0	0.058	2.4	NA	0.0	0.0	0.00	0.19	0.00	89.8
NorthWest: D2543														
8	T1	161	10.0	169	10.0	0.093	0.0	LOS A	0.0	0.1	0.00	0.00	0.00	119.7
9	R2	1	10.0	1	10.0	0.093	8.7	LOS A	0.0	0.1	0.00	0.00	0.00	60.5
Approach		162	10.0	171	10.0	0.093	0.1	NA	0.0	0.1	0.00	0.00	0.00	119.0
SouthWest: D1147														
10	L2	6	10.0	6	10.0	0.088	9.0	LOS A	0.3	2.3	0.30	0.69	0.30	68.1
12	R2	76	10.0	80	10.0	0.088	9.5	LOS A	0.3	2.3	0.30	0.69	0.30	67.2
Approach		82	10.0	86	10.0	0.088	9.5	LOS A	0.3	2.3	0.30	0.69	0.30	67.2
All Vehicles		343	10.0	361	10.0	0.093	3.0	NA	0.3	2.3	0.07	0.22	0.07	93.1

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

Annexure A2.8

Sidra Output: D2543 & D1147

Future 2026 Background + Development Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D2543														
1	L2	77	10.0	81	10.0	0.140	8.8	LOS A	0.0	0.0	0.00	0.22	0.00	58.7
2	T1	163	10.0	172	10.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	110.1
Approach		240	10.0	253	10.0	0.140	2.8	NA	0.0	0.0	0.00	0.22	0.00	86.0
NorthWest: D2543														
8	T1	78	10.0	82	10.0	0.050	0.1	LOS A	0.1	0.4	0.06	0.05	0.06	116.4
9	R2	6	10.0	6	10.0	0.050	9.3	LOS A	0.1	0.4	0.06	0.05	0.06	59.6
Approach		84	10.0	88	10.0	0.050	0.8	NA	0.1	0.4	0.06	0.05	0.06	109.0
SouthWest: D1147														
10	L2	3	10.0	3	10.0	0.037	9.4	LOS A	0.1	0.9	0.33	0.68	0.33	67.9
12	R2	30	10.0	32	10.0	0.037	9.6	LOS A	0.1	0.9	0.33	0.68	0.33	67.0
Approach		33	10.0	35	10.0	0.037	9.6	LOS A	0.1	0.9	0.33	0.68	0.33	67.1
All Vehicles		357	10.0	376	10.0	0.140	3.0	NA	0.1	0.9	0.05	0.23	0.05	88.0

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