

Appendix O - Traffic Impact Assessment



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Biovac Kilimanjaro
Erf 118296-RE, 103659-RE, 24176-RE & 148366

For



TRANSPORT IMPACT ASSESSMENT

August 2025



CONTENTS LIST

1. INTRODUCTION	1
2. BACKGROUND	3
3. EXISTING TRAFFIC SCENARIO	8
3.1 EXISTING TRAFFIC CONDITION.....	8
3.2 EXISTING TRAFFIC SCENARIO ANALYSIS	12
4. PROPOSED DEVELOPMENT	21
5. FUTURE TRAFFIC SCENARIO	27
6. PARKING AND INTERNAL LAYOUT	41
7. ACCESS CONTROL	44
8. PUBLIC TRANSPORT	46
9. CONCLUSIONS AND RECOMMENDATIONS.....	50
REFERENCES	51

LIST OF FIGURES

Figure 1: Locality Plan	2
Figure 2: Road network observations (Part 1).....	4
Figure 3: Road network observations (Part 2).....	5
Figure 4: Road network observations (Part 3).....	6
Figure 5: Road network observations (Part 4).....	7
Figure 6: Alexandra Rd/Berkley Rd Existing Traffic Count	9
Figure 7: Alexandra Rd/Ndabeni Rd Existing Traffic Count.....	10
Figure 8: Alexandra Rd/Raapenberg Rd Existing Traffic Count	11
Figure 9: Existing three stage signal plan AM and PM	13
Figure 10: Alexandra Road/Berkley Road Intersection – Existing AM & PM Peak Results..	15
Figure 11: Alexandra Road/Ndabeni Road Intersection – Existing AM & PM Peak Results	17
Figure 12: Existing five stage signal plan AM and PM.....	18
Figure 13: Alexandra Road/Raapenberg Road Intersection – Existing AM & PM Peak Results	20
Figure 14: Site development layout.....	22
Figure 15: AM Development trips Distribution	23
Figure 16: PM Development trips Distribution	24
Figure 17: AM Development trips only	25
Figure 18: PM Development trips only	26

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Figure 19: Future AM Background and Development trips.....	28
Figure 20: Future PM Background and Development trips.....	29
Figure 21: Alexandra Road / Ndabeni Road right-turn lane warrant assessment	30
Figure 22: Ndabeni Road / Diesel Road intersection upgrade.....	31
Figure 23: Alexandra Road/Ndabeni Road intersection upgrade	32
Figure 24: Alexandra Road / Berkley Road Intersection – 2030 AM and PM Peak Results.	34
Figure 25: Alexandra Road / Ndabeni Road Intersection – 2030 AM and PM Peak Results	36
Figure 26: Alexandra Road / Raapenberg Road Intersection – 2030 AM and PM Peak Results	38
Figure 27: Ndabeni Road / Development Access Intersection – 2030 AM and PM Peak Results	40
Figure 28: Swept path analysis for 12m truck access	42
Figure 29: Swept path analysis for 12m truck internal operations	43
Figure 30: Access control assessment	45

LIST OF TABLES

Table 1: Alexandra Road / Berkley Road Intersection – Existing AM Peak Results	14
Table 2: Alexandra Road / Berkley Road Intersection – Existing PM Peak Results	14
Table 3: Alexandra Road / Ndabeni Road Intersection – Existing AM Peak Results	16
Table 4: Alexandra Road / Ndabeni Road Intersection – Existing PM Peak Results	16
Table 5: Alexandra Road / Raapenberg Road Intersection – Existing AM Peak Results.....	19
Table 6: Alexandra Road / Raapenberg Road Intersection – Existing PM Peak Results.....	19
Table 7: Trip reductions applied.....	21
Table 8: Trip Generation.....	21
Table 9: Alexandra Road/ Berkley Road Intersection – Future with Development AM Peak Results (2030).....	33
Table 10: Alexandra Road/ Berkley Road Intersection – Future with Development PM Peak Results (2030).....	33
Table 11: Alexandra Road/ Ndabeni Road Intersection – Future with Development AM Peak Results (2030).....	35
Table 12: Alexandra Road/ Ndabeni Road Intersection – Future with Development PM Peak Results (2030).....	35
Table 13: Alexandra Road/ Raapenberg Road Intersection – Future with Development AM Peak Results (2030).....	37

Table 14: Alexandra Road/ Raapenberg Road Intersection – Future with Development PM Peak Results (2030).....	37
Table 15: Ndabeni Road/ Development Access Intersection – Future with Development AM Peak Results (2030)	39
Table 16: Ndabeni Road/ Development Access Intersection – Future with Development PM Peak Results (2030)	39
Table 17: Public Transport Trip Generation Calculation (Part 1)	48
Table 18: Public Transport Trip Generation Calculation (Part 2)	49

1. INTRODUCTION

The Biovac vaccine production facility is proposed on Erf 118296-RE, 103659-RE, 24176-RE & 148366 in Ndabeni, Cape Town. The locality map for this site is presented in Figure 1.

This report reviews traffic operations of Alexandra Road/Ndabeni Road, Alexandra Road/Berkely Road and Alexandra Road/Raapenberg Road intersections with the revised site development.

This TIA report assesses a proposed manufacturing facility of 13 144m² GLA industrial facility with a total of 115 parking bays provided.

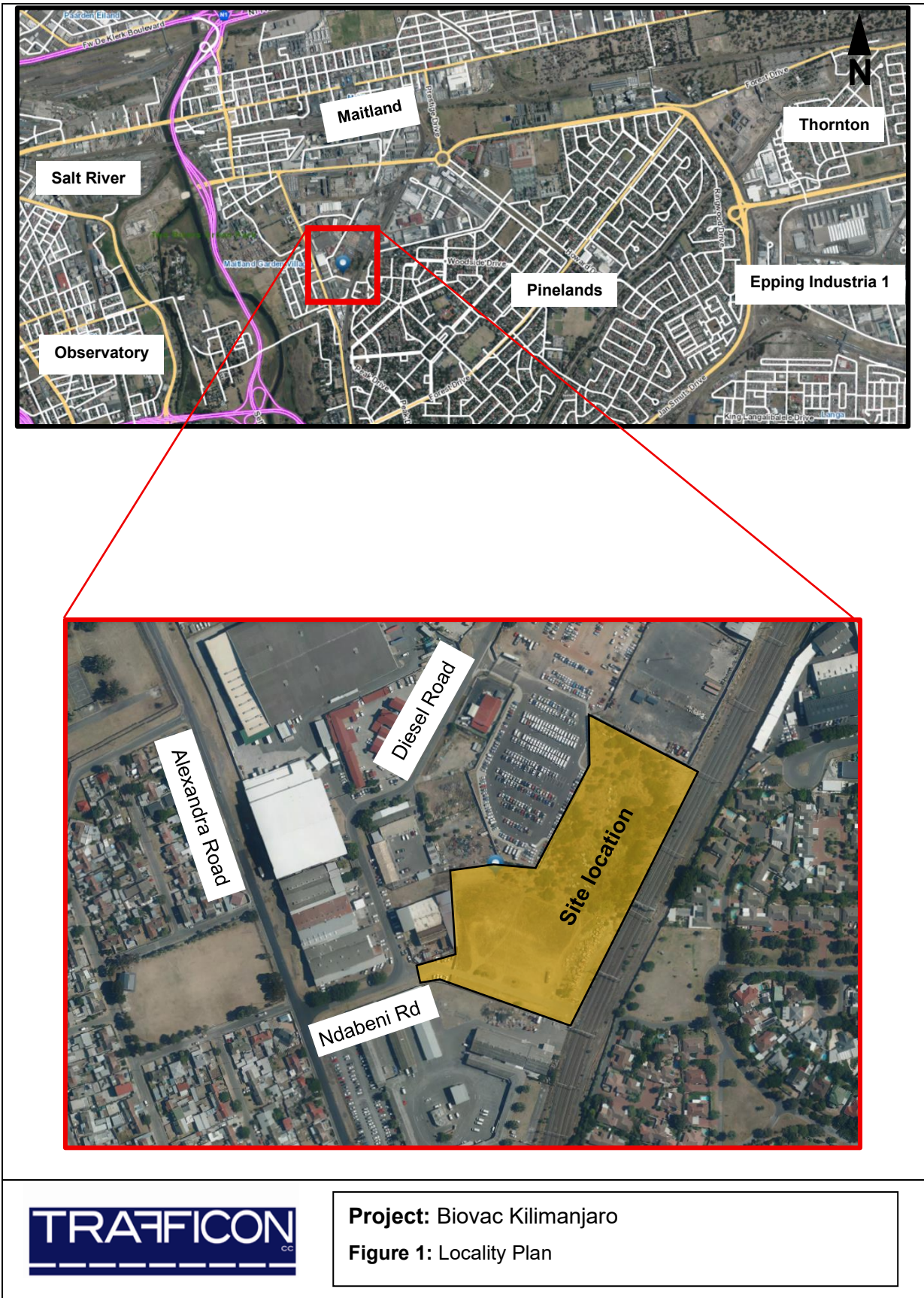
A new traffic control measure is required at Ndabeni Road/Diesel Road intersection to manage the conflict as a result of traffic of the proposed development. A review of the right-turn warrants at Alexander Road/Ndabeni Road intersection indicated that only the south approach right-turn lane at Ndabeni Road/Alexander Road intersection is warranted.

The access gatehouse configuration of one ingress lane and one egress lane with a queue storage length of 33m accommodates the anticipated traffic with no queues extending onto the external road network.

The report concludes that the development will not generate a significant volume of traffic, and the access and parking layouts comply with City requirements. The following upgrades are required:

- An 18m right-turn lane at the south approach Ndabeni Road/Alexander Road intersection with a taper of 30m.
- Access control consisting of one ingress and one egress lane with a minimum ingress queue storage length of 14.2m.

Consequently, with the above upgrades there are no traffic related issues that should prevent this development from proceeding.



2. BACKGROUND

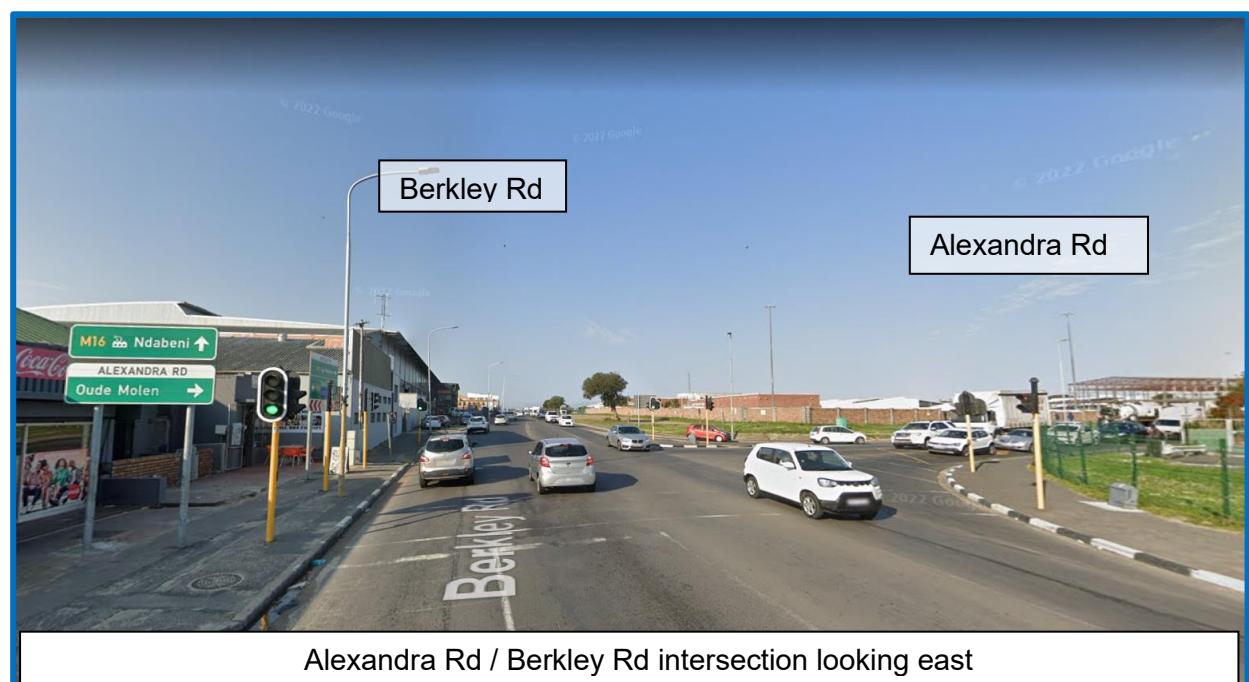
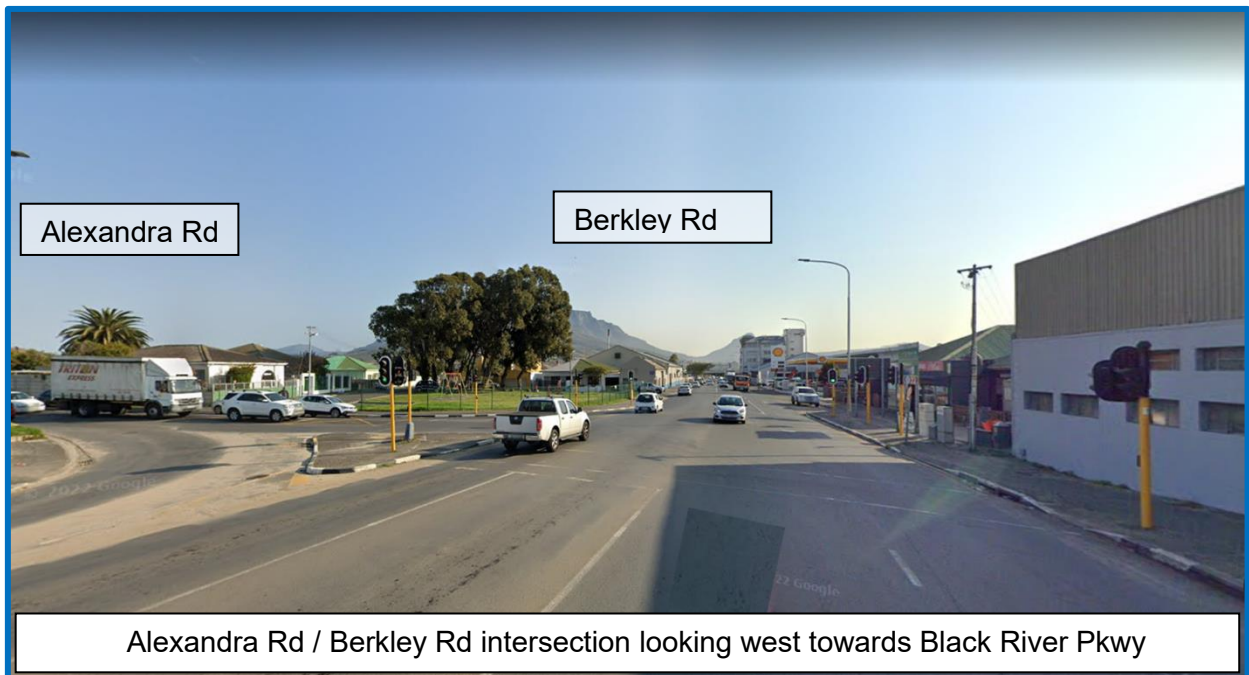
The area under review is largely a light industrial area east of Alexandra Road, a Class 3 (Minor Arterial) Road and the west of Alexandra Road is largely low density residential. Life Vincent Pallotti Hospital is located South of Ndabeni Road at the Alexandra Road/ Raapenberg Road intersection. Raapenberg Road a Class 3 (Minor Arterial) Road connects to the N2 and M5 on the west. To the north of Ndabeni Road, Alexandra Road intersects with Berkely Road, a Class 2 (Major Arterial) Road that connects to the M5 on the west and gives access to Voortrekker Road to the north.

In general, the external road network to Alexandra Road experiences peak hour bottlenecks at the Raapenberg Road/Alexandra Road intersection and at the Alexandra Road/Berkley Road intersection. These two intersections restrict flow along Alexandra Road during the peak hour. Figures 2, 3, 4 and 5 show some site observations made.

This report takes cognisance of the previous TIA report undertaken for the City for the rezoning of this site to General Industrial 2 (GI2). That report assessed an indicative industrial park development of 59 361m² GLA. Furthermore, this high GLA required exclusive 30m right turn lanes for the south and east approach at Alexandra/Ndabeni Road intersection and that the access control lane configuration be three ingress lanes (One visitor and Two Staff) and one egress lane with 20m stacking distance for the ingress lanes.

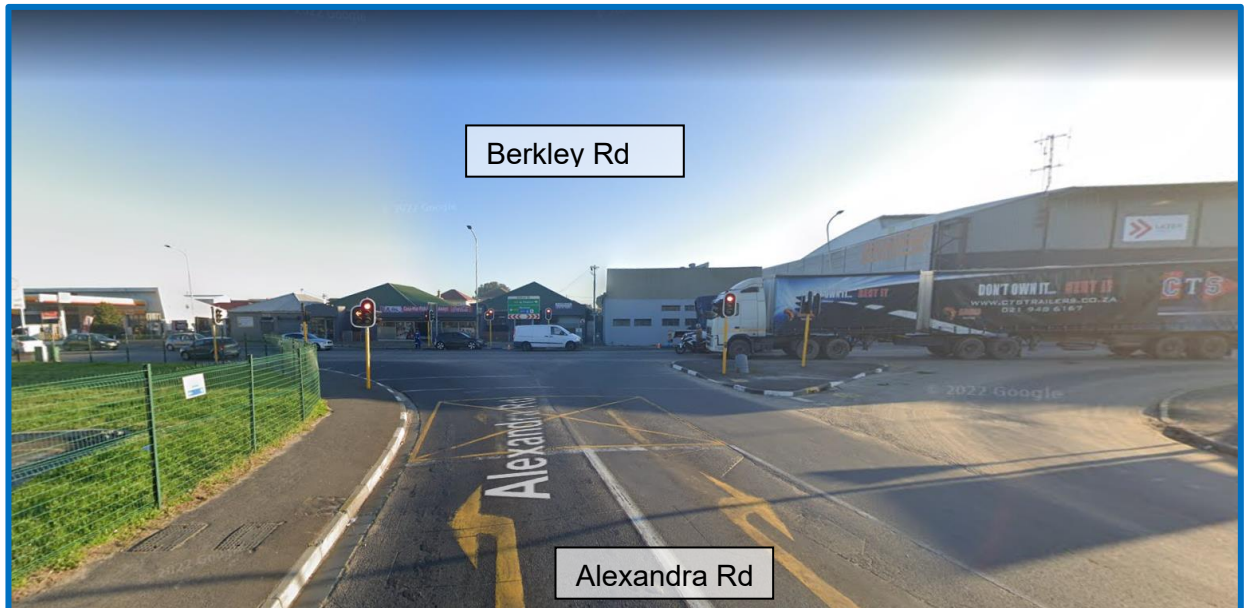
The proposed development is located via Ndabeni Road from Alexandra Road on Erf 183465, 183466, 183467 and 148366, in Ndabeni, Cape Town. Current access to the site is located on Ndabeni Road via Alexandra Road and serves as the only route that connects Ndabeni to the surrounding areas.

The development site is located within the City's PT2 public transport zone with the Pinelands Metrorail Train station is located 650m from the site. Golden Arrow Bus service operates along Alexandra Road and also serves as a minibus taxi route.

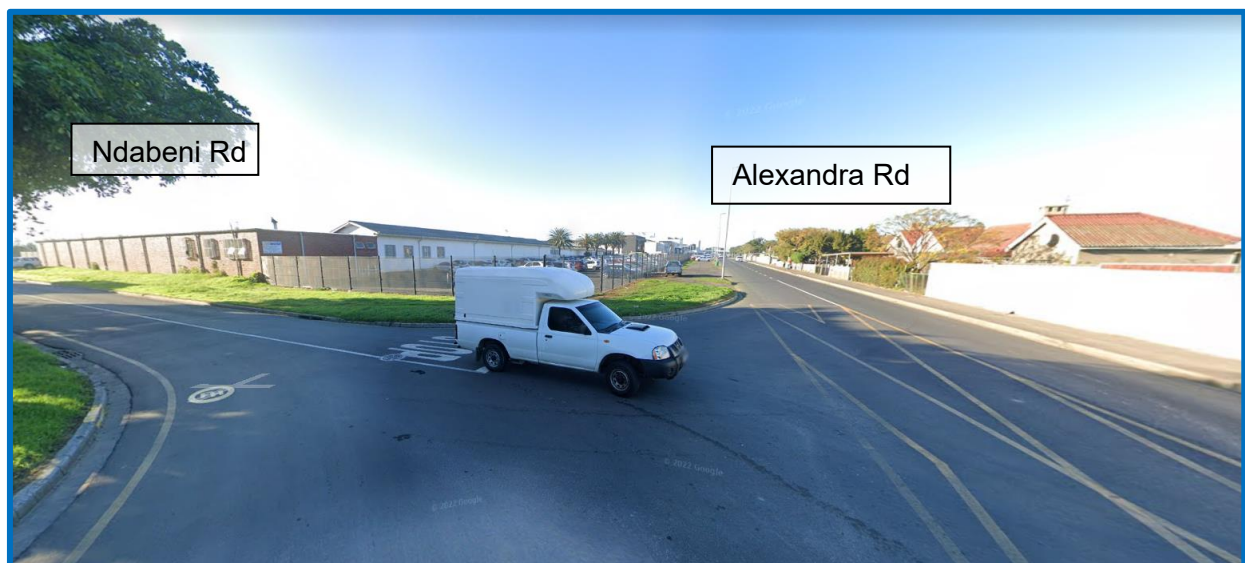


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Figure 2: Road network observations (Part 1)



Alexandra Rd / Berkley Rd intersection south approach

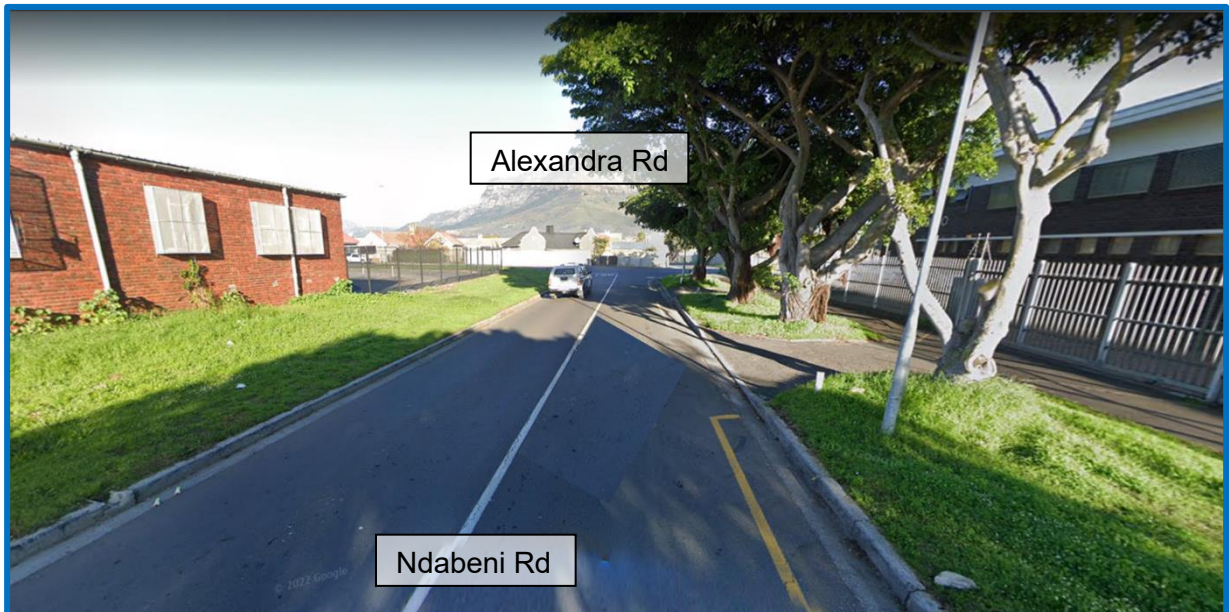


Alexandra Rd / Ndabeni Rd intersection north approach

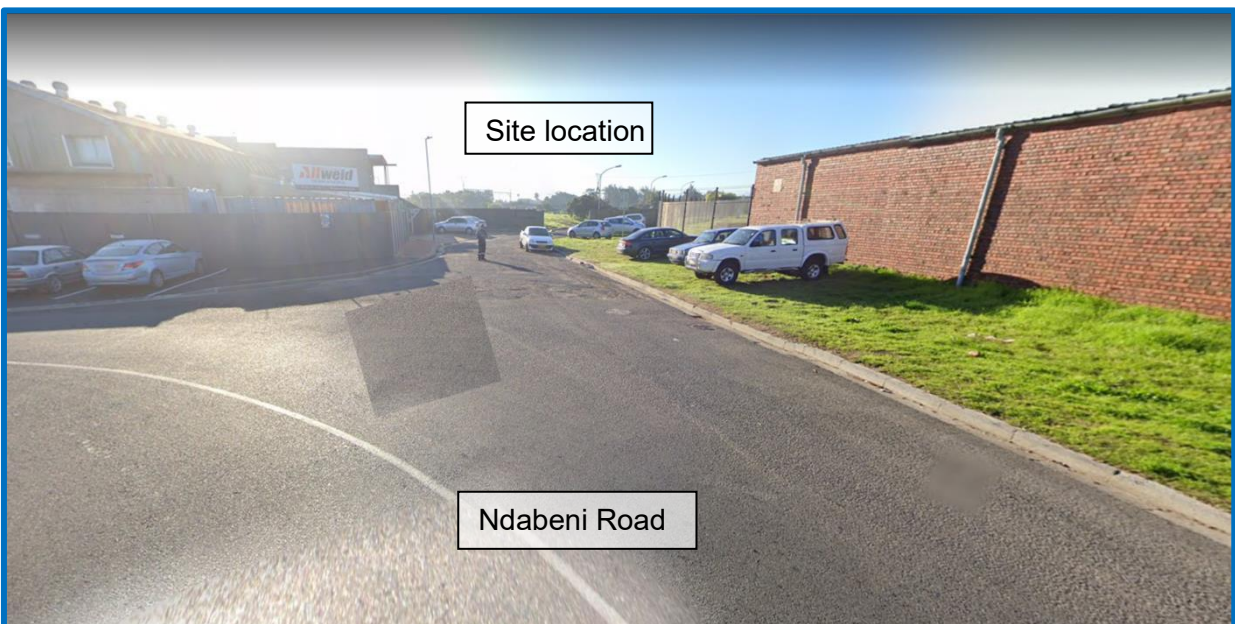


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Figure 3: Road network observations (Part 2)



Ndabeni Road, looking west towards Alexandra Road



Ndabeni Road, looking east towards site location



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Figure 4: Road network observations (Part 3)



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Figure 5: Road network observations (Part 4)

3. EXISTING TRAFFIC SCENARIO

3.1 EXISTING TRAFFIC CONDITION

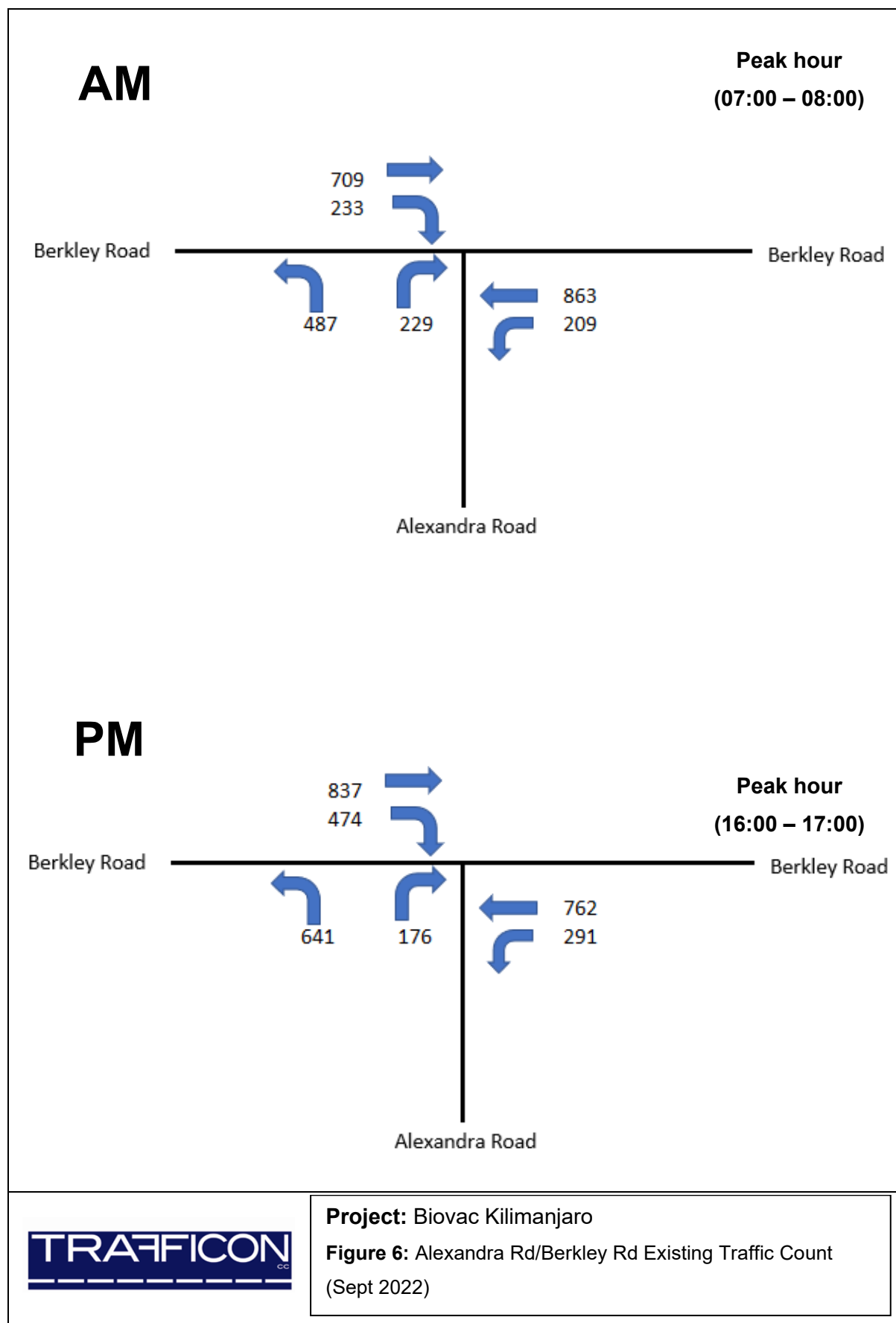
The previous TIA report had undertaken traffic counts and an intersection analysis of the existing conditions at critical intersections along Alexandria Road. The traffic counts were undertaken on the 27th of September 2022 at the following critical intersections:

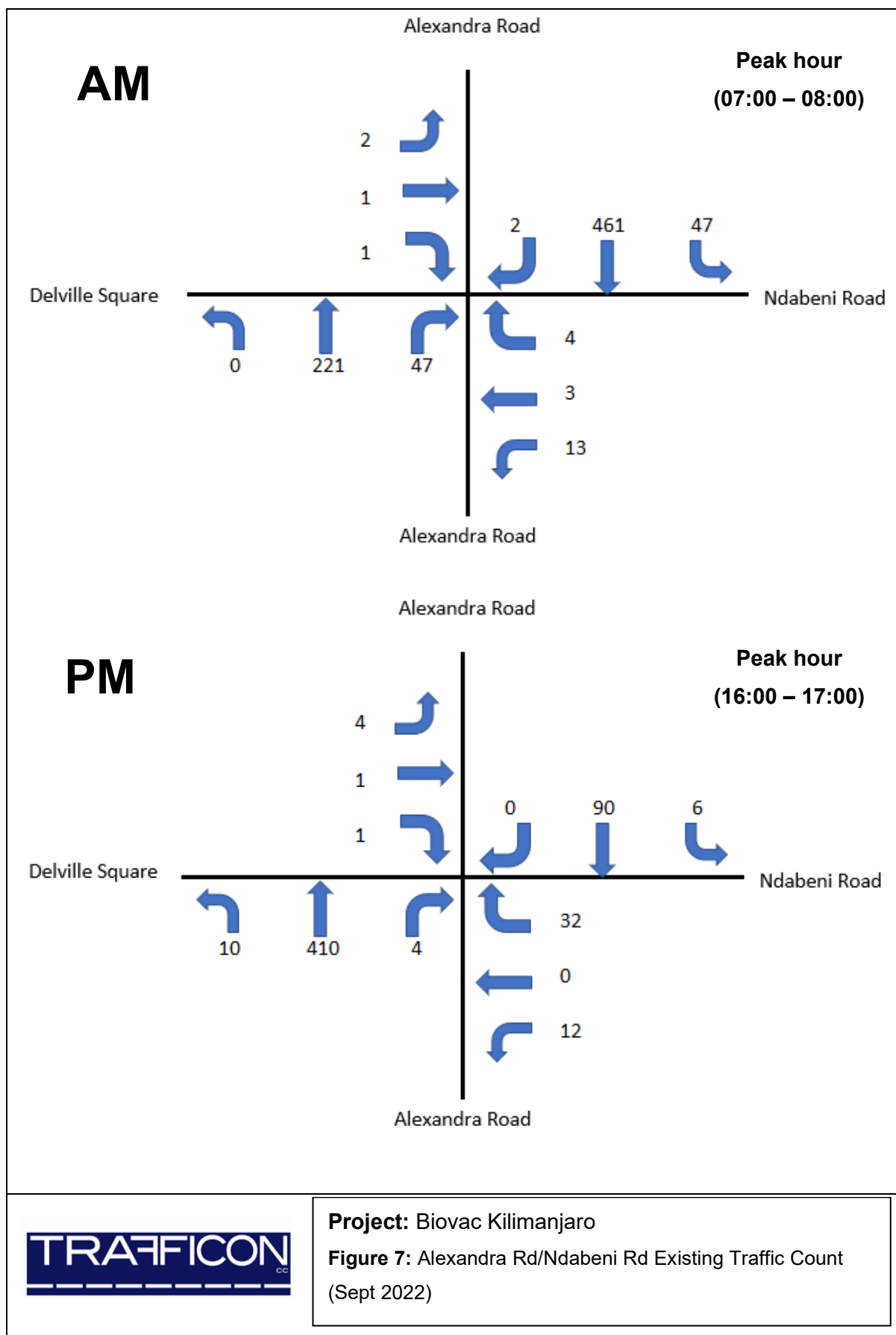
- Alexandria Road/Ndabeni Road.
- Alexandria Road/Berkely Road.
- Alexandria Road/Raapenberg Road intersections.

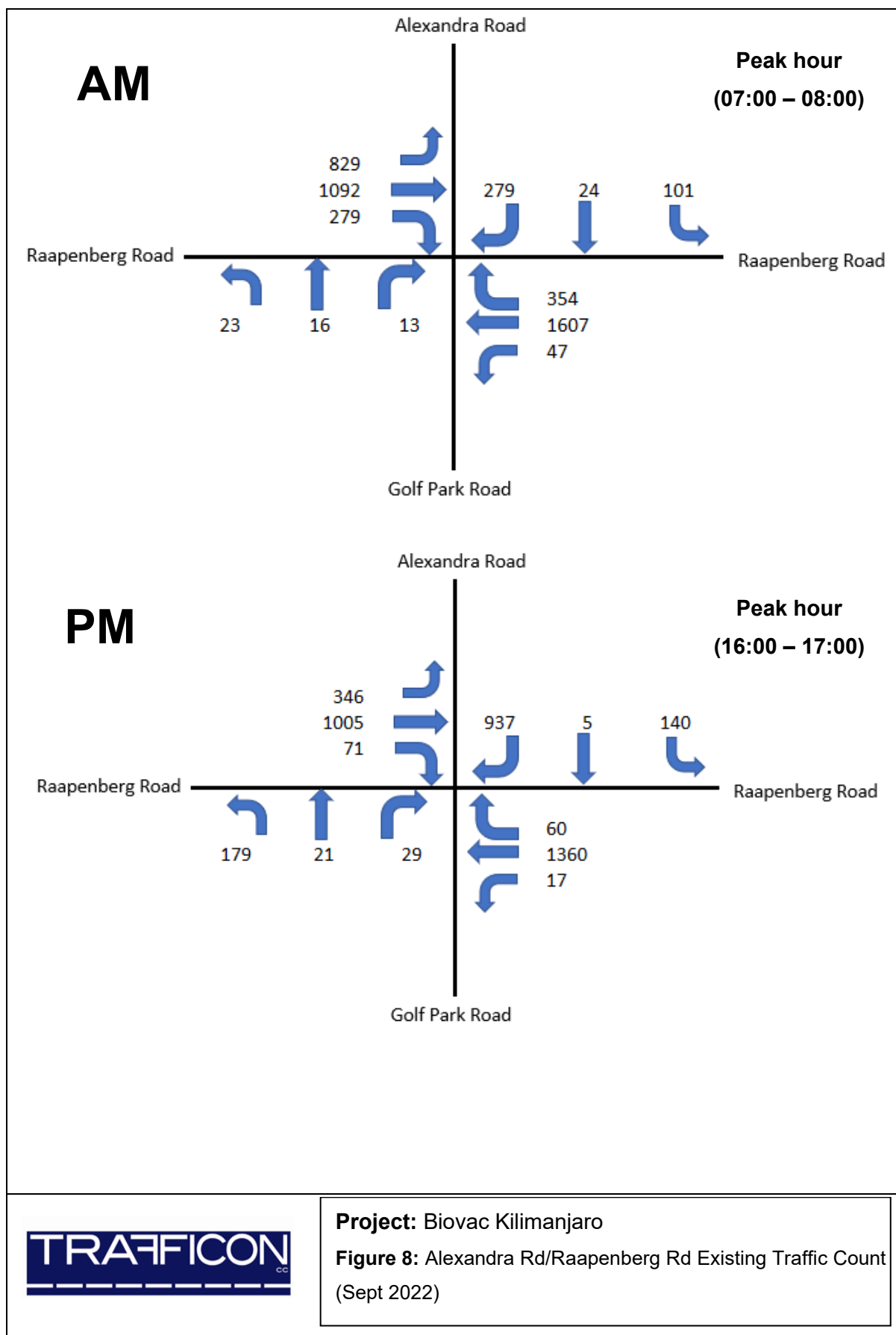
These traffic counts are not older than 5 years and as such, remain valid for the intersection analyses in this TIA report.

The peak AM and PM survey results have been illustrated in Figures 6 to 8. Alexandria Road, a Class 3 Minor Arterial functions as a collector road for the light industrial area and the residential area, serving as access to N2, M5, Raapenberg Road on the south and Voortrekker Road (R102) on the north. Alexandria Road has direct property accesses along its length. The traffic volume along Alexandria Road can be described as moderately high during peak periods, however the traffic volumes traversing through the external road network that Alexandria Road intersects with can be described as high during peak periods.

Alexandra Road/Berkley Road is a 3-stage signalised intersection. Alexandria Road/Raapenberg Road is a 5-stage signalised intersection and Alexandria Road/Ndabeni Road is a staggered 2-way stop controlled intersection. During the peak PM, queueing is observed along the south approach of the Alexandria Road /Berkley Road intersection, this peak PM queue extends towards Oude Molen Road, which is 423m from Berkley Road. Queueing was also observed along Alexandria Road from south, this queue propagates from the Park Road/ Alexandria Roads intersection, which gives access to the Vincent Palotti Hospital, the queue propagates north towards Ndabeni Road. Downstream capacity along Raapenberg Road, south of the development and Berkley Road north of the development limits capacity at the intersections as queues propagate from these intersections along Alexandria Road.







3.2 EXISTING TRAFFIC SCENARIO ANALYSIS

The existing 2022 traffic counts were analysed, and the results have been illustrated in Figures 10, 11 and 13 and Tables 1 to 6. The results show that the Raapenberg Road/Alexandra Road intersection is currently operating at a level of service F during the AM and PM peaks, the delays within this intersection cause queues to propagate along Alexandra Road past the hospital access intersection. The Berkley Road/ Alexandra Road east approach is operating at a LOS E during the peak PM.

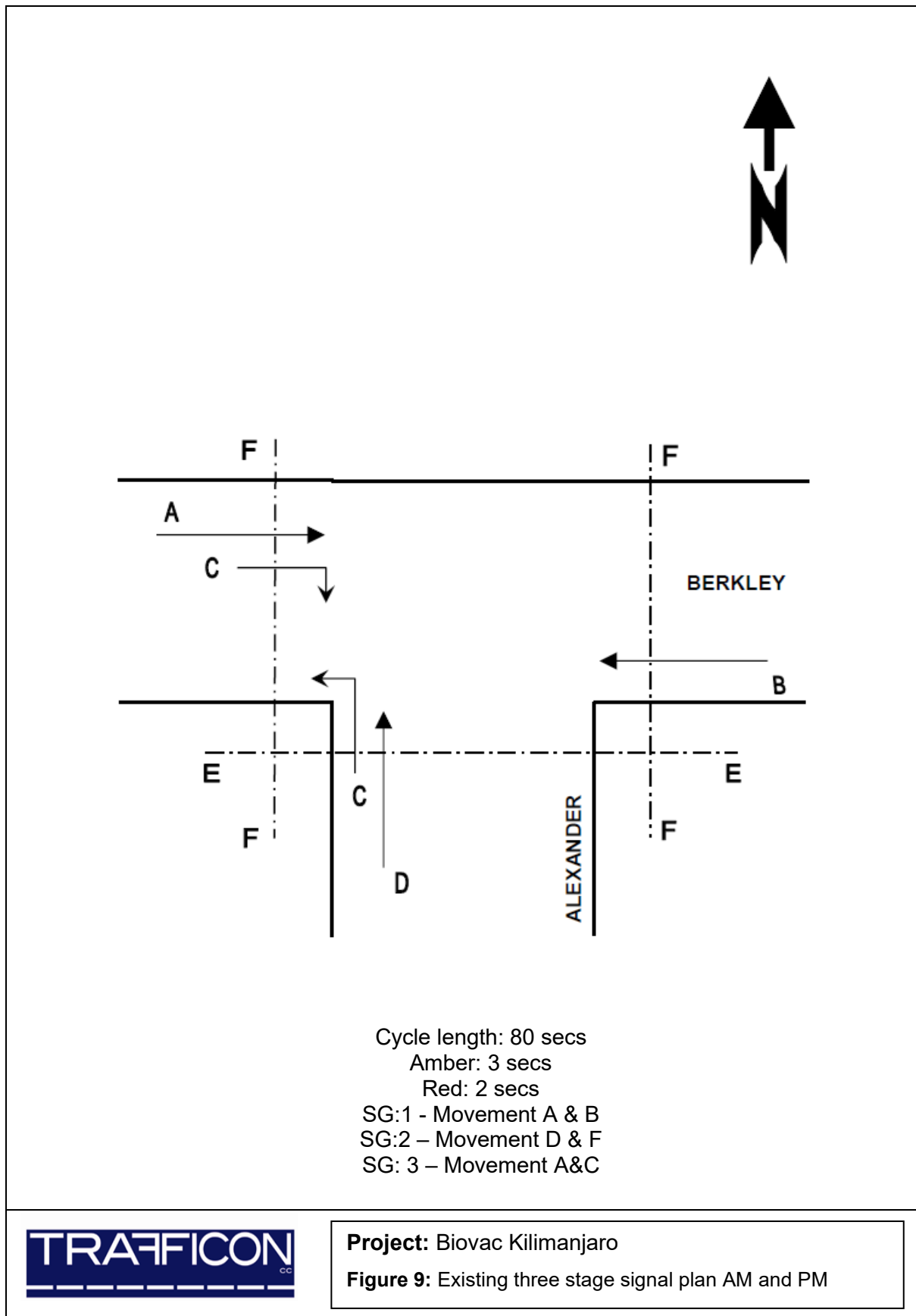


Table 1: Alexandra Road / Berkley Road Intersection – Existing AM Peak Results

Performance Measure	Assessment Result
Demand Flow	2730 veh/h
Degree of Saturation	0.790
Capacity (Total)	3454 veh/h
Control Delay (Total)	21.39 veh-h/h
Control Delay (Average)	28.2 s/veh
Level of Service	LOS C
Level of Service (Worst Movement)	LOS D
Total Effective Stops	2135 veh/h
Effective Stop Rate	0.78 per veh
Travel Distance (Total)	1654.1 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	49.0 veh-h/h

Table 2: Alexandra Road / Berkley Road Intersection – Existing PM Peak Results

Performance Measure	Assessment Result
Demand Flow	3181 veh/h
Degree of Saturation	0.836
Capacity (Total)	3804 veh/h
Control Delay (Total)	26.06 veh-h/h
Control Delay (Average)	29.5 s/veh
Level of Service	LOS C
Level of Service (Worst Movement)	LOS E
Total Effective Stops	2522 veh/h
Effective Stop Rate	0.79 per veh
Travel Distance (Total)	1927.3 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	58.2 veh-h/h

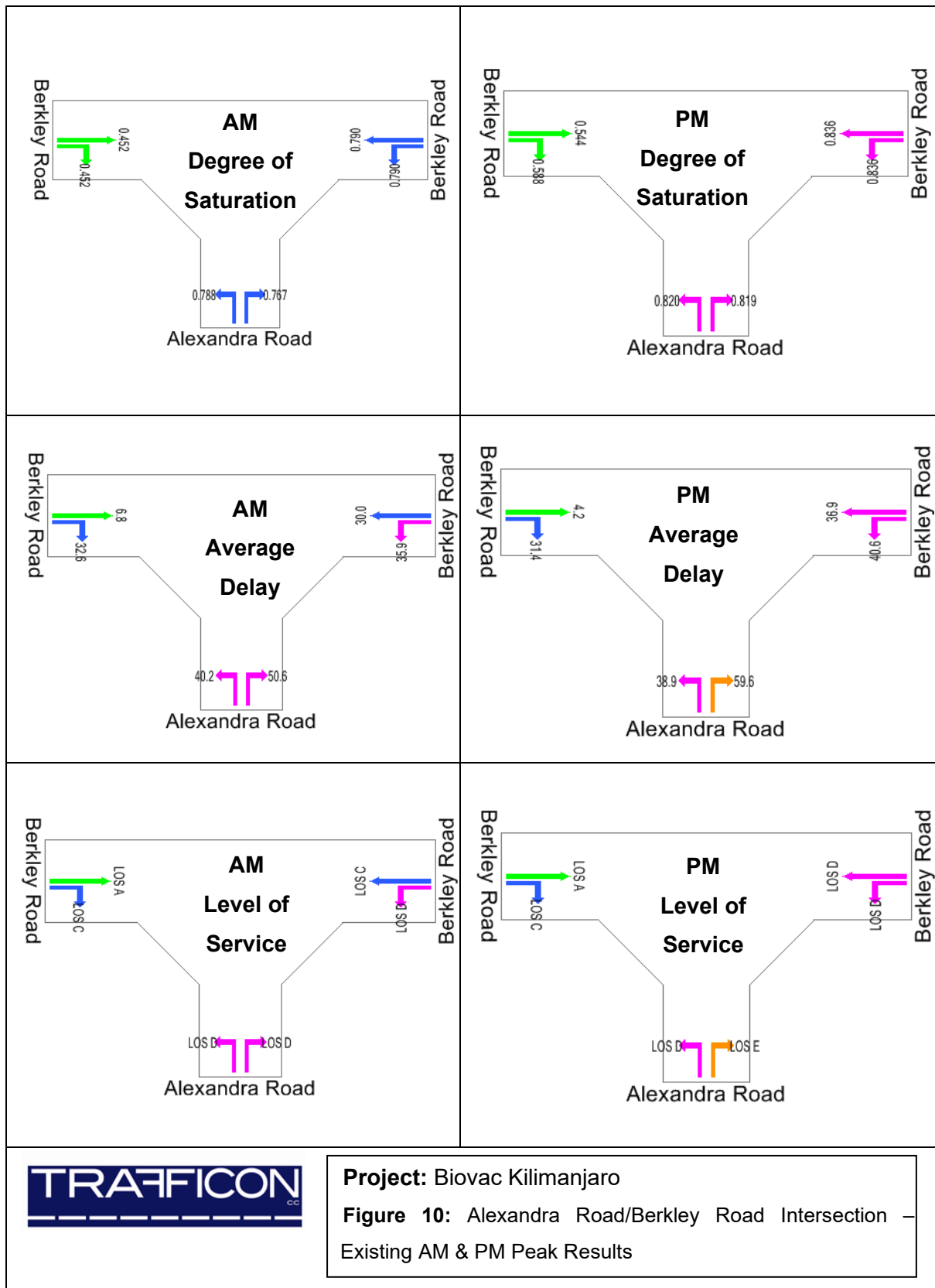
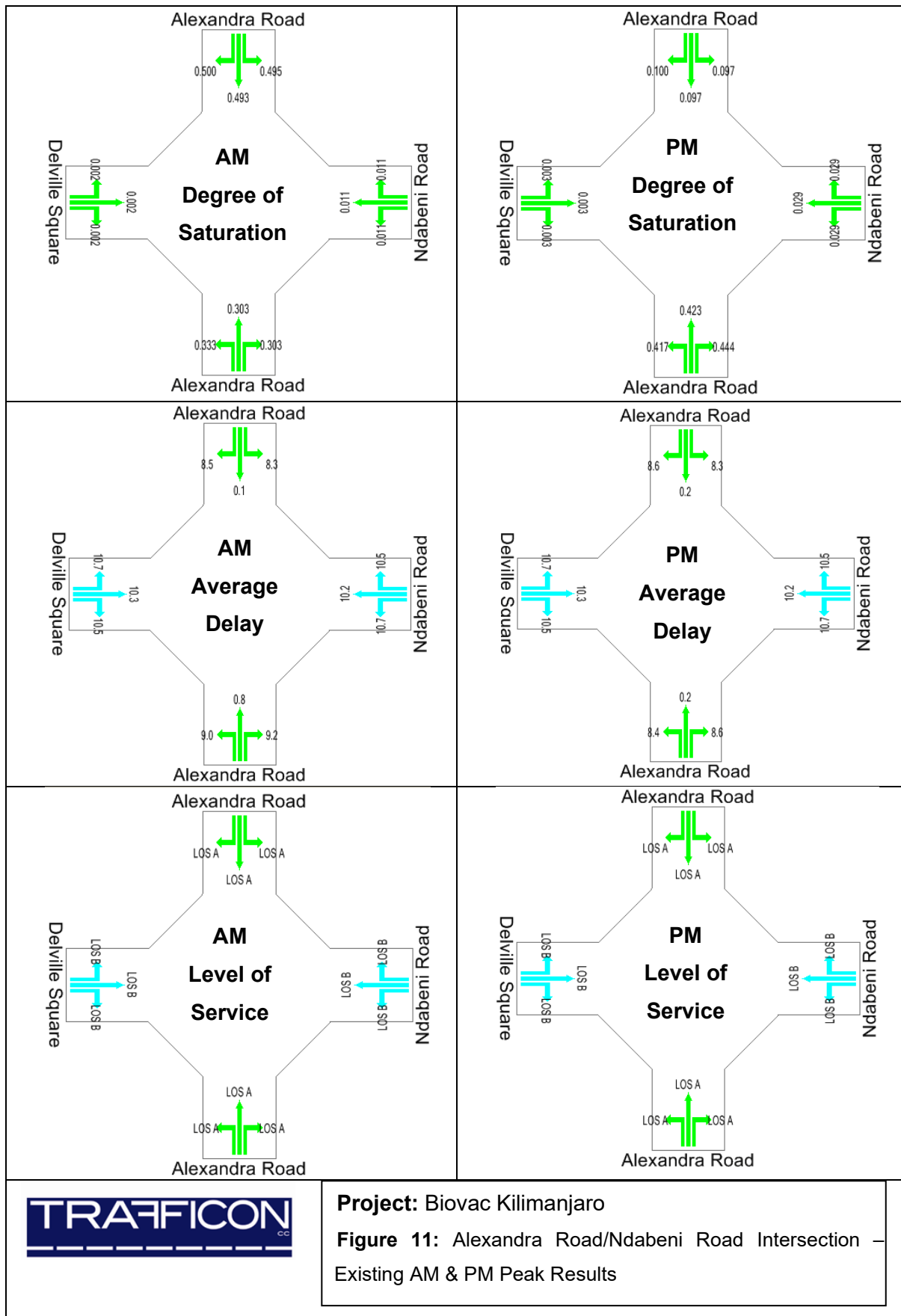


Table 3: Alexandra Road / Ndabeni Road Intersection – Existing AM Peak Results

Performance Measure	Assessment Result
Demand Flow	803 veh/h
Degree of Saturation	0.500
Capacity (Total)	1606 veh/h
Control Delay (Total)	0.36 veh-h/h
Control Delay (Average)	1.6 s/veh
Level of Service	LOS B
Level of Service (Worst Movement)	LOS B
Total Effective Stops	0.12 veh/h
Effective Stop Rate	0.04 per veh
Travel Distance (Total)	486.5 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	8.5 veh-h/h

Table 4: Alexandra Road / Ndabeni Road Intersection – Existing PM Peak Results

Performance Measure	Assessment Result
Demand Flow	572 veh/h
Degree of Saturation	0.444
Capacity (Total)	1287 veh/h
Control Delay (Total)	0.23 veh-h/h
Control Delay (Average)	1.4 s/veh
Level of Service	LOS B
Level of Service (Worst Movement)	LOS B
Total Effective Stops	74 veh/h
Effective Stop Rate	0.13 per veh
Travel Distance (Total)	346.6 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	6.1 veh-h/h



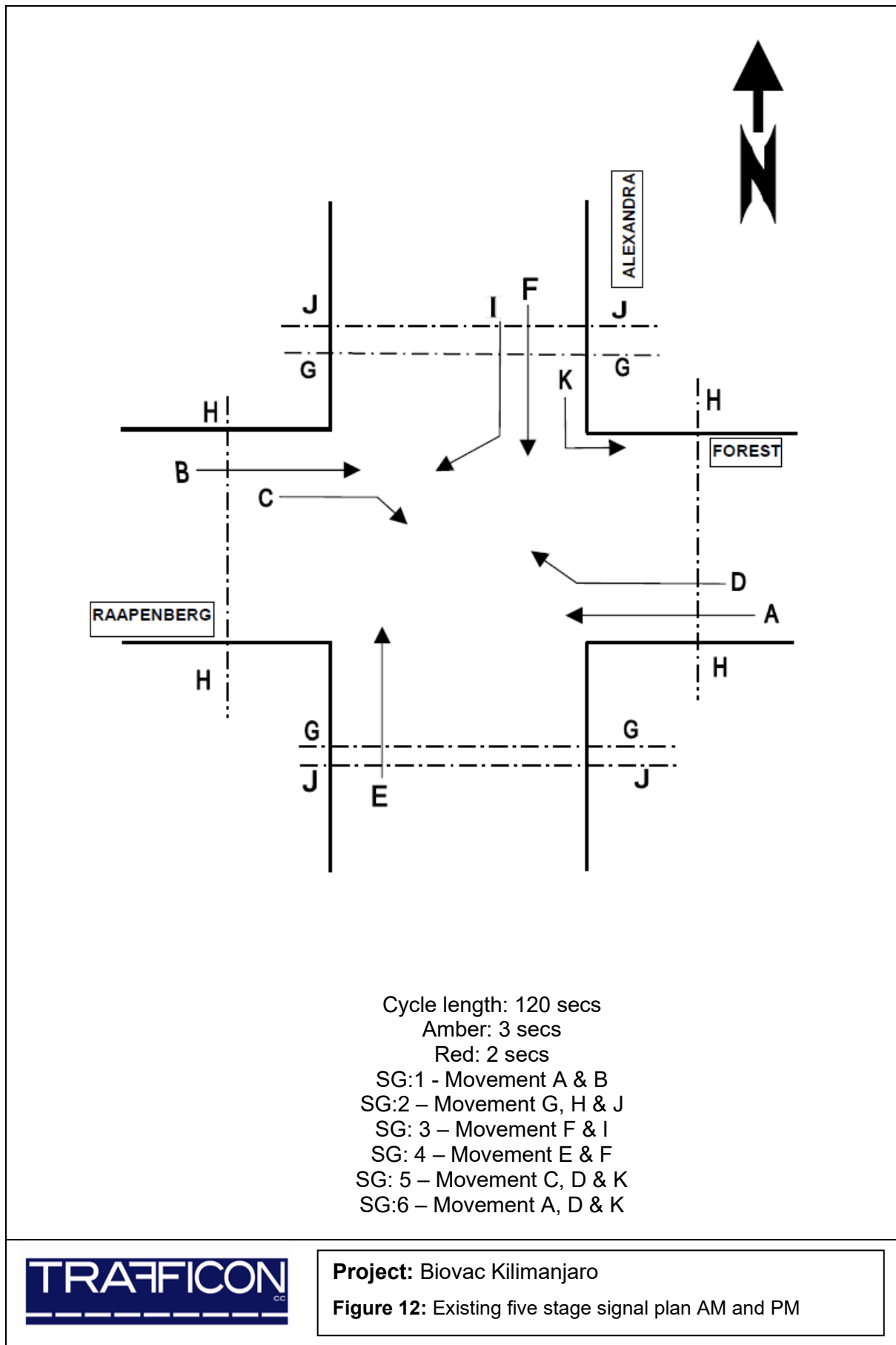
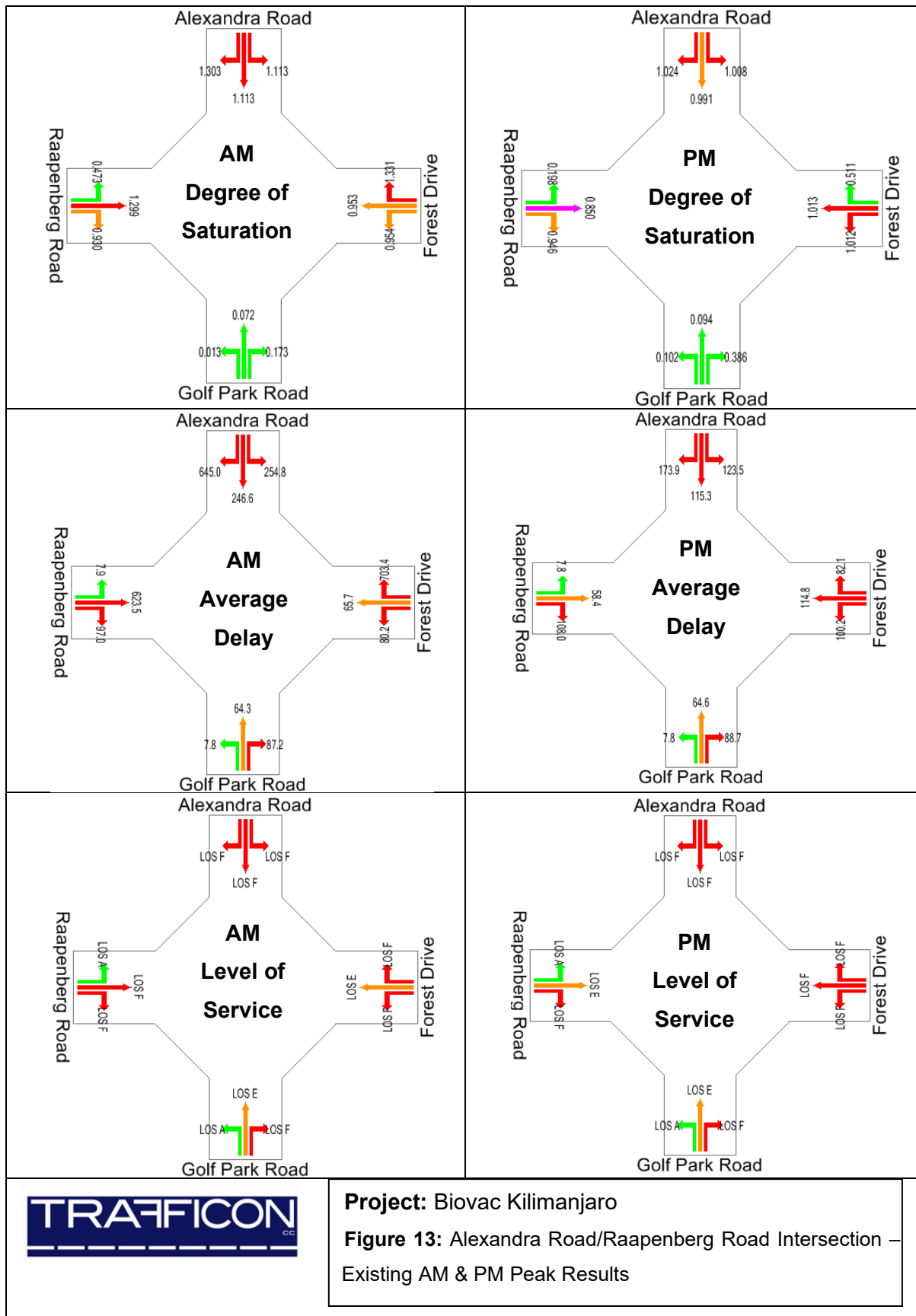


Table 5: Alexandra Road / Raapenberg Road Intersection – Existing AM Peak Results

Performance Measure	Assessment Result
Demand Flow	4664 veh/h
Degree of Saturation	1.331
Capacity (Total)	3504 veh/h
Control Delay (Total)	357.41 veh-h/h
Control Delay (Average)	275.9 s/veh
Level of Service	LOS F
Level of Service (Worst Movement)	LOS F
Total Effective Stops	8062 veh/h
Effective Stop Rate	1.73 per veh
Travel Distance (Total)	2837.1 veh-km/h
Travel Distance (Average)	608 m
Travel Time (Total)	404.8 veh-h/h

Table 6: Alexandra Road / Raapenberg Road Intersection – Existing PM Peak Results

Performance Measure	Assessment Result
Demand Flow	4170 veh/h
Degree of Saturation	1.024
Capacity (Total)	4071 veh/h
Control Delay (Total)	116.11 veh-h/h
Control Delay (Average)	100.2 s/veh
Level of Service	LOS F
Level of Service (Worst Movement)	LOS F
Total Effective Stops	5018 veh/h
Effective Stop Rate	1.20 per veh
Travel Distance (Total)	2535.9 veh-km/h
Travel Distance (Average)	608 m
Travel Time (Total)	158.4 veh-h/h



4. PROPOSED DEVELOPMENT

The Biovac facility is proposed to consist of 13 144m² manufacturing GLA with a total of 115 parking bays. Figure 14 presents the SDP layout for the development.

The site is located within a PT2 zone and analysed as a transit node since Alexandra Road is a public transport route where both taxis and buses operate from and Pinelands Metrorail train station is located 650m from the site. As such, trip reductions have been made based on the transit node nature of the area. Table 7 presents the trip reductions used for the development according to the TMH17 guideline document.

Table 7: Trip reductions applied

REDUCTIONS					
Land Use	Mixed use Development	Low vehicle ownership	Very Low Ownership	Transit nodes/ Corridors	Total Reductions
Manufacturing	0	0	0	15%	15%

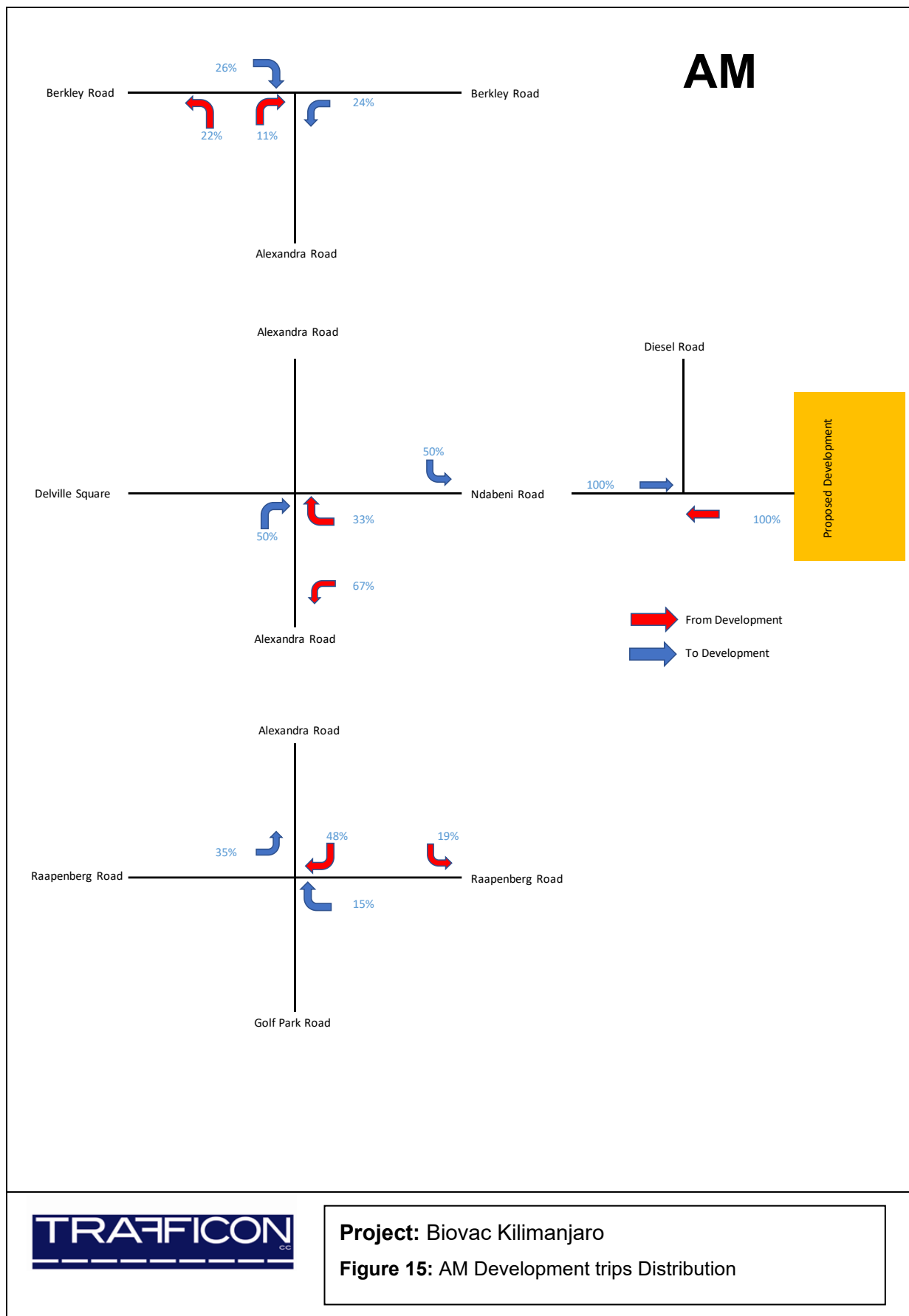
Using the trip adjustment in Table 7, the trip generation was calculated according to the TMH17 manual (COTO, 2012). Table 8 presents the trip generation calculation.

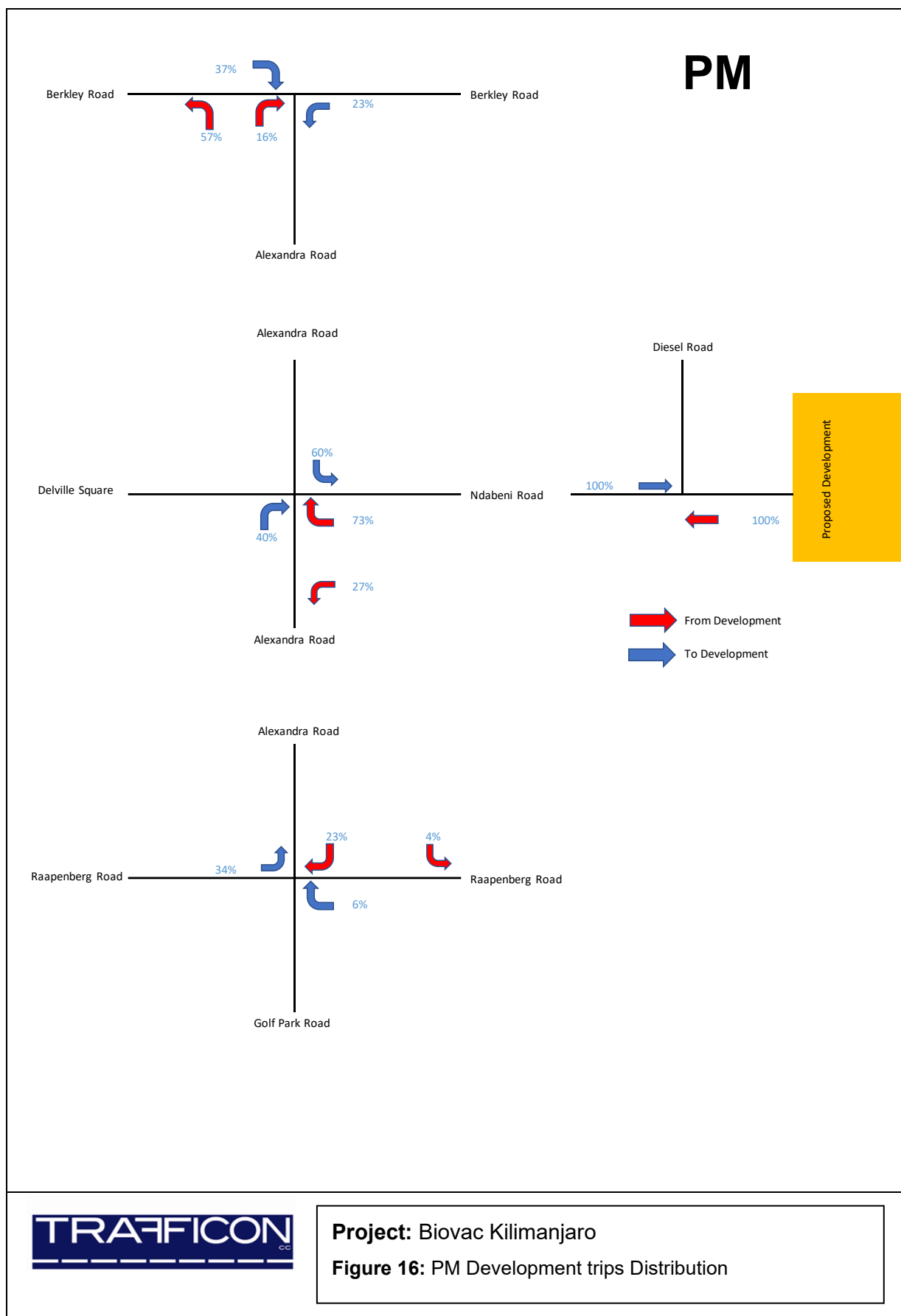
Table 8: Trip Generation

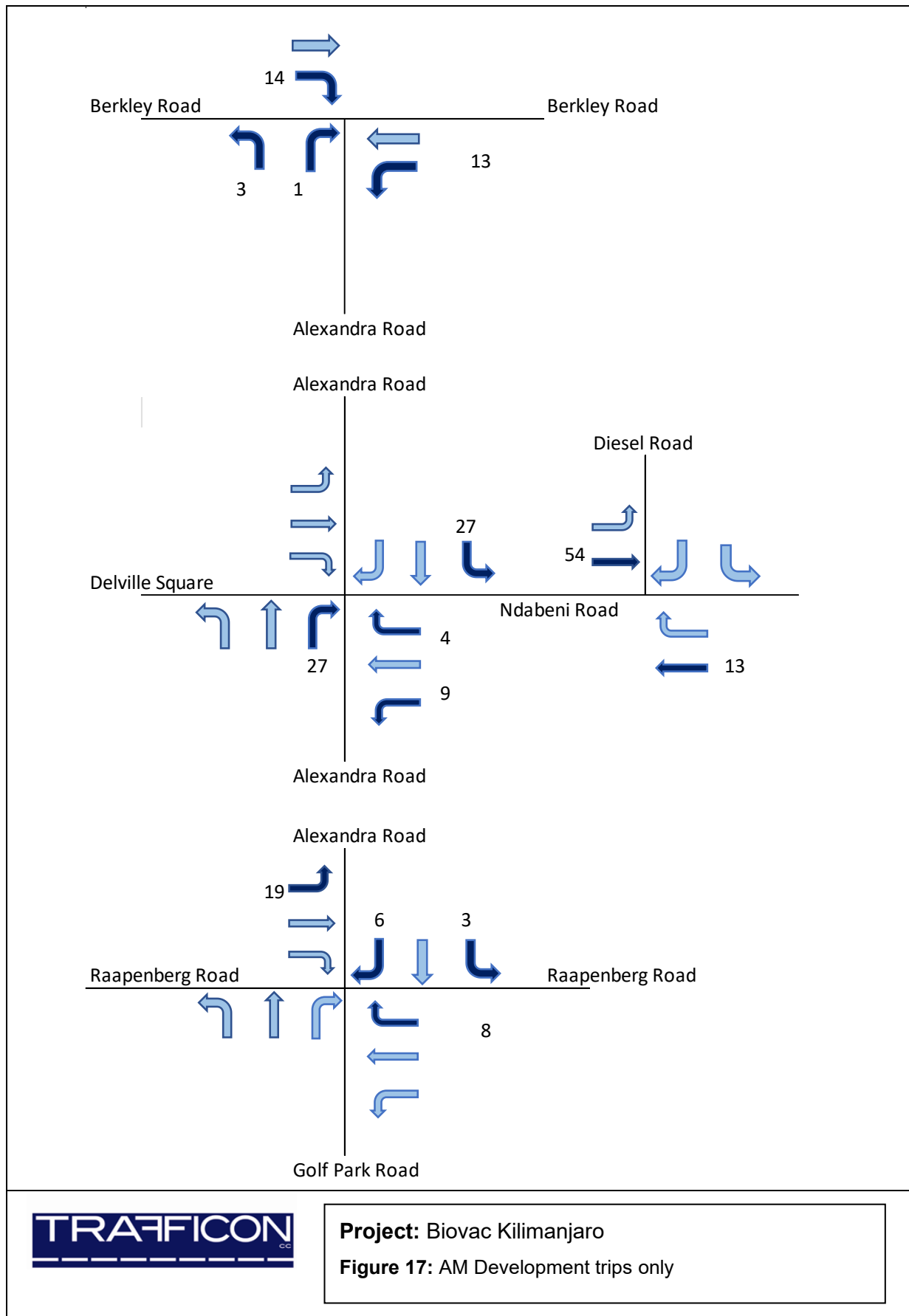
Land Use	Units (/du or /100m ²)	Trip Gen. Rate		Total Trips		Adjusted Total Trips*		Directional Split %				Vehicle Trips			
		AM	PM	AM	PM	AM	PM	AM		PM		AM		PM	
								In	Out	In	Out	In	Out	In	Out
Manufacturing	131,44	0,6	0,6	79	79	67	67	80	20	20	80	54	13	13	54
Total				79	79	67	67					54	13	13	54

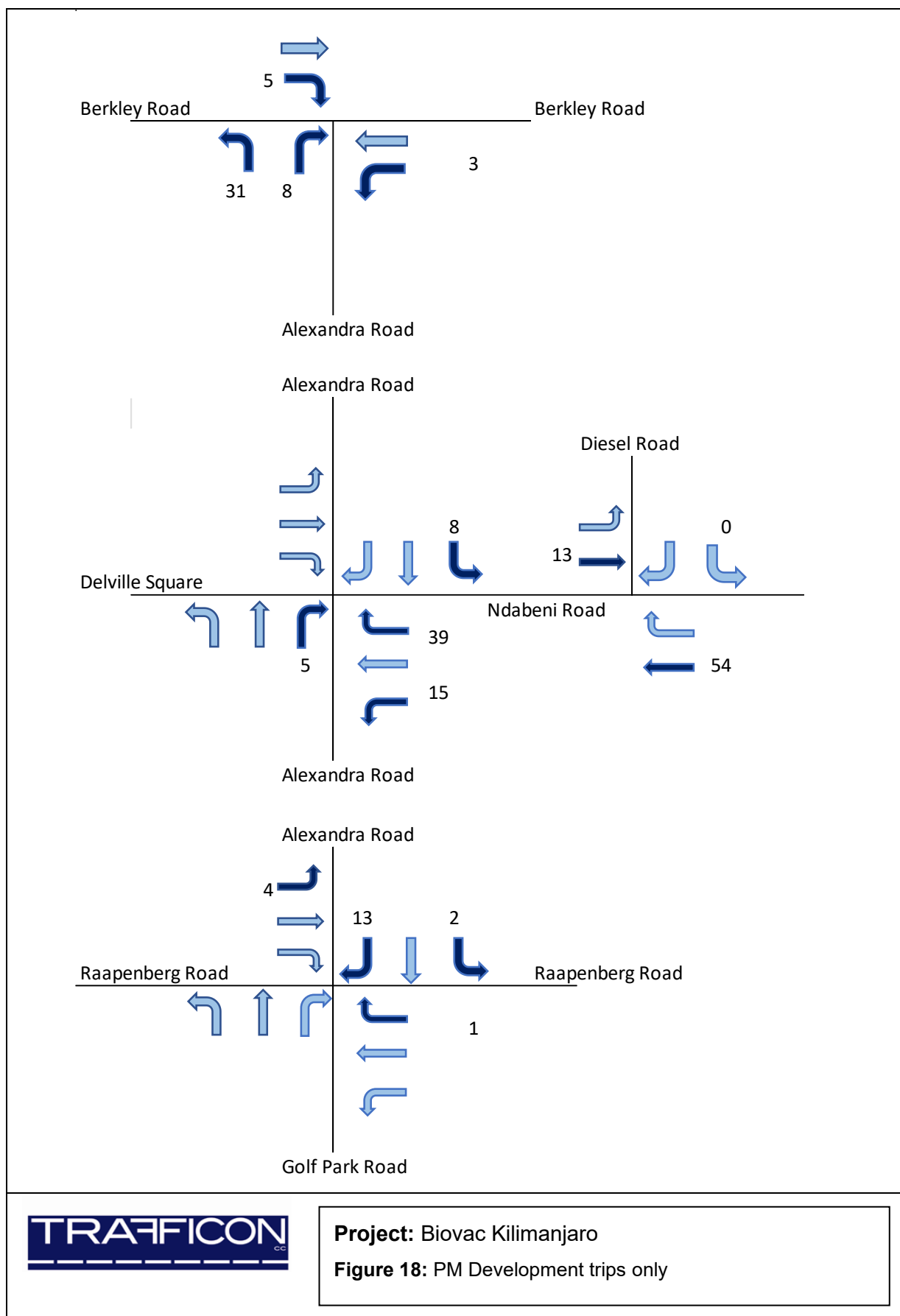
The trip generation calculation in Table 1 reveals that a total of 67 vehicle trips are generated to and from the development during the AM and PM peaks. These trips are distributed on the surrounding road network according to the turning movement proportions of the existing traffic volumes. Figures 15 and 16 present the percentage proportions of the trip distribution and Figures 17 and 18 present the development trips expected on the network using this trip distribution and show the insignificant level of development trips at these external bottlenecks.











5. FUTURE TRAFFIC SCENARIO

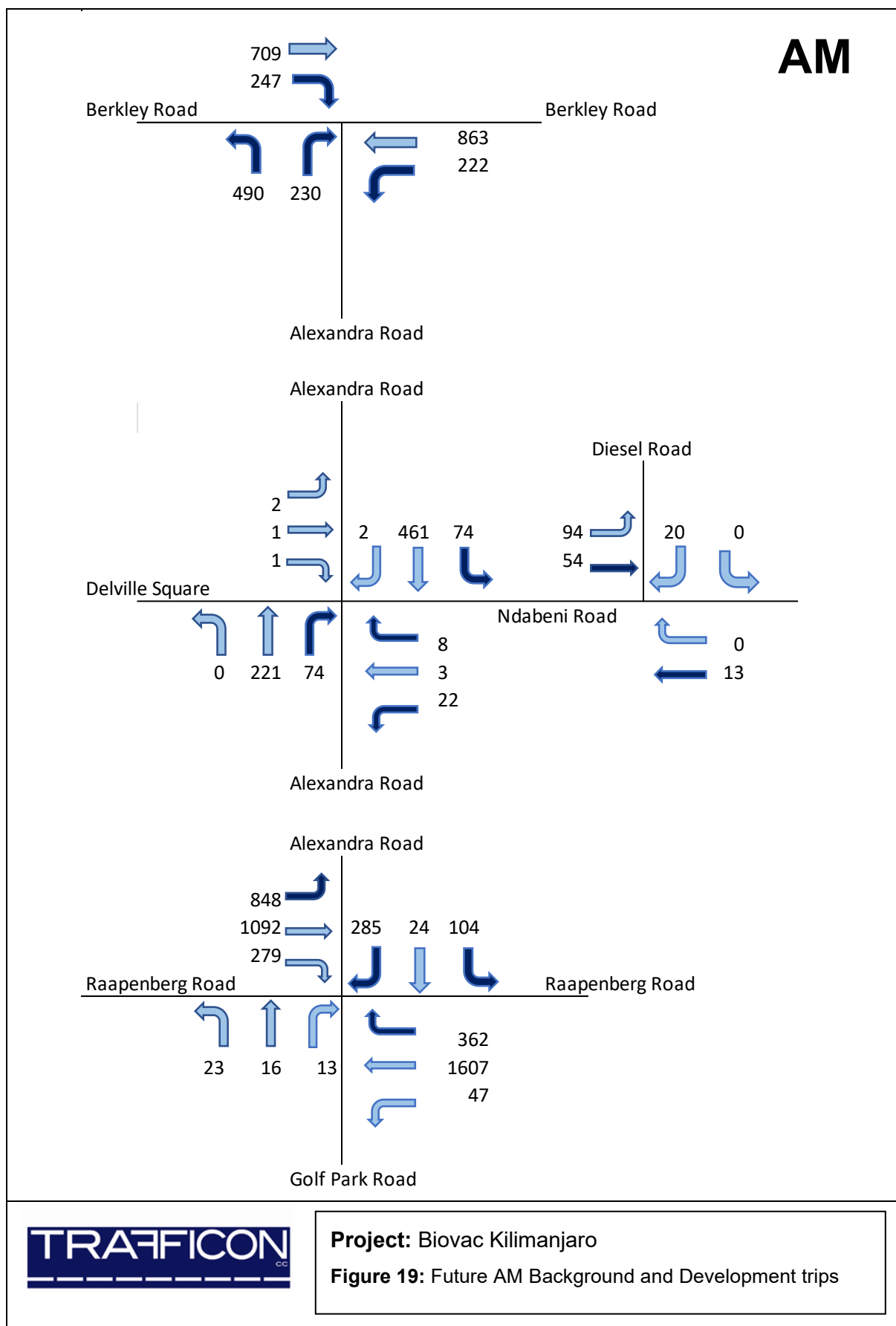
The previous TIA report for this site indicated that due to Alexandra/Raapenberg intersection operating at well over-saturation, any additional capacity offered in the future would immediately be used by existing major traffic flows due to peak spreading and no traffic growth is likely to be observed. Hence, no background traffic growth has been applied for the future scenarios in this assessment.

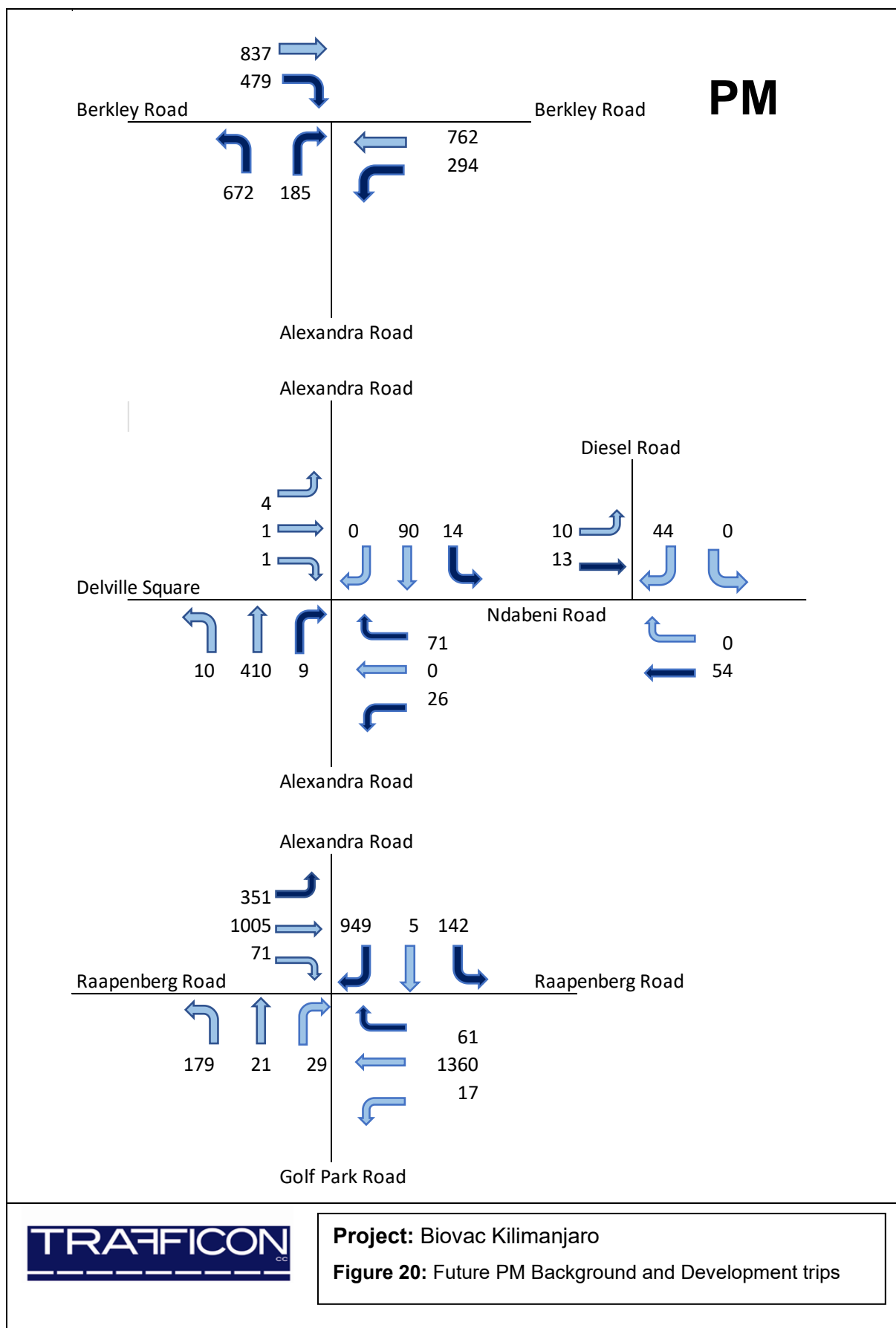
The development trips were applied to the existing scenario and were distributed based on the existing background traffic and it is assumed that 100% of the development trips will make use of Ndabeni Road / Alexandra Road intersection to access the development from the surrounding road network. Figures 19 and 20 present the future scenario traffic volumes with development trips applied.

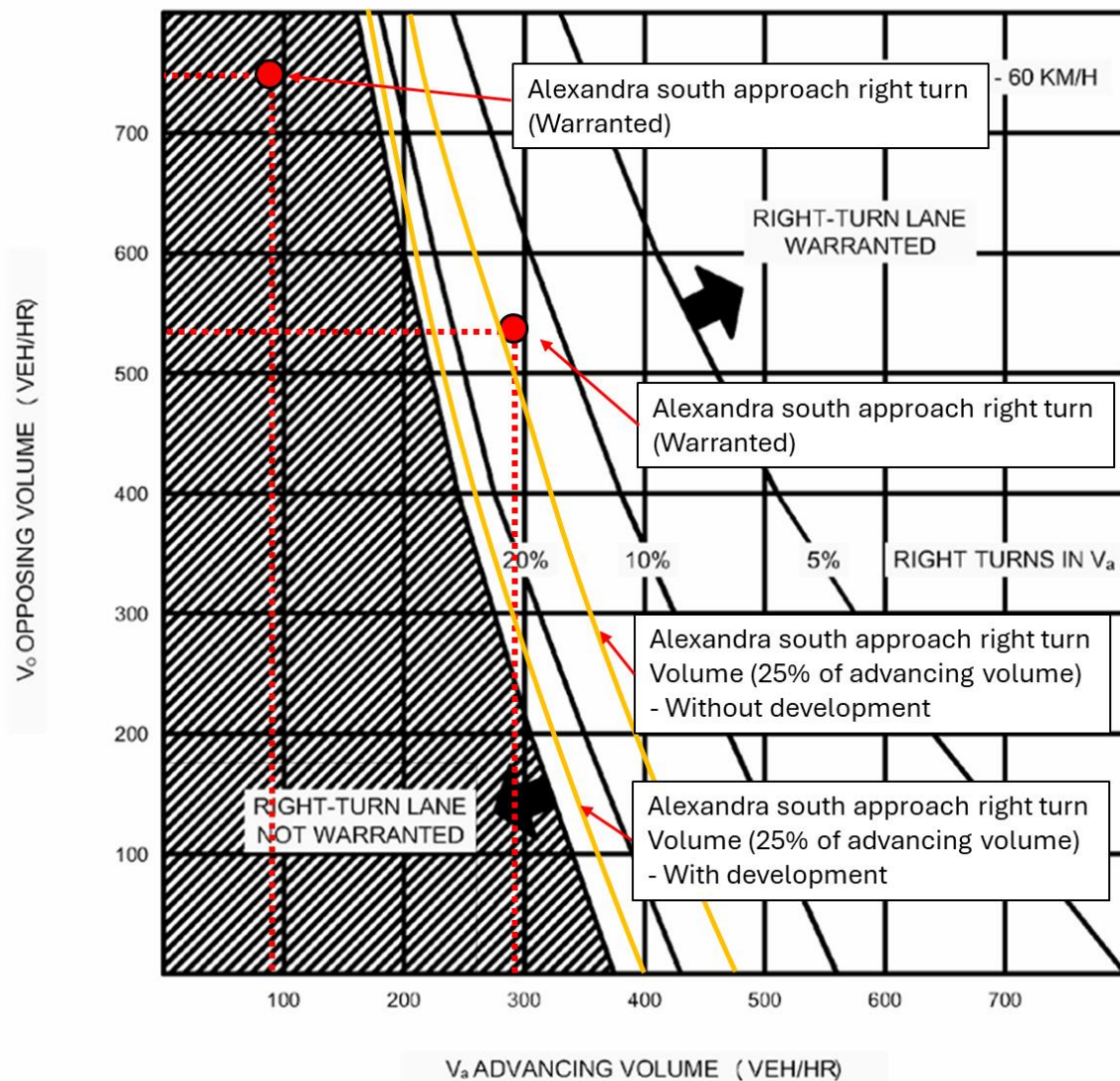
The primary access intersection Alexandra/Ndabeni Road operates within acceptable Levels of Service during the future scenario with development trips applied. However, the trip generation from the proposed development warrants a right turn lane at Alexandra/Ndabeni Road intersection from Alexandra Road south approach only. Figure 21 presents the right turn lane warrants for a 60km/h two-lane road facility from the Road Access Management Guidelines (2020) and plots the advancing volumes and opposing volumes along with the percentage of right-turn volumes to determine the warrant.

Consequently, an exclusive right turn lane is recommended for Alexandra Road south approach only. The right-turn lane is required to be 18m in length (one vehicle and one truck length) and have a taper of 30m (1 in 10 taper with a lane width of 3m) The Diesel Road/Ndabeni Road intersection requires a stop control for the Ndabeni east approach (development approach) and a stop/yield left on the western approach to effectively and safety manage conflicts as a result of the arrivals and departures of development trips. Figure 22 presents a schematic diagram of the Ndabeni Road/Diesel Road intersection with this upgrade and Figure 23 presents a schematic diagram of the Alexandra Road/Ndabeni Road intersection with the right turn lane on the south approach.

The AM and PM analysis results are presented in Figures 24 to 27 and Tables 9 to 16 for the critical intersections. The results indicate that there is little difference in terms of operational performance between the existing and future scenarios and consequently, no traffic impact.







$$V_a (\%) = \text{Right-turn volume} / \text{Advancing volume}$$



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Figure 21: Alexandra Road / Ndabeni Road right-turn lane warrant assessment



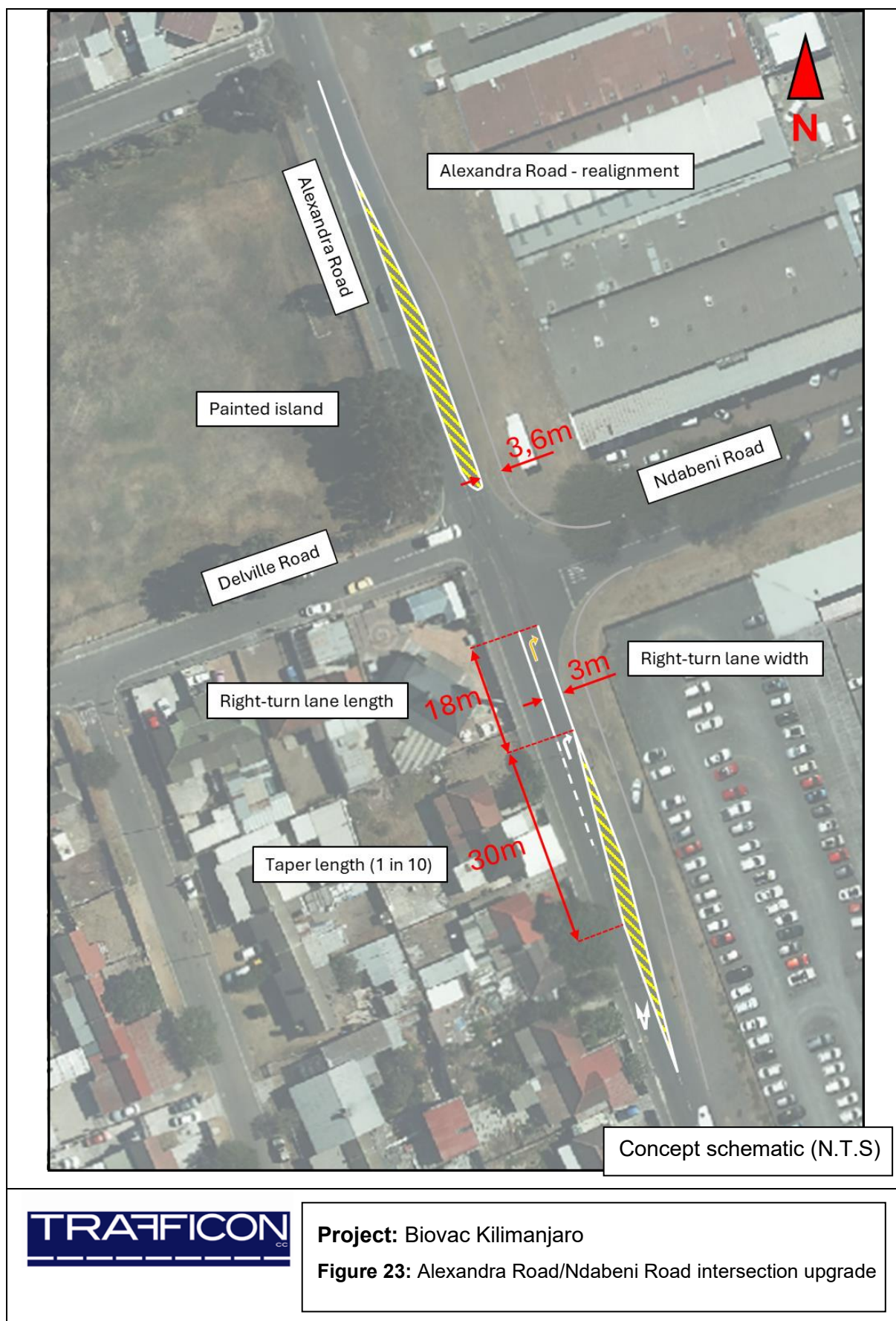


Table 9: Alexandra Road/ Berkley Road Intersection – Future with Development AM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	2912 veh/h
Degree of Saturation	0,799
Capacity (Total)	3 455 veh/h
Control Delay (Total)	21,84 ve-h/h
Control Delay (Average)	28,5 s/veh
Level of Service	LOS C
Level of Service (Worst Movement)	LOS D
Total Effective Stops	2 177 veh/h
Effective Stop Rate	0.79 per veh
Travel Distance (Total)	1 672,9 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	49,7 veh-h/h

Table 10: Alexandra Road/ Berkley Road Intersection – Future with Development PM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	3 220 veh/h
Degree of Saturation	0.860
Capacity (Total)	3 745 veh/h
Control Delay (Total)	27.35 veh-h/h
Control Delay (Average)	30.6 s/veh
Level of Service	LOS C
Level of Service (Worst Movement)	LOS E
Total Effective Stops	2 602 veh/h
Effective Stop Rate	0,81 per veh
Travel Distance (Total)	1950,9 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	59,9 veh-h/h

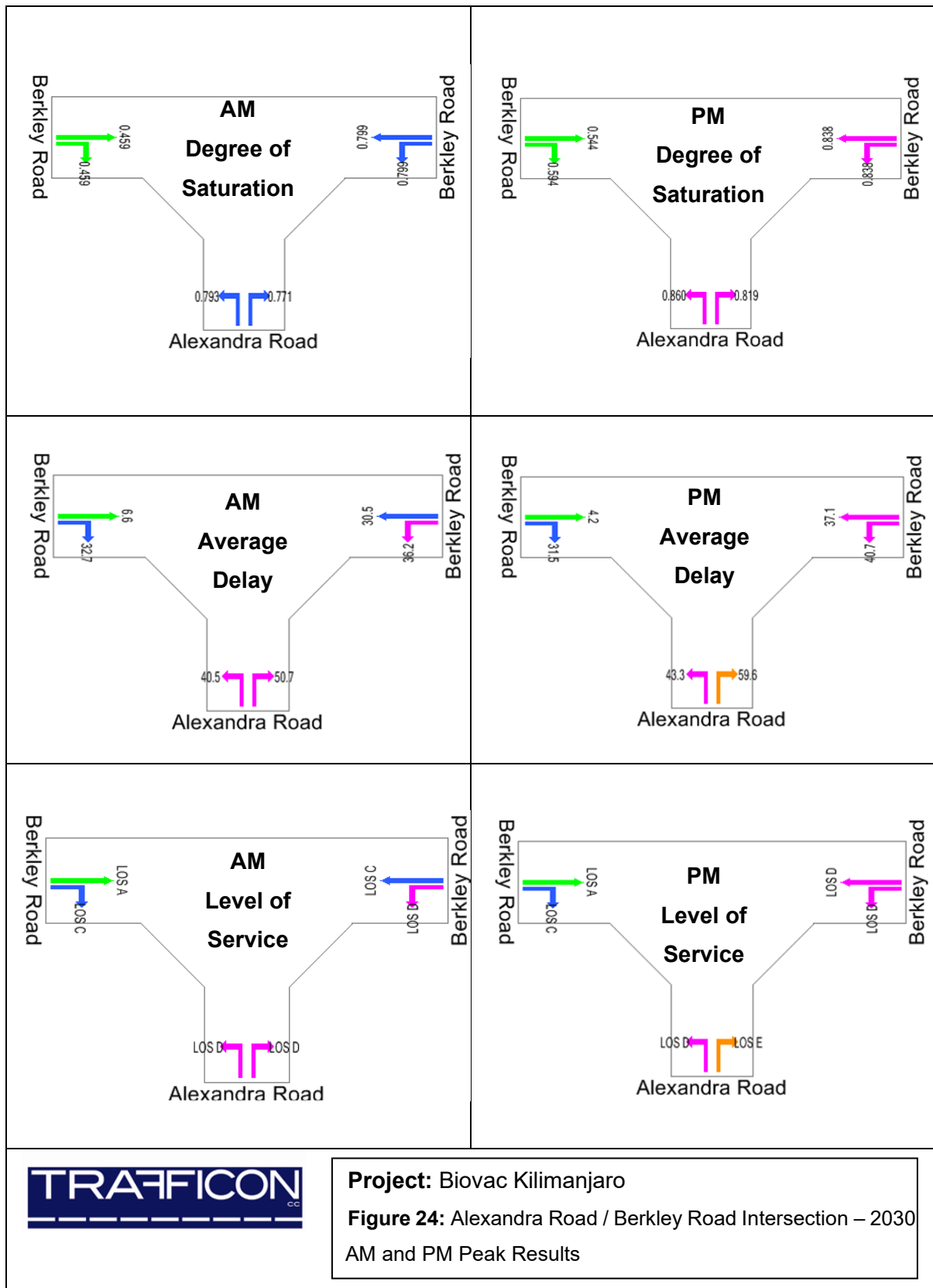


Table 11: Alexandra Road/ Ndabeni Road Intersection – Future with Development AM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	870 veh/h
Degree of Saturation	0,517
Capacity (Total)	1 681 veh/h
Control Delay (Total)	0,57 veh-h/h
Control Delay (Average)	2,4 s/veh
Level of Service	LOS B
Level of Service (Worst Movement)	LOS B
Total Effective Stops	144 veh/h
Effective Stop Rate	0.17 per veh
Travel Distance (Total)	526.9 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	9,4 veh-h/h

Table 12: Alexandra Road/ Ndabeni Road Intersection – Future with Development PM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	638 veh/h
Degree of Saturation	0.45
Capacity (Total)	1 418 veh/h
Control Delay (Total)	0,45 veh-h/h
Control Delay (Average)	2,5 s/veh
Level of Service	LOS B
Level of Service (Worst Movement)	LOS B
Total Effective Stops	606 veh/h
Effective Stop Rate	0.23 per veh
Travel Distance (Total)	386.3 veh-km/h
Travel Distance (Average)	606 m
Travel Time (Total)	11.6 veh-h/h

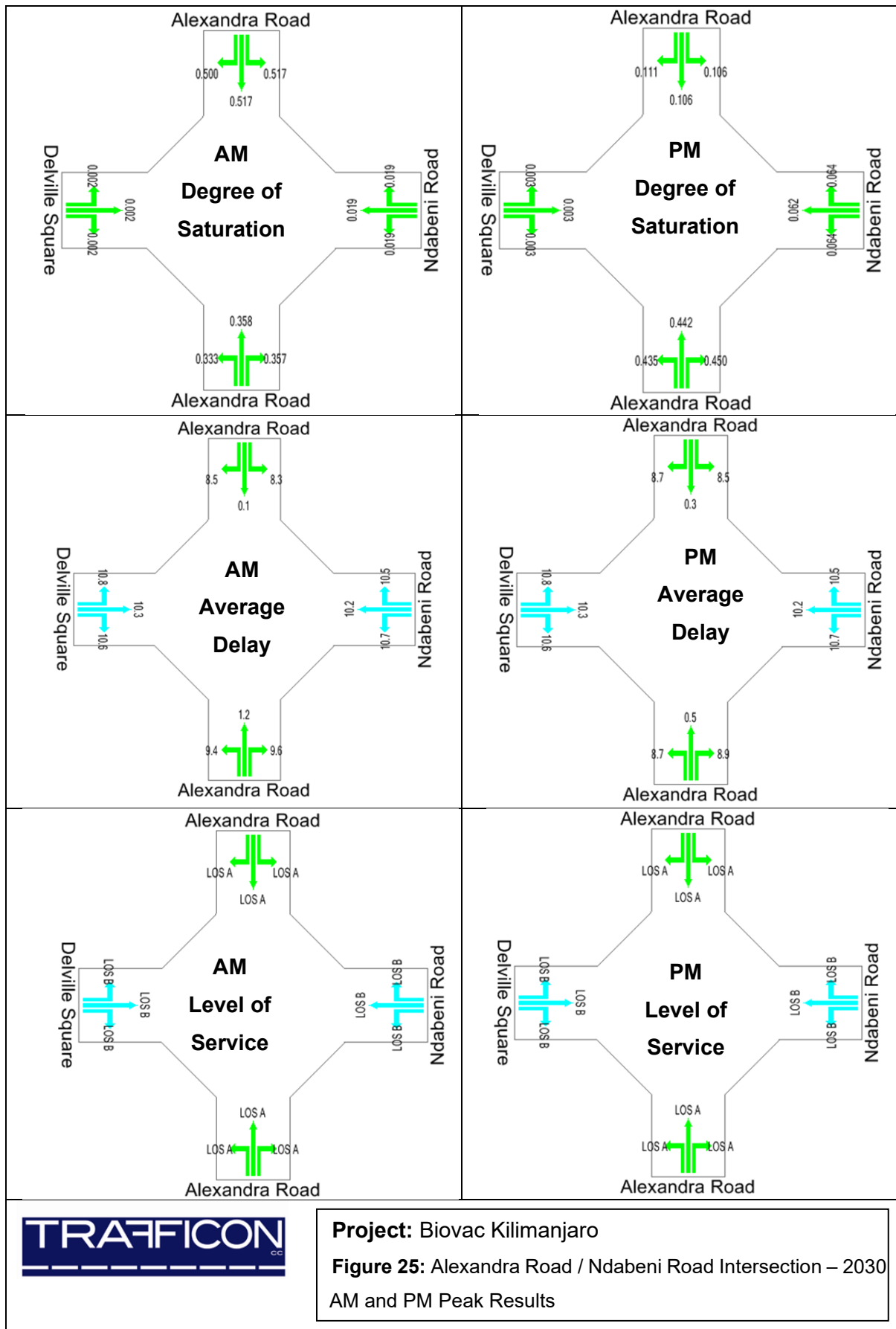


Table 13: Alexandra Road/ Raapenberg Road Intersection – Future with Development AM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	4886 veh/h
Degree of Saturation	1.599
Capacity (Total)	3056 veh/h
Control Delay (Total)	654.12 veh-h/h
Control Delay (Average)	482.0 s/veh
Level of Service	LOS F
Level of Service (Worst Movement)	LOS F
Total Effective Stops	10372 veh/h
Effective Stop Rate	2.12 per veh
Travel Distance (Total)	2972.8 veh-km/h
Travel Distance (Average)	608 m
Travel Time (Total)	703.8 veh-h/h

Table 14: Alexandra Road/ Raapenberg Road Intersection – Future with Development PM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	4 190 veh/h
Degree of Saturation	1.037
Capacity (Total)	4 039 veh/h
Control Delay (Total)	131,17 veh-h/h
Control Delay (Average)	112,7 s/veh
Level of Service	LOS F
Level of Service (Worst Movement)	LOS F
Total Effective Stops	5 247 veh/h
Effective Stop Rate	1.25 per veh
Travel Distance (Total)	2 548,1 veh-km/h
Travel Distance (Average)	608 m
Travel Time (Total)	173,7 veh-h/h

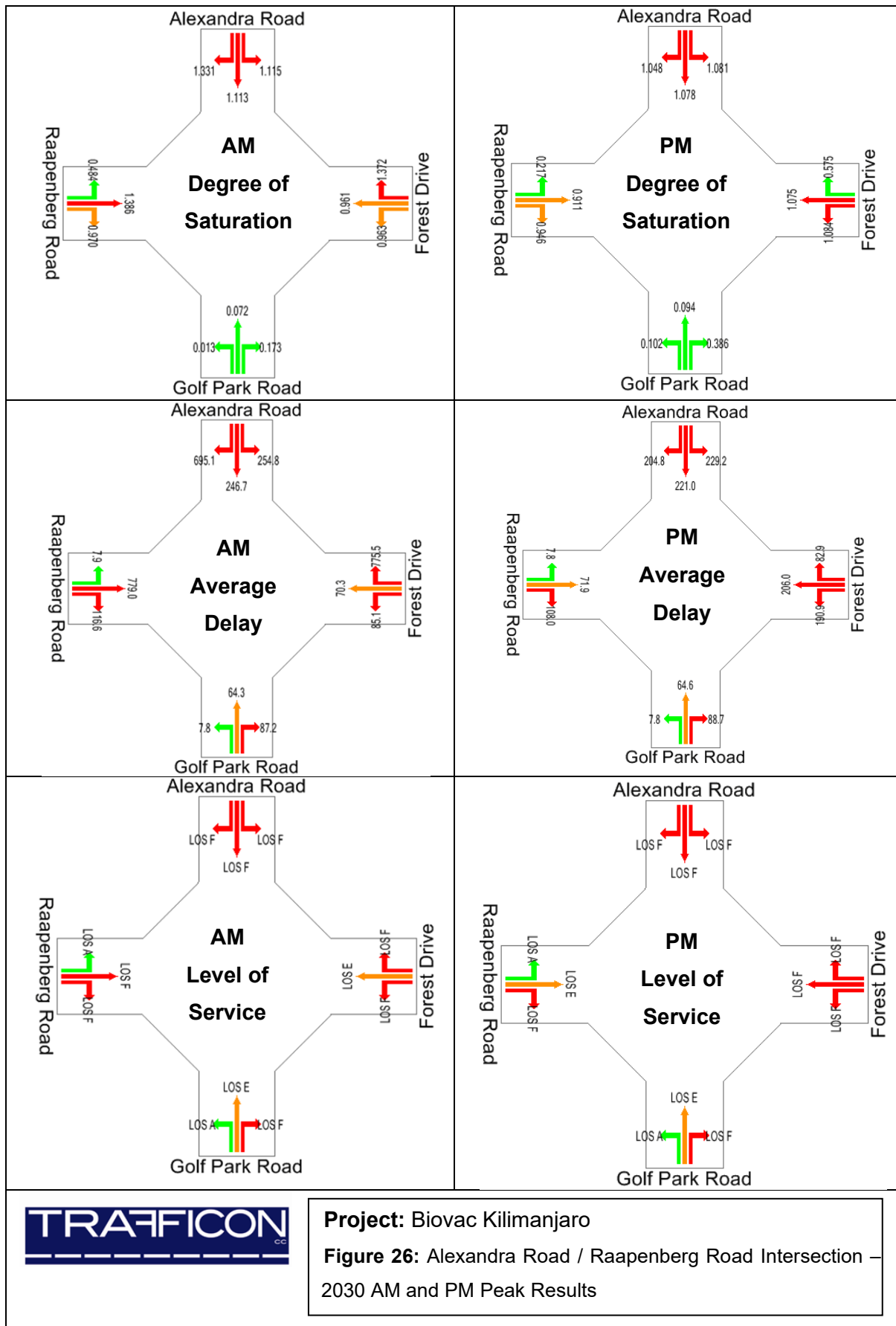
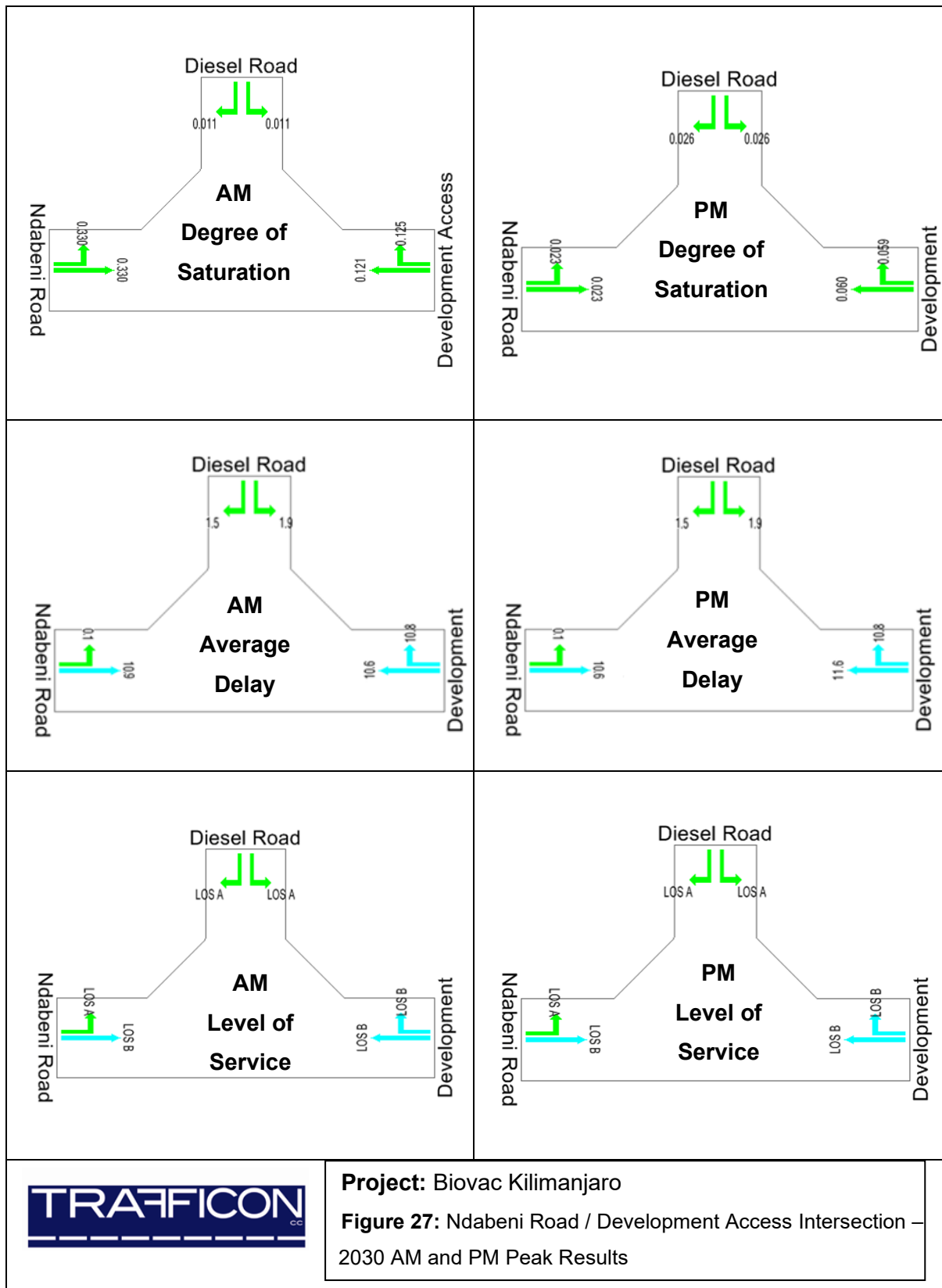


Table 15: Ndabeni Road/ Development Access Intersection – Future with Development AM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	194 veh/h
Degree of Saturation	0.126
Capacity (Total)	1535 veh/h
Control Delay (Total)	0.49 veh-h/h
Control Delay (Average)	9.0 s/veh
Level of Service	LOS B
Level of Service (Worst Movement)	LOS B
Total Effective Stops	149 veh/h
Effective Stop Rate	0.77 per veh
Travel Distance (Total)	117.4 veh-km/h
Travel Distance (Average)	605 m
Travel Time (Total)	2.4 veh-h/h

Table 16: Ndabeni Road/ Development Access Intersection – Future with Development PM Peak Results (2030)

Performance Measure	Assessment Result
Demand Flow	130 veh/h
Degree of Saturation	0.06
Capacity (Total)	2178 veh/h
Control Delay (Total)	0.35 veh-h/h
Control Delay (Average)	9.6 s/veh
Level of Service	LOS B
Level of Service (Worst Movement)	LOS B
Total Effective Stops	106 veh/h
Effective Stop Rate	0.81 per veh
Travel Distance (Total)	78.2 veh-km/h
Travel Distance (Average)	601 m
Travel Time (Total)	1.6 veh-h/h

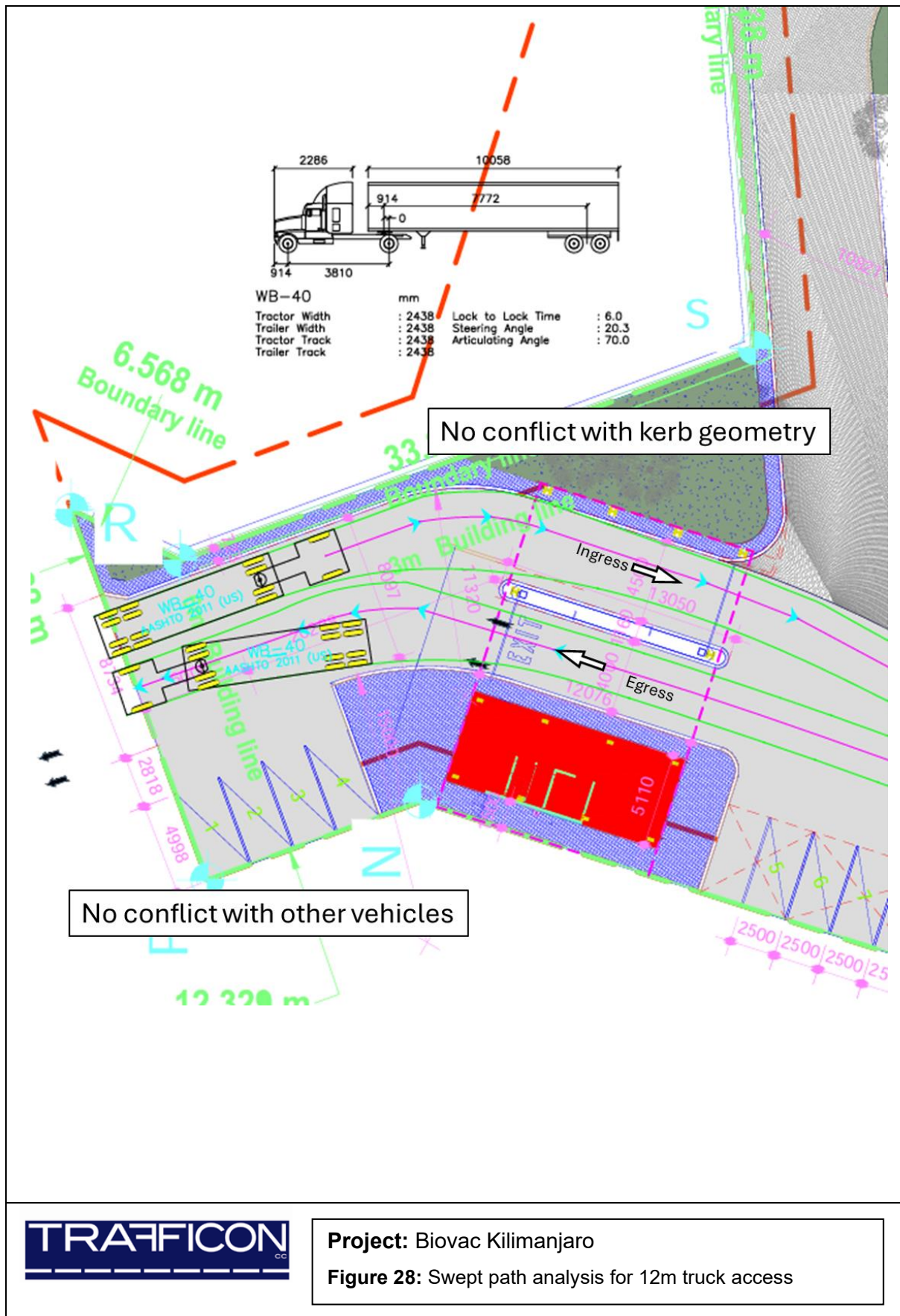


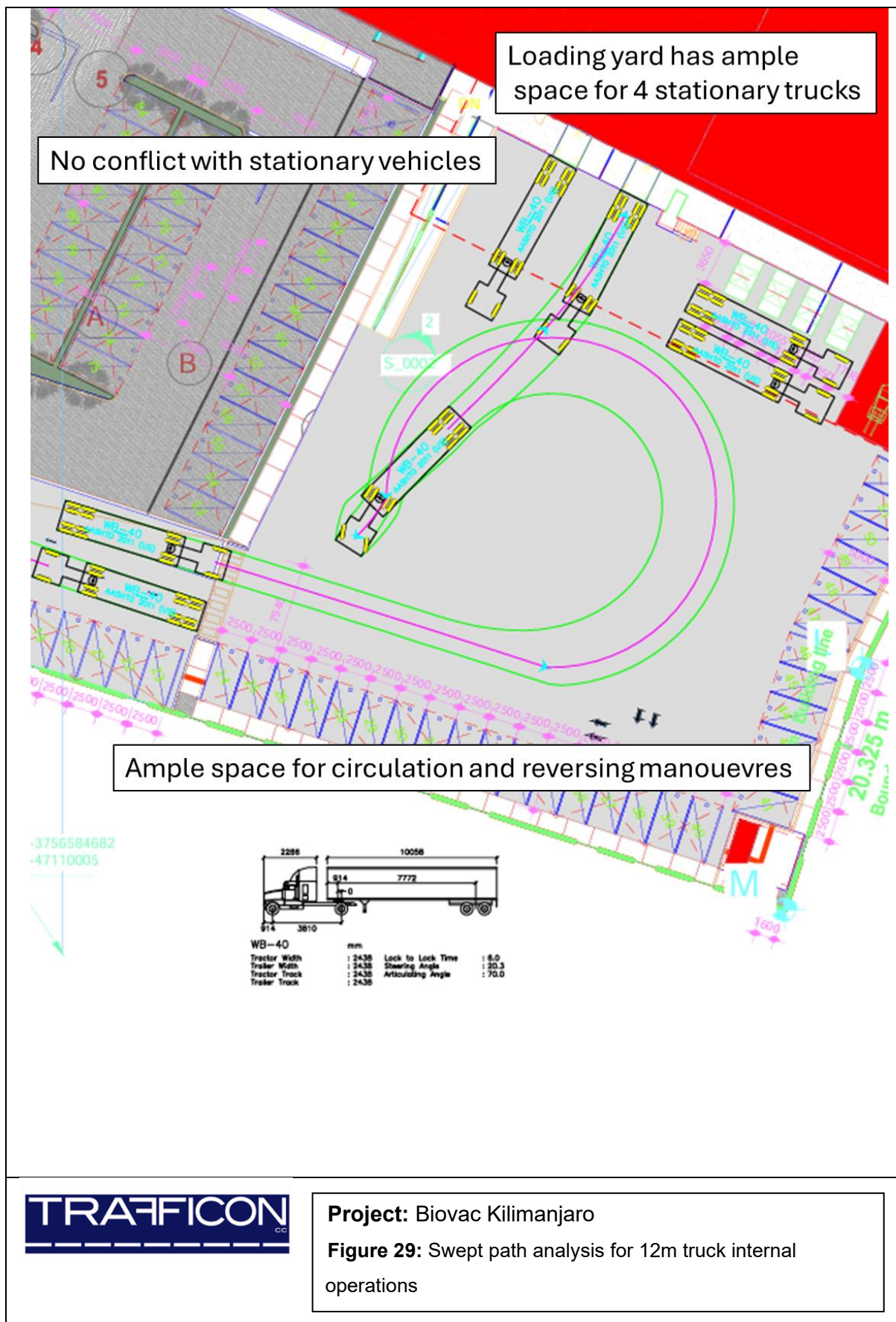
6. PARKING AND INTERNAL LAYOUT

As per the City's requirements, the proposed development is located within a PT2 zone which indicates a zero-parking requirement for the development. However, the development includes a parking provision of 115 bays for its operations. For loading bays, an industry type facility requires 3 loading bays for up to 10 000m² GLA and an additional loading bay for every 10 000m² GLA thereafter which equates to a loading bay requirement of 4 loading bays for 13 144m² GLA. The development provides a large loading dock area where two heavy goods vehicles can dock simultaneously, and two trucks can either operate under side loading facilities served by the forklift in the yard or wait for availability at the loading docks. The loading yard provides excellent space for large turning circles and heavy goods vehicles waiting to dock. This loading design serves the operations of the facility perfectly with ample space to accommodate 4 trucks simultaneously off-street. Figures 28 and 29 present the swept path analysis for a conservative 12m truck expected on a daily basis (2-3 times per day) at this facility and tests the gatehouse geometry, loading docks and turnaround space.

The following are the general conclusions of the layout:

- Parking bay dimensions that comply with the City's minimum requirements for passenger vehicles (2,5m x 5,0m) are to be adhered to.
- Aisle widths of 7,5m comply with the City's requirements.
- Pedestrian access is provided and links to existing pedestrian sidewalk facilities on Diesel Road.





7. ACCESS CONTROL

The previous TIA report has concluded that for an industrial park of 59 361m² GLA the access control gatehouse should consist of three ingress lanes and two egress lanes. For this proposed development of only 13 144m² GLA a review of the access capacity and queue lengths is required to determine the access gatehouse configuration.

In terms of peak hour trip generation, the critical period is the AM peak period with a total of 54 veh/hr. Deliveries are expected to be in the order of 2-3 trucks per day and visitors are expected to be very low and outside of the commuter peak periods.

An access assessment was undertaken under both microscopic methods as well as the queue length calculation requirements according to THM16.

The TMH16 document gives guidance for the calculation of the 90th percentile queue length to determine the ingress throat length with access control, which is determined by Table 31 in the TMH16 using the following equation:

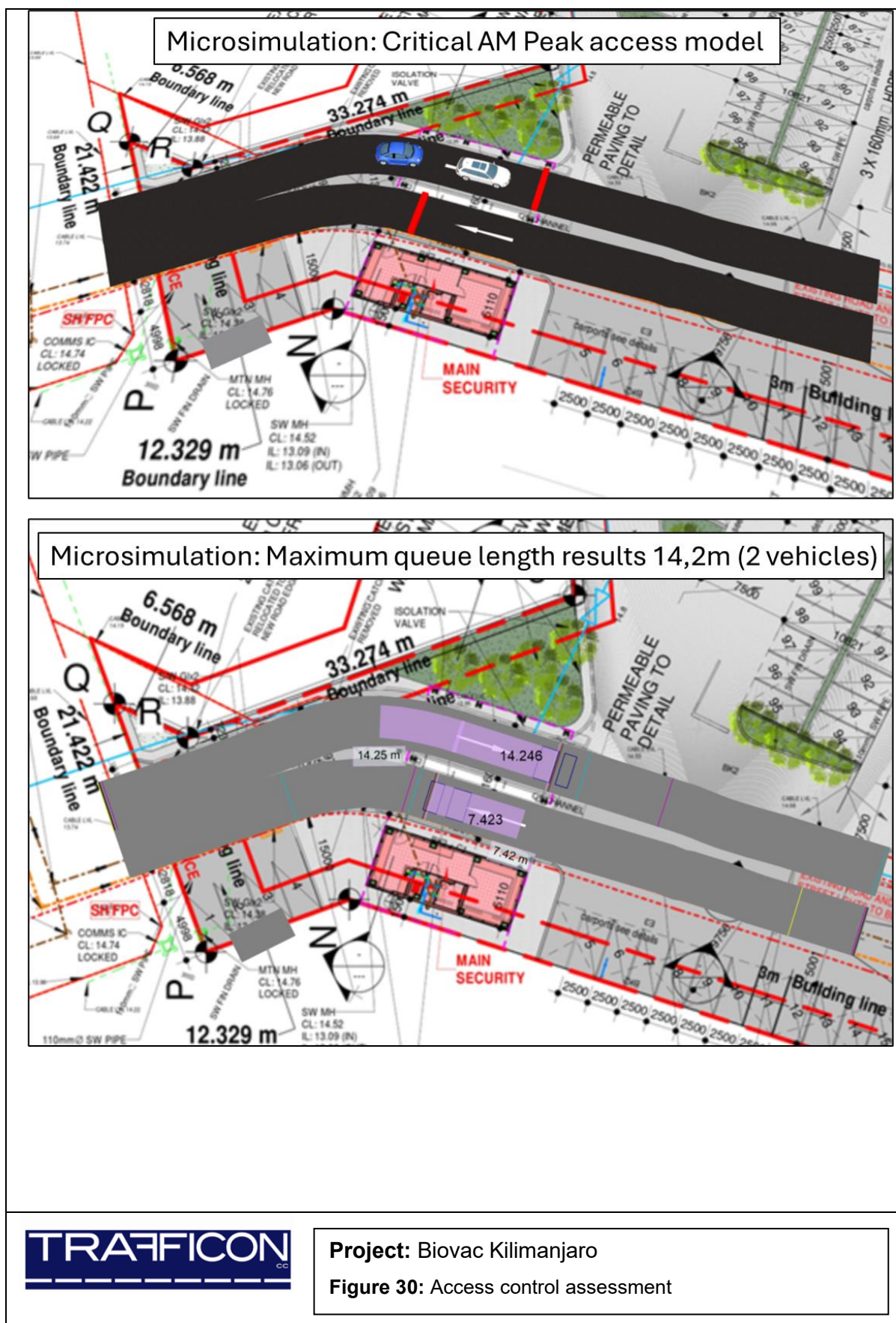
$$\text{Traffic Ratio} = \frac{\text{Total Volume/PHF}}{\text{Service flow rate}} \times 100$$

Using the total ingress volume during the critical AM peak period of 54 trips, a general PHF of 0,85 and a service flow rate of 480 (staff access card) the traffic ratio is calculated to be 13,3.

Table 31 in the TMH16 document indicates that for a 1-channel access control and a traffic ratio of 102,9 the 90th percentile queue lengths is one vehicle.

Using a microsimulation model, the maximum queue lengths was determined to be 14,3m (two vehicles). Figure 30 presents the microsimulation model and the maximum queue length results.

Consequently, with one lane ingress and egress, the available queue storage length of 33m far exceeds the maximum queue length modelled of 14,3m. This conservative approach mitigates against any potential traffic impact of an unlikely scenario of a delivery or visitor during the AM peak commuting period.



8. PUBLIC TRANSPORT

A public transport trip generation was calculated to determine the potential impact of this proposed development on public transport and to recommend appropriate facilities that could accommodate this expected public transport demand.

The guideline used to determine the number of person trips per public transport mode are based on the Comprehensive Integrated Public Transport document (CITP).

1. Methodology

The methodology used are as follows.

- The number of person trips generated are calculated based on the planned number of employees at the facility (approximately 300).
- Then the number of person trips generated during the a.m. peak hour is determined by applying a factor for those person trips arriving within the peak hour.
- The number of person trips expected to use public transport during the peak hour is determined.
- This number of public transport person trips are divided into different public transport modes (i.e. mini-bus taxis and/or busses) based on a secondary modal split. The “Comprehensive Integrated Transport Plan (2018 to 2023)” was used to obtain a secondary modal split for the public transport modes.
- The number of public transport vehicle trips are then calculated by dividing the number of person trips per mode by the occupancy of each mode.

2. Person trips per land use

- The production facility is planning on employing approximately 300 staff members for the day-to-day operations of the facility.

3. Peak Period Person trips expected in peak hour.

A 60% peak period person trips have been used in this assessment for industrial (light manufacturing) based on the CITP guidelines.

4. Peak hour person trips using Public Transport

Of the peak hour trips, the proportion of those using public transport is determined by applying a proportion factor below derived from the guideline documentation:

- Industrial: 50 – 60% of peak hour person trips

Considering the availability of train, bus and mini-bus taxi transport services, the proportion of staff using public transport has been set to 60%.

These assumptions are validated by the fact that a 40% private vehicle usage of the 60% of the total number of employees arriving within the peak hour equates to $300 \times (0,6) \times (0,4) = 72$ private vehicles, which correlates very well with the vehicle trip generation of 67 calculated in Table 8.

5. Secondary Public Transport Mode Split

As per the CITP (2018-2023), the following secondary modal split was assumed for this assessment and adjusted for the exclusion of MyCiTi services:

- Rail: 40%
- Bus (GABS): 20%
- Bus (MyCiTi): 0%
- Mini-bus taxi: 35%
- Walking (only mode): 5%

6. Vehicle occupancies per Public Transport mode

The following vehicle occupancies were used to convert the number of person trips per mode to vehicle trips per mode:

- Bus: 65 persons
- Mini-bus taxi 15 person
- Train (6 carriage train set): 2000 persons

The in/out percentages as provided in the TMH17 manual for each land use were used to determine the in/out trips of trips calculated.

The public Transport trip generation based on the methodology summarised above is presented in Tables 17 and 18 below.

Assuming there is no spare capacity on existing mini-bus taxi and bus services, the results indicate an additional 3 mini-bus taxis and 1 bus are required and an additional 72 passengers for rail. Distributed over the peak period, this is considered not significant, and the existing public transport infrastructure is well suited to accommodate this demand.

Table 17: Public Transport Trip Generation Calculation (Part 1)	
Proposed Development	Biovac Vaccine Production
Land Use	Manufacturing
GLA (m ²)	13144
Person Trip Generation Rates	
Total Employees (Estimate)	300
Demand During Peak Hour	
Proportion of person trips during peak hour	60%
Person Trips during the peak hour	180
Industrial (Manufacturing)	180
Total Person Trips	180
Primary Modal Split (Public Transport %)	
Modal split (public transport share, including walking)	60%
Number of public transport passengers and pedestrians	108
Secondary Modal Split (PT Modes Split)	
Public transport modal split (assumed)	
Rail	40%
Bus (GABS)	20%
Bus (MyCiTi)	0%
Taxi	35%
Walking (Only Mode)	5%
No of people using public transport	
Rail	72
Bus (GABS)	36
Bus (MyCiTi)	0
Taxi	63
Walking (Only Mode)	9

Table 18: Public Transport Trip Generation Calculation (Part 2)	
Public transport capacity	
Mini-Bus Taxi Capacity	15
Bus Capacity	65
Train Set Capacity	2000
No of Public Transport Vehicles	
No of Pedestrians	9
Taxi Trips (AM Peak Hour)	
% of taxi trips In	80%
% of taxi trips Out	20%
Total no of taxi pax In	50
Total no of taxi pax Out	13
Total no of taxi trips In	3
Total no of taxi trips Out	1
Bus Trips (AM Peak Hour)	
% of bus trips In	80%
% of bus trips Out	20%
Total no of bus pax In	29
Total no of bus pax Out	7
Total no of bus trips In	0
Total no of bus trips Out	1
Train Trips	1

9. CONCLUSIONS AND RECOMMENDATIONS

This TIA has reviewed the potential development of Biovac Kilimanjaro on Erf 118296-RE, 103659-RE, 24176-RE & 148366, Ndabeni.

The conclusions of this report are summarised as follows:

- The proposed development consists of 13 144m² manufacturing GLA with an expected trip generation of 67 trips during the AM and PM peak periods
- 115 parking bays are provided which complies with the City parking requirements.
- No growth rate has been applied to the background volumes for the future scenario with development due to insufficient capacity on the external bottlenecks which acts as a traffic volume regulator.
- In terms of LOS and capacity, the future scenario indicates no significant impact on the surrounding road network as a result of the development.
- In terms of operational safety, a right-turn lane is warranted at the south approach at Ndabeni Road/Alexander Road intersection only.
- A new traffic control measure is required at Ndabeni Road/Diesel Road intersection to manage the conflict as a result of traffic in and out of the proposed development.
- The access gatehouse configuration of one ingress lane and one egress lane with a queue storage length of 33m accommodates the maximum queue length modelled of 14,2m with no queues extending onto the external road network.
- Public transport trip calculation indicates no significant impact to existing public transport services.

The recommendations of this report are summarised as follows:

- A new stop control intersection layout to be introduced at Ndabeni Road/Diesel Road. A stop control at the east approach and a stop and yield left control at the west approach.
- A right-turn lane, 3m in width and 18m in length with a 30m taper (1 in 10 taper) be introduced on the Alexander Road south approach at Alexander/Ndabeni Road intersection.

With the above infrastructure upgrades, there are no traffic-related reasons why this development may not proceed.

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