ERF 1051 ROCKDALE MIDDELBURG PROPOSED NEW NEIGHBOURHOOD SHOPPING CENTRE (The Site)

TRAFFIC IMPACT ASSESSMENT (TIA) for rezoning purposes

NOVEMBER 2019

mpe moyeni professional engineering mpe0280

Report mpe0280/TIA

NOTE:

 Moyeni Professional Engineering (MPE) appointed Trafsol to undertake the data collection under MPE's supervision.

TITLE OF REPORT:



ERF 1051 ROCKDALE MIDDELBURG PROPOSED NEW NEIGHBOURHOOD SHOPPING CENTRE (The Site)

TRAFFIC IMPACT ASSESSMENT (TIA) for rezoning purposes

CLIENT:			
Owner			
REPORT NO:	MPE0280 – ROCKDALE SO		
PREPARED BY:			
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			SIGNED
REVIEWED BY :		-	The engineer and his team
APPROVED :			has been prepared by myself and I field of traffic and transportation
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		REVISION	DATE
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ERF 1051 ROCKDALE MIDDELBURG PROPOSED NEW NEIGHBOURHOOD SHOPPING CENTRE (The Site)

TRAFFIC IMPACT ASSESSMENT (TIA)

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ROCKDALE SHOPPING CENTRE Erf 1051 Middelburg Traffic Impact Assessment November 2019

ERF 1051 ROCKDALE MIDDELBURG
PROPOSED NEW NEIGHBOURHOOD SHOPPING CENTRE
(The Site)

TRAFFIC IMPACT ASSESSMENT (TIA)

1. INTRODUCTION

- The developer of the property wishes to apply for rights for a new neighbourhood shopping centre. Erf 1051 Rockdale is part of an established residential township.
- The Site lies on the N11 some 850m north of the N4 freeway
- The Site is vacant (currently a temporary road construction contractor for the N11 rehabilitation partially occupies the site).
- A new future township known as Rockdale West has been applied for as shown in Figure 6.
- Except for the Rockdale supermarket located some 400m east of the Site, the Rockdale Township, being a low-income residential development, has no formal business activities including retail located within the township.
- The N11 is currently undergoing its final stages of rehabilitation including a new riding surface, new shoulders and right-turn lanes at the existing intersections including the intersection adjacent to the Site.
- Due to the rehabilitation project, NO new traffic counts were undertaken as the N11 is, due to various detours and road temporary closures, NOT operating under normal traffic conditions. As mpe undertook AM, PM and Saturday traffic counts along the N11 in September 2017, these have been used instead as shown in Figure 10A.
- Refer to **Figure 5** for the Town Planning layout of the application.

- Refer to **Figure 7**, for a copy of the Rockdale Shopping Centre layout.
- The purpose of this report is to document a normal TIA (COTO Manual compliant)
 in order to complement the input to the town planning application submission. The
 associated mitigating road upgrades are proposed, if required, to satisfy these
 current and expected future traffic. The comprehensive TIA report contains the
 detail of all calculations, figures and annexures in the normal manner.
- Moyeni Professional Engineering (Pty) Ltd (mpe) (Brian Roberts Pr Eng MBA) together with input from the town planners (Urban Dynamics Mpumalanga) has prepared this TIA report, which follows the requirements of the COTO Manuals.



Figure 1: Regional locality plan



Figure 2: Area-wide Local locality plan



Figure 3: Precinct locality plan and study area Study area and intersections analysed on the N11



Figure 4: Local locality plan

TOWN PLANNING AND ARCHITECT

- A rezoning application for retail rights is to be lodged with the Steve Tshwete Local Municipality (STLM).
- The TIA has been based on the information depicted on the architect's concept layout (refer to Figure 7 overleaf), which shows and FAR of 0,21 on the 2Ha property.
- This means the GLA for the planned shopping centre calculates to 4 200sqm.
- The shopping centre is planned to be a 1 storey domestic type building.

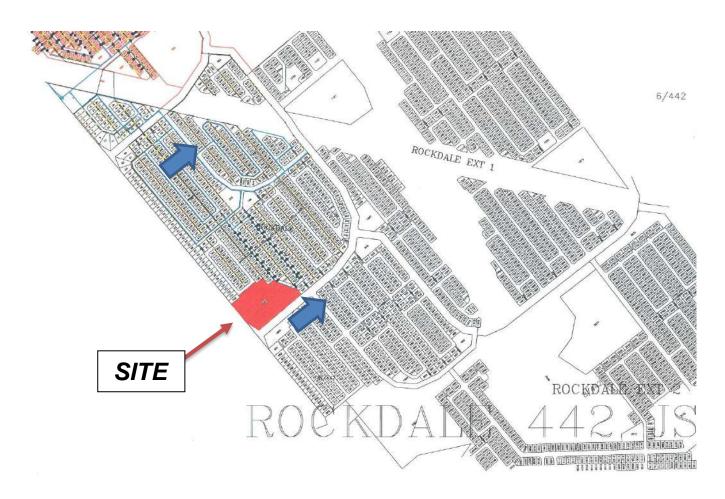


Figure 5: Existing Rockdale township (east) layout with the Site in red Access points off the N11

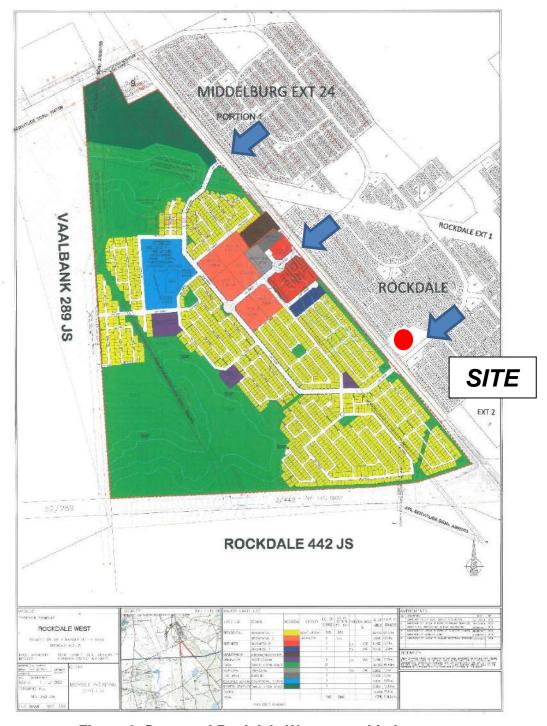


Figure 6: Proposed Rockdale West township layout
Access points off the N11 (mainly opposite existing intersections)

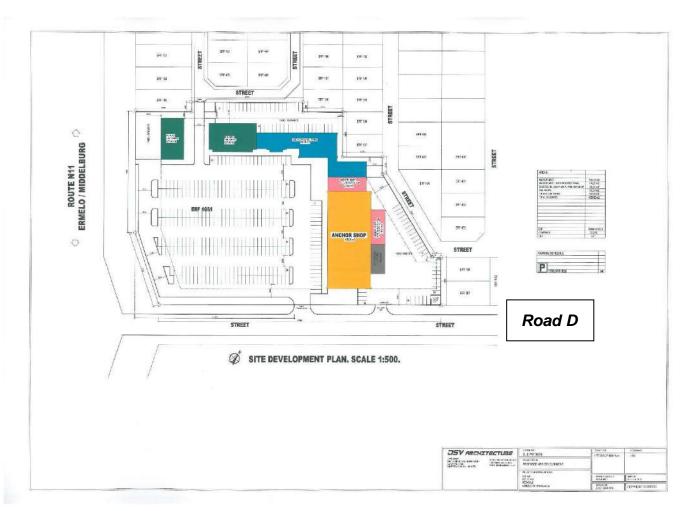


Figure 7: Proposed Erf 1051 Rockdale shopping centre



Rights associated with the proposed shopping centre

2. ROAD INFRASTRUCTURE

2.1 Existing Road Network

N4 trunk road:

This is a high order Class 1 freeway that passes Rockdale to the south, adjacent the southern boundary, in an east-west direction.

N11

This is a **Class 2** road linking the N4 in the south (and beyond) to the R104 in the north. The road interchanges with the N4 freeway adjacent to the Rockdale Shopping Centre southern boundary. The route comprises a two-lane single carriageway road.

It can be described as primary distributors (Class 2), i.e. roads that:

"...form the primary network for the urban area as a whole. All long distance traffic movements to, from and within the city should be focussed onto such roads. Characteristics are high volumes, restricted access and fairly high speeds. Continuity of route is important." (6)

Class 4 and 5 roads

Class 4 roads will link the N11 to the residential streets and are typically constructed as two-lane single carriageway roads with turning lanes if required. **Roads A and Road B** are class 4 roads.

They can be described as district distributors (Class 4), i.e. roads that:

"...distribute traffic between various residential, industrial and principal business districts of the town and form the link between the primary road network and the roads within the residential areas ... should also carry high volumes, have restricted access and be characterised by moderate traffic speeds. The major public transport movements are routed on district distributors and accordingly, facilities should be provided off the roadway for passenger loading and unloading."(6)

Access roads or Class 5 roads (within the townships) form the final interface between the domestic units and the primary network, and because of their narrowness and higher environmental standard, will not normally be used by bus services. It may, however, be necessary to make use of certain access roads to provide a turn-around for buses, avoiding the need for reversing. The minimum roadway width of access road so used, should be 6,8 metres. (6)



Photo 1: Looking north along the N11 leaving the N4 interchange at Road A (November 2019)



Photo 2: Looking north along the N11 leaving the N4 interchange approaching the resurfaced area

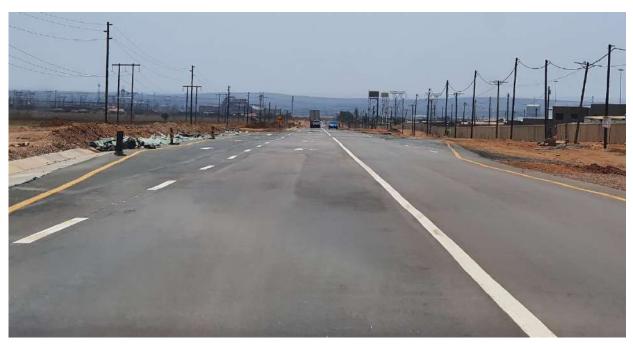


Photo 3: Looking north along the N11 approaching the new Road D intersection

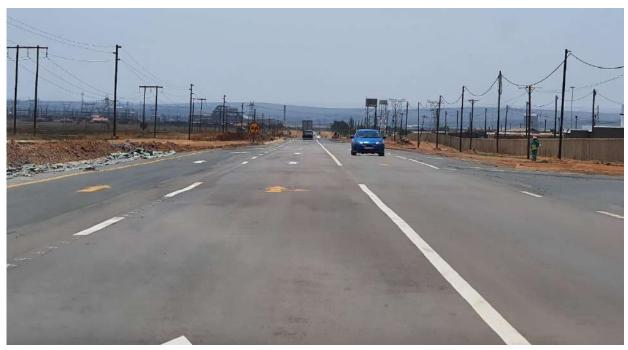


Photo 4: Looking north along the N11 near the new Road D intersection (Site is on the right behind the wall)



Photo 5: Looking north along the N11leaving the new Road D intersection

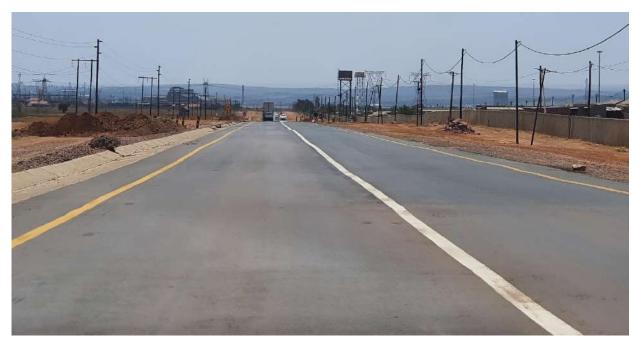


Photo 6: Looking north along the N11 after the new Road D intersection



Photo 7: Looking north along the N11 after the new Road D intersection showing road works to the north



Photo 8: Looking south-east at the internal Rockdale Supermarket along Road D



Photo 9: Looking west along Road D approaching the N11 (recently constructed new intersection adjacent the Site which on the right.



Photo 10: Looking west along Road D at the N11 (recently constructed new intersection adjacent the Site which on the right.

TABLE 1: Road network classification

Road / Street	Class	Carriageway	Road reserve width (m)	Number of lanes	Characteristic
N4	1	Dual	90	4	SANRAL
N11	2	Single	50 - 60m	2	SANRAL
Road A	4	Single	20	2	Municipal
Road B	4	Single	20	2	Municipal
Road D	4	Single	25	2	Municipal

The traffic volumes have the following characteristics:

TABLE 2: Link traffic flows (September 2017)

Road	Flow (vph)	PM peak hour	Saturday peak hour	Capacity (vph) / Number of lanes required / existing	Percent of capacity
N4 Ramps	Eastbound	169	108	1900 / 1 / 1	15
N4 Kamps	Westbound	242	132	1900 / 1 / 1	13
N11	Northbound	369	241	1900 / 1 / 1	20
NII	Southbound	443	299	1900 / 1 / 1	23
Road A*	Eastbound	39	25	1800 / 1 / 1	2
	Westbound	46	31	1800 / 1 / 1	3
Road B*	Eastbound	57	48	1800 / 1 / 1	3
Noau B	Westbound	47	56	1800 / 1 / 1	3
Road D*	Eastbound	64	49	1800 / 1 / 1	4
Noau D	Westbound	52	53	1800 /1/1	3

^{*}Revised to take into account the new Road D intersection as per Figure 10B.

In general, the traffic volumes on the N11 are fairly low with the highest one-way traffic link flow being 23 percent of capacity.

All of the above are operating at satisfactory link characteristics in 2017.

2.2 Future Road Network

Except for the existing rehabilitation and intersection upgrading currently under construction on the N11 and hard-surfacing of some of class 4 / 5 roads, no major roads are planned in this area.

2.3 Intersection controls

The existing intersection controls are as follows:

TABLE 3: Existing N11 intersection controls (September 2017)

Main Road / Street	Cross street	Control
N4 terminals	N11 Priority on side streets	
N11	Road A	Priority on the side street
N11	Road B	Priority on the side street
N11	Road D	Priority on the side street

3. SITE ACCESS

Refer to Figure 7 for conceptual details.

There are three access points planned for the Rockdale Shopping Centre, namely

- Access 1: 100m from the N11 on Road D, being the main access for the public.
- Access 2: 50m east of Access 1 on Road D, being the rear / delivery access
- Access 3: a connection between the northern car park and the existing local street, for local residents.

It should be noted that the proposed accesses comply with Provincial standards in that:

- No access is applied for along the N11 frontage.
- Access 1 is 100m from the N11.

4. TRAFFIC DATA

As mentioned in the introduction, due to the N11 undergoing the last phase of the rehabilitation project, including detours and certain road closures, the proposed 2019 traffic count survey was NOT carried out as the traffic flows are obviously NOT normal. It was decided to use the last normal flow data ie undertaken in September 2017.

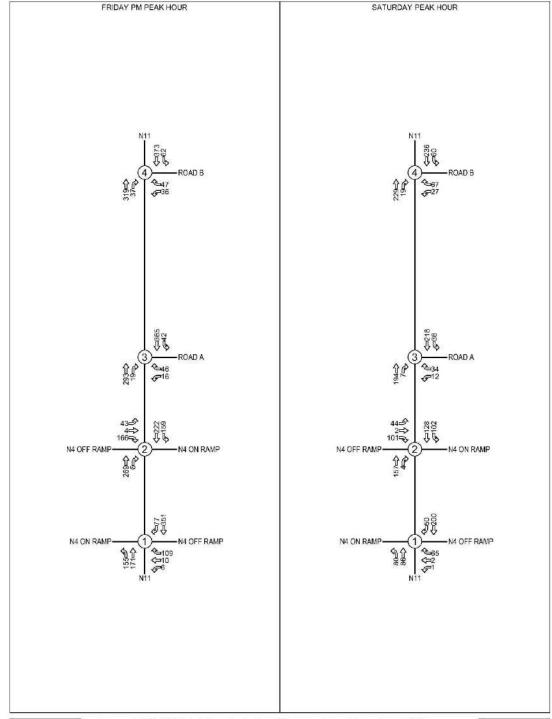
The traffic counts undertaken in September 2017 are shown below:

The peak hours occur as follows:

Weekday PM Peak hour - 16:45 to 17:45 Saturday peak hour - 12:30 to 13:30

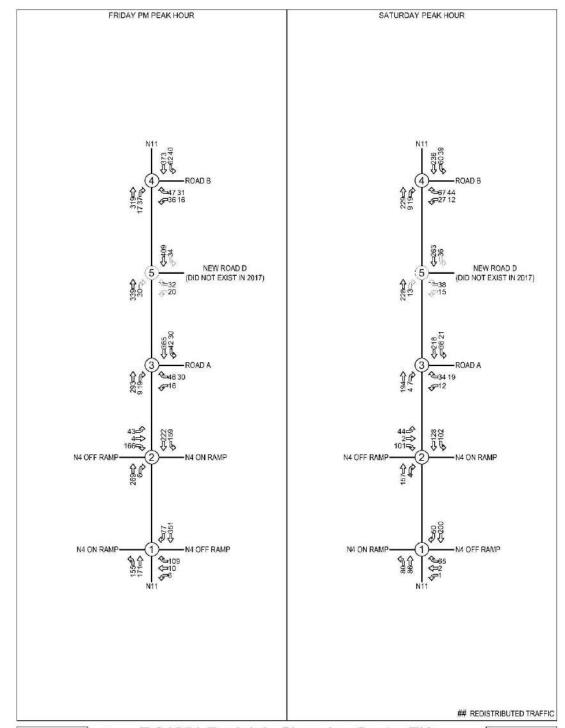
Considering the future of the greater area and based on the total traffic along *the N11* the growth rate has been 2,0% pa was adopted. (Table 1.1 of COTO TMH 17 was also taken into account).

Since Road D (adjacent to the Site) was not constructed in 2017, an estimate of what the side road flows would have been in 2017 WITH Road D open. The estimate assumes the total IN and OUT flows remain the same across Roads A, B and D and as depicted in **Figure 10B**. These estimate flows are included in **Annexure B** as an adjusted base model case.



10A

Erf 1051 Rockdale Shopping Centre TIA 2017 Existing Traffic Flows Friday PM & Saturday Peak Hours



mpe A.T.S.

Erf 1051 Rockdale Shopping Centre TIA

Redistributed Traffic Flows If Road D Existed Friday PM & Saturday Peak Hours

10B

The modal split (derived from the traffic counts as detailed in **Annexure B**) is as follows:

TABLE 4: Modal split (2017)

Mode of	Friday All surveyed hours	Saturday All surveyed hours	
transport	All study area intersections	All study area intersections	
	Total vehicles	Total vehicles	
Cars	11 533	7 541	
Minibus taxis	1 260	472	
Buses	157	44	
Trucks	1 106	591	
Total	14 056	8 648	
	Percentage	Percentage	
Cars	82,1	87,2	
Minibus taxis	9,0	5,5	
Buses	1,1	0,5	
Trucks	7,9	6,8	
Total	100,0	100,0	

5. TRIP GENERATION

The **expected trip generation rates** have been taken from the latest **COTO TMH 17 Manual** (reference 3) and the **adjustment factors** from Table 3.2. Refer to **Annexure B** for the traffic flows calculations.

TABLE 5: Trip generation adjustment factors

	Adjustment factors (COTO TMH 17 – Table 3.2)		
Land use	COTO Land use Adjustment factor		
Retail Very Low / Low car ownership	820	70%	
Retail Transit nodes and corridors (N11)	820	85%	
Combined factor	820	0,60%	

Table 6: Trip generation rate (trips per 100sqm GLA) (Pre adjustment factor)

PEAK HOUR	COTO Code	IN	OUT	TWO-WAY
Retail	820	6,34	6,34	12,68
Retail	820	8,39	8,39	16,78

The resulting post-modal split trip generation is tabulated below:

TABLE 7: Trip generation (Post adjustment)

Peak hour trips					
Land use IN OUT TWO-WAY					
Weekday PM					
Retail	158	158	316		
Saturday					
Retail 210 210 420					

6. TRIP DISTRIBUTION

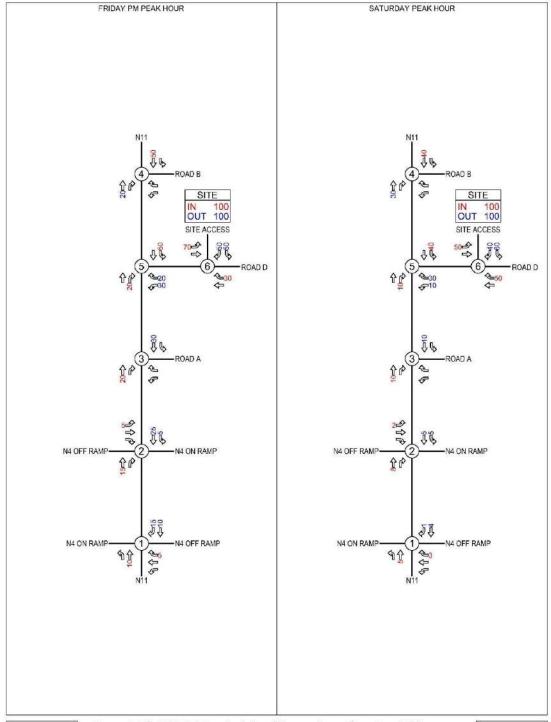
Refer to Figure 11 and Annexure B for details.

Relating to the study area and the traffic counts (2017), the expected trip distribution is as follows:

TABLE 8: Expected Trip Distribution

Direction of Origin / Destination			
Retail	Friday PM Percentage	Saturday Percentage	Route followed
From / to the south	10 / 10	5 / 4	N4 / N11
From / to the south-east	5/5	3/5	Road A east
From / to the south-west	5 / 15	2/1	Road B east
From / to the north	50 / 20	40 / 30	N11
Internal (east of the N11)	30 / 50	50 / 60	Internal
TOTAL	100 / 100	100 / 100	

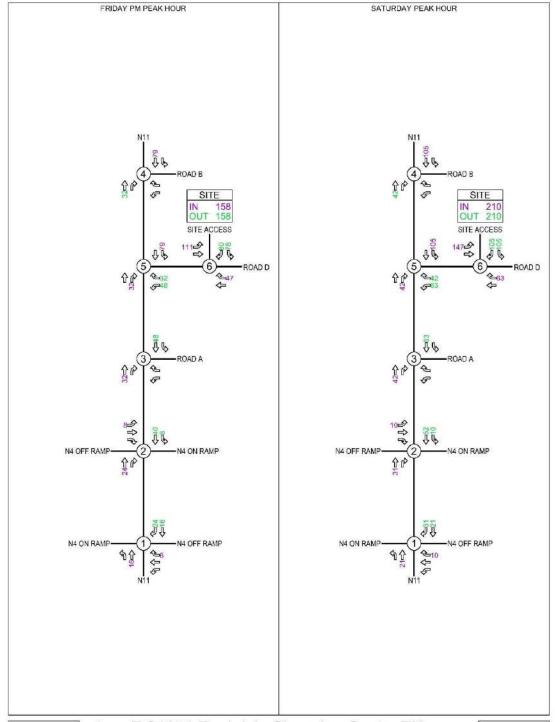
The full trip distribution for both peak periods is shown in Figure 11 overleaf:



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Erf 1051 Rockdale Shopping Centre TIA

Trip Distribution (%)
Friday PM & Saturday Peak Hours



mpe N.T.S.

Erf 1051 Rockdale Shopping Centre TIA

Trip Assignments (vph)
Friday PM & Saturday Peak Hours

7. TRAFFIC FLOWS

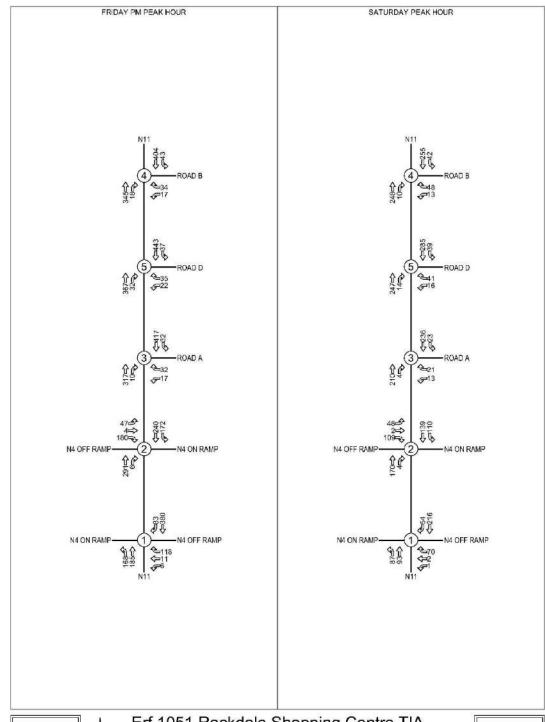
The adjusted 2017 scenario was analysed in order to obtain a base for the traffic flows in the area.

In terms of traffic flow estimates and associated traffic analysis, it was decided to analyse the **2021 and 2026 design horizon scenarios** as this would be the fully built year and 5 years after the opening date. Any associated road upgrades would need to satisfactorily accommodate these traffic flows.

The expected latent rights form part of the Rockdale West township application.

The expected without and with Site flows are depicted in Figures 13 to 18 overleaf.

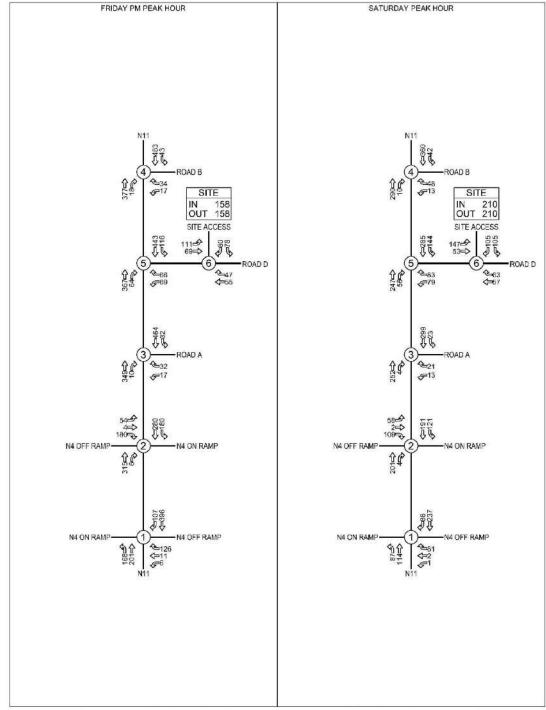
The calculations are detailed in **Annexure B**.



mpe N.T.S.

Erf 1051 Rockdale Shopping Centre TIA

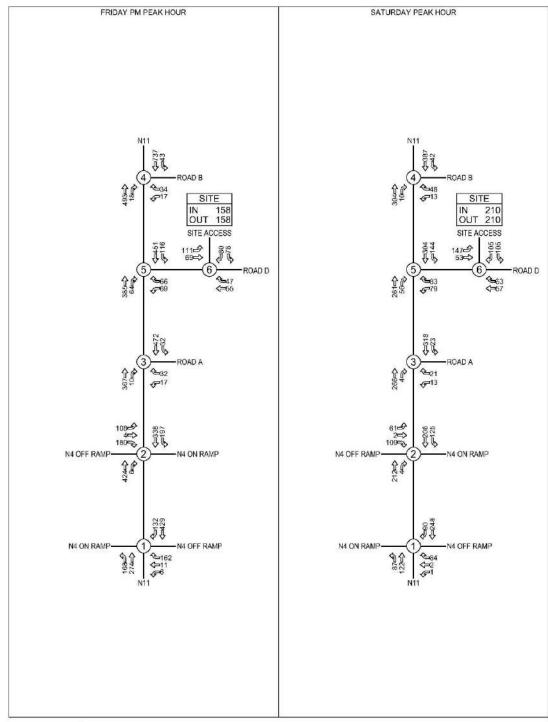
2021 Expected Traffic Flows Only Friday PM & Saturday Peak Hours



mpe A

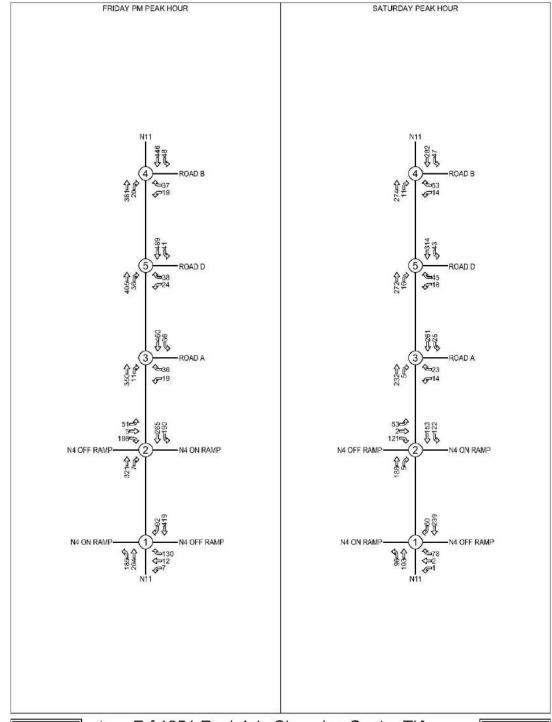
Erf 1051 Rockdale Shopping Centre TIA

2021 Expected Traffic Flows With Site Trips Friday PM & Saturday Peak Hours



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Erf 1051 Rockdale Shopping Centre TIA 2021 Expected Traffic Flows With Site & Latent Trips Friday PM & Saturday Peak Hours

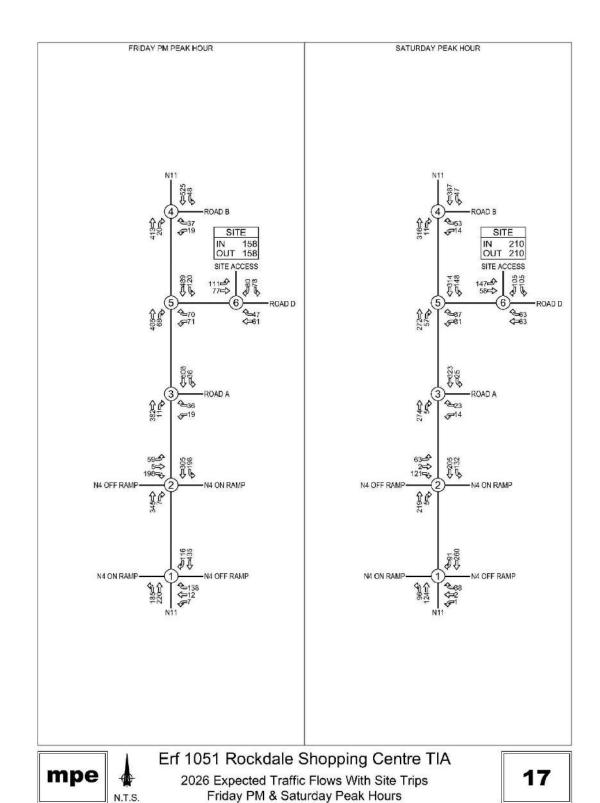


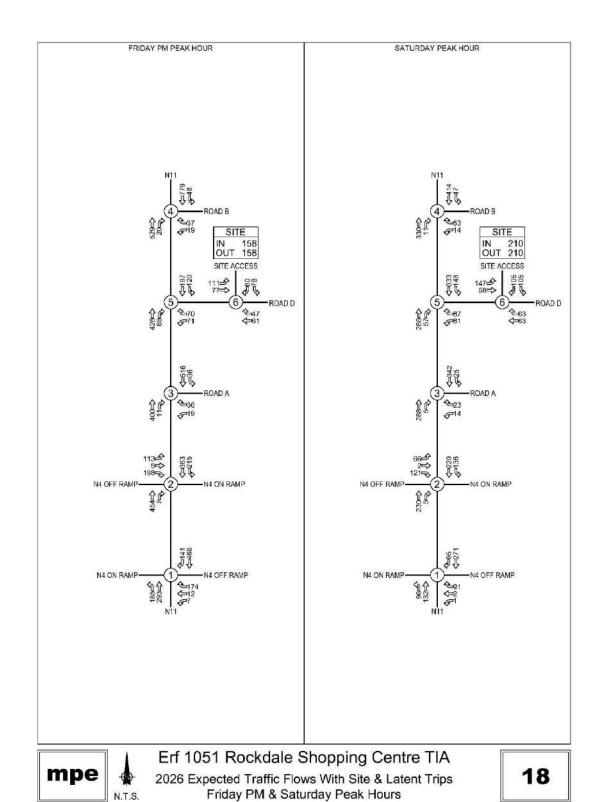
mpe A

Erf 1051 Rockdale Shopping Centre TIA

2026 Expected Traffic Flows Only Friday PM & Saturday Peak Hours

16





8. CAPACITY ANALYSES

The capacity analysis undertaken in this assessment is for the existing and future scenario situations.

The performance of intersections in urban road networks is defined by the level of service (LOS) for each approach to the intersection. These levels of service have been defined in the Highway Capacity Manual (HCM) (**Reference 5**) as shown in the **TABLE** below. During the peak hours, the road infrastructure capacity provided should ensure that the intersection approach level of service should <u>ideally</u> not exceed LOS D.

TABLE 9: Level of Service Criteria (HCM)

Level of Service	Average Approach Delay (d) for Signalised Intersections (seconds)	Average Approach Delay (d) for Priority Intersections (seconds)
А	d ≤ 10	d ≤ 10
В	10 < d ≤ 20	10 < d ≤ 15
С	20 < d ≤ 35	15 < d ≤ 25
D	35 < d ≤ 55	25 < d ≤ 35
E	55 < d ≤ 80	35 < d ≤ 50
F	80 < d	50 < d

The intersection approach performance for the intersections within the study area was determined using the **AutoJ** software programme.

The layouts are shown in **Annexure A.**

The detailed AutoJ results are included in Annexure C.

A summary of the results is tabulated overleaf.

TABLE 10: Summary of capacity results (2017)

No	Intersection description	Control	Performance Index	Result
1	N11 / S terminal	Xwe	55%	Satisfactory in both peak hours
2	N11 / N terminal	Xwe	56%	Satisfactory in both peak hours
3	N11 / Road A	Xwe	62%	Satisfactory in both peak hours
4	N11 / Road B	XX Xwe	10% 93%	XX - Unsatisfactory in both peak hours. Needs to be changed to an Xwe
5	N11 / Road D	na		Did not exist
6	Road D / Access	na		Did not exist

TABLE 11: Summary of capacity results (2019)

(rehabilitated road layout/ upgrades included)

No	Intersection description	Control	Performance Index	Result
1	N11 / S terminal	Xwe	55%	Satisfactory in both peak hours
2	N11 / N terminal	Xwe	55%	Satisfactory in both peak hours
3	N11 / Road A	Xwe	61%	Satisfactory in both peak hours
4	N11 / Road B	Xwe	62%	Satisfactory in both peak hours (has been changed)
5	N11 / Road D	Xwe	62%	Satisfactory in both peak hours
6	Road D / Access	na		Does not exist

Xwe - West-East stop (priority)Xns - North-South stop (priority)

TABLE 12: Summary of capacity results (2021) without / with Site / with Site & Latent traffic

	T.		To the state of th	
No	Intersection description	Control	Performance Index	Result
1	N11 / S terminal	Xwe	55% / 52% / <mark>34%</mark> / 51%	Satisfactory in both peak hours except for when the latent rights are added which requires upgrading. Eastern approach fails and requires upgrading (Figure A1-2)
2	N11 / N terminal	Xwe	55% / 55% / <mark>43%</mark> / 51%	Satisfactory in both peak hours except for when the latent rights are added which requires upgrading Western approach approaching failure (Figure A2-2)
3	N11 / Road A	Xwe	61% / 61% / 60%	Satisfactory in both peak hours
4	N11 / Road B	Xwe	62% / 61% / 60%	Satisfactory in both peak hours
5	N11 / Road D	Xwe	62% / 66% / 66%	Satisfactory in both peak hours
6	Road D / Access	Xns	- /51%/-	Satisfactory in both peak hours (No right turn lane in Road D is required)

Xwe - West-East stop (priority)Xns - North-South stop (priority)

TABLE 13: Summary of capacity results (2026) without / with Site / with Site & Latent traffic

No	Intersection description	Control	Performance Index	Result
1	N11 / S terminal	Xwe	52% / 53% / 31% / 48%	Satisfactory in both peak hours except for when the latent rights are added which requires upgrading. Eastern approach fails and requires upgrading (Figure A1-2)
2	N11 / N terminal	Xwe	54% / 53% / <mark>51%</mark> / 51%	Satisfactory in both peak hours except for when the latent rights are added which requires upgrading Western approach approaching failure (Figure A2-2)
3	N11 / Road A	Xwe	61% / 61% / 60%	Satisfactory in both peak hours
4	N11 / Road B	Xwe	62% / 61% / 60%	Satisfactory in both peak hours
5	N11 / Road D	Xwe	62% / 65% / 65%	Satisfactory in both peak hours
6	Road D / Access	Xns	/ 52% / -	Satisfactory in both peak hours (No right turn lane in Road D is required)

Xwe - West-East stop (priority)Xns - North-South stop (priority)

The AutoJ analysis results showed that the following road upgrading is required:

TABLE 14: Road upgrades required

Required road	upgrade		Respo	onsibility
Intersection No	Description	Upgrade required	Developer	Road Authority
1 and 2	N4 / N11 terminals	In the future, requires double right-turn lanes from the ramp terminals and 5 lanes under the bridge (4 throughs and one back-to-back right-turn lane). (Refer to Figure A1-2 & A2-2) As per TRACs previous comments regarding the theft of traffic signals, the Traffic Signal option previously recommended in 2017, is now NOT recommended and double right-turn lanes on the off-ramp terminals are now proposed instead		Responsible
3, 4 & 5	N11 / Road A, B and C	The recent road upgrading (including 60m right-turn lane and associated passing lane together with a 60m left-turn lane in the opposite direction) are adequate for the all 2026 traffic demand scenarios (background traffic, site-related traffic and latent rights-related traffic).		Currently under completion by the Road Authority

The above shows that:

- since the Road authority has provided a high-standard Road D intersection with the N11 as well as at Road A and Road B with the N11, the developer does NOT require to provide additional road upgrades.
- The proposed site main access in Road D does not require a separate right-turn lane as it I expected to operate at satisfactory levels of service up to 2026 and beyond.

9. NON-MOTORISED TRANSPORT

The provision of non-motorised transport facilities forms an integral part of transport planning and should be considered during the planning phases. Non-motorised transport facilities include pedestrian walkways, pedestrian crossings and cycling lanes. The following facilities should be taken into account when undertaking the site development plan.

- Pedestrian crossing Paved sidewalks DO NOT exist along the N11 and associated side roads. This is typical of National roads where, for traffic safety reasons, it is not encouraged for pedestrians to walk along these high-speed roads.
- Pedestrian crossings Not required as pedestrians are not expected to cross
 the N11 except at the signalised intersections. It is expected that the bulk of the
 pedestrians will be internal to the Rockdale Township in line with neighbourhood
 Shopping Centre trends. A pedestrian walkway along the Site's frontage in Road
 D is therefore recommended.



Photo 11: Looking north on the N11 and the existing Road B intersection, showing where pedestrians now walk.

10. PUBLIC TRANSPORT

10.1 Context

This section of the report deals with public transport proposals that are essential to and will impact on the Site. In order to promote manoeuvrability of all modes of transport, it is vital to design within a framework that will relate to the surroundings. In this case, there are no Council initiatives existing or planned in the vicinity of the Site.

10.2 Background

It is good planning practice as well as a requirement of the NLTA Act (1) that an assessment of the public transport is included in a traffic impact assessment.

The following comments are relevant with respect to the public transport availability at the proposed township.

The N11 is characteristic of **mini-bus taxis**. A few buses per peak hour were also noted on the N11 route. These modes of transport have been counted separately in the traffic data section and are included overleaf.

10.3 Public Transport Requirements

Road-based public transport such as mini-bus taxis and buses are subject to the same road operating conditions as private vehicles.

In the context of the type of development for the site, thorough planning will be required to accommodate the following factors relating to public transport:

- Taxi routes
- Bus routes
- Non-motorised transport

The above factors are therefore pivotal in the provision of an adequate public transport system.

As described in Chapter 2, buses and mini-bus taxis are operating on **N11** as well as along Road B (source – from this TIA traffic counts).

There are currently 45, 37 and 13 Minibus Taxis (MBT) travelling northwards in the AM, PM and Saturday peak hours and 37, 35, 18 MBT travelling southward on the N11.

The associated number of buses are 14, 1 and 2 northwards and 1, 2 and 0 buses southwards travelling in the AM, PM and Saturday peak hours

EXPECTED TRANSPORT DEMAND

Erf 1051 Rockdale Middelburg

EXPECTED PUBLIC TRANSPORT DEMAND

MODAL SPLIT

Vehicle	Percentage by vehicle	Average vehicle Occupancy	Persons	Percentage by persons
Car	87,2%	1,6	140	51,9%
MBT	5,5%	20	109	40,6%
Bus	0,5%	40	20	7,6%
TOTAL	93,2%		269	100,0%

TRIP GENERAT	ION (Peak hour)			
Max one way	=	210		
				PT vehicles required
Car	183	1,6	292	
MBT	11	20	229	11
Bus	1	40	43	1
TOTAL	195		564	

<u>Eleven additional Minibus Taxis and 1 bus per peak hour will be required to service the proposed fully-built Rockdale Shopping Centre.</u>

The walking distances of some 500m (as set out by the Department of Transport) around the Site covers a considerable local population which is satisfactory.

The standard 20m long public transport lay bye is recommended to the constructed on both sides of Road D at the Shopping Centres main access.

11. PARKING

Parking is to be as per the applicable Town Planning Scheme and may be relaxed if motivated wrt the low-income housing section.

12. CONCLUSIONS

With the development of the Masterplan rights, the following can be concluded:

- 12.1 The traffic situation at the Site remains generally low. **The N11** traffic is increasing by some 2 percent per annum.
- **12.2** The maximum link flows wrt its capacity on the N11 is at 23 percent and is therefore satisfactory.
- The trip generation rate as detailed in **Annexure B** in the PM and Saturday peak periods was based on the COTO Manual TMH. The adjustment factor applicable to this Site for combined **low-car ownership and transport corridor adjustment factor of 60 per cent of normal rates, has been adopted in this study.**
- 12.4 This results in a post adjustment trip generation as follows:
 - 158 IN and 158 OUT in the Friday PM peak hour
 - 210 IN and 210 OUT in the Saturday peak hour

It is generally accepted that the Site generated and the commuter peak hours are similar ie no adjustments were made.

- 12.5 The trip distributions are generally based on the existing traffic patterns being 40 to 50% from the north, 30 to 50 percent internal and balance from and to the south.
- 12.6 The capacity analysis for **N4 interchange with the N11** indicates that:
 - In the future, the ramp terminals are expected to operate satisfactorily including with the proposed Site's traffic, except for the scenario when latent rights are added. In this case, both off-ramp terminals will require double

right-turn lanes and 5 lanes under the bridge (4 throughs and one back-to-

• Refer to Figure A1-2 & A2-2 for details.

back right-turn lane).

- As per TRACs previous comments regarding the theft of traffic signals, the Traffic Signal option previously recommended in 2017, is now NOT recommended and double right-turn lanes on the off-ramp terminals are now proposed instead.
- 12.7 All three N11 intersections are expected to operate at satisfactory levels of service both now and into the future, including with-site and with-site-latent rights scenarios.
- 12.8 The access points proposed on Road D are adequate to meet the future traffic demand at satisfactory levels of service as well as meeting the high-standard provincial geometric requirements. No right-turn lane is required.
- 12.9 With the main access on Road D located some 100m from the N11, no side-street queueing challenges are expected.

12.10 Regarding non-motorised transport,

- Paved sidewalks DO NOT exist along the N11 and associated side roads.
 This is typical of National roads where, for traffic safety reasons, it is not encouraged for pedestrians to walk along these high-speed roads.
- Pedestrian crossings Not required as pedestrians are not expected to cross the N11 except at the signalised intersections. It is expected that the bulk of the pedestrians will be internal to the Rockdale Township in line with neighbourhood Shopping Centre trends. A pedestrian walkway along the Site's frontage in Road D is therefore recommended.

12.11 Regarding Public Transport,

- Eleven additional Minibus Taxis and 1 bus per peak hour will be required to service the proposed fully-built Rockdale Shopping Centre.
- The walking distances of some 500m (as set out by the Department of Transport) around the Site covers a considerable local population which is satisfactory.
- The standard 20m long public transport lay bye is recommended to the constructed on both sides of Road D at the Shopping Centres main access.

12.11 Parking

Parking is to be as per the applicable Town Planning Scheme and may be relaxed if motivated wrt the low-income housing section.

13. RECOMMENDATIONS

Given the findings of this TIA report, the following *recommendations* are made:

- 1. That the TRAFFIC IMPACT ASSESSMENT for the proposed Rockdale Shopping Centre is approved in principle from a Traffic and Transportation point of view with the no road upgrading being required.
- 2. An additional 11 Mini-bus Taxis and 1 bus be permitted to travel along the N11 route to service the needs of the Site.
- 3. Standard 20m long lay byes (2 off) for buses and Minibus Taxis are recommended at the downstream side of Roads D at the main access point of the shopping Centre to facilitate the expected public transport operations of the future.
- 4. A 2,0m wide sidewalk along the Shopping Centre's frontage in Road D is required to meet the locals walking to and from the shops.
- 5. The road authority approves and budget for additional lanes at the N4 / N11 Interchange as proposed in Figures A1-2 and A2-2. Of this report.

14. REFERENCES

The following references were used in the compilation of this report:

- 1. National Land Transport Act **NLTA** (Act No 5 of 2009).
- 2. **TMH 15** South African Engineering Service Contribution Manual for Municipal Avenue Infrastructure, Ver 1.0, COTO, September 2012.
- 3. **TMH 16** Volumes 1 & 2 South African Traffic Impact and Site Traffic Assessment Manual, Ver 1.0, COTO, August 2012.
- 4. TMH 17 Volume 1, Trip Data Manual, COTO, September 2012.
- 5. **TMH 26** South African Avenue Classification and Access Management Manual, Ver 1.0, COTO, August 2012.
- 6. Highway Capacity Manual, FHWA, USA, 2000.
- 7. Department of Community Development, Guidelines for the provision of engineering Services in residential townships, 1994.
- 8. **AUTOJ** Intersection User Guide, (July 2007)
- 9. Highway Capacity Manual, FHWA, USA, 2000.

ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019

ANNEXURE A INTERSECTION LAYOUTS

ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019







Erf 1051 Rockdale Shopping Centre TIA

Overall Layout









Erf 1051 Rockdale Shopping Centre TIA

Existing Intersection of N11 and N4 South Interchange

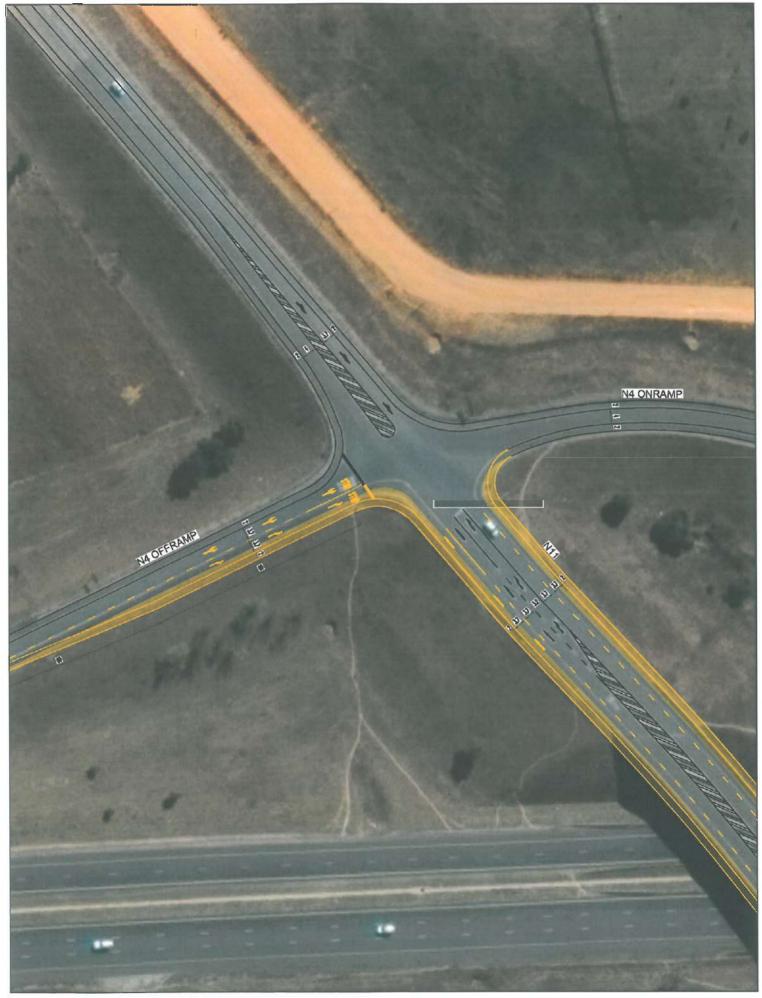
A1-1





Erf 1051 Rockdale Shopping Centre TIA

Proposed Upgrading of
N11 and N4 South Interchange





Erf 1051 Rockdale Shopping Centre TIA

Proposed Upgrading of
N11 and N4 North Interchange

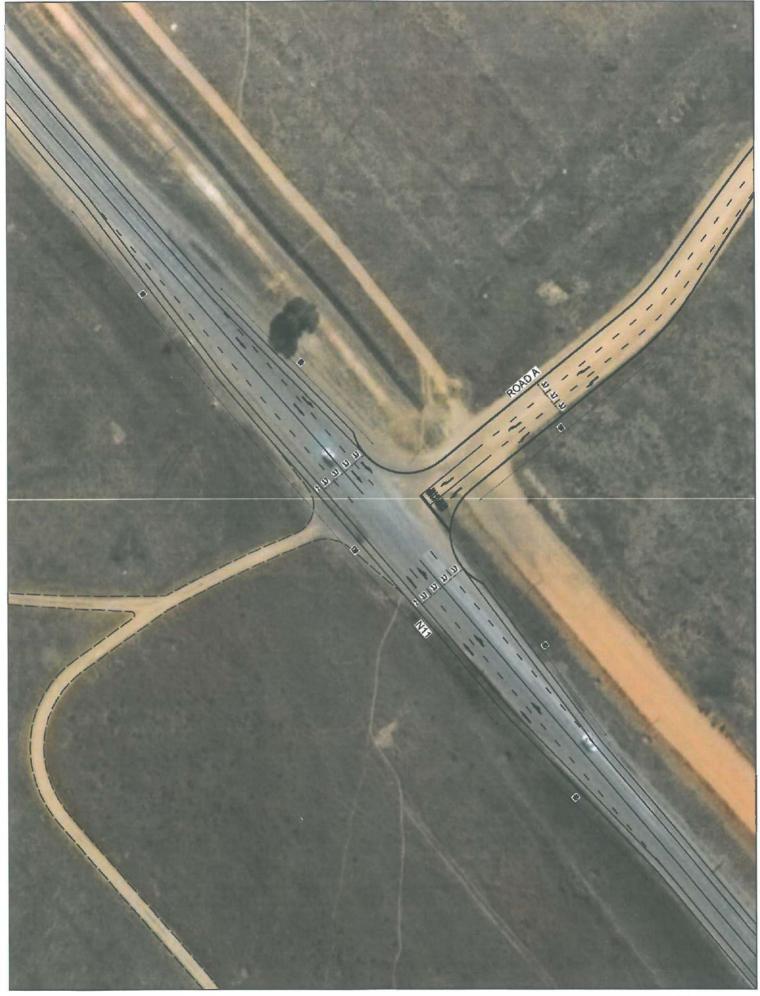
A2-2





Erf 1051 Rockdale Shopping Centre TIA
2017 Intersection of
N11 and Road A

A3-1







Erf 1051 Rockdale Shopping Centre TIA
2019 Existing Intersection of
N11 and Road A

A3-2







Erf 1051 Rockdale Shopping Centre TIA
2017 Intersection of
N11 and Road B

A4-1







Erf 1051 Rockdale Shopping Centre TIA
2019 Existing Intersection of
N11 and Road B

A4-2







Erf 1051 Rockdale Shopping Centre TIA
2017 Situation of
N11 at Road D (No Intersection)

A5-1







Erf 1051 Rockdale Shopping Centre TIA
2019 Existing Intersection of
N11 and Road D

A5-2







Erf 1051 Rockdale Shopping Centre TIA

Proposed New Intersection of Road D and Site Access

A6-1

ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019

ANNEXURE B

Traffic Flow Calculations

ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019

Erf 1051 Rockdale Middelburg

As @ 6 November 2019

620

14

4

Erf 1051 Rockdale Middelburg MODAL SPLIT 2017

M11 / NA NORTH INTERCHANGE 100% 82% 6% 1,0% 10%					Port da		-	1041	
Intersection Name					Friday pea	k period - 2	2 Septem	Jer 201/	
N11 / N4 SOUTH INTERCHANGE 4297 3540 277 45 441 100% 82% 6% 1,0% 10%	Intersection No	Intersectiv	on Name	TOTAL	Cars	Taxí	Bus	Trucks	
N11 / N4 SOUTH INTERCHANGE 100% 82% 6% 1,0% 10% 10% 10% 10% 10% 10% 10% 10% 10% 1									
N11 / NA NORTH INTERCHANGE 4679 3836 331 45 467 10% 10% 10% 100% 82% 7% 1,0% 10% 10% 10% 10% 73% 24% 1,5% 2% 1,5% 2% 1,5% 2 1,0% 10% 100% 83% 11% 1,3% 4% 1,0% 1,0% 1,0% 1,0% 1,0% 1,0% 1,0% 1,0	-	N11 / N4 S	SOUTH INTERCHANGE	4297	3540	27.1	45	441	486
N11 / ROAD A 675 3636 331 45 467 10% 10% 10% 10% 10% 10% 10% 10% 10% 10%				100%	82%	%9	1,0%	10%	11%
N11 / NA NORTH INTERCHANGE 4679 3836 331 45 467 N11 / ROAD A 675 491 161 10 13 N11 / ROAD B 100% 83% 11% 1,5% 2% N11 / ROAD B 100% 83% 11% 1,5% 2% 100% 82,1% 9,0% 1,1% 7,9%									
N11/ROAD A 675 491 161 10 13 N11/ROAD B 4405 3666 497 57 185 2 N11/ROAD B 4405 3666 497 57 185 2 100% 83% 11% 1,5% 4% 106 12 100% 82,1% 9,0% 1,1% 7,9% 9,0%	2	N11 / N4	NORTH INTERCHANGE	4679	3836	331	45	467	512
N11 / ROAD A 675 491 161 10 13 N11 / ROAD B 4405 3666 497 57 185 2 N11 / ROAD B 100% 83% 11% 1,3% 48 5 100% 82,1% 9,0% 1,1% 7,9% 9,0				100%	82%	7%	1,0%	10%	11%
N11/ROAD A 675 481 161 10 13 100% 73% 24% 1,5% 2% 100% 73% 24% 1,5% 2% 100% 83% 11% 1,5% 4% 100% 83% 11% 1,3% 4% 100% 82,1% 9,0% 1,1% 7,9% 9,0%									
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N11 / ROAD B 4405 3666 497 57 185 100% 83% 11% 1,3% 4% 100% 100% 83% 11% 1,3% 4% 100% 1,1% 1,00% 1,1% 7,9% 9				100%	73%	24%	1,5%	7%	3%
100% 83% 11% 1,3% 49% 49% 100% 49% 11% 1,3% 49% 100% 83% 11% 1,3% 100% 157 1106 11 100% 82,1% 9,0% 1,1% 7,9% 9									
100% 83% 11% 1,3% 4% 4% 1,1% 1,0% 1,1% 1,0% 9,0% 1,1% 7,9% 9	4	N11 / RO	AD B	4405	3666	497	57	185	242
100% 82,1% 9,0% 1,1% 7,9%				7001	83%	11%	1,3%	- 4%	23%
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				1000/	100 00	O 097	4 40/	7 007	0 00/0

	Saturday peak period -	ak period -	23 September 2017	nber 2017	
TOTAL	Cars	Taxi	Bus	Trucks	HEAVIES
2675	2288	87	6	191	200
%09	23%	2%	0,2%	4%	2%
2535	2238	68	14	194	208
24%	48%	5%	0,3%	4%	4%
112	437	62	-	-	12
76%	65%	%6	0,1%	2%	2%
			1		
3027	2578	234	2	195	215
269	26%	2%	0,5%	4%	80
8648	7541	472	44	591	635
100%	87,2%	5,5%	0,5%	6,8%	4,5%
1000	207 302	E E 0.	70 E 07	C 09/	A 50%
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2%

Growth Rate

	0.00
Erf 1051 Rockdale Middelburg	FRIDAY PM PEAK

MPEAK					TION	- 1	
				1	N	158	
			TIA	TRIP GENERATION			
	2017 to 2021	2021 to 2026		NO	OUT	158	

N11 / N4 SOUTH INTERCHANGE intersection 1:

			Redistributed		constructed							
			Reduributed	Trip Distri	(36) uppnq		ij	Expected No. of Trips	rips		Model 1	Model 2
Movement		2017	2017	punoqui	Outbound		Outbound	TWO-WAY	inbound	Outbound	2021	2026
(approach)		traffic	traffic	Trips	Trips Trips	SYTE	SITE	SYTE	Latent	Latent		
s-left	-	155	155			0	0	0			168	185
s-thru	2	171	171	10%		16	0	16	73		185	204
s-right.	ę		_			0	0	0		_	0	0
e-left	٧	9	9			0	0	0		_	မှ	7
e-thru	S	40	10			0	0	0		_	Ξ	12
e-right	9	109	1000	55%		00	0	8	36	_	118	130
n-left	 		_	_		0	0	0		_	0	0
n-thru	60	351	351		*0t	0	16	16		88	380	419
n-right	6	7.7	7.7		15%	0	24	24		52	83	82
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w-thru	7					0	0	0			0	٥
wenght	12					0	(2)	0			0	Đ
		879	879	15%	25%	24	100	. 63	109	939	951	1050

Model 5
2021
plus site & latent
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0 6
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0 0
428
1322
0 0
0 0
0 0

Model 3 2021 2021 168 201 0 6 11 126 0 396 107 0

N11 / N4 NORTH INTERCHANGE Intersection 2:

			Trip Distri	(button (%)		Ę,	Expected No. of Trips	Trips		Model 1	Model 2	Model 3	Mode/ 4	Model 5	Model 6
Movement	2017	2017	punoqui	inbound Outbound	70	Outbound	TWO-WAY	punoqui	Outbound	2021	2026	2021	2026	2021	2026
(approach)	traffic	traffic	Tripa	Trips	SYTE	SITE	SYTE	Lalent	Latent			plus site	plus site	plus site & latent	plus site & latent
s-left 1					0		0			0	0	Ö	0	0	0
s-thru 2	269	269	15%	_	24	0	24	109		291	321	315	345	424	454
s-right 3	త	9		_	0	0	0			9	~	9	_	9	2
e-left 4				_	0	0	0			0	0	0	0	0	0
e-thru 5					0	0	0	_		0	0	0	0	0	0
e-right 6		_	_	_	0	0	D	_		0	0	0	0	-	0
n-left 7	159	159	_	20%	0	8	60	_	17	172	190	180	198	197	215
n-thru	222	225	_	25%	0	40	40	_	88	240	265	280	305	338	363
n-right 9		_	_	_	a	0	0	_		°	0	0	0	0	0
w-left 10	43	43	2%	_	80	0	8	2		47	51	35	59	901	113
w-thru	4	4	_	_	0	0	0	_		4	2	4	40	4	45
w-right 12	166	166			0	9	0			180	198	180	198	180	198
	928	020	3000	306	9.0	40	20	183	7.5	2044	dense	4030	44.40	4.2636	4245

		1000				-	The state of the last	Value		Bandel d	Bandal 9	Model 2	Blooded 4	Model 5	Moutal
Advantage	2017	2017	rasio dur	Outbound	Inhound	Outhoused	TAMPLIAGY N. D. 171DS	Infortage	Ordbound	2021	2026	2021	2026	2021	2026
(approach)	traffic	l traffic	Trips	Trips	SITE	S/TÉ	SITE	Latent	Latent	-		plus site	Phis site	plus site & latent	plus site & latent
s-left	1 0	٥			0	3	0			0	0	0	0	0	0
s-thru	2 293	293	20%		32	0	32	£		317	350	349	382	367	400
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e-left		16	_		0	0		_	_	1,7	19	45	18	1,	<u>۾</u>
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e-right	6 46	8 -	_		0	0	0	_	_	32	36	35	38	33	98
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intersection 4;	N11 / ROAD B														
		Estimated	Trip Distribution (%)	bution (%)		ญี	spected No. of	Trips		Model 1	# Wodel 2	Model 3	Model 4	Model 5	Model 6
Movement	2017	2017	punaqui	Outbound	punoqui	punoqino	TWO-WAY	punoqui	Outbound	2021	2026	2021	2026	2021	2026
(approach)	traffic	l traffic	Trips	Trips	SITE	SYTE	SITE	Latent	Lateri			plus site	plus site	plus site & latent	plus site & latent
S-left	-	<u>[</u>			0	0	0			0	0	0	0	0	0
s-thru	2 319	319		20%	0	32	32	116	-	345	361	377	413	493	529
s-right	3 37	17			•	0	0		_	18	20	BD :	20	E :	20
a-teft.		9		_	0	0	0		_	17	16	17	<u>م</u>	7	S .
e-thru		_			0	0	0	_	_	0 ;	0	0 ;	o !	o ;	o !
-dah	47	31	_		0	0	0	_	_	34	37	34	37	* S	37
	23 (2	40		_	0	0	D \$	_	7.50	43	48	43	5 45	100	40
		373	82	_	50 0	0 0	200	_	# P	404	0000	200	070	700	2.0
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	12	_			0	0			-	Q	0	0	0	0	0
	87.6	796	20%	20%	62	32	171	116	2554	862	951	972	1062	1342	1432
Intersection 5.	N11 / ROAD I	N11 / ROAD D (Adjacent to the site)	he site)			*									
		Estimated	Trip Distribution (%)	button (%)			Expected No. of Trips	Trips		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Movement		2017	punoqui	Outbound	punoqui	Outbound	TMO-WAY	риподиј	Outbound	2021	2026	2021	2026	1 2021	2026
(approach)		I traffic	Trips	Trips	SITE	SITE	SITE	Latent	Faleni			plus site	pius site	plus s'te & latent	plus site & latent
Fleff		-			0 (0 (0 (,		0	0 0	0 0	0 405	3 C	0 2 2
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s-ngnt	, co	8 8	%0Z	2000	Ŋ,	9	29.00		_	9 6	95	5 5	1 60	5 8	3 7
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1	· ·	- A	50%	2	, EZ	0	562	_		37	-4	116	120	118	120
	- 00	409			0	0	0		60	443	489	443	489	451	497
	6			- "	0	0	0		_	0	0	0	0	0	0
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	0	364	20%	20%	111	1.62	196	18	77	935	1033	1725	1223	1757	1263

Erf 1051 Rockdale Middelburg

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D21	0	1,0824	1,1041
2017 to 2021 2021 to 2026			
		_	9

1,0824	1,1041	

7%	2%
Growth Rate	

111	ad if Road D was constru
N11 / NA SOUTH INTERCHANGE	Radietributed # 20
N11 / NA	
Intersection 1:	

		Rediributed	Trip Distri	Trip Distribution (%)		Ē	Expected No. of Trips	rips
Movement	2017	2017	punoqui	Dunoctino	Imbound	Outbound	TMO-WAY	punoguj
(approach)	traffic	traffic	Trips	Trips	SITE	SITE	SITE	Latent
5-left	1 80	08			0	0	0	
s-thru	2 86	98	10%	-	53	0	2	ED
s-right	ಳು	_			0	<u> </u>	0	
e-left	4	_			0	0	0	
e-thru	5 2	2		_	0	0	0	
e-right	6 65	65	2%	_	9	0	100	6 0
n-teft	4	_			0	0	0	
1-thr	8 200	200		40%	0	2	12	
n-right	9 50	8		15%	0	31	31	
	01			_	0	0	٥	
w-thru	11				0	0	0	
w-right 1	12				0	d	0	
	484	484	1567	7056	24	65	78	44

850-78088000 **8**

N11 / N4 NORTH INTERCHANGE Intersection 2:

		_	7 Trip Distri	pution (%)		EX	spected No. of 1	rrips		Model 1	Mode/ 2	Model 3	Mode/ 4	Model 5	9 /apoyl/
Movement	2017	2017	punoqui	Inbound Dutbound	Ļ	Outbound	TWO-WAY	punoqui	Outbound	2021	2026	2021	2026	2021	2026
(approach)	traffic	traffic	Trips	Trips		SITE	SITE	Latent	Latent			plus site	plus site	plus site & latent	plus site & atent
s-teft	-				•	0	0			0	0	0	0	0	0
s-thru	2 157	157	15%		31	0	31	11		170	188	201	219	212	230
s-right	3	4			o	0	0		_	4	ις.	4	52	4	so.
e-teff	4				¢	0	0			0	0	0	0	0	0
e-thru	NC.	_	_		0	0	0			0	0	0	0	0	0
e-right	ED CE	_			0	0	0			0	0	Þ	0	0	0
n-left	7 102	102	_	2%	0	10	00		*	110	122	121	132	125	135
ո-փտ	B 128	128	_	25%	0	52	52		15	139	153	191	205	908	220
n-right	-Ch	_	_		0	0	0			0	0	0	°	-	0
w-left		4	2%		10	0	10	(r)		48	53	28	63	19	99
w-thru	11 3	C4			0	0	0	N.		2	2	23	cvi	2	2
w-right	12 101	101			C	0	0			109	121	109	121	109	121
	678	67.7	2000	300%	63"	6.2	405	114	10	407	673	445	748	720	193

	-	-1	-		-	-	-	_	_	_	_			-1	
Model 6	2026	plus site & latent	Ф	288	9	14	0	23	25	342	0	0	0	o	697
Model 5	2021	plus site & latent	0	266	4	13	0	21	23	318	0	0	0	0	644
Model 4	2026	plus site	0	274	us.	14	۵	23	25	323	0	0	φ.	0	664
Model 3	2021	plus site	0	252	4	13	0	21	23	299	0	0	0	0	611
Model 2	2026		0	232	9	14	0	23	25	261	_ 0		0	0	559
Mode/ 1	2021		0	210	゙゙゙゙゙゙゙゙゙゙゙゙゙	13	0	21	23	236	0	Ç.	0	D	507
	Outbound	Lateril				_			_	19	_	_			57
rips	punoqui	Latent		4											14
Expected No. of Trips	TWO-WAY	SITE	0	43	0	0	В	Ь	0	63	<u>_</u>	0	0	0	105
EX	Outbound	SITE	0	0	0	0	0	o	0	63	0	0	0	(a)	63
	punoqui	SITE	0	42	0	0	0	0	0	0	0	0	0	0	42
Trip Distribution (%)	Oulbound	Trips								30%					30%
Trip Distri	Inbound	Trips		20%					_	_	_				20%
Estimated	2017	traffic	b	194	₹	12	0	18	24	218	0	0	0	0	494
	2017	traffic	0	194	7	12	0	8	36	218	0	0	0	0	501
	Movement	(approach)	s-left 1	s-thru	s-right 3	e-left 4	9-thru 5	e-right 8	n-left 7	n-th-u	n-right 9	w-left 10	w-thru	w-right 12	

Intersection 4:	N11 / ROAD B	m													
		Estimated	Trip Distribution (%)	Surfon (%)		Ž	Expected No. of Trips	Trips		Model 1	Model 2	Model 3	Model 4	Model 5	1 Model 6
Movement	2017	1 2017	punoqui	Outbound	punoqui	Outbound	TWO-WAY	punoqui	Outbound	2021	2026	2021	2026	1 2021	2026
(approach)	traffic	l traffic	Trips	Trips	SITE	SITE	SITE	Latent	Latent			plus site	l plus site	I plus site & latent	plus site & latent
-left		_			0	-	0			0	0	0	0	0	0
s-thru 2	229	229		20%	0	42	45	4		248	274	290	316	304	330
g-right 3	19	6			0	0	0		_	10	11	10	=	5	=
e-left 4	27	12			0	0	0		_	13	14	13	14	13	14
e-thru 5					0	0	٥			0	0	٥	0	0	0
e-right 6	67	44			0	0	0		-	48	53	48	53	48	53
meft 7	90	33	_	_	0	0	0			42	47	42	47	42	47
n-thru 8	236	236	50%	_	105	0	105		27	255	282	360	387	387	414
0 lucidhi 9		-		_	0	0	0		_		0	0	0	0	0
w-left 10		_		_	0	0	0	_	_	0	0	0	0	0	0
w-thru		_		_	0	0	0	_	_	0	0	0	0	0 -	- -
w-right 12		-		_	0	0	0	-	_	0	0	0	0	0	0
	638	699	20%	30%	105	42	167	14	27	616	680	763	827	994	863
		Total Control of the		*	The state of the s										

ŀ-	Estimated	Trip Distri	oution (%)		X3	Expected No. of Trips	rips		Model 1	Model 2	Mode/ 3	Model 4	Model 5	Model 6
-	Duponudu	0	punoqin	Infound	Outbound	TWO-WAY	punoqui	Outbound	2021	2026	2021	2026	2021	2026
traffic Trips Trips	Trips		Trips	SITE	SYTE	SYTE	Latent	Latert			plus site	plus site	plus site & latent	plus site & latent
				0	0	0			0	0	0	0	0	0
228			_	Ó	-	0	14		247	272	247	272	1 261	286
13 20%	20%		_	42	0	42		_	14	16	26	19	96	57
			30%	Ó	83	63		_	16	18	62	19	52	- 8
			_	0	0	0			0	0	0	0	0	0
_	20	20	20%	а	42	42			4	45	B3	26	83	87
36 50%	50%			105	0	105			38	43	144	148	4	148
				D	0	0		9	285	314	285	314	304	333
				0	0	0			0	0	0	0	0	0
			_	0	0	0			٥			0	0	0
			_	0	0	0			0	0	0	0		0
				0	0	0			0	0	0	0	0	0
7000	1000	١	1000		1000	200	9.5	000	444	200	000	090	920	900

N11 / ROAD D (Adjacent to the site)

Intersection 5:

ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019

ANNEXURE C

Capacity Analysis Results (AutoJ)

ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019

3	z O n	- Auto]		-						N11 & Rockd	1 & N4 St Rockdale 2017		n terr	ninal							&Auto.	&Auto! 1910 roberts
					Xwe	de la			Stc	Stop street on west and	on wes		st appi	east approaches	100							
Volume	Volume (evu/hr)																					
			from North					from South					from West	est				from East			inte	intersection
AM	beds	e E	St.	right	L+S+R	beds	left	str	right	L+S+R	beds	left	str	right	L+S+R	peds	lett	str	right	L+S+R		total
sat			222	56	278		137	190		206							5	12	134	153		574
				1																		
Lanes	1 3	-	(if lanes s	hared LtS	or 5:R = 0,5;	(if lanes shared L:5 or 5:R = 0.5:0.5; L:5:R = 0.3:0.4:0.3)	3,3:0.4:0.	3)			2	-	L	c		2	-	ı	٥			
# lanes	Ш		1,0	1,0		-	0,5	5'0	د ا		-				,		1,0	0,1	6,0			
Control			_																			
		from	from North				from South	outh				from	from West		_		from	from East				
	peds	left	str	right		peds	left	str	right		beds	left	str	right		beds	left	str	right			
															-							
VOLUN	AE to CA	JOLUME to CAPACITY (V/C)	(v/c)				A-B	Q.D	w	ш	LOS A«	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	8, C<0.9	, D<0.95	, E<0.99	Ped 1.05	5 A<0.1, E	3<0.3, C<	0.4, D<0.6	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	F=0.97+	
		-	V/C from North	3			۷/د	V/C from South	uth	6) A	V/C from West	West		1	/\	V/C from East	1	0.0.1		≥⊦
AM	pens	Į	17	11.9	LTSTR	beas	<u>ב</u>	N N	TISU.	LTSTR	peos		36	100	LTSTR	peas	<u> </u>	31	100	LTSTR	7	OVEL
sat			0,11	0,04	0,10		0,10	0,11		0,10							0,01	0,10	0,17	0,16	0,17	
∑			0,19	0,07	0,17		0,14	0,19		0,17							0,01	0,37	0,47	0,44	0,47	0,21
Average	2 DELAY	Average DELAY per vehicle (secs)	cle (secs)				. A-B	Q.S	E	7 11-3	LOS A<	LOS A<10, B<15, C<25, D<35, E<50	, C<25, I	>35, E<	20	Ped LO	S A<10, B	<15, C<2	5, D<35, B	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	I	
			delay from North	Ì			dela	delay from South	outh			del	delay from West	West			del	delay from East			de	2
AN	peds	left	str	right	L+S+R	beds	feft	st	right	L+5+R	peds	# J	šţ	right	L+S+R	beds	left	str	right	L+S+R	max	overall
sat			0	0	0		0	0		0							0	O	1	1		1 0
PM			1	0	1		1	T		1							0	2.	ćć.	ണ		3 1
Average	QUEUE	Average QUEUE length (veh)	veh)	٣	= total dela)	(= total delay veh-hrs / hr)	-	8	WARN	POOR	Q <4 =	Q <4 = OK, <10 = WARN, 10+ = POOR	= WARN,	10+= P	OOR							
		۵	Q from North				ρ	Q from South				٥	Q from West	est				Q from East				Queue
M	peds	left	Şţ	right	L+S+R	peds	left	str	right	L+S+R	speds	left	str	right	L+S+R	peds	left	str	right	L+S+#	шах	total
sat			0,0	0,0	0,0		0,0	0,0		0,0							0,0	0'0	0,0	0,0	0,0	0,1
PM			0,1	0,0	0,1		0,0	0,0		0,1							0,0	0'0	0,1	0,1	0,1	1 0,3

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3	Auto]	1. N11 & N Rockdale	1. N11 & N4 southern terminal Rockdale 021 PLUS SITE & LATENT	AUA A	&Autol 1910 roberts
Volume AM sat	Volume (evu/hr) from North peds left str right L+S+R AM 272 96 368	from South peds left str righ 107 145	from West peds left str right L+S+R	from East in peds left str right L+5+R 5 5 100 110	intersection total 730
PM Lanes	(if lares shared L.5 or 5	471 139 610 148 295 443 (if lares shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3) L L S R 1,0 1,0 0,5 0,5 0,5 0,5		8 13 189 210	1263
Control	from North peds left str right	from South peds left str right	from West peds left str right	from East peds left str right	
AM sat	VOLUME to CAPACITY (V/C) VOLUME to CAPACITY (V/C) VOCTION North VACTION NORTH VACTIO	A-8 C-D E F V/C from South V/C from South 12 0,11 0,14 0,13 13 0,15 0,29 0,24	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+5+R	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+ Victor East	v/c wax overall 0,28 0,14 1,10 0,36
Averag	Average DELAY per vehicle (secs) delay from North peds left str right L+5+R	A-B C-D E F delay from South	LOS A<10, B<15, C<25, D<35, E<50 delay from West peds left str right L+5+R	Ped IOS A<10, B<15, C<25, D<35, E<50, F=50+ delay from East delay from East ma	delay / veh
PM	1 0	1 0 1 1		0 1 1 1 1 1 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 3 2 3 2 3 3 2 3	237 36
Average AM sat PM	QUEUE length (veh) Q from North peds left str right 0,0 0,0 0,2 0,0	(= total delay veh-hrs / hr) OK WARN POOR L+S+R Apeds left str right L+S+R 0,1 0,0 0,0 0,0 0,0 0,2	Q <4 = OK, <10 = WARN, 10+ = POOR Q from West peds left str right L+5+R	O from East L+S+R ma 0,0 0,0 0,0 0,0 0,0 0,0 0,0 12,4 12,4 11,4	Queue max total 0,0 0,1 12,4 12,8

North 155 156 15	3	Autol	tol			: : : :		1. N11 & N Rockdale	N4 sot	thern	N4 southern terminal							&Auto! 1910 roberts	0 roberts
From North From South From South From North Fro		-		Xwe	0)	20	21 PLUS Stop	SITE & L	ATENT U	PGRADE nd east	approact	Jes							
12 13 13 13 13 13 13 13	Volum		from North		-		ipht	# + 5 × 5	spea	1 1	n West	1 1	100	-	from Eas	12	+S+	intersection	ction
	AM sat PM	+++	272 471 1			D 00	 	252								 	110		730
From North From South Fro	lanes # lanes		(if lares shared L:: 5 R 1,0 1,0	S or S:R = 0.5:0.).5; L:5:R = 0.3:C		œ		2	_	Н			Н	S 0,1	1,9			
Color Colo	Contro	spad	Str			l So	right		beds	from W			nad .		str	right tright			
DELAY per vehicle (secs) A-B C-D E F LOS A<10, 8<15, C<25, D<235, E<50	AM Sat PM	ME to CAPACI	N 4 4	L+S+R 0,12 0,21	A- lei	8 C-D V/Cfrom So Ht str 1 0,05 S 0,10	E	F F 54-R	peds	V/C fr	om West	.95, E<0.99	Pedl	25 A<0.1.	/C from E str str 0,14 0,14 0,61	ast right 1 0,12 0,42	L+5+R 0,12 0,42	>	overall 0,10 0,21
Color Colo	Averag	e DELAY per v	ehicle (secs)		A-	8 C-D	В	L.	LOS A<10	, 8<15, C<	25, D<35,	E<50	Ped	LOS A<10,	B<15, C<2	15, D<35, E	:<50, F=50	L	
QUEUE length (veh) (= total delay veh-hrs / hr) OK W/ARN POOR Q < 4 = OK, <10 = WARN, 10+ = POOR	AM sat		str right	J+S+1	~	t str (t str 0 0 0 0 1 0 0 0	+	8+8+ 0	spad	delay i	str rig	E	nad l	ja ja	str str 0 1	# 0 m	1+S+R	delay / veh max overs	overall 0
peds left str right L+S+R peds left str right L+S+R 0,0 <	Averag	e QUEUE leng	North	(= total delay v		OK Ok	ARN	OOR	0 < 4 = 0)	C, <10 = W	ARN, 10+ m West	= POOR			Q from Ea				e e
0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0	AM	+	str	₹	<u> </u>	20	++	+S+R	spad	+	++	++) Be		١.	++,	+S+R		total
	sat PM							0,0						3 0		0,1	0,0	0,0	0,4

anes

Lanes

PΚ

AM sat Control

AM sat PM

Sat PM

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AM sat

									-	1 N11	o MA c	NA contrors torming	MA CA MA	6							6 144.40	0 A.461 1010 cabaret
7	Autol	Amto	-						4	Roc	65										1 6000	2001010
3		nanu	1							Z0Z6 P	ZOZ6 PLUS SITE						100					
	,				Xwe	9			Sto	p street	Stop street on west and	t and ea	east approaches	roaches						:		
Volum	Volume (evu/hr)	-																				
	-	-	from North	1 1	1			from South	4			-	from West	sst			1 1	from East	44		inter	intersection
AM	peds	left	str	right	L+S+R	peds	ett	~	right	L+S+R	peds	left	sti	right	X+2+1	peds	lett	JE .		X+2+X		total
sat	į		286	123	384		118	149		407							ν ρ 00	14 6	106	118		1 203
Lanes			(if lares	shared L:S	(if lares shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)	0.5; L:S:R =	: 0.3:0,4:0	(8)														•
#	١		2	~ [2	7	2	~		<u>.</u>		~	~	_	~]	101	\$ 0.1	R 0.9			
i F			2	24			2/2	ch's				-			_		2/2					
Control	70														_							
	1	H	from North	44		100	from	from South	444		9000	L	from West	+dmin		spoul	from East	East	4197+			
	peds	IEIT	ST	rignt		beas	Ĭ.	100	TIEUT.		bens	₩	25	20		bens			20			
VOLU	VOLUME to CAPACITY (V/C)	APACITY	(v/c)				A-8	Q-S	en en	L	LOS A	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	.8, C<0.9,	, D<0.95,	E<0.99	Ped LOS	A<0.1, B	<0.3, C<0	3.4, D<0.6	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	F=0.97+	
			V/C from North	orth			Ň	V/C from South					V/C from West	West			Λ	V/C from East		0.0		V/C
AM	peas	Text.	Str	rignt	L+3+K	peas	ЕП	STL	rignt	1+3+K	beas	Tal	DE L	right	L+3+R	beas	<u>u</u>	116	180	LTSTR	K P	DAG!
sat			0,14	80'0	0,13		0,12	0,15		0,13							0,01	0,15		0,29	0,31	0,15
Ā			0,24	0,11	0,22		0,17	0,24		0,23							0,01	0,61	0,86	0,80	0,86	0,31
Average	Average DELAY per vehicle (secs)	per vehic	cle (secs)				A-8	C-D	LAJ!	L.	LOS A	LOS A<10, 8<15, C<25, D<35, E<50	5, C<25, [3<35, E<	20	Ped LO	5 A<10, B	<15, C<2	5, D<35, E	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+		
			delay from North	Vorth			dela	delay from South	ŀ				delay from West	West	4		del	ᆰ			dela	delay / veh
AM	beds	et	str	right	L+2+K	peds	ett	str	right	L+S+R	peds	Ħ	şţ	right	L+S+K	peds	Helt	25	rignt	L+3+K	X E	overall
sat			1	0	4		0	₹**		T moses							0 0	-1 4	200	10	2	1
2			T		7		7					-						0	0.7	0	2	
Averag	Average QUEUE length (veh)	E length ((veh)		(= total delay veh-hrs / hr)	veh-hrs/		Ж	ARN	POOR	Q <4 =	Q <4 = OK, <10 = WARN, 10+ = POOR	= WARN,	, 10+ = PI	OOR							
			Q from North	urth			٥	Q from South	İ				Q from West	est				Q from East	ŀ	T	ő	Queue
Ψ	beds	left	str	right	L+S+R	beds	left	str	right	L+S+R	peds	eft	str	right	L+S+R	beds	left	St	right	L+S+R	max	total
sat			0,1		0,1		0,0	Ш		0,0							0,0	0,0	0,0	0,0	0,1	
PM			0,2	0,0	0,2		0'0	0,1		0,1							0,0	0,0	6,0	1,0	6,0	1,3

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	2-	V								2. N11	III & N	N4 n	N4 northern terminal	rn ten	minal								&Au	&Auto) 1910 raberts	oberts
¥ ≥	fonny a	Aut	_								102	, and the second													
	٨				Xwe	9.4				Stop:	street c	Stop street on west and	and e	east approaches	roache	Si									
Volume	Volume (evu/hr)		_																						
2	peds	left	from North	th right	L+S+R	peds	s left	from South	South r right	I	L+S+R	beds	left	from West	est	L+S+R		peds	left fr	from East	right	L+S+R	<u> -= </u>	intersection	totaf
sat PM		102	128		230		\mathbb{H}	1314	157	4 9	161		44		2 101 4 166	1 147				\prod				Щ	538
Lanes			(if lares	shared L.s	(if lanes shared L.5 or S:R = 0.5:0.5; L:5:R = 0.3:0.4:0.3)	:0.5; L:5:F	3 = 0.3:0.																		
# lanes	<u> </u>	0,5	5,0	~		-	$ \parallel$	1,0	0 1,0	~[o]		١.	L 0,3	0,4	0,3			1	_	S	~				
Control		from	from North		_		l l	from South		Γ			fron	from West		F			from East	to Co					
	peds	left	str	right		beds	+++	t	r	ŧ		peds	left	st	right			spad	left	str	right				
VOLUR	VOLUME to CAPACITY (V/C)	PACITY	(A/C)				A-B	a C-D	D E		L.	LOS A	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	.8, C<0.5	9, D<0.9	5, E<0.99	r	d LOS A	<0.1, B	.0.3, C<0).4, D<0.	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	, F=0.97	- 1	
2	peds	left //	V/C from North	orth	L+S+R	peds	a	V/C from	V/C from South	물	L+S+R	beds	a l	V/C from West	West	L+S+R		peds	left //c	V/C from East	right	L+S+R	E	иах оче	overall
Sat M		0,12	0,12		0,12		\coprod	0,08	10,0 81		0,08		0,23	0,23	0,23	0,23			H	\prod			00	0,23 0,	0,14
Average	Average DELAY per vehicle (secs)	per vehic	cle (secs)				A-B	CD S	D		<u></u>	LOS A	OS A<10, B<15, C<25, D<35, E<50	5, C<25,	D<35, E	50	م ا	/ SOT pa	<10, B<	15, C<2	5, D<35,	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+			-
A	spad	left	delay from North	right	L+S+R	peds	=	t str	delay from South	4	L+S+R	peds	a	delay from west	right	L+S+R		spad	left	delay from east	Ħ	L+S+R	" E	max overa	overall
sat		0	1		1				0 17	0 0	0 1			3 1	T &	3 1	- m		П					3 1	-
Average	Average QUEUE length (veh)	length (veh)		(= total delay veh-hrs / hr)	y veh-hrs	/ hr)	ŏ	K WARN		POOR	0 <4 =	Q <4 = OK, <10 = WARN, 10+ = POOR	= WARN	1, 10+=	POOR								ı.	
		٥	Q from North	rth				Q from South	South	1				Q from West	Vest	l ŀ				Q from East				Queue	
A	beds	left	str	right	L+S+R	peds	eft	t	r right	_	L+S+R	beds	eff	str	right	L+S+R		peds	eft	str	right	L+S+R	E	max to	total
sat		0,0			0,0					0,0	0,0		0,0				l l							0,0	0,1
Σ		0,0	0,1		0,1		-		0,0	0,0	0,0		0,0	0,0	0,1	1 0,2	7							0,1	2,5
																		!							

3	AutoJ	2. N11 & N4 Rockdale Z021 PLUS SIT	2. N11 & N4 northern terminal Rockdale ZOZI PLOS SITE		&Autol 1910 roberts
Volume sat PM PM Lanes	from North from North from North peds left str right L+S+R	str righ 201 315 5 R 5 R 1,0 1,0	from West from	from East peds left str right L+5+R L S R	intersection total 685 685
VOLUI	str right (V/C) C from North	right right	str right St. Co.9, Dc.95, E Cfrom West	from East from East peds left str right Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	
sat PM Averag AM sat PM	sat 0,16 0,16 0,16 PM 0,24 0,24 0,24 Average DELAY per vehicle (secs) delay from North Am L+S+R AM sat 1 1 PM 1 1 1	0,10 0,00 0,10 0,15	0,31 0,31 0,31 0,31 0,31 0,31 0,50 0,60	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	0,50 0,18 0,60 0,30 delay / veh max overall
Average AM sat PM	QUEUE fength (veh) Qfrom North peds left str right 0,0 0,0 0,1 0,1	(= total delay veh-hrs / hr) OK WARN POOR L+S+R peds left str right L+S+R 0,1 0,0 0,0 0,0 0,1	Q <4 = OK, <10 = WARN, 10+ = POOR	Q from East peds left str right L+S+R	Queue total 0,0

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9	z (C	Amto	-							Ą	MALL (Rockdaie										20.00	&AUTOJ 1910 roberts
β## ≥	formy J	nnv	_							ZOZI	DZT PLUS SITE & LATENT	TE & L	TENT					1					
	n				×	Xwe				Stop	Stop street on west and	on wes	t and e	east approaches	roache								
Volume	Volume (evu/hr)		_																				
			from North	th		L		from	from South					from West	est				from East	ast		Ē	intersection
AM	peds	left	str	right	L+S+R	peds	\vdash	left s	str	right L	L+S+R	beds	left	str	right	L+S+R	beds	left.	str	right	L+S+R		total
sat		124	206		330		H	H	212	4 4	216		100		2 109	172						_	1 254
-					100		+	+	177	2	7		3		╛				-	-			
Lanes			lif lanes	shared L:	(if lares shared LtS or StR = $0.5:0.5$; LtStR = $0.3:0.4:0.3$)	5:0.5; L:S	:3 = 0.3:(
# lanes		0,5	5 0.5	~	,	<u>-</u> _	<u></u>		S 1,0	1,0 1,0		<u>ا</u> ا	0,3	0,4	0,3	_	<u>.</u>	-	<u>د</u> ا	<u>م</u>			
							-	-	\cdot				-	-				-			_		
Control					_		ľ	,								_	L						
		from	from North				-	ᆰ	\vdash	7			-	from West		_		-	ᆰ	171			
	peas	lett	str	right		peas	75 IETT	+	str	right		peds	E E	Str	rign		peas	len	STL	rignt			
VOLUR	VOLUME to CAPACITY (V/C)	PACITY	(V/C)				A	A-B C	9		-	LOS A	<0.5, 8<(LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	, D<0.95	, E<0.99	Ped LC	S A<0.1	, B<0.3, C	>0.4, D<0	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	, F=0.97	+
		۸/۷	V/C from North	orth				V/C fro	V/C from South	ے			^	V/C from West	West				V/C from East	East		Ш	ν/c
₽	peds	left	str	right	L+S+R	spad	+	left	str	right L	L+S+R	peds	left	str	right	L+S+R	beds	left	str	right	L+S+R	W W	ax overall
sat		0,17	0,17		0,17		H	0			0,10		0,33		0,33	0,33						0,33	
PM		0,28	0,28		0,28		Н	0	0,21 0	0,01	0,21		0,93	0,93	0,93	0,93						Ó	3 0,41
Average	Average DELAY per vehicle (secs)	per vehic	le (secs)				A	A-B C	Q-D	ш	UL.	LOS A	<10, B<1	LOS A<10, B<15, C<25, D<35, E<50	0<35, E<	20	Ped L	OS A<10	, 8<15, C	:25, D<35	Ped LOS A<10, 8<15, C<25, D<35, E<50, F=50+		-
		dela	delay from North	lorth			-	delay fr	۲	Į,	1			delay from West	West	9		-	<u>e</u>	East		٦	
AM	beds	left	str	right	L+S+R	peds	+	ett	Str	right L	L+X+K	peds	left	st	right	L+S+R	peds	lett	str	right	1+X+R	L L	ax overall
sat		1			1		H		0	0	0							Ц					2
Ž			2				-		-	0			34	40	36	35		_	_				40
Average	Average QUEUE length (veh)	length (veh)		(= total delay veh-hrs / hr)	ıy veh-hı	's / hr)	Ц;	OK W	ARN	POOR	Q <4 = OK,	OK, <10	<10 = WARN, 10+ = POOR	, 10+ = P	OOR						L	
	-	٦	O Trom North	5	_		-	o to	ᅙ	-	6			C from west	rest	0.0		1	C Trom East	ast	6.0		<u>.</u> -
AM	peas	E E	Str	IUS:	L+2+K	peas	75 left	╀	21.	ngnt	L+2+K	peas	E	žį.	right	L+2+K	peas	Tell left	stt	rignt	1+2+¥	XE E	TOLIN
sat		0'0			0,1		H	H	0,0	0'0	0,0		0,0	0'0	0,1	0,1		Ц					
PA		0,1	0,1		0,2		\dashv	\dashv	0,1	0,0	0,1		1,(0'0 0	1,8	2,9							1,8 3,2

	E Autoj	2. N11 & N Rockdale Rockdale Xwe Stop street on v	2. N11 & N4 northern terminal Rockdale 2026 Stop street on west and east approaches	&AutoJ 1910 roberts
Volume AM sat PM	Volume (evu/hr) from North AM from North L+5+R Sat 122 153 275 PM 185 265 451	from South L+5+R peds left str right L+5+R 188 5 192 321 7 329	from West peds left str right L+S+R 53 2 121 176 51 5 198 255	peds left str right L+S+R total
# lanes	from trom		L~ L S R 0,3 0,4 0,3 from West peds left str right	from East peds left str right
VOLUN AM sat PM	VOLUME to CAPACITY (V/C) V/C from North Peds left str right L+S+R AM 0,14 0,14 0,14 PM 0,24 0,24 0,24	A-B C-D E F V/Cfrom South 1+5+R peds left str right 1+5+R 0,09 0,00 0,09 0,09 0,16 0,01 0,16 0,16	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+5+R 0,30 0,30 0,30 0,30 0,63 0,63 0,63 0,63	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+ V/C from East Peds left str right L+5+R 0,30 0,17 0,63 0,31
Average AM sat PM	Average DELAY per vehicle (secs) delay from North peds left str right L+S+R AM sat 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A-B C-D E F delay from South 1+5+R peds left str right 1+5+R 0 0 0 0 1 0 1 0	LOS A<10, B<15, C<25, D<35, E<50 delay from West L+S+R delay from West delay from	Ped LOS A<10, 8<15, C<25, D<35, E<50, F=50+
Average AM sat PM	QUEUE length (veh) Q from North Peds left str right 0,0 0,0 0,1 0,1	- total delay veh-hrs / hr)	Q <4 = OK, <10 = WARN, 10+ = POOR Q from West peds left str right L+5+R 0,0 0,0 0,0 0,1 0,1 0,1	Q from East Queue peds left str right L+S+R max total 0.1 0,1 0,3 0,3 0,3 0,3

	24									N11 &	Road	Ø			2					&AutoJ 19	&AutoJ 1910 roberts
3	Ö	_ Auto∫	_							Rockdale	dale										
	r uh				Xwe	a.			Sto	op street on west	on west	and	east approaches	aches							
Volume	Volume (evu/hr)																				
			from North	된.				from South	된			- 1	from West				fron	from East	ŀ	inters	intersection
AM	peds	eff	str	right	L+S+R	peds	left	str	right	L+S+R	beds	left	str	right	L+S+R	spad	left si	str rig	right L+5+R		total
sat		36	218		254			194	_	201			\dagger	\dagger	T		12	+	34 46		501
PM		42			427			293	19	312							16	H	Ш		801
Lanes			(if lanes	shared L:	(if larres shared LtS or StR = 0.5:0.5; LtStR = 0.3:0.4:0.3)	:0.5; L:S:R	= 0.3:0.4:0	(3)													
	-	_	S	~		<u>.</u>	-	S	œ		<u>-</u>	1	s	æ		۲.		S	<u>«</u>		
# lanes		1,0	1,0					1,5	0,5				10				1,0		1,0		
Control																					
		from	from North				from	from South				from West	West				from East	st.			
	peds	left	str	right		spad	left	str	right		spad	left	str	right		peds	left si	str i rig	right		
					_		Н											Н			<u> </u>
<u>. </u>																					_
NOTOA	VOLUME to CAPACITY (V/C)	PACITY	(N/C)				A-B	C-D	ш	F	LOS A<	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	, C<0.9, I	><0.95, E	<0.99	Ped LOS	A<0.1, B<0.5	3, C<0.4,	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	, F=0.97+	
		ν/Λ	V/C from North	lorth			۸/۷	V/C from South	uth			N/C	V/C from West	est			v/c fro	V/C from East		^	V/C
	peds	left	str	right	L+S+R	beds	left	str	right	L+S+R	spad	left	str	right	L+S+R	spad	left st	str rig	right L+S+R	max	overall
AM																		+	-		
sat		0,02	0,11		0,10			90'0	90'0	90'0							0,01	0,		0,11	0,08
Z		0,02	0,19		0,18			0,10	0,10	0,10							0,02	0,	0,11 0,09	0,19	0,14
Average	Average DELAY per vehicle (secs)	per vehic	cle (secs				. A-B	C-D	ш	ii.	LOS A<	LOS A<10, B<15, C<25, D<35, E<50	C<25, D<	35, E<50	-	Ped LOS	A<10, B<15,	, C<25, D	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	50+	
		dela	delay from Morth	North			dela	>	outh			delay	delay from West	est			delay fr	delay from East		L	delay / veh
MA	spad	left	str	right	L+S+R	beds	left	str	right	L+S+R	peds	left	str	right	L+S+R	spad	left st	str rig	right L+S+R	гиах	overall
sat		0			0			0	0	0					Γ		0	,	0 *** 0 **	0	0
PM		0	1					0	0	0							0		0 0	1	1
Average	QUEUE	QUEUE length (veh)	veh)		(= total defav veh-hrs / hr]	/ veh-hrs /	14	ŏ	WARN	POOR	0 <4 = (O <4 = OK, <10 = WARN, 10+ = POOR	WARN. 1	0+ = PO(JR.						
		a	Q from North				L	1.0	it.			Q	Q from West	zt.			Q fran	Q from East		ď	Queue
	spad	left	str	right	L+S+R	peds	left	str	right	L+S+R	peds	left	str	right	L+S+R	peds	left st	str rig	right L+S+R	max	total
AM		0																			
sat		0,0			0,0			0,0	0,0	0,0							0,0	+		0'0	0,0
<u>₹</u>		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0'0 0'0	0,1	0,1
							15														

A		2-	-									N11	વ્ય	Road A	A										& Autol	&AutoJ 1910 roberts
Fig. 10 10 10 10 10 10 10 10	3	Ö	Auto	_									Rockda	ايد												
From North From North From South From North From South From South From South From South From South From North From South From North From South From North From North From South From North From South From South From North From North From North From North From North From North From South From North From South From North Fro		s		,		3							5107			4										
Figure F							We				7	TOD SE	reer of	West	and e	ode 151	roacue	2								
	Volume	(evu/hr)		_																						
			ij.	rom No	rth				非	om Sou	£		_ 			from W	est	lł			fror		lŀ		inte	rsection
12 12 12 12 12 12 12 12	Δ4	beds	left	str	right	\vdash	F.	eds	left	str	right	_	æ	peds	left	str	right	-		-	+		_	S+R		tota
1 1 1 1 1 1 1 1 1 1	sat		22		Ĺ	249				202			90							Н	12		70	32		487
1 10 10 10 10 10 10 10	PM		31	Ш		432	Ш	H		305			41								17	-	31	48		794
	Tour !			Lif lagor	1000	0.0 10	Ç	0 - 0.3	2.0 7.0	í																
1.0 1.0 1.0	רמוני	_	٦	S S	200	5	,	1	7		œ			-	_	S	œ			2,						
Find North Peds left str right L454R Peds Peds left str right L454R Peds Peds left str right L454R Peds Peds Peds Peds Peds Peds Ped	# lanes		1,0	1,0	Ц		Ш	Н	П	1,5	0,5	_	_						Ц	Н	0,1	1,(
From North Fro																										
Troin South PedS left Str right PedS	Control					г	L					_						г	L				Γ			
Tight Packs left Str right Packs left Str right Packs left Str right Packs left Str right L45+R Packs Packs left Str right L45+R Packs Packs			from	North		_		-	from	South		_			fron	West		_		ŀ	Ē.	ŀ	<u> </u>			
A-B C-D E F		peds	left	str	right	_	11	spa	left	str	right			peds	left	str	right	1	ō.	-	+	+	t l			
A B C-D E F COS A-O.S. B-O.B. C-O.95, E-O.95, E-O.99, E-O.95, E-O.99, E-O.99						7		-				_						7		-	-		7			
1																										
1	VOLUE	AE to CA	PACITY	(V/C)					A-B	C-D	ш	L		LOS A <c< th=""><th>).5, B<0.</th><th>8, C<0.5</th><th>), D<0.9</th><th>5, E<0.99</th><th></th><th>LOS A<</th><th>0.1, B<0.</th><th>3, C<0.4, 1</th><th>D<0.6, E</th><th>E<0.97, F</th><th>=0.97+</th><th></th></c<>).5, B<0.	8, C<0.5), D<0.9	5, E<0.99		LOS A<	0.1, B<0.	3, C<0.4, 1	D<0.6, E	E<0.97, F	=0.97+	
1			۸/۷	C from A	lorth		L		۸/د	from S	outh				//	C from	West				V/Cfr	om East				V/C
Courty C		beds	left	str	right	\vdash	"	spa	left	str	right	+	œ	peds	left	str	right	-		-	+	+	_	S+R	max	overall
10 10 10 10 10 10 10 10	AIM ACO		10.0	0.11		0.10		\dagger		0.06	0.06		100						1	0	00	0.0		.03	0.11	
Columbn Colu	PM		0,02	0,20		0,19		\parallel		0,10	0,10	+-							Ш	7	,03	0,0	\vdash	90	0,20	0,14
County C		DELAY	rider age	-In towar	-	_			0 <	0 7	ь	12		100 47	2770	7/2	77.25 6	r,	0	A POLY	10 B/15	C25 P	735 Ect	50 F=50	4	
	No DAC	7	dela	iv from	North				dela	v from	outh				del	av from	West		<u>'</u>		delay f	rom East				av / veh
1	W	spad	left	str	right	H	14	eds	left	str	right	\vdash	æ	peds	left	Str	right			\vdash	ff f	tr	\vdash	S+R	mex	overall
1	sat		0			0				0		~	0						L		0	three:		0 100		1 0
(= total delay veh-hrs / hr) OK WARN POOR Q < 4 = OK, <10 = WARN, 10+ = POOR Q from East Que Q from East Q from East Que Q from East Q from East	PM		0			Ŧ		H		0		C	0								0			0 ~		
North Q from South Q from South Q from West Q from West Q from East Que r. dight L+S+R seds left str right L+S+R max 0,0	Average	QUEUE	length (veh)		= total de	lay veh	hrs / hr]		ð	WARN			Q <4 = (ЭК, <10	= WARN	1, 10+=	200R	į						i	
peds left str right L+S+R peds left str right L+S+R peds left str right L+S+R max 0,0			Ö	from No	orth					rom Sa	uth				ď	from V	Vest				Q fro	m East			0	ueue
0,0 0,0 <th></th> <td>peds</td> <td>left</td> <td>str</td> <td>right</td> <td>\rightarrow</td> <td><u>"</u></td> <td>spa</td> <td>left</td> <td>str</td> <td>right</td> <td>\vdash</td> <td>~</td> <td>peds</td> <td>left</td> <td>str</td> <td>right</td> <td>-</td> <td></td> <td>4</td> <td>+</td> <td>\dashv</td> <td>-</td> <td>S+R</td> <td>max</td> <td>total</td>		peds	left	str	right	\rightarrow	<u>"</u>	spa	left	str	right	\vdash	~	peds	left	str	right	-		4	+	\dashv	-	S+R	max	total
0,0 0,1 0,1 0,0 0,0 0,0 0,0 0,0 0,0 0,0	AM		0					\dagger	1	6			10							+	0	+	0	0	-	0
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	JPS		200			3, 5	1	+		2 0			2 5							+	2 0		0,0	0 0	0	
_	1		2,0			4,7	┙			3			<u>.</u>							-	2,5		2	2	5	

- \$	- Autol	Xwe	N11	N11 & Road A Rockdale 2021 Stop street on west and east approaches		&AutoJ 1910 roberts
Volume (evu/hr) AM sat PM Lanes L # lanes Control	left str right L+ 23 236 32 417 1,0 1,0 from North left str right	259 449 0r S:R = 0.5:0.5; L:S:R	str righ 210 317 8 S R 1,5 0,5	from West Peds left str right L+S+R	from East peds left str right L+S+R 13 21 34 17 32 50 L~ L S R 1,0 1,0 1,0 peds left str right	intersection total 507 826
VOLUM AM sat PM	VOLUME to CAPACITY (V/C) V/C from North Adm PM C,012 0,12 0,01 PM 0,02 0,21 0,01 0,01	L+5+R peds 0,11	A-B C-D E F	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+S+R	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+ V/C from East max peds left str right L+5+R max 0,02 0,03 0,03 0,03 0,12 0,03 0,08 0,06 0,21	=0.97+ wax overall 0,12 0,08 0,21 0,15
Average AM sat PM	Average DELAY per vehicle (secs) delay from North delay from North peds left str right L+8 AM sat PM PM O 1	L+S+R peds	A-B C-D E F	LOS A<10, B<15, C<25, D<35, E<50 delay from West peds left str right L+5+R	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+ delay from East peds left str right L+S+R 0 0 0 0 0 0 0 0	delay / veh max overall
Average AM sat PM	Average QUEUE length (veh) Q from North Q from North AM Sat PM Sat PM O,0 O,0 O,0 O,0 O,0 O,0 O,0 O,	(= total delay veh-hrs / hr) L+5+R 0,0 0,1	/hr) OK WARN POOR Q from South left str right L+S+R 0,0 0,0 0,0 0,0	Q <4 = OK, <10 = WARN, 10+ = POOR Q from West peds left str right L+5+R	Q from East peds left str right L+S+R 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0	Queue max total 0,0 0,1 0,2

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3	<u>.</u>	Ž. Autoľ	_							2	Rockdale	ָר ב										o vale	מובססו מדבד
)									2021	2021 PLUS SITE	3											
					Xwe	re re			St	op stree	Stop street on west	est and	east approaches	peode	hes								
Volum	Volume fevu/hr)																						
			from North	‡			-	from South	ŧ				from West	West		П		1 1	from East			inter	intersection
4 2	peds	left	str	right	1+5+R	beds	left	str	right	L+S+R	beds	ds left	ft str	r right	-	L+S+R	peds	left	str	right	L+S+R		total
sat		23	299		322			252	10	359								13		21	34		612
			;					l															
Lanes		-	(if lanes)	shared L:: R	(if lanes shared LiS or SiR = 0.5:0.5; LiSiR = 0.3:0.4:0.5) $1 \sim 1$:0.5; L:S:R = 	0.3:0.4:0	(a)	~		2	-	٠.	~	_		3	-	V.	no			
# lanes		1,0	1,0		_	·		1,5	0,5	_	<u>'</u>	Н	H	Н			,	1,0	ļ	1,0			
ļ																							
Control	_	from North	Vorth		_		from	from South		_		1	from West		Г			from East	East				
	peds	\vdash	str	right		peds	left	str	right		peds	H	ft	H	right		peds	left	str	right			
					_							-	-	_	7								
VOLU	VOLUME to CAPACITY (V/C)	(PACITY (()/A				A-B	C-D	E	F	105	A<0.5, B	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	0.9, D<0	.95, E<0	.99	Ped LOS	A<0.1, B	<0.3, C<0	.4, D<0.6	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+		
		γ/	V/C from North	orth			7	V/C from South	outh			-	탉	m West	- 1-			<u>``</u>	V/C from East	ļ	4		, , ,
Ψ	peds	Tell I	Str	right	L+2+K	peds	μeπ	JE .	rignt	L+X+R	peds	TIS IETT	TI SEL	right	+	L+S+K	beds	Tell Tell) Str	rign	L+2+K	xe E	overall
sat		0,01	0,15		0,14			0,08	0,08	0,08								0,02		0,04	0,03	0,15	0,17
Avera	Average DELAY per vehicle (secs)	per vehic	vehicle (secs)	- In other			A-B	-B C-D E	u 4	ш	S[A<10, B	LOS A<10, B<15, C<25, D<35, E<50	5, D<35,	E<50		Ded IO	A<10, B	0, B<15, C<25, D	5, D<35, I	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	L	don't walch
AM	beds	left	str	right	L+S+R	peds	left	str	right	L+S+R	beds	ª	ft str	right /	Ħ	L+S+R	beds	left	str	Ę	L+S+R	max	overall
sat		0	1		ET.			0		0					H			O		0	0	1	0
₹		0	ਜ 		1			֥1,	0	-		-		_				Ö		0	0		
Average	e QUEUE	QUEUE length (veh)	'eħ)		(= total delay veh-hrs / hr)	veh-hrs /		ğ	WARN	POOR	0 4	= OK, <	<4 = OK, <10 = WARN, 10+ = POOR	RN, 10+	= P00R					Ì			
		ď	Q from North	Ę	-		٥	Q from South	uth			-	許	West	- 1-				Q from East			ð	Queue
A	peas	lett	str	right	1+0+K	peds	lett	str	right	L+S+K	peds	75 left	żs .	right	-	L+S+K	beds	tett	놠	right Tight	H+S+H	E E	total
sat		0,0	0,1		0,1			0,0	0,0			H		H	H			0,0		0,0	0,0	0,1	0,1
Μď		0,0	0,2	1	0,2			0,1		0,1					_			0,0		0,0	0'0	0,2	0,5
																					-		

L`	z	NII	Road A	8AA	&AutoJ 1910 roberts
3	Q- Autol	Rockdale 2021 PLUS SITE &	Rockdale 21 PLUS SITE & LATENT		-
	h	Xwe Stop street o	Stop street on west and east approaches		
Volume	Volume (evu/hr)				
	from North	from South	from West	from East	intersection
AM	peds left str right L+S+R	peds left str right L+5+R	peds left str right L+S+R	peds left str right L+S+R	total
sat	23 326 349 32 719 751	266 4 270 465 10 475		13 21 34 17 32 50	1 276
source	(if Janes chared 1.5 or 5.8 = 0.5.0 5.1.5.8 = 0.3.0 4.0.3)	05-05-1-5-8-03-04-03)			
	~_	\$ 5	L~ L S R	\$	
saue:	1,0 1,0	1,5 0,5		1,0	
Control					
	from North	from South	from West	from East oeds left str right	
VOLUR	VOLUME to CAPACITY (V/C)	A-B C-D E F	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	17+
	V/C from North	V/C from South	V/C from West	V/C from East	V/C
AM				d.	+
sat	0,01 0,16 0,15 0,02 0,36 0,34	0,08 0,08 0,08 0,08 0,08 0,17		0,02 0,04 0,03 0, 0,04 0,15 0,11 0,	0,16 0,12 0,36 0,27
Average.	Avaraga DEI AV nar vahirla (care)	A.B.	108 8×10 8×15 C×26 D×35 E×50	0 ad 100 Az 10 Rz 15 Cz 25 Dz 35 Fz 50+	
90	delay from North	lay from South	delay from West		delay / veh
7	peds left str right L+S+R	peds left str right L+S+R	peds left str right L+S+R	peds left str right L+S+R m	max overall
sat	0 1	O contracts O reservoir O respirate		0 0 0	
Σ	0 2 2	District District Burners		0 1 0	2 2
Average	Average QUEUE length (veh) = total d	(= total delay veh-hrs / hr) OK WARN POOR	Q <4 = OK, <10 = WARN, 10+ = POOR		
:	Q from North	Q from South	Q from West	Q from East	Quene
AM	peds left str right L+S+R	peds left str right L+S+R	peds left str right L+S+R	peds left str right L+S+R m	max total
sat	0,0 0,1 0,1				
PA	0,4	0,0 1,0 0,0			0,4 0,6

-	z-0	F Auto	-			Xwe		-		Sto	N11 & Road A Rockdale 2026 Stop street on west and	1 & Road A Rockdale 2026 eet on west an	d A	east approaches	proach	es	w I						&AutoJ 1	&AutoJ 1910 roberts
Volume AM sat PM	Volume (evu/hr) Peds AM Sat PM	left 36	from North str 1 261	th	L+5+R 286 496	<u> </u>	peds	fror left	from South str r	ight 11	1+5+R 237 361	peds	left	from West	Vest right	1t L+5+R		spad	fre 14 19	from East	right L4 23 36	1+S+R 37 55	inter	intersection total 559
# Janes	L~	from from left	(if lanes 1,0 1,0 1,0 from North left str	shared LtS R right	(if lanes shared L:5 or S:R = 0.5:0.5; L:5:R = 0.3:0.4:0.3) S R L^ L 1,0 R From So str right	0.5:0.5;1	L.S.R = 0.3	\$:0.4:0.3) L	S S Li,5 with str	R O,5		beds		from West	R Light			-l-	1,0 S		R 1,0			
AM sat	Peds	VOLUME to CAPACITY (V/C) V/C from V/C from V/C from Sat C,01 C,01 C,01 C,01 C,02 C,02	TY (V/C) V/C from North ft str rig 11 0,13	orth right	L+S+R 0,12 0,21		spad	A-8 V/Cfr	V/C from South ft str rig	7 P	F L+S+R 0,07	LOS A«	(0.5, B	V/C from West	1.9, D<0.95	95, E<0.99		ped LOS A	v/c1, B<(v/c1, B<(v/c1) left 0,02	V/C from East V/C from East str // 0	D<0.	6, E<0.97, F L+5+R 0,03	l v losimi	0,09 0,17
Average AM sat PM	peds peds	Average DELAY per vehicle (secs) delay from N peds left str AM sat PM O 1	delay from North	Vorth	L+5+R		peds	delay f	delay from South	¥ 00	F L+S+R	LOS A-	10, B	<15, C<25, D<35, delay from West ft str rigi	m West right	E<50		ped LOS /	delay delay left 0	0, B<15, C<25, D delay from East f str rig 0	<35,	E<50, F=50	- ,	delay / veh
Average AM sat PM	peds	Average QUEUE length (veh) Q from Q from AM Sat Sat O,0 PM O,0	Q from North str ri 0,0 0,0 0,0 0,0 0,0	gh	(= total delay veh-hrs / hr) L+5+R 0,0 0,2	elay veh-		left Q fro	Q from South str ri,	ght 0,0	POOR 1+5+R 0,0	Q <4 =	Q <4 = OK, <10 = WARN, 10+ = POOR Q from West peds left str right L*:	Q from West	West right	POOR	e I	spad	0,0 0,0	o from East	tright L+	0,0 0,0	max 0,0 0,2	Queue x total),0 0,1

3	Autoj	, see a see			Z 20	N11 & R Rockdale 2026 PLUS	Road A									&AutoJ 1910 roberts	oberts
la l	(olime (ami/hr)	B			200	באינה כולה ינסס מות מכני הוא זכן לאינה	504		Mary Car	Q							
in the second se	from North from Str. right	L+S+R	peds left	from South	right L+5+R		spad	from left s	from West str right	ht L+S+R	spad	left	from East	right L+S+R	T _{\(\frac{1}{2}\)}	intersection	ction
sat PM	25 324 36 508	349		274	11	393						14		23	25 37		992
Lanes # lanes	(if lanes shared US or S:R = 0.5:0.5; L.S:R = 0.3:0.4:0.3)	or S:R = 0.5:0.5; L	.S:R = 0.3:0.4:0	S 1,5	R 0,5		2	_	S		2	1,0	S	R 1,0			
Control	from North peds left str right	Ĭ	from peds left	from South	right	1	peds	from West	est str right		peds	from	East	right			
VOLUI AM sat	VOLUME to CAPACITY (V/C)	L+S+R p6	A-B V/V	8 C-D 8 V/C from South ft str rig	rth right L+S+R 0,09 0,09 0,13 0,13		05 A<0.5,	V/C fro	v0.8, C<0.9, D<0.95 V/C from West t str right	105 A<0.5, B<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+5+R	Ped LO	V/V/V/Eff	V/C from East x str 7i	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+ V/C from East peds left str right L+S+R may 0,02 0,03 0,04 0,04 0,08 0,04 0,16	0.97, F=0	>	overall 0,12 0,19
Averag	Average DELAY per vehicle (secs)		A-B	G-D	F F		DS A<10,	LOS A<10, B<15, C<25, D<35, E<50	25, D<35,	E<50	Ped L(OS A<10, B	<15, C<2!	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+), F=50+		
AM sat PM	delay from North peds left str right 0 1	1 1 pe	dela peds left	delay from South	right L+S+R 0 0 0		peds	delay fre	delay from West	ht L+S+R	peds	la la	delay from East	right L+S+R	× 00	delay / veh max overa	/ veh overall
Averag	Average QUEUE length (veh)	(= total delay ven-hrs / hr)	hrs / hr)	OK W	WARN POOR		<4 = OK,	Q <4 = OK, <10 = WARN, 10+ = POOR	IRN, 10+	= POOR							
Ā	Q from North peds left str right	L+S+R	Q Deds left	Q from South	right L+S+R		peds	Q fron	Q from West str right	ht L+S+R	peds	left	Q from East	t right L+5+R	æ	Queue max total	亞
sat	0,0 0,1 0,0 0,2	0,1		0,0	0,0	0,0						0,0		0,0	000	0,1	0,3
																:: ::	•

	2						4. N11	62	Road B									& Auto 1910 roberts	roharte
3	Ö	> Autol			-			ockda 2017										ATET FORMULA	-
	^		X	Xwe			Stop st	Stop street on west and east approaches	est and	east app	roache	LA.							
Volum	Volume (evu/hr)	-																	
AM	peds	from North	right L+5+R	beds	left fro	from South	3		peds left	from West	/est right	L+S+R	peds	left	from East	right	L+S+R	intersection	total
PM		62 373	435			319	37 3	356		\parallel				36		47	83		874
Lanes	<u> </u>	(if lares sha	(if lares shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)	5:0.5; L:\$:R =	0.3:0.4:0.3)	S R		٦[-	S	œ	_	٢_	7	s l	ح ح			
		┨┎]			\mathbf{H}						7				o f			
Control	peds	from North	right	spad	from South	uth str right] Jød	froi peds left	from West eft str	right		peds	from East		right			
VOLU	ME to CA	VOLUME to CAPACITY (V/C)			A-8	G-D	14	FOS	A<0.5, B	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	9, D<0,95	, E<0.99	Ped LO	3 A<0.1. B	<0,3, C<0	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	<0.97, F=	0.97+	· · · · · · · · · · · · · · · · · · ·
	peds	V/C from North	rth right L+S+R	peds	V/Cfi	V/C from South ft str right	at L+S+R	R	V ds left	V/C from West	West right	L+S+R	peds	v/(V/C from East	right L+S	L+S+R	> J	'C overall
sat PM		0,03 0,12 0,03 0,19	0,10			0,07 0,07	1 0,11							0,03		0,12 0,1	0,10	0,12 (0,000)	0,09
Averag	ge DELAY	Average DELAY per vehicle (secs) delay from North	Ę		A-B	delay from South	<u> </u>	SOI_	A<10, B<	LOS A<10, B<15, C<25, D<35, E<50 delay from West	D<35, E<	20	Ded IC	S A<10, B	0, 8<15, C<25, D	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	0, F=50+	delav / veh	dev
AM	beds	left str ri	right L+S+R	peds	left	str right	It L+S+R	R	<u>-</u>	f str	right	L+S+R	peds	left	str	right L+S+R	# #	max ov	overall
sat PM		0 1	0			1	0 0	0 1						00		0	00	-1 -1	0 1
Averag	se QUEUE	Average QUEUE length (veh)	(= total delay veh-hrs / hr)	ıy veh-hrs / l		OK WARN	N POOR		1 = OK, <1	Q <4 = OK, <10 = WARN, 10+ = POOR	4, 10+ = P.	OOR							
		2 from Nor			Q fre	Q from South	1 1			Q from West	Vest			Ö	Q from East		— П	Quene	ē
AM	peds	left str ri	right L+S+R	peds	eft T	str right	t L+S+R	Beds	ds left	t str	right	L+5+R	beds	left	str	right L+S+R	ec t	max t	total
Sat		0,0	0,0				0,0	000	H	\prod				0,0			0,0	0,0	1,0
<u> </u>			1,0			n'n		n'n	-	-				0,0		0,0	0,0	0,1	0,2
ļ				:				-											

spad

Control

lanes

Lanes

peds

AM Sat PM

peds

AM sat PM

Volume (evu/hr)

spad

AM sat

print: 2019-11-09

peds

AM sat PM

3	N Autoj	4. N11 8 Rock	1 & Road B Rockdale	&Autol 1910 roberts
	Xwe		Stop street on west and east approaches	
Volum AM sat PM	Volume (evu/hr) from North AM peds left str right L+5+R Sat 31 360 392 PM 32 483 515	from South peds left str right L+S+R 290 10 300 377 18 396	from West peds left str right L+S+R	from East intersection peds left str right L+S+R total 13 48 61 752 17 32 50 961
Lanes # lanes	(if lares shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)	.0.5; L:S:R = 0.3:0.4:0.3) L L L S R 1,5 0,5	L~ L S R	L~ L S R 1,0
Control	from North peds left str right	from South peds left str right	from West peds left str right	from East peds left str right
VOLUI Sat Sat PM	VOLUME to CAPACITY (V/C) V/C from North AM Peds left str right L+5+R Sat 0,02 0,18 0,17 PM 0,02 0,24 0,23	A-8 C-D E F V/C from South peds left str right L+5+R 0,09 0,09 0,09	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+S+R	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+ V/c from East v/c peds left str right L+S+R max overall 0,02 0,03 0,10 0,07 0,04 0,18 0,18 0,18
Average AM sat PM	Average DELAY per vehicle (secs) delay from North peds left str right L+S+R AM sat PM O 1 1 1	A-B C-D E F delay from South delay from South L+S+R peds left str right L+S+R 0 0 0 0 0 1 1 1 1 1	LOS A<10, B<15, C<25, D<35, E<50 delay from West peds left str right L+5+R	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+
AM sat	Average QUEUE length (veh) (= total delay total de	(= total delay veh-hrs / hr) OK WARN POOR 4 from South 4 from South 6 d. 0,1 6 d. 0,0 7 from South 7 from South 7 from South 8 d. 0,0 9 d. 0,0 9 d. 0,0 9 d. 0,0	Q <4 = OK, <10 = WARN, 10+ = POOR Q from West peds left str right L+S+R	Q from East Queue peds left str right L+S+R max total 0,0 0,0 0,0 0,1 0,1 0,1 0,0 0,0 0,0 0,2 0,2 0,2

print: 2019-11-09

print: 2019-11-09

**	N See AutoJ	2	Road B		&Autol 1510 roberts
		AWe Street	Stop street on west and east approaches		
AM	from North peds left str right L+	from South peds left str right L+5	from West peds left str right L+S+R	from East str right L+S+	intersection
PM	35 414 449 36 779 815	330 11 340 529 20 550		14 53 67 19 36 55	1419
Lanes #	(if lares shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)	0.5:0.5; 1:5:R = 0.3:0.4:0.3) L	L S R	L~ L S R	
Control	from North	from South	from West	from East	
	peds left str right	peds left str nght	peds left str right	peds left str right	
VOLU	VOLUME to CAPACITY (V/C)	A-B C-D E	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	Ped LOS A<0.1 B<0.3 C<0.4 D<0.6 F<0.97 E=0.97+	-0.97+
A	V/C from North peds left str right	/C from South	y/C from West peds left str right L+5+R	V/C from East peds left str right L+S+R	V/C max overall
PM PM	0,02 0,21 0,19 0,19	0,11 0,11 0,11 0,11 0,11 0,20 0,20		0,02 0,13 0,11 0,05 0,20 0,15	0,21 0,15 0,39 0,30
Averag	Average DELAY per vehicle (secs)	A-8 C-0 E F	LOS A<10, 8<15, C<25, D<35, E<50	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	-
AM	peds left str right L+5+R	peds left str right L+S+R	peds left str right L+S+R	peds left str right L+S+R	max overall
sat PM	0 1 version1	0 0 0		0 1 - 0	3 2
Averag		(= total delay veh-hrs / hr) OK WARN POOR	Q <4 = OK, <10 = WARN, 10+ = POOR		
	Q from North	Q from South	Q from West	Q from Eas	
AM	11911	ופון וופון	וביו את הפוור	11811	
PM sat	0,0 0,1 0,1	0,0 0,0 0,0 0,0 0,0 0,0		0.0 0.0 0.0	0,1 0,2
					Ш

	2-			:			5. N11	& Road D	۵			;					&AutoJ 1910 roberts	roberts
*	O- Autol	_					Roc	Rockdale										
	· o		Xwe			ا ا	Stop street on west and	2019 et on west	and east	east approaches	hes							
	1,000																	
Volum	volume (evu/nr)	from North			from	from South			fro	from West		Г		from	from East		intersection	tion
744	peds left	str right	L+5+R	peds	left si	str right	L+S+R	peds	left	str	right L+S+R	# #	peds	left str	rright	it L+S+R	t	total
sat	37	274	311			237 14 353 31	1 384				+			16		33 54		617
-		10 C-A C-C C = G-3-1-3 C-3 C-3 C-3-1 Leavends source 35	0.040	0.0,	16.0.4.0.9													
#		S R		- L	, T	S R	_	<u>-</u>	_	S	٦_	_	١	3	Z C	[-		
100		Q i	_		1	+	7				7	_		21	,]		
Control	A state of the sta	4	_	8	16:20		_		100mm	***				Section Posts		Г		
	peds left	str right		peds	left st	str right		peds	left		right		peds	left str	rrright	141		
			-		-	-	7]	_				7		
NOCU	VOLUME to CAPACITY (V/C)	(A/C)			A-B C	C-D E	L	LOS A<(LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99]<0.9, D<).95, E<0.		ed LOS A	<0.1, B<0.3	, C<0.4, E	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	F=0.97+	
	v/c	V/C from North	L+S+R	peds	V/C from left str	V/C from South	L+S+R	peds	v/c fi	V/C from West	est right L+5+R		spad	V/C fron	V/C from East	t L+S+R	Pt	Coverall
Sat	0,02	0,14	0,12		80'0		80'0							0,02	70,0	7 0,06	0,14 · 0,	. 0,10
Z Z	70,0	17,0	0,20		O,							_		60'03	000	-		0,16
Averag	Average DELAY per vehicle (secs)	vehicle (secs)			A-B C-D	DE	ш	LOS A<1	LOS A<10, B<15, C<25, D<35, E<50	<15, C<25, D<35,	, E<50		Ped LOS A	<10, B<15,	0, B<15, C<25, D<	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	- Clob	don'
ARA	peds left	str right	L+S+R	peds	left str	eft str right	L+S+R	peds	left	Str rig	right L+S+R	4	peds	left str	r right	r L+S+R		overall
sat	0	1	1				0							0			1	0
P	0	1				त्न	0					' 		0		0 0	Ţ	1
Averag	Average QUEUE length (veh)	reh)	(= total delay veh-hrs / hr)	eh-hrs / hr)	ŏ	K WARN	POOR	0<4=0	Q <4 = OK, <10 = WARN, 10+ = POOR	ARN, 10+	= POOR						(
	neds left	ctr right	1+C+R	nede	loft ctr	ctr right	1+C+B	pools	the late	Ctr Cit	right 1+C+R	4	node	U Trom East	r right	4 1+S+B	max to	total
AM		+			<u> </u>					H	┿		3	H			++	
sat	0,0	0,0	0,0			0,0				-		<u> </u>		00		0,0	0,0	70
∑	0,0	0,1	1,0		-	0,1	0,1					_		0,0		0.0	0,1	0,2

*	z	- Autol	_	:					LIT)	5. N11 Roc	1 & Road D Rockdale 2021	e l									& Autol 1910 roberts	roberts
					X	Xwe			Str	op street on west and	on wes	t and e	east approaches	oaches								
Volum	Volume (evu/hr)																					
ΔA	peds	left	from North	th right	L+S+R	peds	left	from South	th right	L+S+R	beds	left	from West	right	L+S+R	peds	left	from East	right	L+S+R	intersection	total
sat		37	285		324 480			367	32	399							16		35	57		935
Lanes			(if lanes :	shared L:	(if lanes shared LtS or StR = 0.5:0.5; LtStR = 0.3:0.4:0.3)	:0.5; L:S:R	= 0,3:0,4:0										,	ı	ı			
# lanes	ا ا	1,0	2,0	~	_		_	1,5	R 0,5		١.	-	<u>م</u> ا	«		<u> </u>	1,0	s d	1,0			
Control	_	40000	No.		_		in the state of th	design County				4	from Most				from	from Fact				
	peds	left	str	right		peds	H	str	right		peds	\mathbf{H}	str	right		beds	left	str	right			
VOLU	VOLUME to CAPACITY (V/C)	PACITY	(v/c)				A-8	C-D	ш,	1	LOS A	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	.8, C<0.9	, D<0.95	E<0.99	Ped LO	5 A<0.1, E	3<0.3, C<	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	E<0.97, F	- 1	
-	peds	ā	V/C from North	right	L+S+R	peds	<u>a</u>	V/C from South	right	L+S+R	peds	lef	V/C from West	right	L+S+R	peds	left (v/c rrom east	ght.	L+S+R	max ov	overall
sat PM		0,02	0,14		0,13			0,08	0,08	0,08							0,02		0,08 (90'0	0,14 0	0,10
Average	Average DELAY per vehicle (secs)	per vehic	le (secs)				A-B	0-5	ш	11	LOS A	LOS A<10, B<15, C<25, D<35, E<50	5, C<25, I	><35, E<	20	Ped LC	S A<10, B	<15, C<2	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	<50, F=504		
No	peds		delay from North	North right	L+S+R	peds		delay from South	right	L+S+R	peds	2	delay from West	West	L+S+R	peds	left de	delay from East	Ħ	L+S+R	max overa	overall
P _M sat		00	T		1			0 17	0	0							0		0 0	00	1	0 1
Average	e QUEUE	QUEUE length (veh)	/eh)		(= total delay veh-hrs / hr)	y veh-hrs /	' hr)	ŏ	WARN	POOR	Q <4 =	<4 = OK, <10	<10 = WARN, 10+ = POOR	, 10+ = Pi	OOR	į						
			Q from North	rth				Q from South	ıth				Q from West	est				Q from East			3	a
N	peds	left	str	right	L+5+R	beds	left	str	right	L+S+R	peds	left	str	right	L+S+R	peds	left	str	right	L+S+R	max	total
sat		0'0	П		0,1		\coprod	0,0		0,0		\coprod					00		0,0	0,0	0,1	0,1
PA		0'0	0,1		0,1			0,1	0'0	0,1							0,0		0,0	0'0	0,1	0,2

	z Ö	F Autol	_							5. N11	ockd?	Road D										&AutoJ 1910 roberts	roberts
	· s				X	Xwe			S	Stop str	op street on west and	West an	od east	east approaches	ches	:							
Volum	Volume (evu/hr)					l					l r		ŀ			[ľ					
AM Sat PM	peds	left 144 116	from North str 1 285 5 443	right	L+S+R 429 559	spad	left	str str 247	right 7 56	L+S+R 6 303 4 431		peds	fro left	str	right	1+S+R	peds	left 79 70	str	right L+	162 136	intersection total total 89	total 894 1 126
Lanes # lanes	2	1,0	if lares sh	hared L.S	(if lares shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)	5:0.5; L:S:R	t = 0.3;0,4	.0.3) \$ 1,5	R 0,5	<u></u>				S	<u>~</u>		<u>.</u>	1,0	S	R 1,0			
Control	peds	from North	str	right		spad		from South	right			peds	from West		right		peds	from East	str	right			
AM sat	ME to CA	VOLUME to CAPACITY (V/C) VOLUME to CAPACITY (V/C) APA left st sat 0,08 0,1 PM 0,06 0,2	N	ž l	L+S+R 0,12 0,19	spad	-A le	V/C from South Rt str rig 0,10 0,1	South right 0,10 0,14	F L+S+R 0,10 0,14		OS A<0.5,	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+S+R	V/C from West t str rig	>0.95, E	2<0.99	spad COS	A<0.1, B- V/C left 0,10 0,11	V/C from East ring str ring str ring 0	D<0.	6, E<0.97, F: L+S+R 0,15 0,15	>	overall 0,17
Averag	e DELAY	Average DELAY per vehicle (secs)	vehicle (secs)	1			A-B	-8 C-D E	E P	<u> </u>	3[35 A<10,	LOS A<10, B<15, C<25, D<35, E<50	<15, C<25, D<35,	15, E<50		Ped LO	5 A<10, 8<	0, 8<15, C<25, D	Ped LOS A<10, 8<15, C<25, D<35, E<50, F=50+	50, F=504	delay / yeh	day
sat PM	spad	left 0	str 1	right	L+S+R	peds		Str commen	right 0 0 0 0 0 1	T+S+I		peds	left	tt.	E	L+S+R	spad	left 0	str	其一一一	L+S+R	max ov	overall 1
Average	e QUEUE	QUEUE length (veh)	eh)		(= total delay veh-hrs / hr)	y veh-hrs		ě	WARN	V POOR		<4 = OK,	Q <4 = OK, <10 = WARN, 10+ = POOR	VARN, 10)+ = PO(H.						,	
AM	peds	left Q		ght	L+S+R	peds	left	of from South		155	1 1 1	peds	left Q	Str ri	ght	L+S+R	beds	left o	O from East	ight	L+S+R	힐ᆜᆜ	
PM		0,0	0,1		0,1			0,0	1 0,0	0,0	्रा _न							0,0		0,0	0,0	0,1	0,3

*	Autoj	5. N11 & Road D Rockdale TOO21 PLUS SITE & LATENT Xwe Stop street on west and	5. N11 & Road D Rockdale 021 PLUS SITE & LATENT Stop street on west and east approaches	&Autol 1910 roberts
Volume AM sat PM	Volume (evu/fir) from North peds left str right L+S+R AM 384 304 448 PM 116 451 567	from South peds left str right L+S+R 385 64 449	peds left str right L+S+R	from East intersection peds left str right L+S+R total 79 83 162 927 70 67 136 1152
# lanes	(if lanes shared L:S or S:R = L	(if lanes shared L:5 or 5:R = 0.5:0.5; L:5:R = 0.3:0.4:0.3) S R L L L S R 1,0 1,0 Aorth str right str right	L~ L S R from West peds left str right	
AM sat	VOLUME to CAPACITY (V/C) V/C from North AM V/C from North L+5+R Sat 0,08 0,15 0,13 PM 0,06 0,23 0,19	A-B C-D E F V/C from South peds left str right L+S+R 0,10 0,10 0,10 0,15 0,15	LOS A<0.5, 8<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+5+R	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+ V/C from East v/C peds left str right L+5+R max overall 0,11 0,12 0,15 0,15 0,12 0,12 0,11 0,022 0,17 0,23 0,17
Average AM sat PM	Average DELAY per vehicle (secs) delay from North delay from North AM str right L+S+R AM 0 1 1 PM 0 1 1	A-B C-D E F delay from South peds left str right L+5+R 0 0 0 0	105 A<10, B<15, C<25, D<35, E<50 delay from West peds left str right L+5+R	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+
Average AM sat PM	Average QUEUE length (veh) Q from North Q from North AM Sat Sat PM PM Sat O,0 O,0 O,1 O,2 O,2 O,2 O,3	(= total delay veh-hrs / hr) OK WARN POOR L+5+R	Q <4 = OK, <10 = WARN, 10+ = POOR Q from West peds left str right L+5+R	Q from East Queue peds left str right L+S+R max total 0,0 0,0 0,0 0,1 0,1 0,1 0,1 0,0 0,0 0,0 0,0 0,1 0,1 0,3

Peds left o,02 o,02 o,02	### ##################################	2026 Stop street on west and east approaches	
Peds left 41 41 41 41 41 41 41 4	str righ 272 405 5 R 1,5 0,5	west and east approaches	
peds left 1,0 1,0 peds left ped	str right L+4 272 16 405 36 5 R 5 R		
peds left 43 43 41	str right L+5 272 16 405 36 5 R 5 R 1,5 0,5		
13 41 41 41 41 41 41 41	272 16 405 36 5 R 1,5 0,5	from WestpedsleftstrrightL+S+R	from East intersection peds left str right L+S+R total
from trom peds left VC DELAY per vehic dela peds left peds left per vehic no 0.02 peds left per vehic no 0.02 peds left peds l	5,1,5		18 45 63 24 38 62
1,0	1,5	ι	
orth right right		N C 7	
right right right	from South	from West	from East
orth right right	peds left str right	peds left str right	peds left str right
orth right right			
right lorth	A-B C-D E F	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+
orth right	V/C from South +R peds left str right L+S+R	V/C from West peds left str right L+S+R	y/C from East v/C peds left str right L+S+R max overall
right	3 0,15 0,15 0,15 0,15		0,02 0,09 0,07 0,16 0,04 0,13 0,09 0,24
peds left str right	A-B C-D E F	LOS A<10, B<15, C<25, D<35, E<50	<35, E<50, F=50+
c	HR peds left str right L+S+R	peds left str right L+S+R	peds left str right L+S+R max overall
MA I	1 1 1 1 1		0 0 0 1
	(= total delay veh-hrs / hr) OK VVARN POOR	Q <4 = OK, <10 = WARN, 10+ = POOR	
Q from North	O from South	Q from West	Q from East
peds left str right L+S+R	+R peds left str right L+S+R	peds left str right L+S+R	peds left str right L+5+R max
sat 0,0 0,1 0	0,1 0,0 0,0 0,0		0,0 0,0 0,0
2,5	(A'A (T'A		a'a la'a

	24	Antrol	_							เก๋	. N11 & R	k Road D	Q F									&Auto) 1	&AutoJ 1910 roberts
		T T T T T T T T T T T T T T T T T T T						Ц		2	026 PL	2026 PLUS SITE						Г					
					×	Xwe				Stop	street	Stop street on west and east approaches	t and e	ast app	roach	SS							
Volume	Volume (evu/hr)		_																				
		_	from North	orth				from	from South					from West	fest				from East	St		inter	intersection
MA	spad	left	str	right	L+S+R	peds	ts left	\vdash	str	right L	L+S+R	peds	left	str	right	L+S+R	peds	left	str	right	L+S+R		total
sat		148	314	4	462		H	H	272	58	330							81		87	168		961
P.		120	489	<u>0</u>	809		-	-	405	89	473							72		70	142		1224
Lanes			[if lare	s shared l	(if lanes shared LiS or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)	5:0.5; 1:5	:R = 0.3:0.	4:0.3)															
1	<u>.</u>	٠, ١	v (~	Г	<u>-</u>	<u></u>		H	۳ [≟_	_	5	œ	Г	<u>ئ</u>		S	~ 5	_		
# lanes		1 T'O	O,'⊥		7		+	-	7,7 0	C()						7		T,U		7,0	_		
Control					Г											Г		ļ			-		
		from	from North		_	[-	욁	ŀ				-	from West					from East				
	peds	left	str	right	1	beds	15 left	+	str	right		peds	left	str	right	1	beds	left	str	right			
					1											1							
SILION	E to CA	CAN VICTOR OF CABACITY (VICTOR)	10/10				<		4		L	900	, 0,0	0,70	0	000/0 00/0 00/0 00/0 00	0	0/4	, c	6	100 A 70 0 2 B 70 A 70 A 60 A 60 A 60 A 60 A 60 A 60 A	+260-	
		ν/Λ	V/C from North	North				V/C fro	South				>	V/C from West	West			>	V/C from East	ast			V/C
	peds	left	str	right	L+S+R	beds	a	ر. در	str rie	뉟	L+S+R	peds	e	str	right	L+S+R	peds	lef	Str	right	L+S+R	max	overall
AM 5		000	0		0.13			0	0 13 6	0.11	0.11		1	1				0.11		0.21	0.16	17.0	13
PM		90'0	+-		0,21		H	0	-	-	0,16							0,12		0,26	0,19	0,26	0,19
	DELAV	A comment of the formal	1 / 1	7	 		4		2	L	L	8 30	מפיים פנית פנית פנית מניא ממי	16.73	7,35	Ç,	0.100	30 0710 5	710 6	JE DV2E	027 07 0770 0770 0770 0770 0770 0770 07	į.	
1000		del	delay from North	North			3	elay fro	Sour	2			de	delay from West	West			de	delay from East	East	100		delay / veh
M	spad	left	창	right	L+S+R	beds		الد. الد	str rig	H	L+S+R	spad	left	str	right	L+S+R	peds	left	str	right	L+S+R	max	overall
sat		0		1	1			A CONTRACTOR OF THE PERSON OF	0	Daniel O	Market 0				Ц			0		1	T	-1	1
PM		0		1	1			CL BARE	T o	1	T mount							0			7	T.	g-W
Average	QUEUE	Average QUEUE length (veh)	(veh)		(= total delay veh-hrs / hr)	ay veh-hr	s/hr)	C	OK W	WARN P	POOR	0 <4 =	<4 = OK, <10 = WARN, 10+ = POOR	= WARI	۷, 10+ =	POOR							
		٥	Q from North	lorth				Q fron	Š	ŀ			7	Q from West	West	1			Q from East	ıst		ਰੰ	Queue
AM	spad	left	st	right	L+S+R	peds	ss left	+	str	right	L+S+R	peds	left.	str	right	L+S+R	beds	left	str	right	L+S+R	max	total
sat		0,0	0,1	[→	0,1		\vdash	-	0,0	0,0	0,0							0,0		0'0	0,0	0,1	0,2
Ā		0'0	0,2	2	0,2				0,1	0,0	0,1			- 1				0,0		0'0	0,0	0,2	0,3
					:																		

	z									5. N11	& Road D	ДÞ									&Aurtol	&Auto/ 1910 roberts
¥	ا	Auto]	_						202	Ackdale 26 PLUS SITE & LATENT	Rockdale S SITE & L/	TENT		-								
	s.				X	Xwe			SI	Stop street on west and east approaches	t on we	t and e	ast app	roache	S							
Volume	Volume (evu/hri																					
			from North	th				from South	ith		L		from West	est				from East	Ħ		inte	intersection
24.5	beds	left	str	right	L+S+R	peds	left	str	right	L+S+R	peds	s left	str	right	L+S+R	beds	left	str	right	L+S+R		total
sat		148			481		Ц	286	58	344							81		87	168		994
₽		120	497		616			423									72		70	142		1 250
Lanes			(if lanes	shared LiS	(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)	3:0.5; L:S:R	= 0.3:0.4:(7.3)														
-	<u>.</u>	7	S	۵	_	١_	-	S	8	_	<u>`</u> _	-	S .	×	_		-1 F	S	~ [
Sall Plant		D,'T	D,1		_			7,7	200	_			_		7		7,1		۲,۵			
Control															г	į						
		from	from North				from	from South				ŀ	3				-	from East				
<u> </u>	peds	left	str	right		beds	E	st	right		beds	left	str	right		peds	left	st	right			
															1							
VOLUN	E to CA	VOLUIME to CAPACITY (V/C,	(V/C)				A-8	0-0		-	LOS	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99	0.8, C<0.	9, D<0.9	, E<0.39	Ped LO	S A<0.1,	B<0.3, C<	:0.4, D<0.	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	- 1	2/1/2
	peds	left	V/Cirom Norm	right	L+S+R	oeds	left (V/C rram sourn	right	1+5+R	peds	e	V/C ITOM West	right	L+S+R	peds	left	str ri	ght	L+S+R	max	
AM												┝	\vdash	•	-		L					
sat		80'0	0,17		0,14			0,11	0,11	0,11							0,11		0,22	0,17	0,22	-
Md		90,0	0,25		0,21			0,17	0,17	0,17							0,12		0,26	0,19	0,26	0,19
Average	DELAY	Average DELAY per vehicle (secs)	de (secs)				A-B	C-D	ш	14.	LOSA	LOS A<10, B<15, C<25, D<35, E<50	5, C<25,	D<35, E<	50	Ped LC	S A<10, I	3<15, C<2	25, D<35,	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	L	
	pood	dela	delay from North	Vorth	14640	node	del	delay from South	South	1 TCTD	node	2	delay from West	West	LACAD	opeo		delay from East	İ	14549	dela	delay / veh
AM	5000		300	(2)		6		1	9			-		G	-		+		-			\blacksquare
sat		0	7		1			1		0							0 .=		et	1 40%		1
<u>M</u>		0			1			e - -	1	1		-	_				0		erel N	I were		
Average	QUEUE	Average QUEUE (ength (veh)	veh)		(= total delay veh-hrs / hr)	y veh-hrs /		ŏ	WARN	POOR	0 <4	<4 = OK, <10 = WARN, 10+ = POOR	= WAR	1, 10+= 1	OOR							
		۵	Q from North				٥	O from South	uth				Q from West	Vest	- }-			Q from East			g	홝
ΔM	peds	left	냚	right	L+S+R	peds	eft	अं	right	L+S+R	beds	et	st	right	L+S+R	beds	e H	str	right	L+S+R	Jax	total
sat		0'0	0,1		0,1			0,0		0,0							0,0		0,0	0,0	0,1	1 0,2
PM		0'0	0,2		0,2			0,1	0,0	0,1							0,0		0'0	0,0	0,2	2 0,3
						2	:															

	z-{(တ်	6. ROAD D	(1)	& ACCESS	SS									ac .	&AutoJ 1910 roberts	roberts
3	.	# Autoj	_							20	2021 PLUS SITE	S SITE						ſ						
					×	Xwe				Stop s	Stop street on west and east approaches	n west	and ea	t appr	oaches									
Volum	Volume (evu/hr)																							
	peds	left le	from North	rth	L+S+R	peds	s left	from South	outh right	}-+	L+S+R	peds	left	from West	s t right	L+S+R	beds	is left	from East	East tr right	ıt L+S+R		intersection	ction
sat PM		105		105	210					+			111	53		200				57	63 120 47 102			530
Lanes			(if lares	shared L:5	(if lares shared L.S or S:R = 0.5:0.5; L.S:R = 0.3:0.4:0.3)	5:0.5; L:S:	\ = 0.3:0.4	4:0.3)																
# lanes	~	L 0,3	0,4	R 0,3		`_		S	~			<u>-</u>	L 0,5	5,0	~	_	<u>.</u>		\$ 0,5	5 R 5 0,5	lo.			
			_																					
Control		from	from North				fro	from South					from West	West		_		*	from East	_	Г			
	peds	left	str	right		beds	s left	str	right	ا ایا		beds	left	str	right		peds	s left	ft str	r right	#			
VOLUI	VOLUME to CAPACITY (V/C)	PACITY	(V/C)				A-B	0-5	3 C	11		LO5 A<0	LOS A<0.5, B<0.8, C<0.9, D<0.95, E<0.99), C<0.9,	D<0.95,	E<0.99	Ped Lt	OS A<0.	1, B<0.3,	, C<0.4,	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+	0.97, ⊱=0	426	
	spad	v/c	V/C from North	orth right	L+S+R	peds	a a	V/C from South	South right	it L+5+R	#	spad	V/C	V/C from West	/est right	L+S+R	spad	s left	V/C from East	ım East :r right	nt 1+5+R	000	v/c max ove	overall
AM		0,11		0,11	0,11								0,29	0,29		0,29			0,18	18 0,18	8 0,18		0,29 .0,	0,20
PA		60'0		60'0	60'0				\perp	\dashv			0,24	0,24		0,24			0,14					0,16
Averag	Average DELAY per vehicle (secs)	per vehic	ile (secs)				A-B	G-D	E	t.		LOS A<1	LOS A<10, B<15, C<25, D<35, E<50	C<25, D	<35, E<5	<u>S</u>	Ped	OS A<1	0, B<15,	C<25, D	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+	F=50+	,	
	peds	dela	delay from North	North	L+S+R	peds		delay from South	n South right	IT L+S+R	**************************************	peds	left	delay from West ft str rig	west right	L+S+R	peds	<u>e</u>	delay from East ft str rig	om East r right	nt L+S+R		defay / ven	/ veh overall
AM		C		Û	0					+			-	0		-				-	-		2	1
PM		0		0				\coprod			 			T		1		\parallel		-	1		1	
Averag	Average QUEUE length (veh)	length (veħ)		(= total delay veh-hrs / hr)	ay veh-hrs	/ hr)	ě	WARN	N POOR	JR	0 < 4 = 0	Q <4 = OK, <10 = WARN, 10+ = POOR	WARN,	10+ = PC	JOR								
		ğ	Q from North					Q from South	South				ā	Q from West	sst				Q from East	n East	:		Queue	a
AM	spad	left	str	right	L+S+R	peds	발	st	right	It L+S+R	#	peds	left	str	right	L+S+R	peds	s left	#s	r right	T L+S+R	~	max	total
sat		0'0		0'0			\sqcup	\parallel	\parallel	H			0,1	0,0		0,1	L	H	\parallel				0,1	0,1
Σ		0,0	V	0,0	0,0				40.0		_		0,0	0,0		0,1				0,0	0'0 0'0	0	0,0	0,1

	2						9	6. ROAD D		& ACCESS										&AutoJ 1910 roberts	roberts
*	Q- AutoJ	AutoJ						202	Rockdale 2026 PLUS SITE	SITE											
	us.			Xwe				Stop st	Stop street on west and east approaches	west an	d east	pproac	hes								
Volum	Volume (evu/hr)																				
AM sat PM	peds	from North left str 105 78	105 80	210 158	peds	fror left	from South	right L+S+R		peds	from 147 111	from West rig	right 1.+5	1+5+R 205 188	peds	left.	str r 63 61	right L+S+R 63 126 47 108	3+R 126 108	intersection total	total 541 454
lanes # lanes	2	(if lares L S 0,4	(if lanes shared L.S or S.R = 0.5:0.5; L.S.R = 0.3:0.4:0.3) S R 0,4 0,3	r S:R = 0.5:0.	.5; L.S:R = 0	.3:0.4:0.3)	\$	~		3_	0,5 0	\$ 8	<u>~</u>	_	<u>.</u>		s 0,5	R 0,5			
Control	peds	from North left str	right		peds	from South		right		peds	from West		right		spad	from East		right			
VOLUI AM sat	ME to CAP	VOLUME to CAPACITY (V/C) V/C from North Peds left str rig sat 0,09 0,09 0,00	# 118	0,11 0,09	spad	A-B V/Cfr	V/C from South	th right L+S+R		105 A<0.5, B<0.8, C<0.9, D<0.95, E<0.99 V/C from West peds left str right L+5+R 0,30 0,26 0,26 0,26 0,26 0,26 0,26	V/Cfro	40.8, C<0.9, D<0 V/C from West t str rig 0 0,30 6 0,26	><0.95, E<0 sst right L+3 0,		ped LOS A	V/C	V/C from East str rig	Ped LOS A<0.1, B<0.3, C<0.4, D<0.6, E<0.97, F=0.97+ V/C from East peds left str right L+S+R max 0,19 0,15 0,15 0,15 0,15 0,26	20.97, F=(> _ _	Overall 0,20
Awerag AM sat PM	peds	Average DELAY per vehicle (secs) delay from North delay from North peds left str righ AM sat PM O	right 0	L+S+R 0	beds	delay f	delay from South	E F outh right L+S+R		LOS A<10, B<15, C<25, D<35, E<50 delay from West peds left str right 1 2 1 1 1 1 1 1 1 1	delay fr	<15, C<25, D<35, delay from West (R str right) 1 2 1 2 1 1	35, E<50 /est right L+5	1 1 1	Ped LOS /	delay	O, B<15, C<25, D delay from East ft str rig	Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+ delay from East peds left str right L+5+R m 1 1 1 1 1 1	0, F=50+	delay / veh max overa	/ veh overall
Averag AM sat PM	Average QUEUE length (veh) Q from Q from AM Sat Sat O,0 PM O,0	ength (veh) Q from North left str ri 0,0 0,0	48 000	(= total delay veh-hrs / hr) L+S+R 0,0 0,0	peds	삘	Q from South	WARN POOR ith right L+5+R		Q <4 = OK, <10 = WARN, 10+ = POOR Q from West peds left str right L+ 0,1 0,0 0,0 0,0	<10 = W, Q fro Q fro 0,1 0,0	2 WARN, 10+ Q from West str rig 1 0,0	ot = Poor	OR 1,1 0,1	beds	left Qf	Str r 0,0	right L+S+R 0,0 0,0	# 0,0,0	Queue max to 0,1 0,0 0,0	ue total 0,1

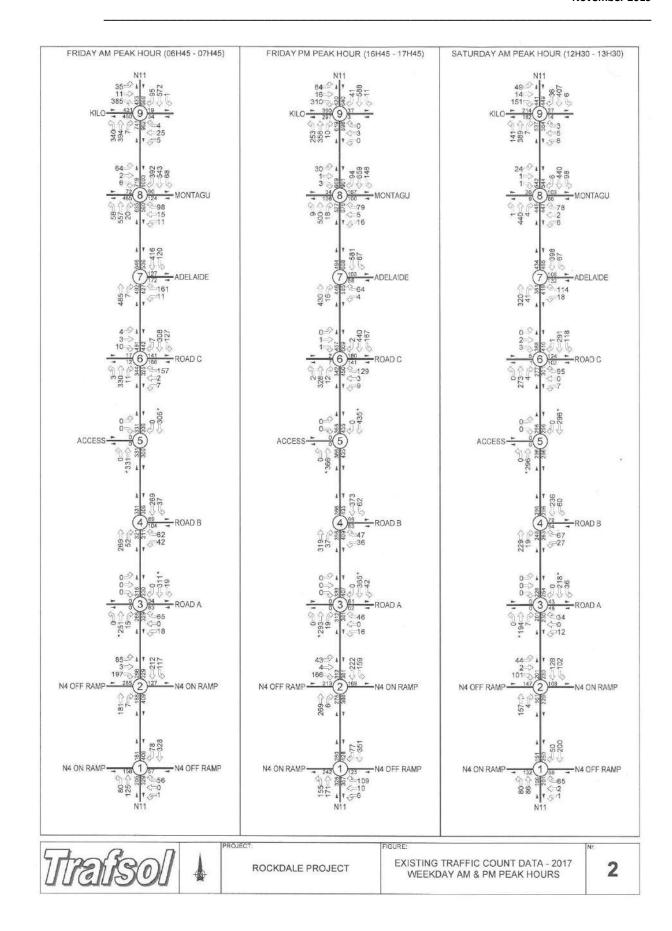
ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019

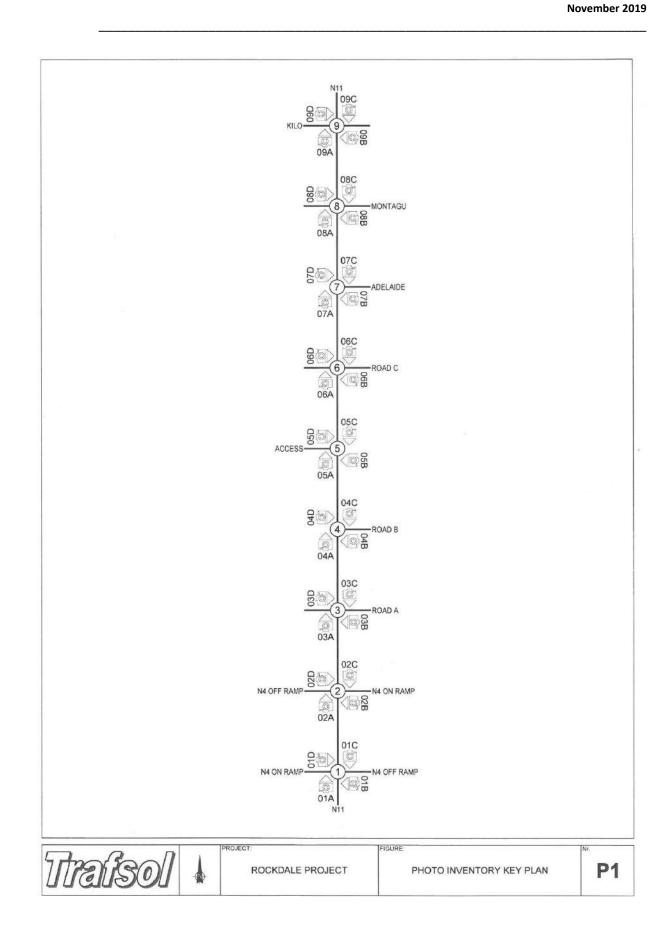
ANNEXURE D

Traffic count data (September 2017)

ROCKDALE SHOPPING CENTRE
Erf 1051 Middelburg
Traffic Impact Assessment
November 2019













01C









02C









03C











04C



ROCKDALE SHOPPING CENTRE

Erf 1051 Middelburg
Traffic Impact Assessment
November 2019

November 2019

OCTATO:		KOCKI	JALE (CT: TF			VEYS	(MPE)	ne tra	
6 HOUR	COUNT				N4 AN		AL VEH	H TER	MINAL	.)			22/09/2	-
AM PEA		6.45	7:45	_		1017	AL VER	NCCE3			P	M PEAK	FRIDA	-
	-/*				N1	1 (SOL	JTHT	ERMIN	IAL)	1		THE LEAST	10.43	
					181	78	328	0	406					
						0	0	0	10000					
					280 OUT	77 m	351	0	428 IN					
						- 4	ı İ	L 5						
			0	0	0	- 1		70	204		400			
N4 (S	OUTH	4			0			-	56	0	109	N/	(SOUT	4
	INAL		0	0	0	=	•	— 5	0	0	10		RMINAL	
			0	0	0	3	,	F 4	1	0	6			8
			158		242	8	1	PZ.	57		125			
					IN	- "	2		OUT					
					205	80	125	0	329					
book	box	00			326	155	171	0	357					
عاما	NO.	17						ERMIN						v2.
Time		South			East			North			West		Hour	v
AM PEAK	80	125		4	5	6 56		328	9 78				668	-
MIECAN	00	123				36		328	/8				668	
PM PEAK	155	171		6	10	109		351	77		Value of		879	-
TOTAL 6:00	686	818		20	26	599		1752	396				4297	
6:00	14	16 13		1		13		59 87	19 24					
6.30	23	22				24		122	22					
6:45 7:00	28 12	37 29		1		17		100	20 24				686	6
7 15	16	29				11		76	12				729	6
7.30	24	30				13		63	22				888	6
7-45 8.00	30 24	23 28		2		26 18		70 57	8				624 596	7
8.15	21	29				17		57	11				587	7
8 30 8 45	20 22	32 27			1	13		43	10				553	7
900	66	21		3	1.	29		32	8				516 375	8
9.15													240	8
9:30 9:45												9	122	8
10.00														9
10.15														9
10 30														9
11.00														10
11.15														10
11.30 11.45														10
12 00														11
12 15														11
12 30 12 45														11
13:00														12
13.15														12
13:45														12
14:00														13
14:15									1					13
14.45														19
15 00														14
15 15		**												14
15.30 15.45	42 31	49 49			4	41 37		73 92	19 17				228 455	14
16.00	53	55		2	5	48		25	18				861	15
16.15	35	32			1	33		60	11				833	15
16:30	50 27	57 27		2	3	35 54		76	19				845	15
17.00	57	66			3	9		94	21				880	16
17:15	34	46		2	3	12		66	23		1		874	16
17 30 17 45	37	32 27	O Service	3	1 2	34 40	No. of Lot	119 71	19		1		879	16
18 00	17	23			-	24		76	19				774	17
18.15	23	29		1	1	24		73	13			=	752	17
18.30 18.45	1	11											519 335	17
19.00														18
19 15												1	12	18
19 30 19 45														18
20 00														19
20.15														19
20 30														

OCATION	1 1	ROCKE	JALE (D N11					VEYS	(MPE	23/09/2	017
-	COUNT			100	IV4 AIV		AL VEH		VIIIVAL	,			SATURD	-
SAT PE	AK	12:30	13 30											
					N1 161	1 (SOL	JTH TI 200	ERMIN 0	AL) 250					
					101	0	0	0	250					
					OUT	0	0	0	IN					
					551	= U	, L	\$ 5	***					
			0	0	0	10		£ 6	65	0	0			
	SOUTH		0	0	0	11		5	2	0	0		N4 (SOUTH	
TERM	INAL)	0	0	0	12		4	1	0	0		TERMINAL))
			132	0		8	4	Z	68					
			100		IN	7	2	e -	OUT					
					176	80	96	0	201					
kea	box	~				0	0	0						
الالإيال	NO.	-1 200				1 (SOL	ITH T		AL)					V2
Time	1	South 2	3	4	East 5	6	7	North 8	9	10	West 11	12	Hourt	y
AT PEAK	80	96		1	2	65		200	50				494	
		NAME OF TAXABLE PARTY.												
TOTAL	472	506		14	13	397		1002	171				2575	
9:00 9:15														
9:30 9:45														-
10 00	24	23			1	15		56	4				123	
10.15	28 25	28 46		1		27 28		33 47	7				247 398	
10:45	19	29			1	12		41	10				510	1
11:00	32 21	43 22		1		38 15		52 60	10 6				563	1
11:30	24 26	26 28		1	1	14 23		33 53	5 9				516 543	1
12:00	27	21		8		18		67	9				509	
12:15	24	17 35		2	1	24		54 55	12				511 547	1
12:45	15	21		1		14		52	18				529	1
13:00 13:15	24 18	22 18			1	14 23		48 45	10				506 494	
13:30 13:45	24 22	23 22		2 2	2	15 17		58 37	9				487	14
14:00	30	17		1	2	22		78	10				511	
14:15	23	15		1	1	24 19		46 57	7		-		513	1
14:45	23	23		2	1	23		30	4				363	1
15:15													247	1
15 30 15 45													106	
16:00														1
16:15 16:30														
16.45 17:00														1
17.15														1
17:30 17:45														
18 00 18 15														1
18.30														1
18 45														1
19:15 19:30				•										
19.45							н н							1
20 00 20 15														1
20.30														B
21.00								155	. *					2
21:15								, Ý						2
21.45														2
22 00 22 15													İ	2
22:30														2
22 45 23 00														2
23 15 23 30														2
RW WW														

001		OCKE	ALE (CT: TR			VEYS	(MPE)		
LOCATION	2				N4 AN	D N11	(NORT	H TERI	MINAL	.)			22/09/2	
6 HOUR O	A Delia Disease	6.45	7:45	-		1018	AL VEH	ICLES		-	D	M PEA	FRIDA	
- and F LPAP			1.40	J.	N1	1 (NOF	TH TI	RMIN	AL)	,		r smi	10.45	and the
					266	0	212	117	329					
					312	0	222	159	381					
					OUT		00	~	IN					
			285		213	2	1	₩ 5	127		169			
			85	0	43	10		4	0	0	0			
N4 (NC			3	0	4	11		—	0	0	0		4 (NORTH	
TERM	INAL)		197	0	166	12 3			0	0	0	,	ERMINAL)
						2	4	Z						
					IN	מי ב	2	m -	OUT					
					188	0	181	7	409					
loor	000	0			275	0	269	6	388					
ROOM	300	Lh						ERMIN						v2.
Time		South			East			North		A DELKA	West		Hourt	v
AM PEAK		181	7				7 117	212		10	11	12	802	- Della
TOTAL TOTAL		269 1389	5 33				159 772	222 1226		43 290	4 26	166 943	869 4679	
6:00		32	3				31	67		6	20	34	4673	
6:15 6:30		23 44	1				48 31	57 61		8	1	49 78		
6.45		53					37	60		10	1	63	813	1 6
7:00 7:15		47 41	1				29 20	53 47		28 28	1	60 42	850	6
7:30		40	6			. *	31	52		19	1	32	802	6
7:45 8:00		44 46	3				31 27	44 45		11		32 22	740 669	7
8 15		45					29	42		4	1	23	635	7
8:30 8:45		45 48	1				24 23	33 27		6 10	1	21 33	584 565	1
9:00		,,,					23	21		10		33	417	8
9.15 9.30													273	8
9.45													143	8
10:00														5
10 30														5
10:45														10
11:15														10
11:30														10
12:00														11
12.15														11
12 45														12
13:00														12
13 30														12
13:45														12
14.15														13
14:30 14:45														13
15 00														14
15 15 15 30		95	3				43	52		10	2	32	237	14
15:45		81	4				36	61		15	3	41	478	15
16.00 16.15	-	91					28 39	45 46		10	1	40	BC 907	15
16:30		86	2				34	64		10	2	29	897	15
16:45 17:00		63	2		1	FEIR	27 37	46 56		13	1	36 41	842 857	16
17:15		69	2			100	42	47		13	1	43	898	16
17:30 17:45		54 79	2				53 27	73 42		11	1	46	884	10
18 00		41	1				25	55		13	2	39	834	17
18.15		65	1				20	51		8		36	798	17
18.45													357	18
19 00													181	18
19:30														18
19.45														19
20 15														19
20:30		- 1	- 1					1 1		1				19

LOCATION	2 F	ROCKE	ALE (D N11 (VEYS	(IVIPE	23/09/2	017
6 HOUR	_				144 MIN			ICLES	VIIIVAL	-1			23/09/2 SATURE	
SAT PEA	Carried Control	12:30	13:30											
					201	0	N11	102	230					
					241	0	0	0	230					
					OUT	0	0	0	IN					
			147			2	1	\$	108					
	ODTI		44	0	0	10		•	0	0	0			
N4 (N TERM			2	0	0	11	ě a	←	0	0	0		14 (NORTH FERMINAL	
1,001,111		6	101	0	0	12		-	0	0	0		L/ (///// 1/ L	,
						g	1	Z						
					IN 161	0	157	۳ 4	OUT 229					
	1000					0	0	0						
ROOT	OK	J.K.				U	N11	U						v2.1
Time		South 2	3		East		7	North 8		10	West 11	12	Hourl	у
SAT PEAK	T. T.	157	4				102	128		44	2	101	538	
TOTAL 9:00		848	11				433	614	F CY	146	10	473	2535	
9.15														
9:30 9:45														9
10.00		37 50					19 22	21 22		6	1	27 15	110	9
10:30		64					15	29		4	,	17	352	9
10 45 11 00		51 57	1				14	31 23		6 2		27 17	481	10
11.15		42	- 5				15	29		8	1	24	491	10
11:30 11:45		44 40	1				17 25	31 38		5 9	1	27 19	488	10
12:00 12:15		41 38	2				20 20	35 35		13 13	1	43 24	528 541	11
12:30		44	2				12	32	A STATE	A	1	29	540	11
12 45 13 00		38 35	1				19 27	36 27		7	4	24 35	533	12
13.15	FEEL	40 30	1			100	44 38	33		6	1	13 20	538	12
13.45		43					17	21		5	1	32	528	13
14:00		34 36					36 22	42 30		4 6	1	30 21	542 520	13
14:30 14:45		33 51	1				22 15	39 18		4 8	2	17 12	497	13
15:00											_		337	14
15 15 15 30													222	14
15 45 16 00														15 15
16.15														15
16:30 16:45														15
17 00 17:15														16
17:15														16
17.45 18:00														17
18:15														17:
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22:00 22:15														21.
22:30 22:45														21.
23.00														22
23:15														22
23:45														23

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE LOCATION N11 AND ROAD A 22/09/2017 HOUR COUNT FRIDAY AM PEAK PM PEAK 16 45 17 45 N11 46 42 IN 34 61 0 0 65 0 46 ROAD A 0 0 0 0 0 0 ROAD A 0 0 0 12 18 0 16 9 83 62 IN 15 OUT 0 0 19 16 0 0 N11 v2.1 Hourly 10 11 AM PEAK 117 15 18 65 19 PM PEAK 46 42 123 TOTAL 93 293 675 6:00 6 10 9 8 6:15 6:30 7 10 25 6:45 7:00 2 11 3 21 4 6 1 6:15 6:30 144 7:15 23 117 6.45 7.00 7:15 7:30 7.45 7 45 8 00 108 2 3 8 89 73 8:30 71 59 8.00 9.00 9.15 39 24 8:30 8:45 9 30 10 9:00 9:15 9:30 10:00 10:15 10 30 10 00 10 15 10 30 10.45 11:00 11.30 11.45 10:45 11:00 11:15 11:30 12 00 12 15 11:45 12:00 12:15 12:30 12 45 13 00 13:15 12.45 13:00 13:45 14 00 13.15 13.30 14 15 14 30 14 45 15 00 15 15 15 30 15 45 16 00 13.45 14:00 14:15 14:30 14:45 15:00 15:15 3 35 56 13 12 17 16:30 16:45 16 16:00 16:15 11 131 17 00 17:15 10 122 17:30 17:45 14 15 8 17:00 17:15 17:30 17:45 3 10 119 18 15 3 17 18:30 18:45 95 18:00 18:15 18:30 62 19.00 19.15 19:30 18.45 19.00 19.15 19.30 19:45 20:00 20 15 20 30

OCATION	3	OCKL	DALE (ואווטנ	/LLDC			DAD A	AFFI	5 50 K	V L 13	(iAILE	23/09/2	017
6 HOUR	-						L VEH						SATURE	
SAT PEA		12.30	13:30				and the second							
					34	0	N11 0 0	36 0	36					
					OUT	0	0	0 _	IN					
			0	0	0	10	*	€ 6	43 34	0	0			
ROA	AD A		0	0	0	11=	•	€ 5	0	0	0		ROAD A	
			0	0	0	12	1	4 2	12	0	0			
					IN 7	0	0 2	7	OUT 12					
Con	len	n				0	0 0 N11	0						v2.
Time	lings	South			East			North		40	West	1 40	Hourt	
AT PEAK	1	2	7	12	5	34	36	8	9	10	11	12	89	
		4												
9:00			60	58		204	189						511	
9.15 9.30														
9.45				1		18	12						35	1 6
10:15			4	3		14	9						61	5
10 30			4	1		13	9						87	5
10.45			2 5	4 5		9	9						99	10
11 15			5	5		10	13						106	10
11:30			2	2		12	7						103	10
11:45			4 2	3 5		10	12 6						105	11
12:15			3	2		12	7						96	11
12:30 12:45			3	3		7	5						69 82	12
13:00				3		6	12						83	12
13:15			3	3		14	10						102	12
13.45			2	,		8	6						98	13
14:00			2	4		11	7						101	13
14:15			6	2	-	13	10	-	-	-			104	13
14:45			6	2		12	8						312	14
15:00 15:15													88	14
15.15													28	14
15 45														15
16:00														15
16:30														14
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17:00 17:15														16
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22 15														21
22:30 22:45														21
23 00														22
23 15 23:30														22
20.00			1 1		I						1		1	2:

OCATION 4	ROCKE	MLE	IVIIDL	LLDU			DAD B	MILL	JUN	VLIJ	(IAIL F	22/09/2	01
6 HOUR COUN	TT.					L VEH	_				-	FRIDA	
AM PEAK	6:45	7:45	-		CHMIE		-			Р	M PEA		3545
						N11			,				
				331	0	269	37	306					
				366	0	373	62	435					
				OUT	U	60	DZ	IN					
					= 4	T	4 5	89		99			
		0	0	0	-		4 6	62	0	47	1		
							- °					00400	
		0	0	0	-	•	-	0	0	0		ROAD B	
		0	0	0	3		F 4	42	0	36			
					8	1	Z	104		83			
				IN		2	_ w	OUT					
				321	0	269	52	311					
localo	100			356	0	319	37	409					
COLICE	CIN			000		N11	41						v2
Time	South			East			North			West	MANAGE AND ADDRESS OF THE PARTY	Hourl	v
AM PEAK	2 260	3	4		62	7	8 269				TO THE	731	
NIII PEMI	269	52	42		02	37	209					731	
MPEAK	319	37	36		47	62	373					874	
TOTAL	1706	235	199		259	259	1747				-	4405	
6:00	61 30	6 11	13		17	10	56 82					1370 1776	
6:30	55	12	9		22	8	76						
6.45 7:00	56 81	15	8		15 23	7	68 62					668	
7.15	84	15	8	100	13	5	70					748	
7:30	48	9	13		11	15	69					731	
7.45 8.00	62 50	4	9		12	11 5	54 62					714	
8:15	57	8	9		7	9	56					594	
8.30 8.45	55	3	6		5 4	5	49 44					552 528	
9 00	63		2		"	3						397	
9 15												251	
9.30												128	
10 00													
10 15											1		
10.45													1
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11:15	+	-	-	-	-		-	-	-		-	-	1
11.45					1								1
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13:30	1										1		1
13 45	1									1	1		1
14:00									1		1		1
14.30											1		3
14.45										1	1		1
15.00										1	1		1
15:30	107	13	7		5	12	84		1	1	1	228	1
15:45	97	8 9	7		6	11	87 73				1	441	1
16:15	107	4	5		12	12	75					836	1
16.30	96	12	7		11	13	86					933	1
16:45 17:00	73	10	7 7		13	5	90 98		1	1		518	1
17:15	83	12	9	1	10	19	84			1		BEE 583	1
17:30	64	5	13		11	22	101		-			974	1
17.45 18.00	78	18	1		5	12	82					872	
18 15	56 67	13 15	14		14	13 13	68 71		1	1	1	776	1
18 30		1000			188		888					560	1
18:45											1	192	
19:00									1		1	192	1
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OCATION 4							OAD B				(MPE)	22/09/2	01
6 HOUR COUNT					MIN	IBUS 1	TAXIS					FRIDA	Y
AM PEAK	6 45	7.45						1198		P	M PEAR	16.45	1
						N11	1214	235					
				39		26	11	37					
				31		24	11	35					
				OUT		œ		IN					
					E 📢	1	\$ 5	26		23			
					4		6	9		6			
					_		_					ROAD B	
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					ž 👣	T	₹	15		19			
				IN 45		30	15	OUT 32					
				43		30	13	92					
conten	\sim	•		37		25	12	37					
- Harried Square	- item					N11							
Time	South 2	3	4	East	6	7	North 8			West		Hourl	y
M PEAK	30	15	6		9	11	26			The same of		97	
									1000				
MPEAK	25	12	13		6	11	24					91	
TOTAL 600	159	62	7		51	6	129			-		497	1000
6:15	9	4	5		9	3	9						
6:45	9	6 5	4		8	1	10					137	-
7:00	7	3	3		3	3	4					124	
7:15	13	6			1	3	7					175	
7:30 7:45	5	1 2	2		3	3	8					97	100
8.00	3	1	_		2	2	5					82	
8 15	4	3			3	3	4					69	
8:30	5	1	2		2	1 2	2 2					61	
9.00						_	-		1		1 1	35	
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9.30												1 6	3
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15.45	8	1			2		7					37	1
16.00	2		1		2		2		_			44	1
16:30	18	2	2		3	1	4					72 68	1
16:45	5	3	2		1		5		THE STATE			66	1
17:00	6	3	5		1	3	7					84	1
17:15 17:30	6 8	3	2 4		2 2	4	3 9				1	76	1
17.45	7	2	1		-	1	4					93	
18 00	3	1	2				5					76	1
18 15	6	6	1			1	2					72	1
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OCATION		.KD	ALE (MIDD	FFRO	RG) PI			AFFIC	SUKV	E12 (IVIPE)	22/09/20	17
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ir as glotting de	- E	uth			East	THE REAL PROPERTY.	N11	North	(500 to 1)		West	III III III III		(IS)
Time		2	3	4		6	7	8	SECTION.	-		- Allin	Hourly	
AM PEAK		3	11	1			1						16	
PM PEAK			1	2				2					5	
TOTAL	2	23	15	6		1 1 1 1	3	10					57	
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7:00 7:15		1	5	1			1	1111					23	6
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OCATION	KOCKI	KDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE N11 AND ROAD B										+	047
OCATION 4	-				_						_	23/09/2	
6 HOUR COUN	-	49.90			TOTA	L VEH	ICLES					SATURE	JAY
SATPEAR	12:30	13:30				N11			J				
				296	0	236	60	298					
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				OUT	0	0	0	IN					
				001	- 48	00	L E						
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		0	0	0	3		F 4	27	0	0			
					2	1	Z	94					
				IN	- · III	2	63	OUT					
				248	0	229	19	263					
l= = ==l= =					0	0	0						
Copte	CLA				0	0 N11	U						v2.1
	South			East			North			West		House	9117
Time	2	3	4		6	7	8					Hourt	У
SAT PEAK	229	19	27		67	60	236					638	
		2											
TOTAL	1137	123	120		314	268	1065					3027	
9:00													3
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9.45	100000					50000	7,000					2000	9
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10 30	70 81	5	3		17	8	47 48					474	9
10.45	57	6	3		9	4	42					595	10
11.00	60	7	5		12	12	43					574	10
11:15	64 48	8	5		21 16	15 7	43 49					577	10
11 45	66	6	2		13	15	64					584	11
12 00	43	8	2		15	14	61					588	11
12 15	63	5	2 5		14	12	49				Name of Street	577 597	11
12:45	59	2	9		21	11	59					592	12
13:00	59	7	5		12	15	68					615	12
13.15	52 43	5 10	13		21	13	69 69					638	12
13.45	52	8	10		18	13	46					844	13
14.00	48	9	7		20	19	85					646	13
14.15	45 52	11	11		13	18	57 55		_			633	13
14 45	60	6	4		14	20	41					612	14
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