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.

mpe

TITLE OF REPORT:

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CLIENT:

Owner

REPORT NO: MPE0280 – ROCKDALE SC

PREPARED BY:

B Roberts Pr Eng

SIGNED

REVIEWED BY :

The engineer and his team

APPROVED :

BN Roberts Pr. Eng

I certify that this Traffic Impact Assessment has been prepared by myself and I have the experience and training in the field of traffic and transportation engineering.

SIGNED

	REVISION	DATE
Report for submission to the Road Authorities for comment / approval purposes.		November 2019

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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.**
- Exc**ept 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

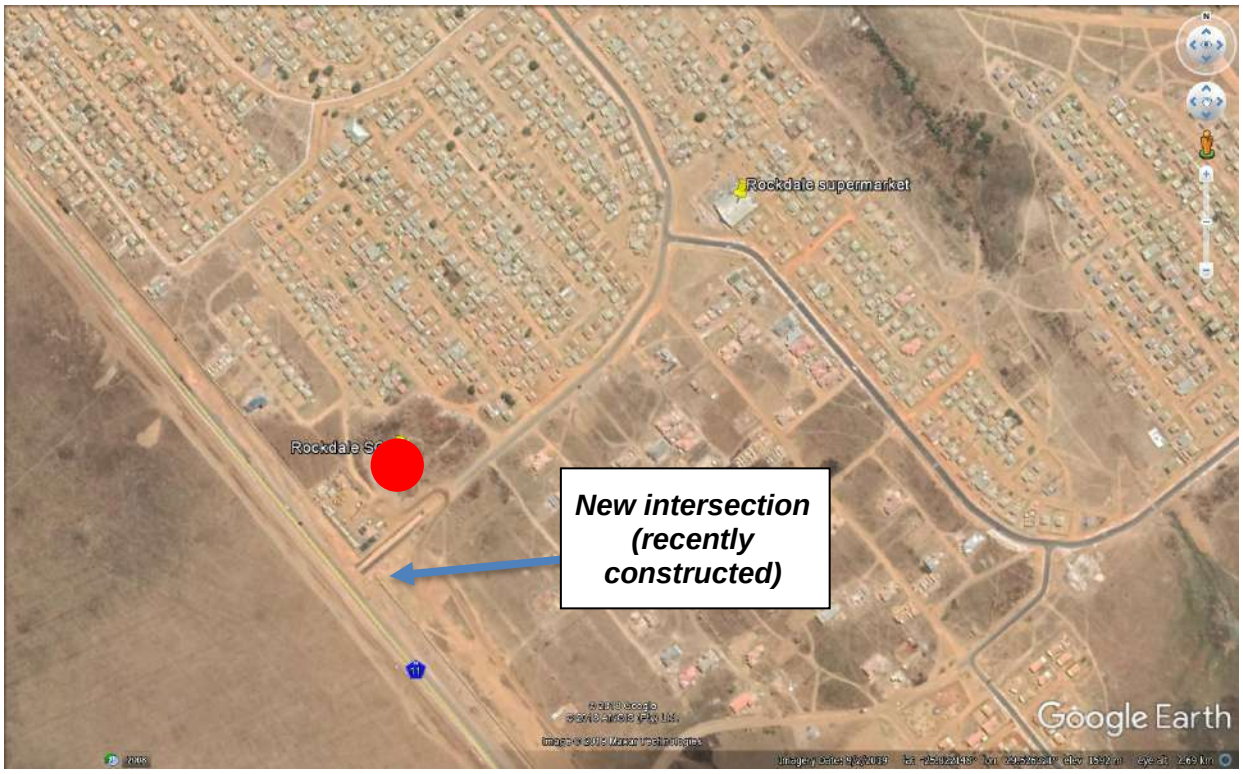


Figure 4: Local locality plan

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.

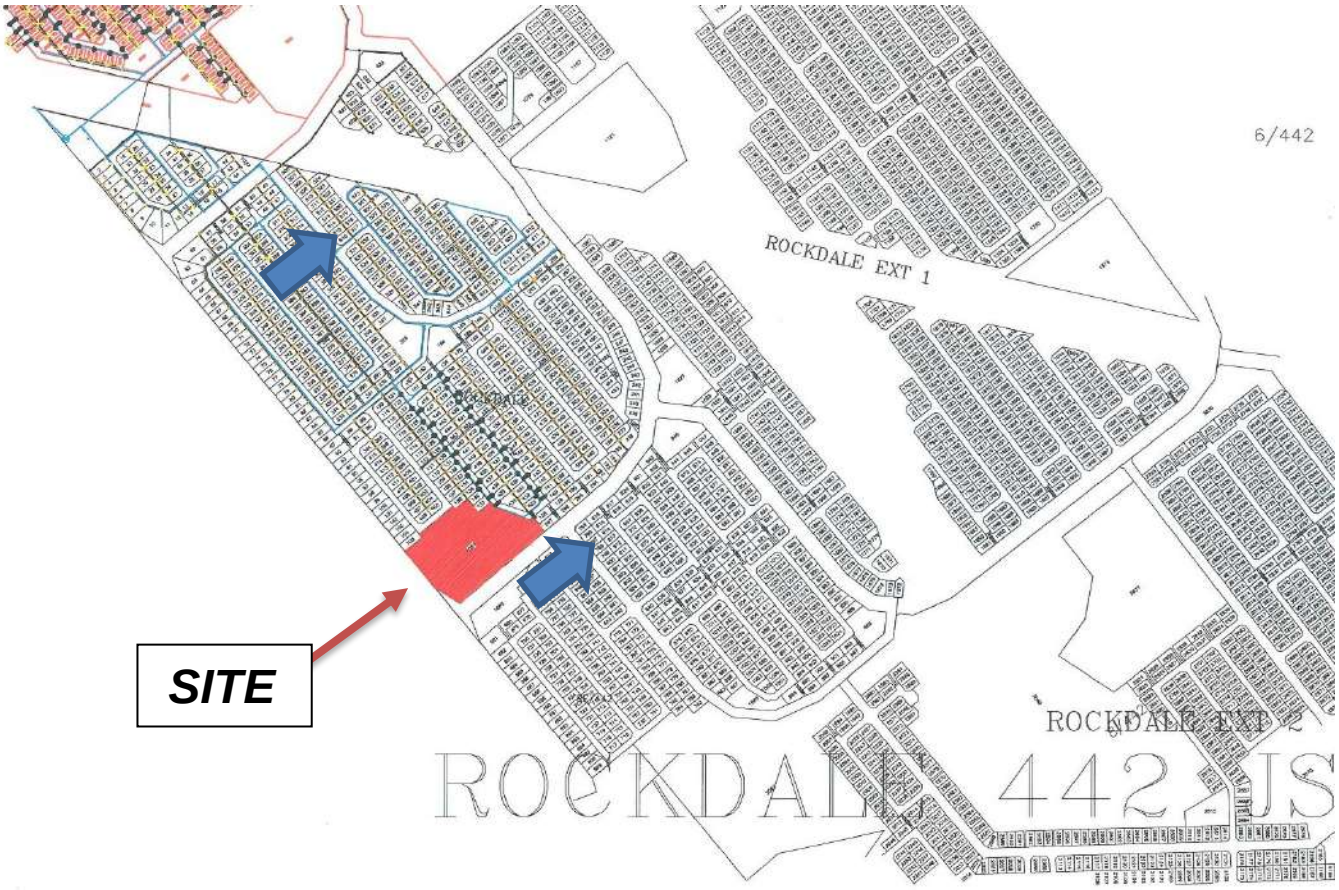


Figure 5: Existing Rockdale township (east) layout with the Site in red
Access points off the N11

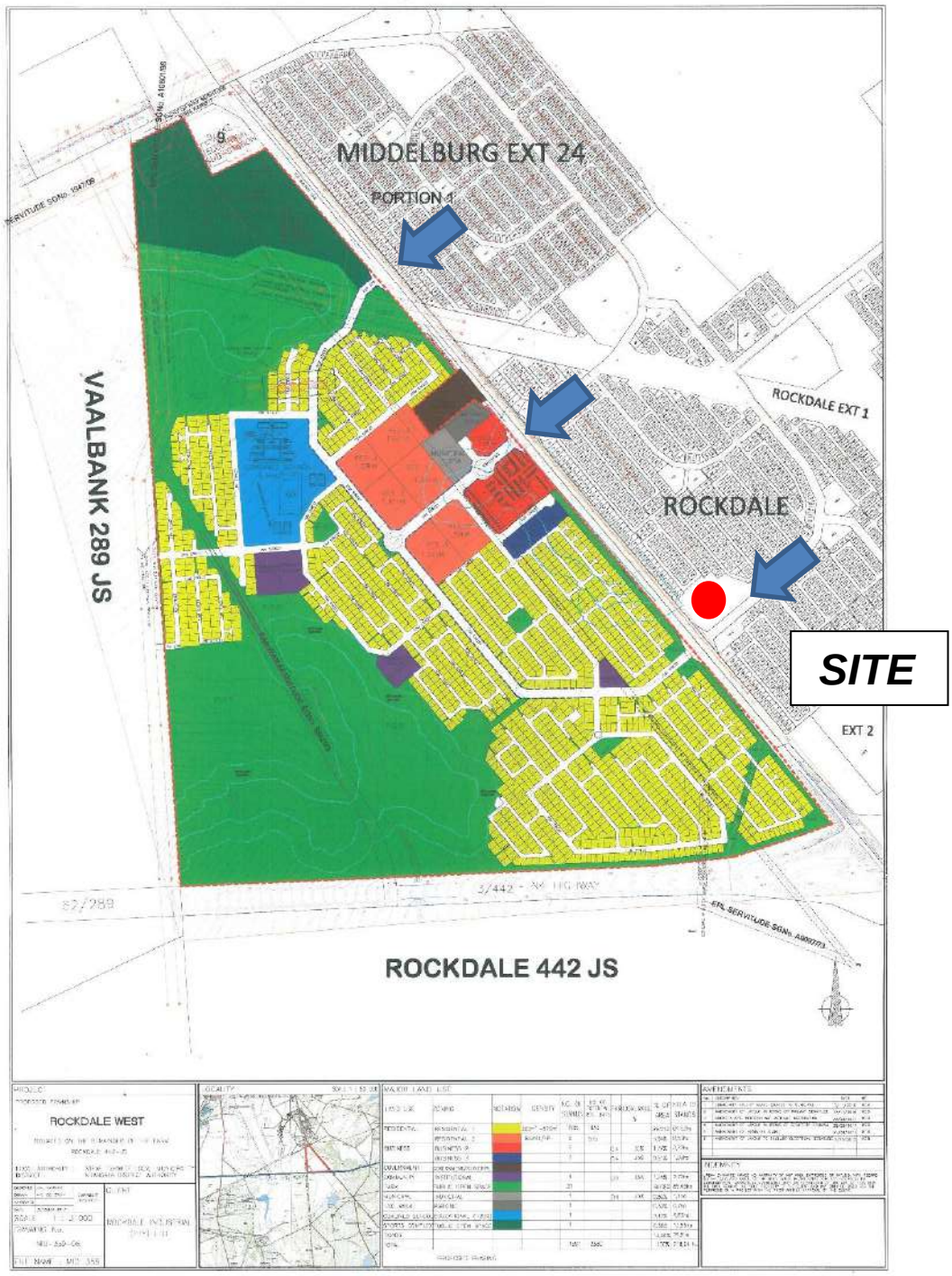


Figure 6: Proposed Rockdale West township layout

Access points off the N11 (mainly opposite existing intersections)

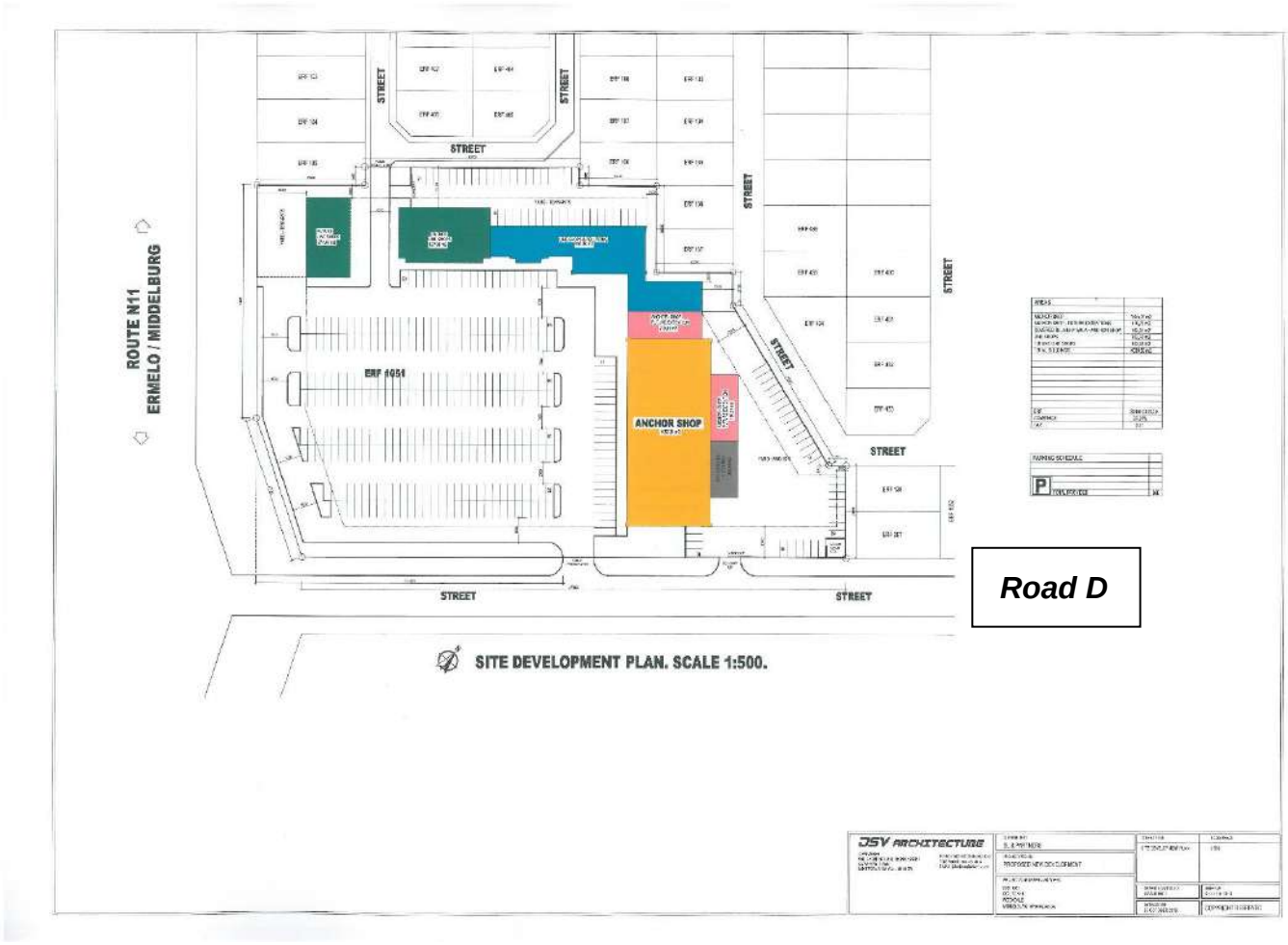


Figure 7: Proposed Erf 1051 Rockdale shopping centre

AREAS	
ANCHOR SHOP	1855,34 m2
ANCHOR SHOP - FUTURE EXTENTIONS	416,26 m2
COVERED DELIVERY AREA - ANCHOR SHOP	163,31 m2
LINE SHOPS	992,30 m2
FUTURE LINE SHOPS	992,38 m2
TOTAL BUILDINGS	4039,59 m2
ERF	28000,00 SQ.M.
COVERAGE	20,20%
FAR	0,21

PARKING SCHEDULE	
P	
TOTAL PROVIDED	388

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**
	Westbound	**242**	**132**	1900 / 1 / 1	**13**
N11	Northbound	**369**	**241**	1900 / 1 / 1	**20**
	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**
	Westbound	**47**	**56**	1800 / 1 / 1	**3**
Road D*	Eastbound	**64**	**49**	1800 / 1 / 1	**4**
	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**.

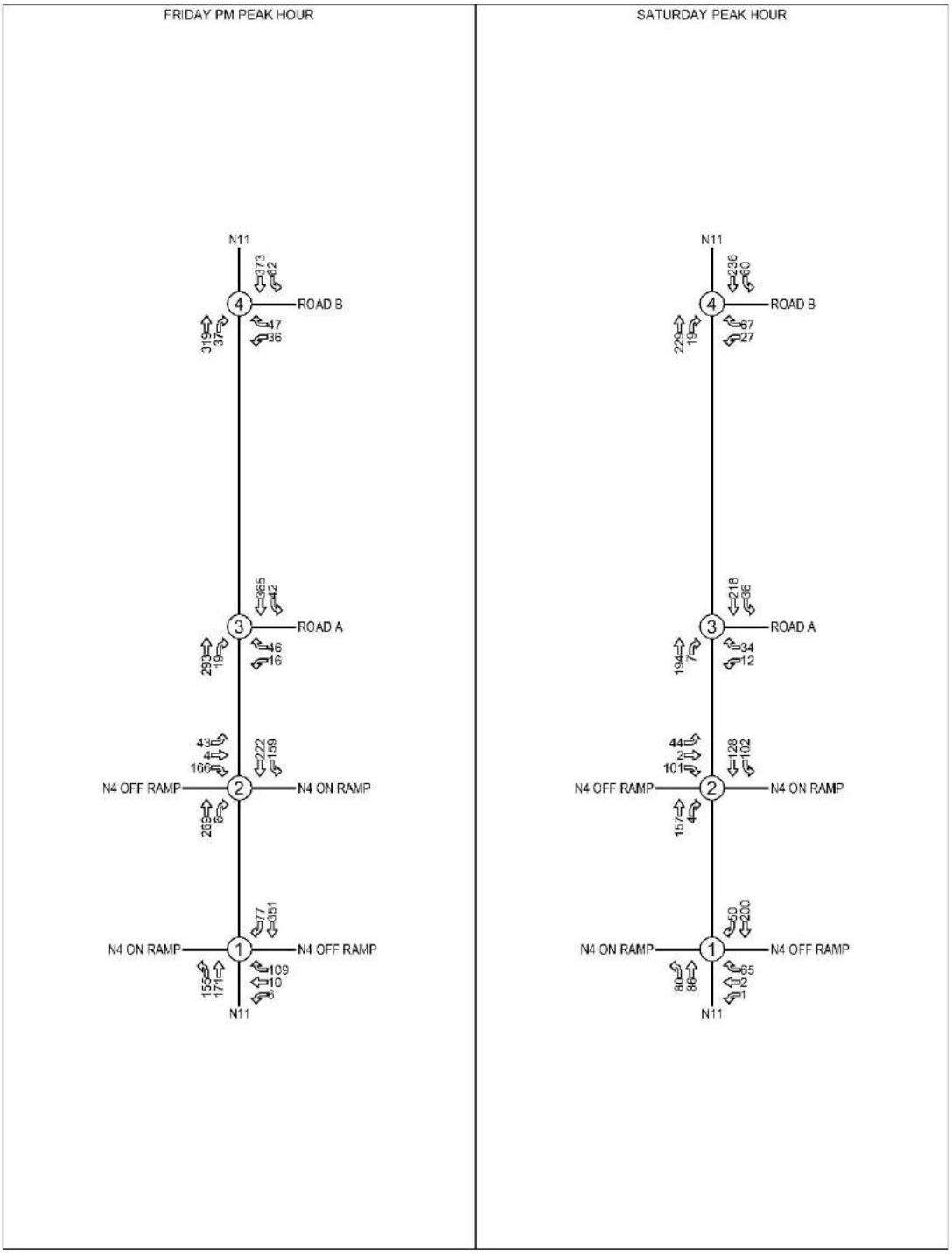
The traffic counts undertaken in September 2017 are shown below:

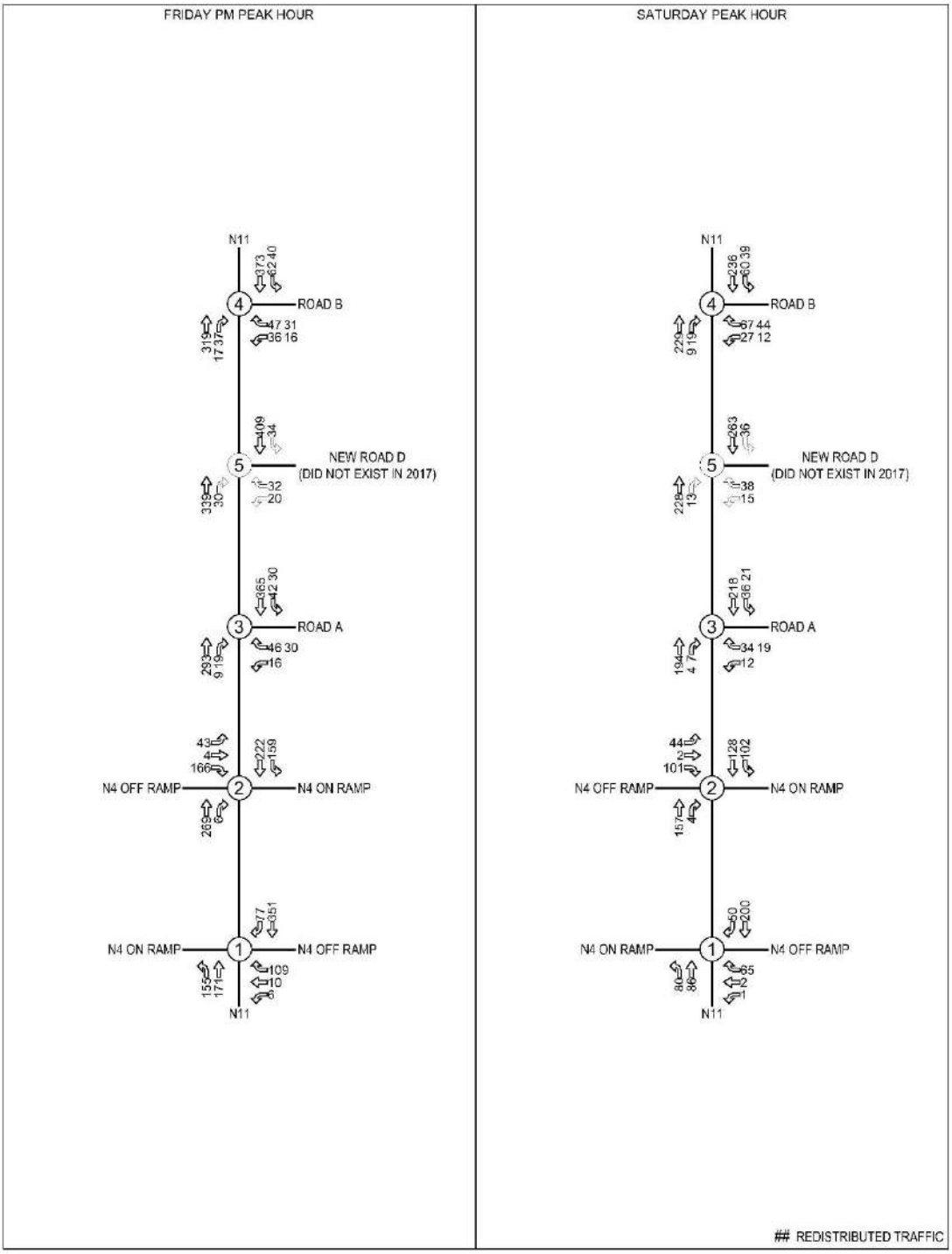
The peak hours occur as follows:

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.


FRIDAY PM PEAK HOUR
SATURDAY PEAK HOUR
N11
ROAD B
ROAD A
N4 OFF RAMP
N4 ON RAMP
N4 ON RAMP
N4 OFF RAMP
N11
mpe
N.T.S.
Erf 1051 Rockdale Shopping Centre TIA
2017 Existing Traffic Flows
Friday PM & Saturday Peak Hours
10A


FRIDAY PM PEAK HOUR
SATURDAY PEAK HOUR
N11
ROAD B
NEW ROAD D
(DID NOT EXIST IN 2017)
ROAD A
N4 OFF RAMP
N4 ON RAMP
N4 ON RAMP
N4 OFF RAMP
N11
REDISTRIBUTED TRAFFIC
mpe
N.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 transport	**Friday All surveyed hours**	**Saturday All surveyed hours**
	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 CODE**	**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

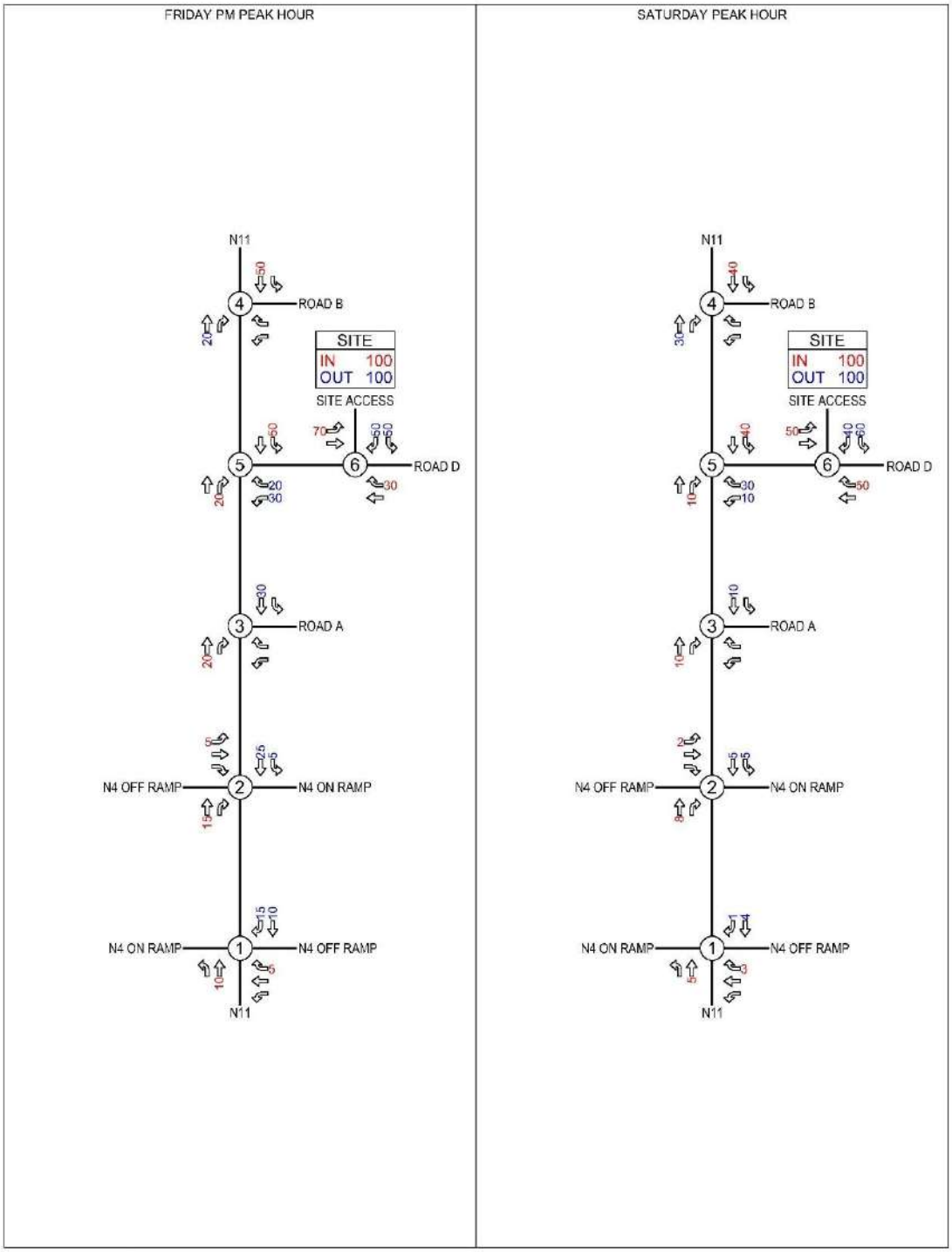
Refer to **Figure 11** and **Annexure B** for details.

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**:**


FRIDAY PM PEAK HOUR
SATURDAY PEAK HOUR
N11
ROAD B
ROAD D
ROAD A
N4 OFF RAMP
N4 ON RAMP
SITE
IN 100
OUT 100
SITE ACCESS
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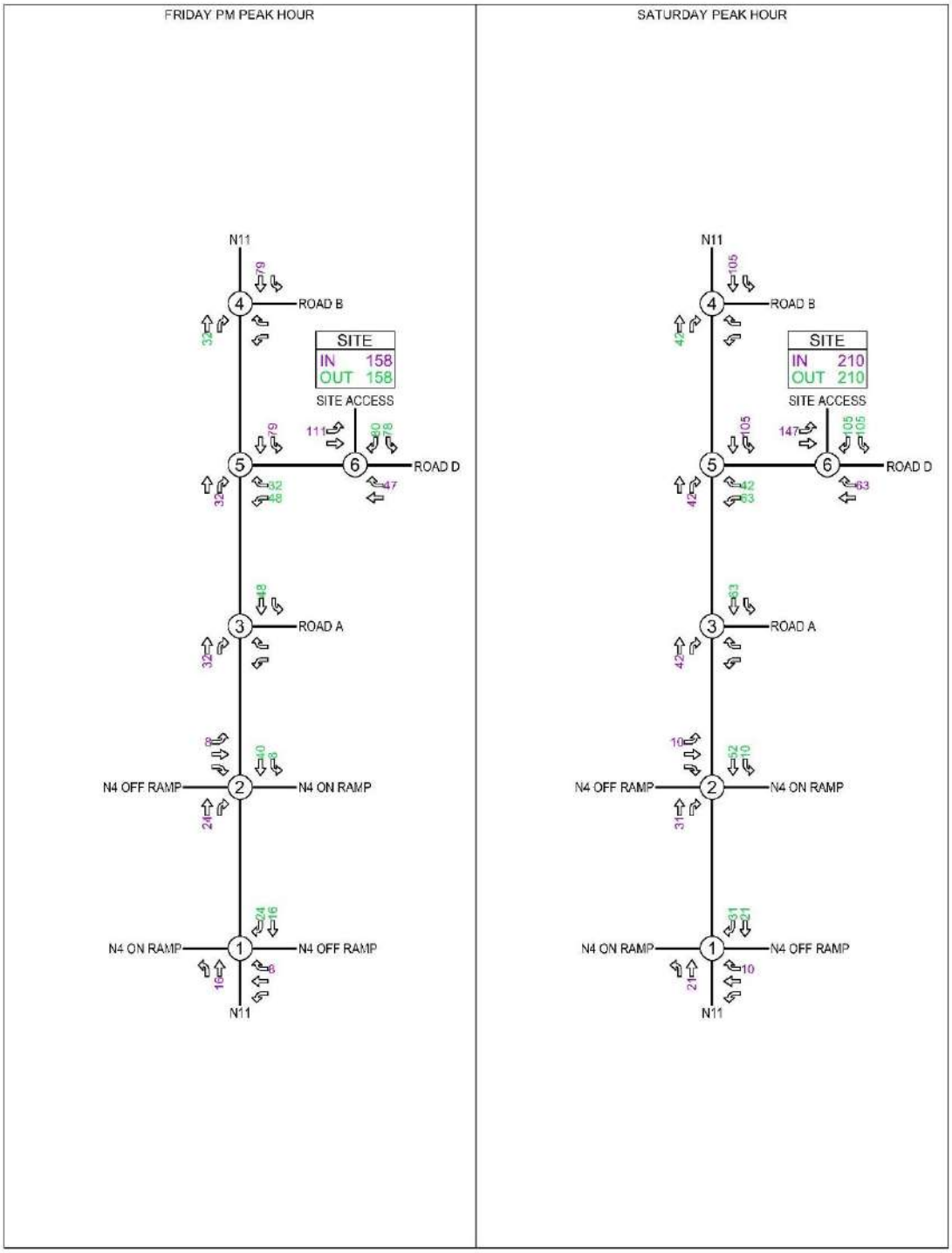
Trip Distribution (%)
Friday PM & Saturday Peak Hours
11



mpe N.T.S.

Erf 1051 Rockdale Shopping Centre TIA

Trip Assignments (vph)
Friday PM & Saturday Peak Hours

12

7. TRAFFIC FLOWS

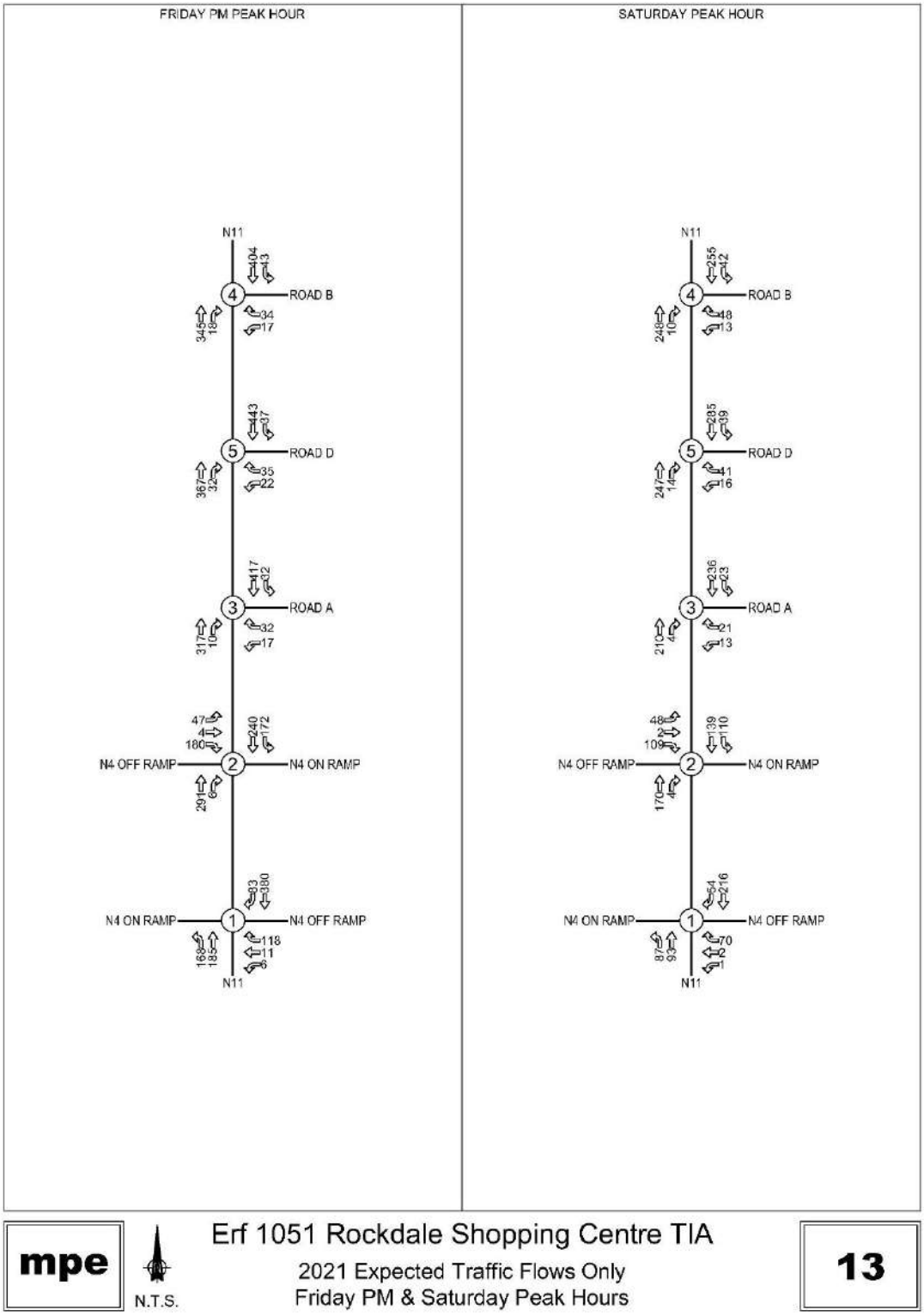
The adjusted 2017 scenario was analysed in order to obtain a base for the traffic flows in the area.

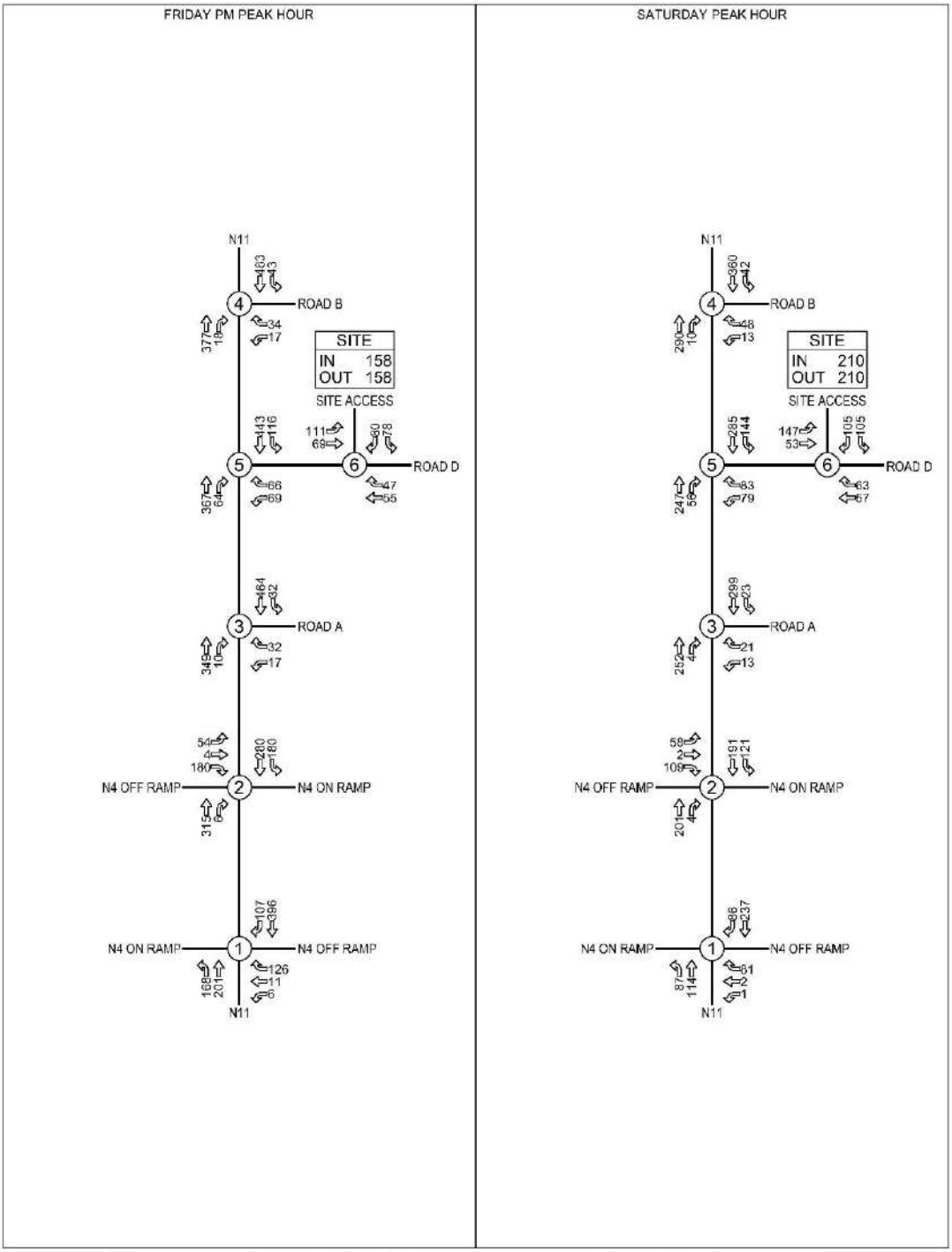
In terms of traffic flow estimates and associated traffic analysis, it was decided to analyse the **2021 and 2026 design horizon scenarios** as this would be the fully built year and 5 years after the opening date. Any associated road upgrades would need to satisfactorily accommodate these traffic flows.

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**.

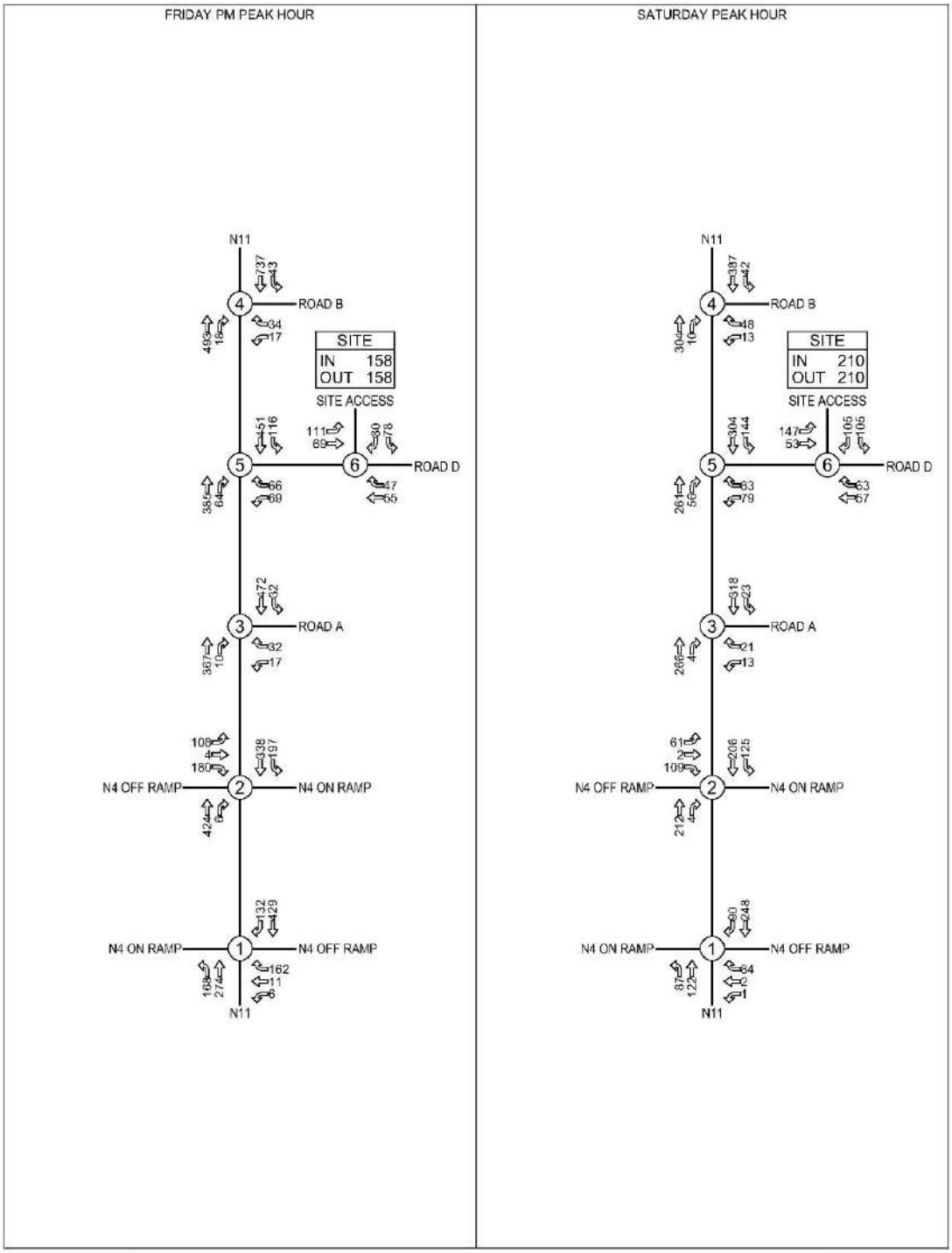

FRIDAY PM PEAK HOUR
SATURDAY PEAK HOUR
N11
ROAD B
ROAD D
ROAD A
N4 OFF RAMP
N4 ON RAMP
N4 ON RAMP
N4 OFF RAMP
N11
mpe
N.T.S.
Erf 1051 Rockdale Shopping Centre TIA
2021 Expected Traffic Flows Only
Friday PM & Saturday Peak Hours
13

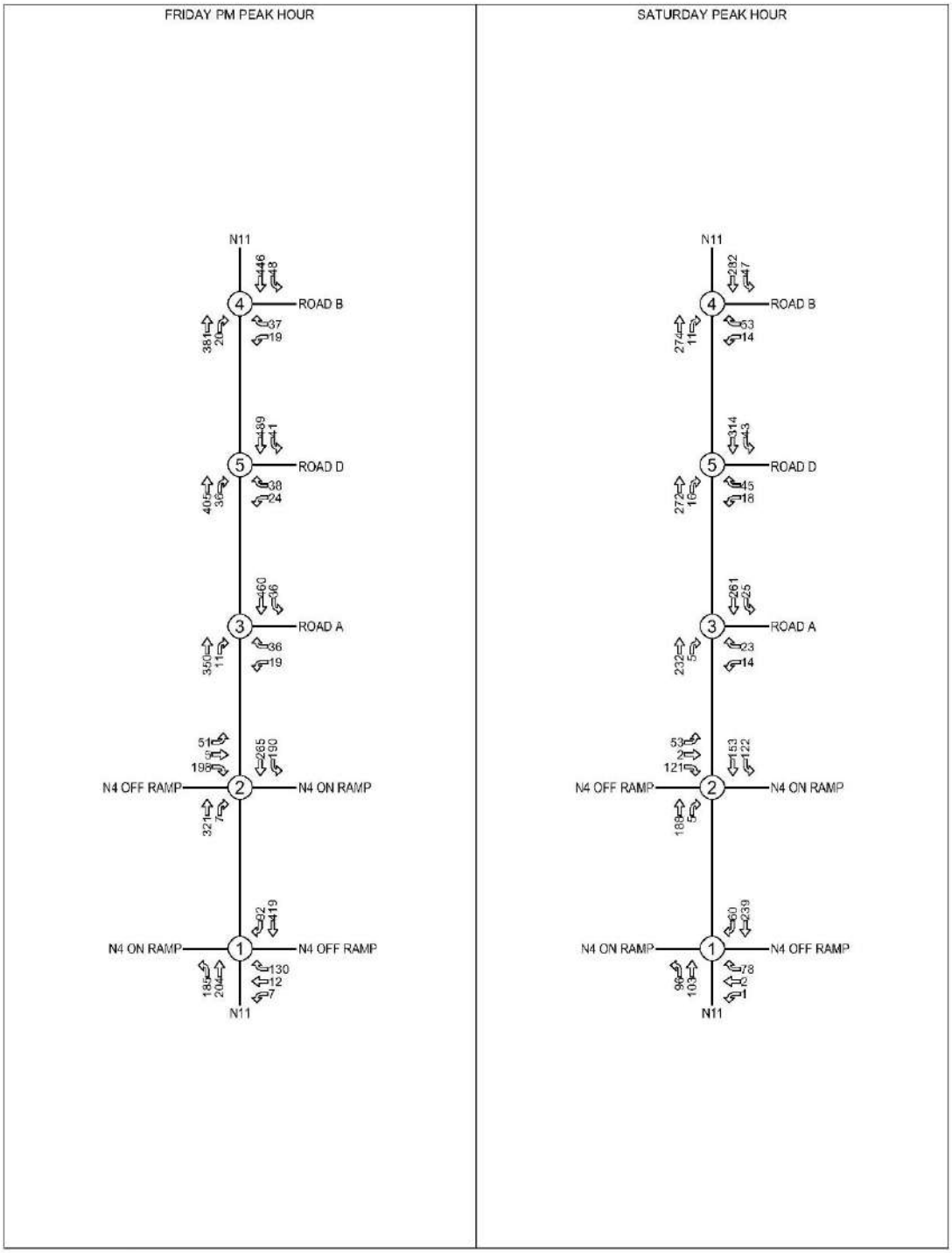


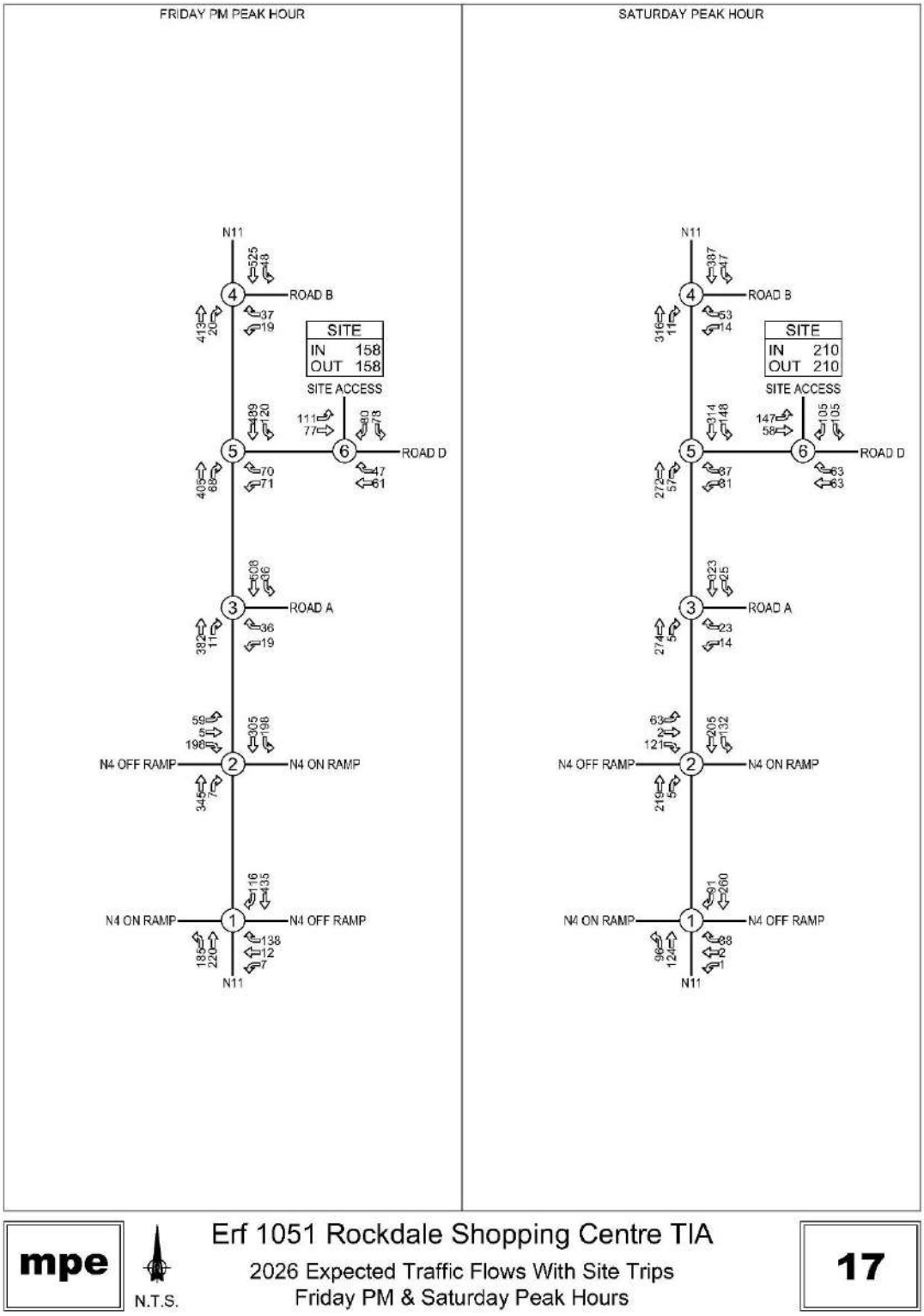
mpe N.T.S.

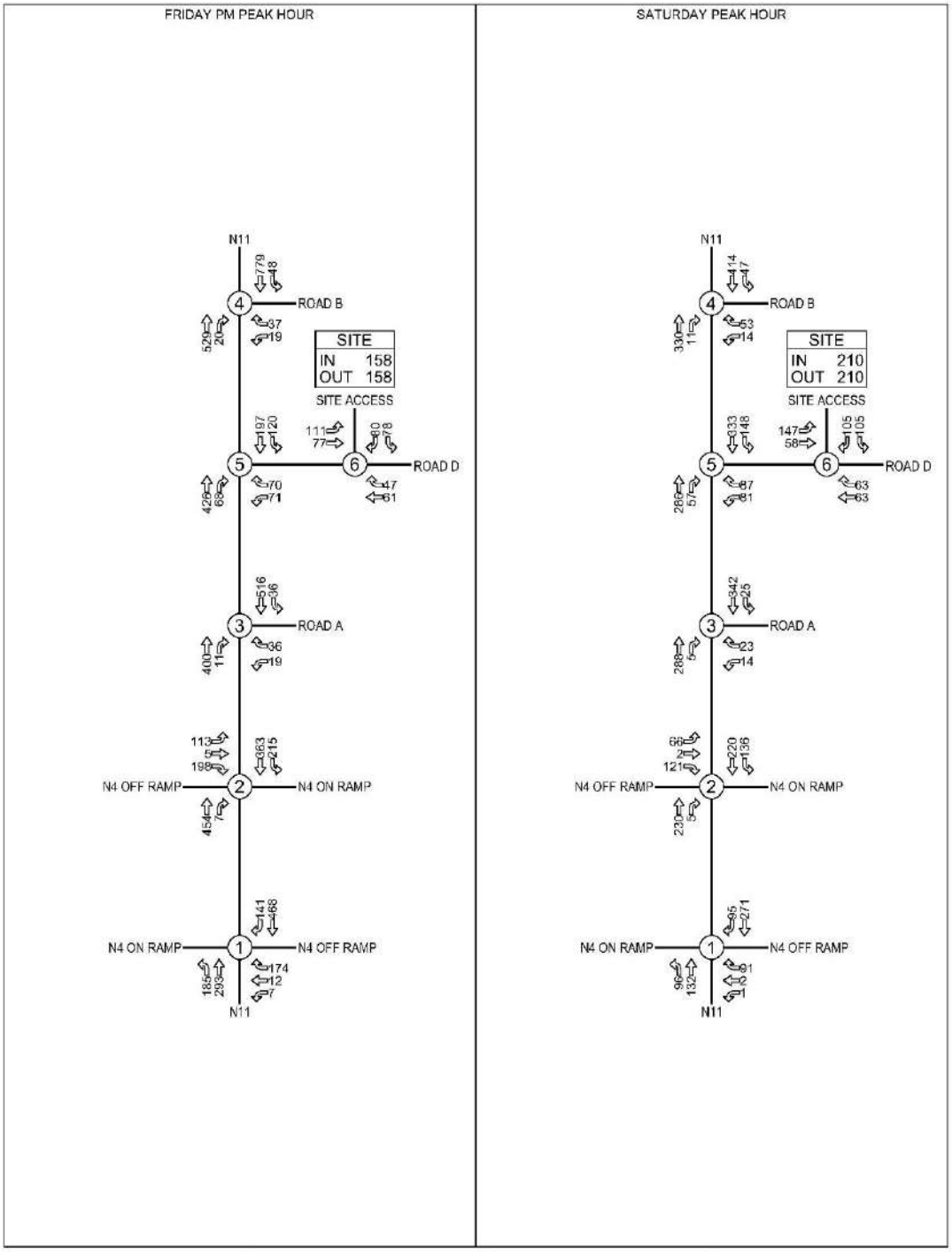
Erf 1051 Rockdale Shopping Centre TIA
2021 Expected Traffic Flows With Site Trips
Friday PM & Saturday Peak Hours

14


FRIDAY PM PEAK HOUR
SATURDAY PEAK HOUR
N11
ROAD B
ROAD A
ROAD D
N4 OFF RAMP
N4 ON RAMP
SITE
IN 158
OUT 158
SITE ACCESS
SITE
IN 210
OUT 210
SITE ACCESS
mpe
N.T.S.
Erf 1051 Rockdale Shopping Centre TIA
2021 Expected Traffic Flows With Site & Latent Trips
Friday PM & Saturday Peak Hours
15


FRIDAY PM PEAK HOUR
SATURDAY PEAK HOUR
N11
ROAD B
ROAD D
ROAD A
N4 OFF RAMP
N4 ON RAMP
N4 ON RAMP
N4 OFF RAMP
N11
mpe
N.T.S.
Erf 1051 Rockdale Shopping Centre TIA
2026 Expected Traffic Flows Only
Friday PM & Saturday Peak Hours
16


FRIDAY PM PEAK HOUR
SATURDAY PEAK HOUR
N11
ROAD B
SITE
IN 158
OUT 158
SITE ACCESS
ROAD D
ROAD A
N4 OFF RAMP
N4 ON RAMP
N4 ON RAMP
N4 OFF RAMP
N11
SITE
IN 210
OUT 210
mpe
N.T.S.
Erf 1051 Rockdale Shopping Centre TIA
2026 Expected Traffic Flows With Site Trips
Friday PM & Saturday Peak Hours
17



mpe N.T.S.

Erf 1051 Rockdale Shopping Centre TIA
2026 Expected Traffic Flows With Site & Latent Trips
Friday PM & Saturday Peak Hours

18

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 ***ideally*** 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)***
A	d ≤ 10	d ≤ 10
B	10 < d ≤ 20	10 < d ≤ 15
C	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

No	Intersection description	Control	Performance Index	Result
1	N11 / S terminal	Xwe	55% / 52% / 34% / 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% / 43% / 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

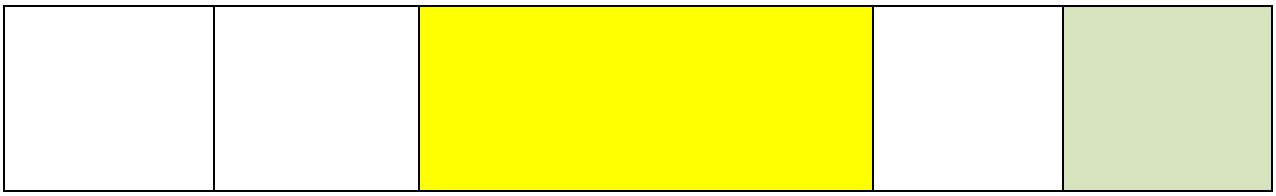
No	Intersection description	Control	Performance Index	Result
1	N11 / S terminal	Xwe	52% / 53% / 31% / 48%	Satisfactory in both peak hours except for when the latent rights are added which requires upgrading. Eastern approach fails and requires upgrading (**Figure A1-2**)
2	N11 / N terminal	Xwe	54% / 53% / 51% / 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			Responsibility	
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**)		Responsible
		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		
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, <u>the developer does NOT require to provide additional road upgrades.</u>**

- **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 GENERATION (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	

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.

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.

12.3 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-back right-turn lane).

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

- **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,

- **<u>Eleven additional Minibus Taxis and 1 bus per peak hour will be required to</u> 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.

ANNEXURE A

INTERSECTION LAYOUTS

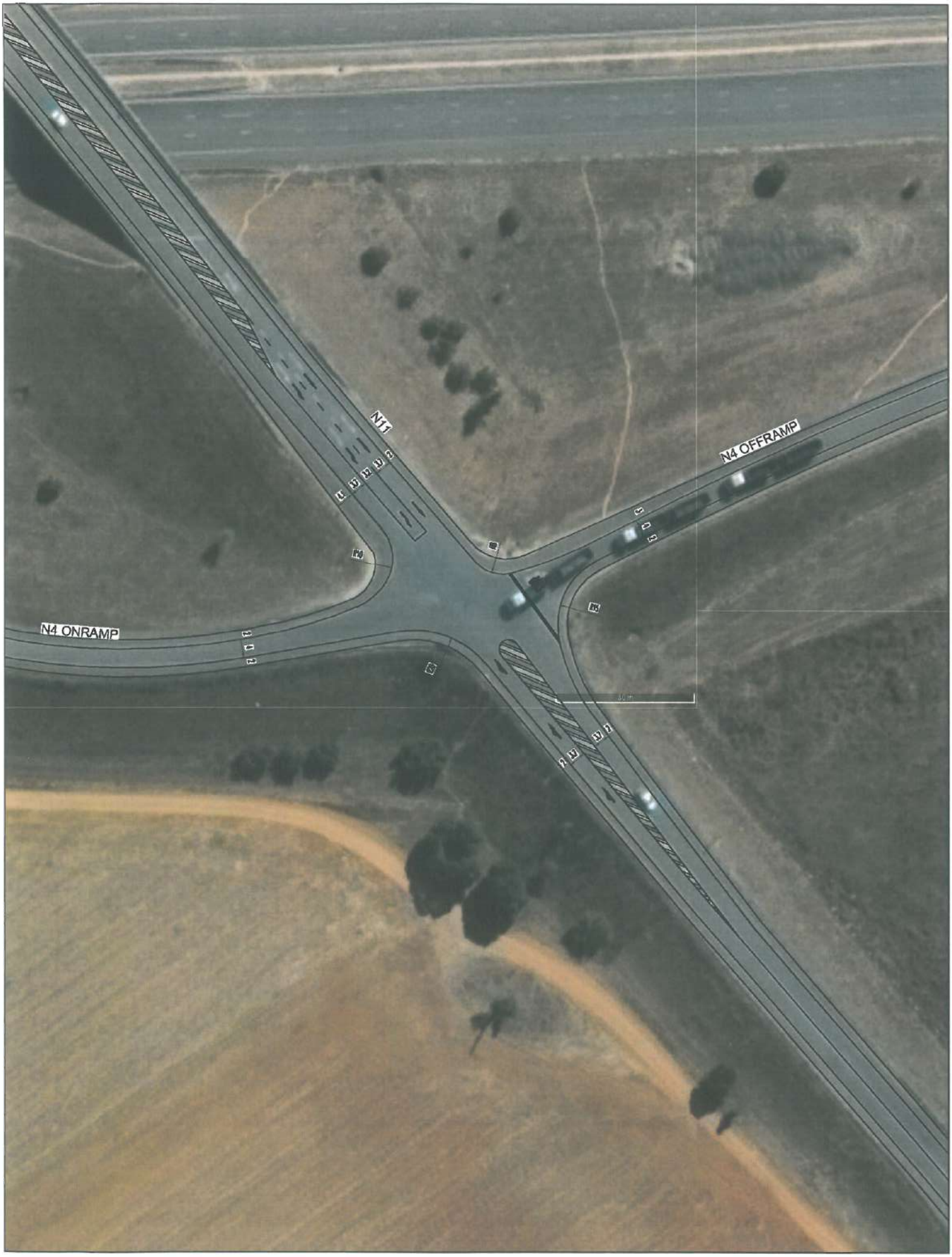
mpe

N.T.S.

Erf 1051 Rockdale Shopping Centre TIA

Overall Layout

A



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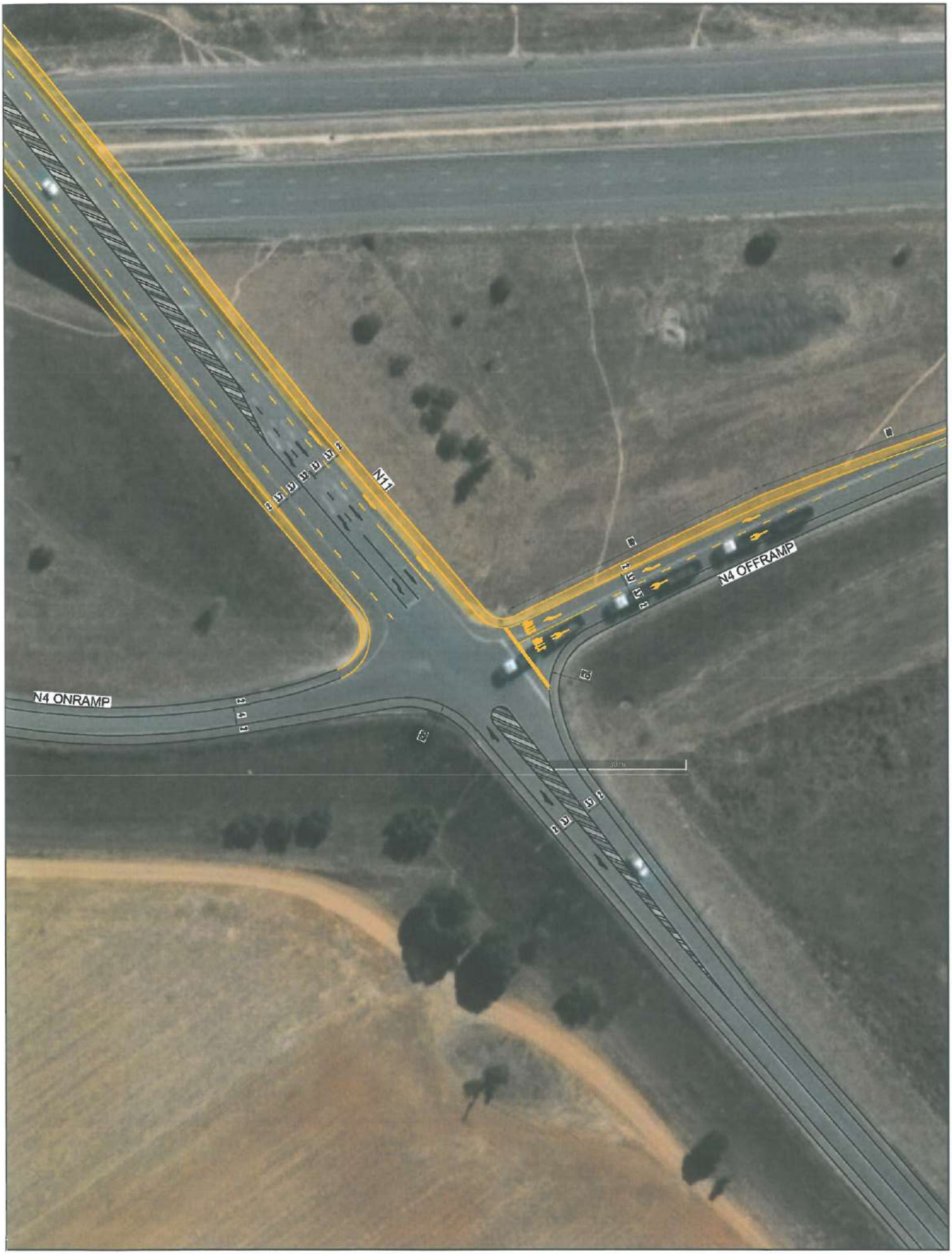
Erf 1051 Rockdale Shopping Centre TIA

Existing Intersection of
N11 and N4 South Interchange

A1-1



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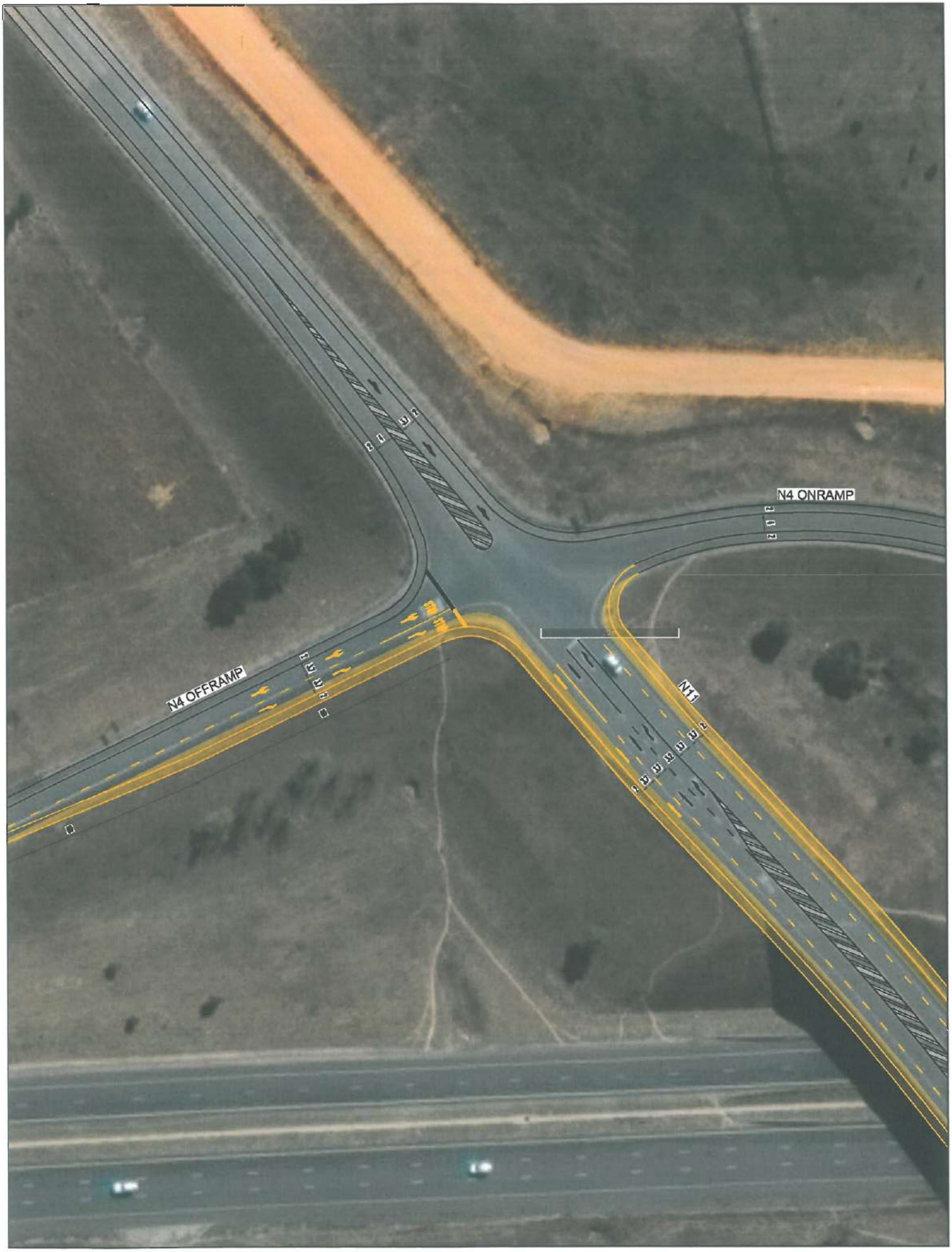
Erf 1051 Rockdale Shopping Centre TIA

Proposed Upgrading of
N11 and N4 South Interchange

A1-2



mpe

1:1000

Erf 1051 Rockdale Shopping Centre TIA

Proposed Upgrading of
N11 and N4 North Interchange

A2-2

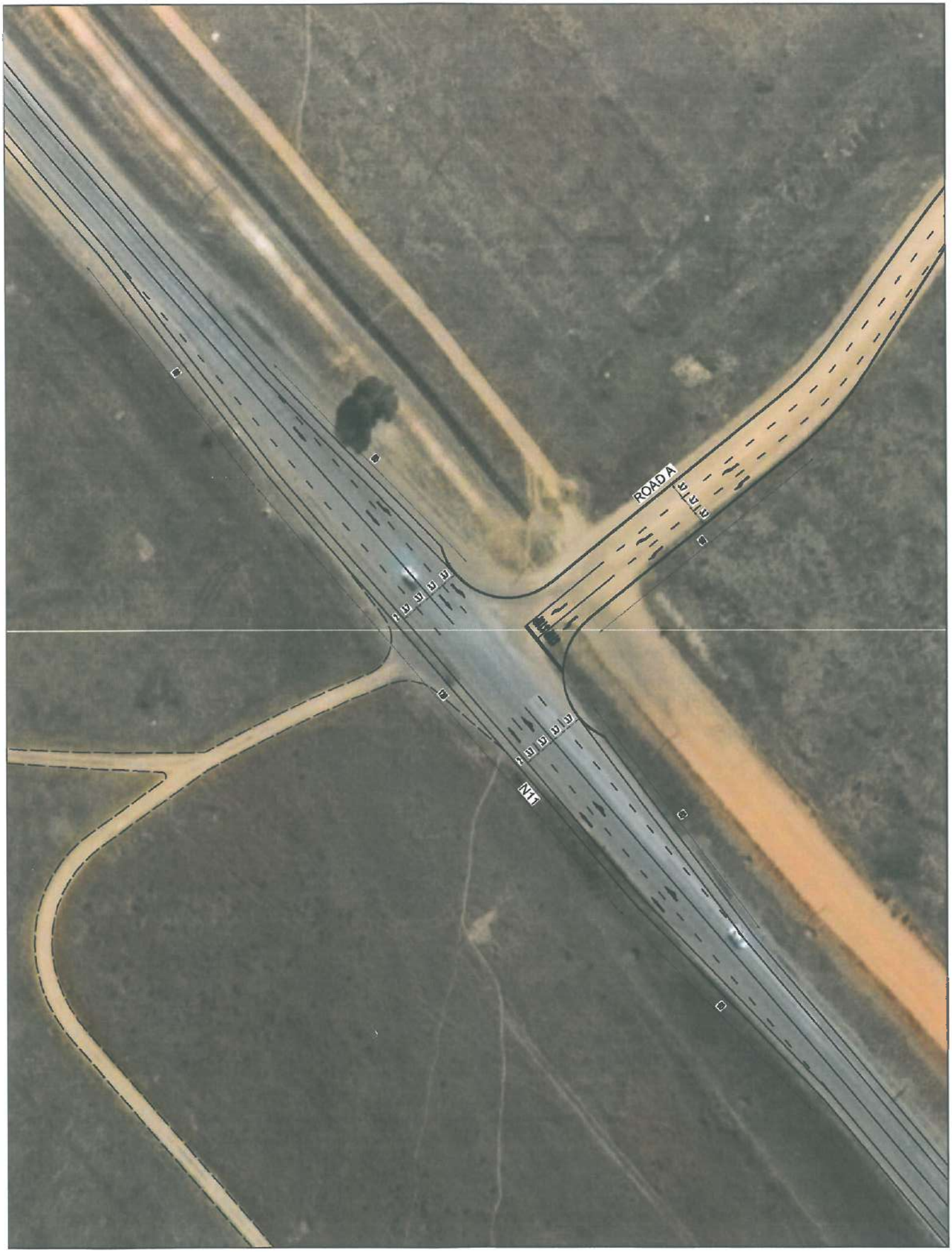
mpe

1:1000

Erf 1051 Rockdale Shopping Centre TIA

2017 Intersection of
N11 and Road A

A3-1



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2019 Existing Intersection of
N11 and Road A

A3-2

mpe

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2017 Intersection of
N11 and Road B

A4-1

mpe

1:1000

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2019 Existing Intersection of
N11 and Road B

A4-2

mpe

1:1000

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2017 Situation of
N11 at Road D (No Intersection)

A5-1

mpe

1:1000

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2019 Existing Intersection of
N11 and Road D

A5-2

mpe

1:500

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Proposed New Intersection of
Road D and Site Access

A6-1

ANNEXURE B

Traffic Flow Calculations

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PROPOSED NEW NEIGHBOURHOOD SHOPPING CENTRE

As @ 6 November 2019

mpe Moyeni Professional Engineering (Project MPE 0280)

COTO TMH 17 Code	Land use	Site size (sqm)	FAR	GLA (sqm)	Storeys
820	Business 3 (Retail)	20 000	0,21	4 200	1
	TOTAL				

COTO TMH 17 - Table 3.2		Factor	Factor used	
1	Mixed Use	na	1,00	
2	Low vehicle ownership	na	0,70	Walking
3	Very Low vehicle ownership	na	1,00	
4	Transit nodes or corridors	na	0,85	MBT
1-4	Overall factor	na	0,60	

TRIP GENERATION

RATE			TRIPS NEW	FRIDAY AM			TRIPS NEW	FRIDAY PM			TRIPS NEW	SATURDAY		
IN	OUT	TWO-WAY	IN	OUT	TWO-WAY		IN	OUT	TWO-WAY		IN	OUT	TWO-WAY	
Trips			61	33	94		266	266	532		352	352	704	4 200
(From COTO guideline:LU 820)			1,45	0,78	2,24		6,34	6,34	12,67		8,39	8,39	16,77	FACTOR
IN:OUT			65%	35%			50%	50%			50%	50%		
PRE ADJUSTMENT														
Retail			61	33	94		266	266	532		352	352	704	
POST ADJUSTMENT														
Retail			36	20	56		158	158	317		210	210	419	

4 200	6	3600
FACTOR	3,727	

Erf 1051 Rockdale Middelburg

MODAL SPLIT 2017

			Friday peak period - 22 September 2017						Saturday peak period - 23 September 2017					
Intersection No		Intersection Name	TOTAL	Cars	Taxi	Bus	Trucks	HEAVIES	TOTAL	Cars	Taxi	Bus	Trucks	HEAVIES
1		N11 / N4 SOUTH INTERCHANGE	4297	3540	271	45	441	486	2575	2288	87	9	191	200
			100%	82%	6%	1,0%	10%	11%	60%	53%	2%	0,2%	4%	5%
2		N11 / N4 NORTH INTERCHANGE	4679	3636	331	45	467	512	2535	2238	89	14	194	208
			100%	82%	7%	1,0%	10%	11%	54%	48%	2%	0,3%	4%	4%
3		N11 / ROAD A	675	491	161	10	13	23	511	437	62	1	11	12
			100%	73%	24%	1,5%	2%	3%	76%	65%	9%	0,1%	2%	2%
4		N11 / ROAD B	4405	3666	497	57	185	242	3027	2578	234	20	195	215
			100%	83%	11%	1,3%	4%	5%	69%	59%	5%	0,5%	4%	5%
TOTAL			14056	11533	1260	157	1106	1263	8648	7541	472	44	591	635
Average			100%	82,1%	9,0%	1,1%	7,9%	9,0%	100%	87,2%	5,5%	0,5%	6,8%	4,5%
Percentage - average			100%	82,1%	9,0%	1,1%	7,9%	9,0%	100%	87,2%	5,5%	0,5%	6,8%	4,5%

Erf 1051 Rockdale Middelburg

FRIDAY PM PEAK

mpe0280

2017 to 2021		1,0824
2021 to 2026		1,1041

Growth Rate	2%
Growth Rate	2%

	TIA		
	TRIP GENERATION		
PORTION	IN		OUT
SITE	158		158

Intersection 1: **N11 / N4 SOUTH INTERCHANGE**

Redistributed if Road D was constructed

Movement (approach)		2017 traffic	*Redistributed* 2017 traffic	*Trip Distribution (%)* Inbound Trips	Outbound Trips	*Expected No. of Trips* Inbound SITE	Outbound SITE	TWO-WAY SITE	Inbound Latent	Outbound Latent	*Model 1* 2021	*Model 2* 2026	*Model 3* 2021 plus site	*Model 4* 2026 plus site	*Model 5* 2021 plus site & latent	*Model 6* 2026 plus site & latent
s-left	1	155	155			0	0	0			168	185	168	185	168	185
s-thru	2	171	171	10%		16	0	16	73		185	204	201	220	274	293
s-right	3					0	0	0			0	0	0	0	0	0
e-left	4	6	6			0	0	0			6	7	6	7	6	7
e-thru	5	10	10			0	0	0			11	12	11	12	11	12
e-right	6	109	109	5%		8	0	8	36		118	130	126	138	162	174
n-left	7					0	0	0			0	0	0	0	0	0
n-thru	8	351	351		10%	0	16	16		33	380	419	396	435	429	468
n-right	9	77	77		15%	0	24	24		25	83	92	107	116	132	141
w-left	10					0	0	0			0	0	0	0	0	0
w-thru	11					0	0	0			0	0	0	0	0	0
w-right	12					0	0	0			0	0	0	0	0	0
		879	*879*	*15%*	*25%*	*24*	*40*	*63*	*109*	*58*	*951*	*1050*	*1015*	*1114*	*1182*	*1281*

Intersection 2: **N11 / N4 NORTH INTERCHANGE**

Movement (approach)		2017 traffic	2017 traffic	*Trip Distribution (%)* Inbound Trips	Outbound Trips	*Expected No. of Trips* Inbound SITE	Outbound SITE	TWO-WAY SITE	Inbound Latent	Outbound Latent	*Model 1* 2021	*Model 2* 2026	*Model 3* 2021 plus site	*Model 4* 2026 plus site	*Model 5* 2021 plus site & latent	*Model 6* 2026 plus site & latent
s-left	1					0	0	0			0	0	0	0	0	0
s-thru	2	269	269	15%		24	0	24	109		291	321	315	345	424	454
s-right	3	6	6			0	0	0			6	7	6	7	6	7
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	0			0	0	0	0	0	0
n-left	7	159	159		5%	0	8	8		17	172	190	180	198	197	215
n-thru	8	222	222		25%	0	40	40		58	240	265	280	305	338	363
n-right	9					0	0	0			0	0	0	0	0	0
w-left	10	43	43	5%		8	0	8	54		47	51	54	59	108	113
w-thru	11	4	4			0	0	0			4	5	4	5	4	5
w-right	12	166	166			0	0	0			180	198	180	198	180	198
		869	*869*	*20%*	*30%*	*32*	*48*	*79*	*163*	*75*	*941*	*1039*	*1020*	*1118*	*1258*	*1356*

Intersection 3: **N11 / ROAD A**

Movement (approach)		2017 traffic	Estimated 2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Expected No. of Trips Outbound SITE	Expected No. of Trips TWO-WAY SITE	Expected No. of Trips Inbound Latent	Expected No. of Trips Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1	0	0			0	0	0			0	0	0	0	0	0
s-thru	2	293	293	20%		32	0	32	18		317	350	349	382	367	400
s-right	3	19	9			0	0	0			10	11	10	11	10	11
e-left	4	16	16			0	0	0			17	19	17	19	17	19
e-thru	5	0	0			0	0	0			0	0	0	0	0	0
e-right	6	46	30			0	0	0			32	36	32	36	32	36
n-left	7	42	30			0	0	0			32	36	32	36	32	36
n-thru	8	385	385		30%	0	48	48		8	417	460	464	508	472	516
n-right	9	0	0			0	0	0			0	0	0	0	0	0
w-left	10	0	0			0	0	0			0	0	0	0	0	0
w-thru	11	0	0			0	0	0			0	0	0	0	0	0
w-right	12	0	0			0	0	0			0	0	0	0	0	0
		801	763	20%	30%	32	48	79	18	8	926	912	905	991	931	1017

Intersection 4: **N11 / ROAD B**

Movement (approach)		2017 traffic	Estimated 2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Expected No. of Trips Outbound SITE	Expected No. of Trips TWO-WAY SITE	Expected No. of Trips Inbound Latent	Expected No. of Trips Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1					0	0	0			0	0	0	0	0	0
s-thru	2	319	319		20%	0	32	32	116		345	381	377	413	493	529
s-right	3	37	17			0	0	0			18	20	18	20	18	20
e-left	4	36	16			0	0	0			17	19	17	19	17	19
e-thru	5					0	0	0			0	0	0	0	0	0
e-right	6	47	31			0	0	0			34	37	34	37	34	37
n-left	7	62	40			0	0	0			43	48	43	48	43	48
n-thru	8	373	373	50%		79	0	79		254	404	446	483	525	737	779
n-right	9					0	0	0			0	0	0	0	0	0
w-left	10					0	0	0			0	0	0	0	0	0
w-thru	11					0	0	0			0	0	0	0	0	0
w-right	12					0	0	0			0	0	0	0	0	0
		874	796	50%	20%	79	32	111	116	254	862	951	972	1082	1342	1432

Intersection 5: **N11 / ROAD D (Adjacent to the site)**

Movement (approach)		2017 traffic	Estimated 2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Expected No. of Trips Outbound SITE	Expected No. of Trips TWO-WAY SITE	Expected No. of Trips Inbound Latent	Expected No. of Trips Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1					0	0	0			0	0	0	0	0	0
s-thru	2		339			0	0	0	18		367	405	367	405	385	423
s-right	3		30	20%		32	0	32			32	36	64	68	64	68
e-left	4		20		30%	0	48	48			22	24	69	71	69	71
e-thru	5					0	0	0			0	0	0	0	0	0
e-right	6		32		20%	0	32	32			35	38	66	70	68	70
n-left	7		34	50%		79	0	79			37	41	116	120	116	120
n-thru	8		409			0	0	0		8	443	489	443	489	451	497
n-right	9					0	0	0			0	0	0	0	0	0
w-left	10					0	0	0			0	0	0	0	0	0
w-thru	11					0	0	0			0	0	0	0	0	0
w-right	12					0	0	0			0	0	0	0	0	0
		0	864	70%	50%	111	79	190	18	8	935	1033	1125	1223	1151	1249

Erf 1051 Rockdale Middelburg

SATURDAY PEAK

mpe0280

2017 to 2021		1,0824
2021 to 2026		1,1041

Growth Rate	2%
Growth Rate	2%

	TIA	
	TRIP GENERATION	
PORTION	IN	OUT
SITE	210	210

Intersection 1: **N11 / N4 SOUTH INTERCHANGE**

Redistributed if Road D was constructed

Movement (approach)		2017 traffic	Redistributed 2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Outbound SITE	TWO-WAY SITE	Inbound Latent	Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1	80	80			0	0	0			87	96	87	96	87	96
s-thru	2	86	86	10%		21	0	21	8		93	103	114	124	122	132
s-right	3					0	0	0			0	0	0	0	0	0
e-left	4	1	1			0	0	0			1	1	1	1	1	1
e-thru	5	2	2			0	0	0			2	2	2	2	2	2
e-right	6	65	65	5%		10	0	10	3		70	78	81	88	84	91
n-left	7					0	0	0			0	0	0	0	0	0
n-thru	8	200	200		10%	0	21	21		11	216	239	237	260	248	271
n-right	9	50	50		15%	0	31	31		4	54	60	86	91	90	95
w-left	10					0	0	0			0	0	0	0	0	0
w-thru	11					0	0	0			0	0	0	0	0	0
w-right	12					0	0	0			0	0	0	0	0	0
		484	484	15%	25%	31	52	84	11	15	524	578	608	662	634	689

Intersection 2: **N11 / N4 NORTH INTERCHANGE**

Movement (approach)		2017 traffic	2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Outbound SITE	TWO-WAY SITE	Inbound Latent	Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1					0	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	4			0	0	0			4	5	4	5	4	5
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	0			0	0	0	0	0	0
n-left	7	102	102		5%	0	10	10		4	110	122	121	132	125	136
n-thru	8	128	128		25%	0	52	52		15	139	153	191	205	206	220
n-right	9					0	0	0			0	0	0	0	0	0
w-left	10	44	44	5%		10	0	10	3		48	53	58	63	61	66
w-thru	11	2	2			0	0	0			2	2	2	2	2	2
w-right	12	101	101			0	0	0			109	121	109	121	109	121
		538	538	20%	30%	42	63	105	14	19	582	643	687	748	720	781

Intersection 3: **N11 / ROAD A**

Movement (approach)		2017 traffic	Estimated 2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Outbound SITE	TWO-WAY SITE	Inbound Latent	Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1	0	0			0	0	0			0	0	0	0	0	0
s-thru	2	194	194	20%		42	0	42	14		210	232	252	274	266	288
s-right	3	7	4			0	0	0			4	5	4	5	4	5
e-left	4	12	12			0	0	0			13	14	13	14	13	14
e-thru	5	0	0			0	0	0			0	0	0	0	0	0
e-right	6	34	19			0	0	0			21	23	21	23	21	23
n-left	7	36	21			0	0	0			23	25	23	25	23	25
n-thru	8	218	218		30%	0	63	63		19	236	261	299	323	318	342
n-right	9	0	0			0	0	0			0	0	0	0	0	0
w-left	10	0	0			0	0	0			0	0	0	0	0	0
w-thru	11	0	0			0	0	0			0	0	0	0	0	0
w-right	12	0	0			0	0	0			0	0	0	0	0	0
		501	468	20%	30%	42	63	105	14	19	507	559	611	664	644	697

Intersection 4: **N11 / ROAD B**

Movement (approach)		2017 traffic	Estimated 2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Outbound SITE	TWO-WAY SITE	Inbound Latent	Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1					0	0	0			0	0	0	0	0	0
s-thru	2	229	229		20%	0	42	42	14		248	274	290	316	304	330
s-right	3	19	9			0	0	0			10	11	10	11	10	11
e-left	4	27	12			0	0	0			13	14	13	14	13	14
e-thru	5					0	0	0			0	0	0	0	0	0
e-right	6	67	44			0	0	0			48	53	48	53	48	53
n-left	7	60	39			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
n-right	9					0	0	0			0	0	0	0	0	0
w-left	10					0	0	0			0	0	0	0	0	0
w-thru	11					0	0	0			0	0	0	0	0	0
w-right	12					0	0	0			0	0	0	0	0	0
		638	569	50%	20%	105	42	147	14	27	616	680	763	827	804	869

Intersection 5: **N11 / ROAD D (Adjacent to the site)**

Movement (approach)			Estimated 2017 traffic	Trip Distribution (%) Inbound Trips	Trip Distribution (%) Outbound Trips	Expected No. of Trips Inbound SITE	Outbound SITE	TWO-WAY SITE	Inbound Latent	Outbound Latent	Model 1 2021	Model 2 2026	Model 3 2021 plus site	Model 4 2026 plus site	Model 5 2021 plus site & latent	Model 6 2026 plus site & latent
s-left	1					0	0	0			0	0	0	0	0	0
s-thru	2		228			0	0	0	14		247	272	247	272	261	286
s-right	3		13	20%		42	0	42			14	16	56	57	56	57
e-left	4		15		30%	0	63	63			16	18	79	81	79	81
e-thru	5					0	0	0			0	0	0	0	0	0
e-right	6		38		20%	0	42	42			41	45	83	87	83	87
n-left	7		36	50%		105	0	105			39	43	144	148	144	148
n-thru	8		263			0	0	0		19	285	314	285	314	304	333
n-right	9					0	0	0			0	0	0	0	0	0
w-left	10					0	0	0			0	0	0	0	0	0
w-thru	11					0	0	0			0	0	0	0	0	0
w-right	12					0	0	0			0	0	0	0	0	0
		0	593	70%	50%	147	105	251	14	19	642	709	893	960	926	993

ANNEXURE C

Capacity Analysis Results (AutoJ)

AutoJ

N11 & N4 southern terminal

Rockdale

2017

&AutoJ 1910 roberts

Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat			222	56	278		99	107		206							5	5	80	90		574
PM			390	83	473		137	190		327							7	12	134	153		953

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	0,5							1,0	0,1	0,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,11	0,04	0,10		0,10	0,11		0,10							0,01	0,10	0,17	0,16	0,17	0,11
PM			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 DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			0	0	0		0	0		0							0	0	1	1	1	0
PM			1	0	1		1	1		1							0	2	3	3	3	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
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	0,3

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2019-11-06

AutoJ

1. N11 & N4 southern terminal

Rockdale

2021

Xwe — Stop street on west and east approaches

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat			240	61	301		107	116		223							5	5	87	97		621
PM			422	90	512		148	206		354							8	13	145	166		1 032

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	0,5							1,0	0,1	0,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,12	0,04	0,10		0,11	0,11		0,11							0,01	0,11	0,20	0,18	0,20	0,12
PM			0,21	0,08	0,19		0,15	0,20		0,18							0,01	0,43	0,57	0,53	0,57	0,24

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	0		0	1		0							0	1	1	1	1	1
PM			1	0	1		1	1		1							0	3	5	4	5	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
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	0,1		0,1							0,0	0,0	0,2	0,2	0,2	0,4

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Rockdale

2021 PLUS SITE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat			261	92	353		107	137		244							5	5	97	107		704
PM			438	114	552		148	222		370							8	13	153	174		1 096

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	0,5							1,0	0,1	0,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,13	0,07	0,11		0,11	0,13		0,12							0,01	0,13	0,26	0,24	0,26	0,14
PM			0,22	0,10	0,19		0,15	0,22		0,19							0,01	0,48	0,68	0,64	0,68	0,26

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	1		0	1		1							0	1	1	1	1	1
PM			1	0	1		1	1		1							0	4	7	7	7	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat			0,0	0,0	0,1		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	0,1		0,1							0,0	0,0	0,3	0,3	0,3	0,6

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Rockdale

2021 PLUS SITE & LATENT

AutoJ

&AutoJ 1910 roberts

Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat			272	96	368		107	145		252							5	5	100	110	730
PM			471	139	610		148	295		443							8	13	189	210	1 263

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	0,5							1,0	0,1	0,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,14	0,07	0,12		0,11	0,14		0,13							0,01	0,13	0,28	0,26	0,28	0,14
PM			0,24	0,13	0,21		0,15	0,29		0,24							0,01	0,60	1,10	1,03	1,10	0,36

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	1		0	1		1							0	1	1	1	1	1
PM			1	1	1		1	2		1							0	6	237	214	237	36

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat			0,0	0,0	0,1		0,0	0,0		0,0							0,0	0,0	0,0	0,0	0,0	0,1
PM			0,2	0,0	0,2		0,0	0,1		0,2							0,0	0,0	12,4	12,4	12,4	12,8

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AutoJ

1. N11 & N4 southern terminal

Rockdale

2021 PLUS SITE & LATENT UPGRADE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat			272	96	**368**		107	145		**252**							5	5	100	**110**	**730**
PM			471	139	**610**		148	295		**443**							8	13	189	**210**	**1 263**

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	1,5							1,0	0,1	1,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,14	0,07	**0,12**		0,11	0,05		0,07							0,01	0,14	0,12	**0,12**	0,14	0,10
PM			0,24	0,13	**0,21**		0,15	0,10		0,12							0,01	0,61	0,42	**0,42**	0,61	0,21

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	**1**		0	0		**0**							0	1	0	**0**	1	0
PM			1	1	**1**		1	0		**0**							0	6	3	**3**	6	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat			0,0	0,0	**0,1**		0,0	0,0		**0,0**							0,0	0,0	0,0	**0,0**	0,0	0,1
PM			0,2	0,0	**0,2**		0,0	0,0		**0,1**							0,0	0,0	0,1	**0,2**	0,2	0,4

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Rockdale

2026

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Xwe — Stop street on west and east approaches

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat			265	67	332		118	128		246							6	6	96	108		686
PM			466	99	565		164	227		391							8	14	160	183		1 139

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	0,5							1,0	0,1	0,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,13	0,05	0,12		0,12	0,13		0,12							0,01	0,13	0,24	0,22	0,24	0,13
PM			0,23	0,09	0,21		0,17	0,22		0,20							0,01	0,54	0,72	0,67	0,72	0,28

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	1		0	1		1							0	1	1	1	1	1
PM			1	0	1		1	1		1							0	5	9	8	9	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
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			0,2	0,0	0,2		0,0	0,1		0,1							0,0	0,0	0,4	0,4	0,4	0,7

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Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat			286	98	384		118	149		267							6	6	106	118		**769**
PM			482	123	605		164	243		407							8	14	168	191		**1 203**

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	0,5							1,0	0,1	0,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,14	0,08	**0,13**		0,12	0,15		0,13							0,01	0,15	0,31	0,29	0,31	0,15
PM			0,24	0,11	**0,22**		0,17	0,24		0,21							0,01	0,61	0,86	**0,80**	0,86	0,31

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	1		0	1		1							0	1	2	1	2	1
PM			1	0	1		1	1		1							0	6	20	18	20	4

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat			0,1	0,0	**0,1**		0,0	0,0		**0,0**							0,0	0,0	0,0	**0,0**	0,1	**0,2**
PM			0,2	0,0	**0,2**		0,0	0,1		**0,1**							0,0	0,0	0,9	**1,0**	0,9	**1,3**

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2026 PLUS SITE & LATENT

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat			297	102	399		118	157		275							6	6	109	121	795
PM			515	148	663		164	316		480							8	14	204	227	1 370

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	0,5							1,0	0,1	0,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,15	0,08	0,13		0,12	0,15		0,14							0,01	0,16	0,33	0,31	0,33	0,16
PM			0,26	0,15	0,23		0,17	0,31		0,26							0,01	0,75	1,36	1,27	1,36	0,42

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	1		0	1		1							0	1	2	2	2	1
PM			1	1	1		1	2		1							0	12	556	501	556	R4

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat			0,1	0,0	0,1		0,0	0,0		0,0							0,0	0,0	0,1	0,1	0,1	0,2
PM			0,2	0,0	0,2		0,0	0,2		0,2							0,0	0,0	31,5	31,6	31,5	32,0

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2026 PLUS SITE & LATENT UPGRADE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat			297	102	399		118	157		275							6	6	109	121		795
PM			515	148	663		164	316		480							8	14	204	227		1 370

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes			1,0	1,0		0,5	1,5							1,0	0,1	1,9

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat			0,15	0,08	0,13		0,12	0,05		0,08							0,01	0,16	0,14	0,14	0,16	0,12
PM			0,26	0,15	0,23		0,17	0,11		0,13							0,01	0,77	0,52	0,51	0,77	0,24

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat			1	0	1		0	0		0							0	1	1	1	1	0
PM			1	1	1		1	0		1							0	13	4	4	13	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat			0,1	0,0	0,1		0,0	0,0		0,0							0,0	0,0	0,0	0,0	0,1	0,1
PM			0,2	0,0	0,2		0,0	0,0		0,1							0,0	0,1	0,2	0,3	0,2	0,6

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Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		102	128		230			157	4	161		44	2	101	147						538
PM		155	222		377			269	6	275		43	4	166	213						865

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,5	0,5				1,0	1,0		0,3	0,4	0,3				

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,12	0,12		0,12			0,08	0,00	0,08		0,23	0,23	0,23	0,23						0,23	0,14
PM		0,20	0,20		0,20			0,13	0,01	0,13		0,46	0,46	0,46	0,46						0,46	0,24

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0		1	1	1	1						1	1
PM		1	1		1			1	0	1		3	3	3	3						3	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
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		0,0	0,1		0,1			0,0	0,0	0,0		0,0	0,0	0,1	0,2						0,1	0,3

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Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		110	139		249			170	4	174		48	2	109	159						582
PM		168	240		408			291	6	298		47	4	180	231						936

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,5	0,5				1,0	1,0		0,3	0,4	0,3				

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,13	0,13		0,13			0,08	0,00	0,08		0,26	0,26	0,26	0,26						0,26	0,15
PM		0,21	0,21		0,21			0,15	0,01	0,14		0,53	0,53	0,53	0,53						0,53	0,27

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0		1	1	1	1						1	1
PM		1	1		1			1	0	1		4	4	4	4						4	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0		0,0	0,0	0,0	0,1						0,0	0,1
PM		0,0	0,1		0,1			0,1	0,0	0,1		0,0	0,0	0,2	0,2						0,2	0,4

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2021 PLUS SITE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		120	191		311			201	4	205		58	2	109	169						685
PM		176	280		456			315	6	322		55	4	180	239						1 016

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,5	0,5				1,0	1,0		0,3	0,4	0,3				

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,16	0,16		0,16			0,10	0,00	0,10		0,31	0,31	0,31	0,31						0,31	0,18
PM		0,24	0,24		0,24			0,16	0,01	0,15		0,60	0,60	0,60	0,60						0,60	0,30

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		1	1		1			0	0	0		1	2	2	2						2	1
PM		1	1		1			1	0	1		5	6	5	5						6	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,1			0,0	0,0	0,0		0,0	0,0	0,0	0,1						0,0	0,2
PM		0,1	0,1		0,1			0,1	0,0	0,1		0,1	0,0	0,3	0,3						0,3	0,5

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Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		124	206		330			212	4	216		61	2	109	172						718
PM		193	338		531			424	6	431		109	4	180	293						1 254

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,5	0,5				1,0	1,0		0,3	0,4	0,3				

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,17	0,17		0,17			0,11	0,00	0,10		0,33	0,33	0,33	0,33						0,33	0,19
PM		0,28	0,28		0,28			0,21	0,01	0,21		0,93	0,93	0,93	0,93						0,93	0,41

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		1	1		1			0	0	0		2	2	2	2						2	1
PM		1	2		1			1	0	1		34	40	36	35						40	9

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,1			0,0	0,0	0,0		0,0	0,0	0,1	0,1						0,1	0,2
PM		0,1	0,1		0,2			0,1	0,0	0,1		1,0	0,0	1,8	2,9						1,8	3,2

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Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		122	153		275			188	5	192		53	2	121	176						643
PM		185	265		451			321	7	329		51	5	198	255						1 034

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,5	0,5				1,0	1,0		0,3	0,4	0,3				

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,14	0,14		0,14			0,09	0,00	0,09		0,30	0,30	0,30	0,30						0,30	0,17
PM		0,24	0,24		0,24			0,16	0,01	0,16		0,63	0,63	0,63	0,63						0,63	0,31

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		1	1		1			0	0	0		1	2	2	1						2	1
PM		1	1		1			1	0	1		6	7	6	6						7	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0		0,0	0,0	0,1	0,1						0,1	0,1
PM		0,1	0,1		0,1			0,1	0,0	0,1		0,1	0,0	0,3	0,4						0,3	0,6

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Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		132	205		337			219	5	223		63	2	121	186						746
PM		193	305		499			345	7	353		59	5	198	263						1 114

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,5	0,5				1,0	1,0		0,3	0,4	0,3				

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,18	0,18		0,18			0,11	0,00	0,11		0,36	0,36	0,36	0,36						0,36	0,20
PM		0,26	0,26		0,26			0,17	0,01	0,17		0,71	0,71	0,71	0,71						0,71	0,34

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		1	1		1			0	0	0		2	2	2	2						2	1
PM		1	1		1			1	0	1		8	10	9	8						10	3

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,1			0,0	0,0	0,0		0,0	0,0	0,1	0,1						0,1	0,2
PM		0,1	0,1		0,2			0,1	0,0	0,1		0,1	0,0	0,5	0,6						0,5	0,9

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Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		142	257		399			250	5	254		73	2	121	196						849
PM		201	345		547			369	7	377		67	5	198	271						1 194

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,5	0,5				1,0	1,0		0,3	0,4	0,3				

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,21	0,21		0,21			0,12	0,00	0,12		0,43	0,43	0,43	0,43						0,43	0,23
PM		0,29	0,29		0,29			0,18	0,01	0,18		0,80	0,80	0,80	0,80						0,80	0,37

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		1	1		1			1	0	1		2	3	3	3						3	1
PM		1	2		1			1	0	1		13	16	14	14						16	4

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0		0,0	0,0	0,1	0,1						0,1	0,3
PM		0,1	0,2		0,2			0,1	0,0	0,1		0,2	0,0	0,8	1,0						0,8	1,3

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Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		36	218		254			194	7	201							12		34	46	501
PM		42	385		427			293	19	312							16		46	62	801

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,11		0,10			0,06	0,06	0,06							0,01		0,06	0,04	0,11	0,08
PM		0,02	0,19		0,18			0,10	0,10	0,10							0,02		0,11	0,09	0,19	0,14

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	0		0			0	0	0							0		0	0	0	0
PM		0	1		1			0	0	0							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,0
PM		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1

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Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		22	227		249			202	4	206							12		20	32		487
PM		31	401		432			305	9	314							17		31	48		794

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,01	0,11		0,10			0,06	0,06	0,06							0,02		0,03	0,03	0,11	0,08
PM		0,02	0,20		0,19			0,10	0,10	0,10							0,03		0,08	0,06	0,20	0,14

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		0			0	0	0							0		0	0	1	0
PM		0	1		1			0	0	0							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,0
PM		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,2

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N11 & Road A

Rockdale

2021

&AutoJ 1910 roberts

Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		23	236		259			210	4	214							13		21	34		507
PM		32	417		449			317	10	327							17		32	50		826

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,01	0,12		0,11			0,06	0,06	0,06							0,02		0,03	0,03	0,12	0,08
PM		0,02	0,21		0,19			0,10	0,10	0,10							0,03		0,08	0,06	0,21	0,15

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		0			0	0	0							0		0	0	1	0
PM		0	1		1			0	0	0							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,1
PM		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,2

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Xwe — **Stop street on west and east approaches**

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Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		23	299		322			252	4	256							13		21	34		612
PM		32	465		497			349	10	359							17		32	50		906

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,01	0,15		0,14			0,08	0,08	0,08							0,02		0,04	0,03	0,15	0,11
PM		0,02	0,23		0,22			0,12	0,12	0,12							0,03		0,09	0,07	0,23	0,17

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	0
PM		0	1		1			1	0	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,2		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,2	0,2

AutoJ

N11 & Road A

Rockdale

2021 PLUS SITE & LATENT

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		23	326		349			266	4	270							13		21	34	653
PM		32	719		751			465	10	475							17		32	50	1 276

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,01	0,16		0,15			0,08	0,08	0,08							0,02		0,04	0,03	0,16	0,12
PM		0,02	0,36		0,34			0,17	0,17	0,17							0,04		0,15	0,11	0,36	0,27

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	1
PM		0	2		2			1	1	1							0		1	0	2	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,4		0,4			0,1	0,0	0,1							0,0		0,0	0,0	0,4	0,6

AutoJ

N11 & Road A

Rockdale

2026

Xwe — Stop street on west and east approaches

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		25	261		286			232	5	237							14		23	37		559
PM		36	460		496			350	11	361							19		36	55		912

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,01	0,13		0,12			0,07	0,07	0,07							0,02		0,04	0,03	0,13	0,09
PM		0,02	0,23		0,21			0,12	0,12	0,12							0,03		0,10	0,08	0,23	0,17

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	0
PM		0	1		1			1	0	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,1
PM		0,0	0,2		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,2	0,2

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Rockdale

2026 PLUS SITE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		25	324		349			274	5	279							14		23	37		664
PM		36	508		544			382	11	393							19		36	55		992

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,01	0,16		0,15			0,09	0,09	0,09							0,02		0,05	0,04	0,16	0,12
PM		0,02	0,25		0,24			0,13	0,13	0,13							0,03		0,11	0,08	0,25	0,19

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	1
PM		0	1		1			1	1	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,2		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,2	0,3

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N11 & Road A

Rockdale

2026 PLUS SITE & LATENT

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		25	351		376			288	5	293							14		23	37		705
PM		36	762		798			498	11	509							19		36	55		1 362

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,01	0,18		0,16			0,09	0,09	0,09							0,02		0,05	0,04	0,18	0,13
PM		0,02	0,38		0,36			0,18	0,18	0,18							0,05		0,18	0,14	0,38	0,29

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	1
PM		0	2		2			1	1	1							0		1	1	2	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,5		0,5			0,1	0,0	0,1							0,0		0,0	0,0	0,5	0,7

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4. N11 & Road B

Rockdale

2017

&AutoJ 1910 roberts

Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		60	236		296			229	19	248							27		67	94		638
PM		62	373		435			319	37	356							36		47	83		874

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,03	0,12		0,10			0,07	0,07	0,07							0,03		0,12	0,10	0,12	0,09
PM		0,03	0,19		0,16			0,11	0,11	0,11							0,05		0,12	0,09	0,19	0,14

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		0			0	0	0							0		0	0	1	0
PM		0	1		1			1	0	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,1
PM		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,2

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4. N11 & Road B

Rockdale

2019

Xwe | Stop street on west and east approaches

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Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		30	246		276			238	9	248							12		46	58	582
PM		31	388		419			332	18	350							17		31	48	817

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,12		0,11			0,07	0,07	0,07							0,02		0,08	0,07	0,12	0,09
PM		0,02	0,19		0,18			0,11	0,11	0,11							0,03		0,08	0,06	0,19	0,14

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	0
PM		0	1		1			0	0	0							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,1
PM		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,2

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4. N11 & Road B

Rockdale

2021

Xwe | Stop street on west and east approaches

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Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		31	255		287			248	10	258							13		48	61		605
PM		32	404		436			345	18	364							17		32	50		850

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,13		0,12			0,08	0,08	0,08							0,02		0,09	0,07	0,13	0,09
PM		0,02	0,20		0,19			0,12	0,12	0,12							0,03		0,08	0,06	0,20	0,15

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	0
PM		0	1		1			1	0	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,1
PM		0,0	0,1		0,1			0,1	0,0	0,1							0,0		0,0	0,0	0,1	0,2

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4. N11 & Road B

Rockdale

2021 PLUS SITE

Xwe | **Stop street on west and east approaches**

&Autol 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		31	360		392			290	10	300							13		48	61		752
PM		32	483		515			377	18	396							17		32	50		961

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,18		0,17			0,09	0,09	0,09							0,02		0,11	0,09	0,18	0,13
PM		0,02	0,24		0,23			0,13	0,13	0,13							0,03		0,10	0,07	0,24	0,18

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	1
PM		0	1		1			1	1	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,2		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,2	0,2

AutoJ

4. N11 & Road B

Rockdale

2021 PLUS SITE & LATENT

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		31	387		419			304	10	314							13		48	61		793
PM		32	737		769			493	18	512							17		32	50		1 331

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,19		0,18			0,10	0,10	0,10							0,02		0,11	0,09	0,19	0,14
PM		0,02	0,37		0,35			0,18	0,18	0,18							0,04		0,16	0,12	0,37	0,28

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	1
PM		0	2		2			1	1	1							0		1	0	2	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,5		0,5			0,1	0,0	0,1							0,0		0,0	0,0	0,5	0,6

AutoJ

4. N11 & Road B

Rockdale

2026

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		35	282		317			274	11	284							14		53	67		668
PM		36	446		482			381	20	402							19		36	55		938

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,14		0,13			0,09	0,09	0,09							0,02		0,10	0,08	0,14	0,11
PM		0,02	0,22		0,21			0,13	0,13	0,13							0,03		0,10	0,08	0,22	0,17

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	0
PM		0	1		1			1	1	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,1		0,1			0,1	0,0	0,1							0,0		0,0	0,0	0,1	0,2

AutoJ

4. N11 & Road B

Rockdale

2026 PLUS SITE

Xwe | **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		35	387		422			316	11	326							14		53	67	815
PM		36	525		561			413	20	434							19		36	55	1 049

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,19		0,18			0,10	0,10	0,10							0,02		0,13	0,10	0,19	0,14
PM		0,02	0,26		0,25			0,14	0,14	0,14							0,03		0,12	0,09	0,26	0,20

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		1	0	1	1
PM		0	1		1			1	1	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,2
PM		0,0	0,2		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,2	0,3

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4. N11 & Road B

Rockdale

2026 PLUS SITE & LATENT

Xwe — Stop street on west and east approaches

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Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		35	414		449			330	11	340							14		53	67		856
PM		36	779		815			529	20	550							19		36	55		1 419

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,21		0,19			0,11	0,11	0,11							0,02		0,13	0,11	0,21	0,15
PM		0,02	0,39		0,37			0,20	0,20	0,20							0,05		0,20	0,15	0,39	0,30

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		1	0	1	1
PM		0	3		2			1	1	1							0		1	1	3	2

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,2
PM		0,0	0,6		0,6			0,1	0,0	0,2							0,0		0,0	0,0	0,6	0,7

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5. N11 & Road D

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Xwe — **Stop street on west and east approaches**

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		37	274		311			237	14	251							16		40	55		617
PM		35	426		461			353	31	384							21		33	54		899

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,14		0,12			0,08	0,08	0,08							0,02		0,07	0,06	0,14	· 0,10
PM		0,02	0,21		0,20			0,12	0,12	0,12							0,03		0,09	0,07	0,21	· 0,16

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	0
PM		0	1		1			1	0	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,0		0,0			0,0	0,0	0,0							0,0		0,0	0,0	0,0	0,1
PM		0,0	0,1		0,1			0,1	0,0	0,1							0,0		0,0	0,0	0,1	0,2

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5. N11 & Road D

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2021

Xwe — **Stop street on west and east approaches**

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Volume (evu/hr)

	from North					from South					from West					from East					intersection
	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	total
AM																					
sat		39	285		324			247	14	261							16		41	57	642
PM		37	443		480			367	32	399							22		35	56	935

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,14		0,13			0,08	0,08	0,08							0,02		0,08	0,06	0,14	0,10
PM		0,02	0,22		0,21			0,13	0,13	0,13							0,03		0,10	0,08	0,22	0,17

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	0
PM		0	1		1			1	1	1							0		0	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,1		0,1			0,1	0,0	0,1							0,0		0,0	0,0	0,1	0,2

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2021 PLUS SITE

Xwe — **Stop street on west and east approaches**

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Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		144	285		429			247	56	303							79		83	162		**894**
PM		116	443		559			367	64	431							70		67	136		**1 126**

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,08	0,14		**0,12**			0,10	0,10	**0,10**							0,10		0,18	**0,15**	0,18	**0,12**
PM		0,06	0,22		**0,19**			0,14	0,14	**0,14**							0,11		0,22	**0,16**	0,22	0,17

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		**1**			0	0	**0**							0		1	1	1	**1**
PM		0	1		**1**			1	1	**1**							0		1	1	1	**1**

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		**0,1**			0,0	0,0	**0,0**							0,0		0,0	**0,0**	0,1	**0,1**
PM		0,0	0,1		**0,1**			0,1	0,0	**0,1**							0,0		0,0	**0,0**	0,1	**0,3**

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Xwe | **Stop street on west and east approaches**

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Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		144	304		448			261	56	317							79		83	162		927
PM		116	451		567			385	64	449							70		67	136		1 152

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,08	0,15		0,13			0,10	0,10	0,10							0,11		0,19	0,15	0,19	0,12
PM		0,06	0,23		0,19			0,15	0,15	0,15							0,11		0,22	0,17	0,23	0,17

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		1	1	1	1
PM		0	1		1			1	1	1							0		1	1	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,1		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,1	0,3

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5. N11 & Road D

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2026

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Xwe — Stop street on west and east approaches

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		43	314		357			272	16	288							18		45	63		709
PM		41	489		529			405	36	441							24		38	62		1 033

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	peds	left	str	right	peds	left	str	right	peds	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,02	0,16		0,14			0,09	0,09	0,09							0,02		0,09	0,07	0,16	0,11
PM		0,02	0,24		0,23			0,15	0,15	0,15							0,04		0,13	0,09	0,24	0,18

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		0	0	1	1
PM		0	1		1			1	1	1							0		1	0	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,1
PM		0,0	0,2		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,2	0,3

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5. N11 & Road D

Rockdale

2026 PLUS SITE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		148	314		462			272	58	330							81		87	168		961
PM		120	489		608			405	68	473							72		70	142		1 224

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,08	0,16		0,13			0,11	0,11	0,11							0,11		0,21	0,16	0,21	0,13
PM		0,06	0,24		0,21			0,16	0,16	0,16							0,12		0,26	0,19	0,26	0,19

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			0	0	0							0		1	1	1	1
PM		0	1		1			1	1	1							0		1	1	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		0,1			0,0	0,0	0,0							0,0		0,0	0,0	0,1	0,2
PM		0,0	0,2		0,2			0,1	0,0	0,1							0,0		0,0	0,0	0,2	0,3

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5. N11 & Road D

Rockdale

2026 PLUS SITE & LATENT

Xwe — **Stop street on west and east approaches**

&Autol 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		148	333		481			286	58	344							81		87	168		**994**
PM		120	497		616			423	68	491							72		70	142		**1 250**

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		1,0	1,0				1,5	0,5						1,0		1,0

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,08	0,17		**0,14**			0,11	0,11	**0,11**							0,11		0,22	**0,17**	0,22	0,13
PM		0,06	0,25		**0,21**			0,17	0,17	**0,17**							0,12		0,26	**0,19**	0,26	0,19

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0	1		1			1	0	0							0		1	1	1	1
PM		0	1		1			1	1	1							0		1	1	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0	0,1		**0,1**			0,0	0,0	**0,0**							0,0		0,0	**0,0**	0,1	**0,2**
PM		0,0	0,2		**0,2**			0,1	0,0	**0,1**							0,0		0,0	**0,0**	0,2	**0,3**

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6. ROAD D & ACCESS

AutoJ

Rockdale

2021 PLUS SITE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		105		105	210							147	53		200			57	63	120		530
PM		78		80	158							111	69		180			55	47	102		440

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,3	0,4	0,3						0,5	0,5				0,5	0,5

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,11		0,11	0,11							0,29	0,29		0,29			0,18	0,18	0,18	0,29	0,20
PM		0,09		0,09	0,09							0,24	0,24		0,24			0,14	0,14	0,14	0,24	0,16

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0		0	0							1	2		1			1	1	1	2	1
PM		0		0	0							1	1		1			1	1	1	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0		0,0	0,0							0,1	0,0		0,1			0,0	0,0	0,0	0,1	0,1
PM		0,0		0,0	0,0							0,0	0,0		0,1			0,0	0,0	0,0	0,0	0,1

AutoJ

6. ROAD D & ACCESS

Rockdale

2026 PLUS SITE

Xwe — **Stop street on west and east approaches**

&AutoJ 1910 roberts

Volume (evu/hr)

	from North					from South					from West					from East					intersection	
	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		total
AM																						
sat		105		105	210							147	58		205			63	63	126		541
PM		78		80	158							111	77		188			61	47	108		454

Lanes

(if lanes shared L:S or S:R = 0.5:0.5; L:S:R = 0.3:0.4:0.3)

	from North				from South				from West				from East			
	L~	L	S	R	L~	L	S	R	L~	L	S	R	L~	L	S	R
# lanes		0,3	0,4	0,3						0,5	0,5				0,5	0,5

Control

	from North				from South				from West				from East			
	peds	left	str	right	*peds*	left	str	right	*peds*	left	str	right	*peds*	left	str	right

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+

	V/C from North					V/C from South					V/C from West					V/C from East					V/C	
	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	max	overall
AM																						
sat		0,11		0,11	0,11							0,30	0,30		0,30			0,19	0,19	0,19	0,30	0,20
PM		0,09		0,09	0,09							0,26	0,26		0,26			0,15	0,15	0,15	0,26	0,17

Average DELAY per vehicle (secs)

A-B | C-D | E | F

LOS A<10, B<15, C<25, D<35, E<50

Ped LOS A<10, B<15, C<25, D<35, E<50, F=50+

	delay from North					delay from South					delay from West					delay from East					delay / veh	
	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	max	overall
AM																						
sat		0		0	0							1	2		1			1	1	1	2	1
PM		0		0	0							1	1		1			1	1	1	1	1

Average QUEUE length (veh)

(= 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					Queue	
	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	max	total
AM																						
sat		0,0		0,0	0,0							0,1	0,0		0,1			0,0	0,0	0,0	0,1	0,1
PM		0,0		0,0	0,0							0,0	0,0		0,1			0,0	0,0	0,0	0,0	0,1

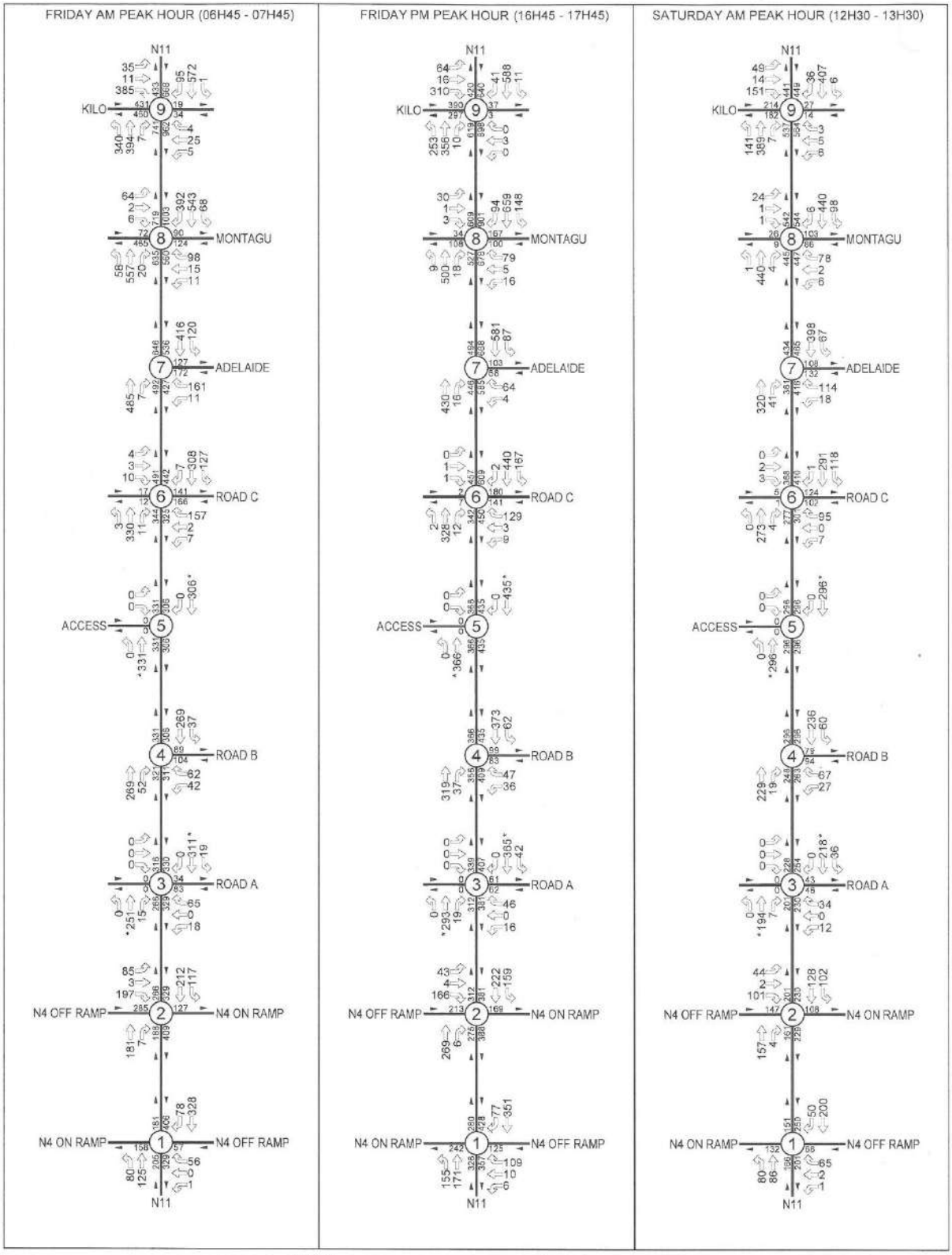
ANNEXURE D

Traffic count data

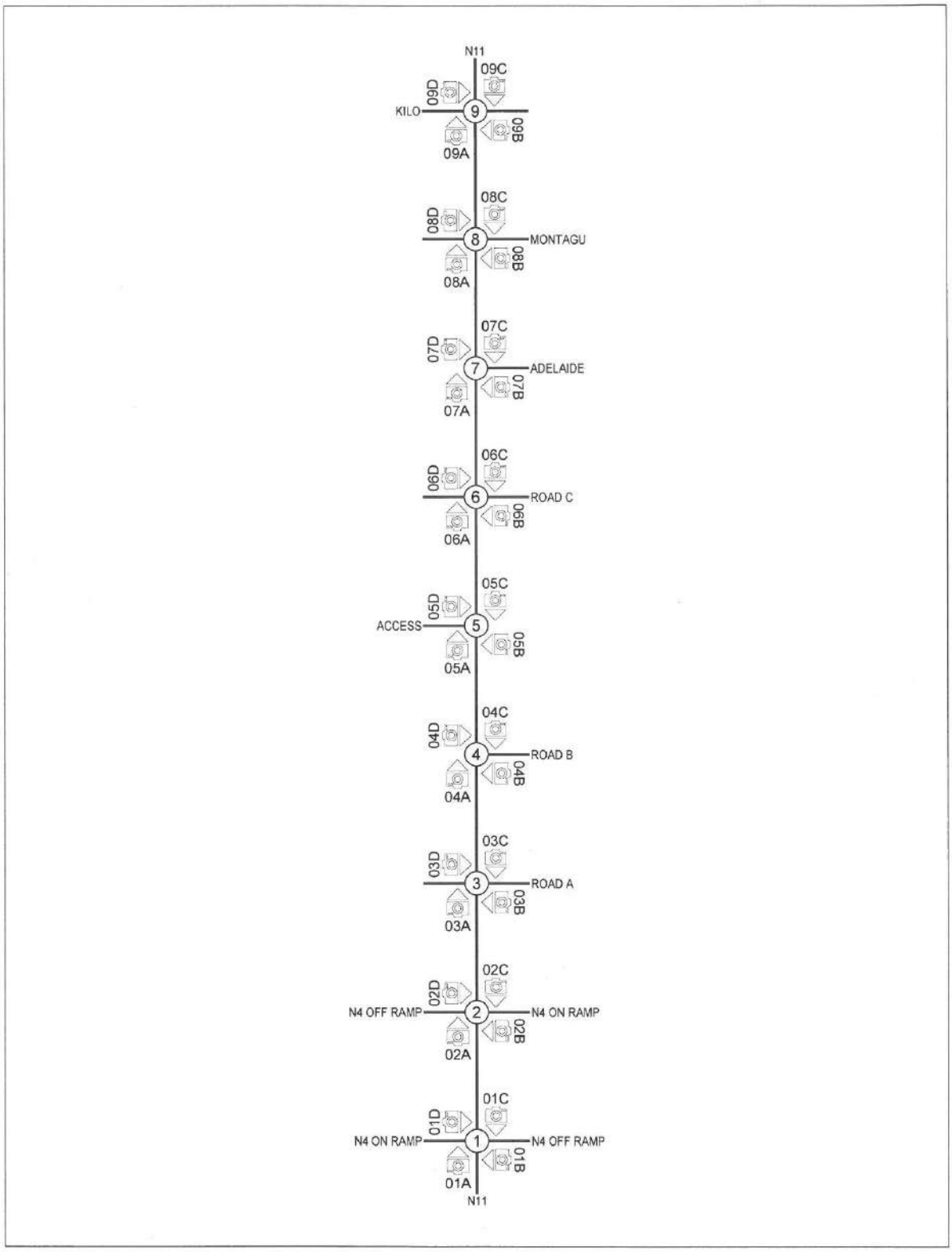
(September 2017)

ROCKDALE PROJECT	
	Count Location
1	N11 AND N4 SOUTH INTERCHANGE
2	N11 AND N4 NORTH INTERCHANGE
3	N11 AND ROAD A
4	N11 AND ROAD B
5	N11 AND ACCESS
6	N11 AND ROAD C
7	N11 AND ADELAIDE ST
8	N11 AND MONTAGU ST
9	N11 AND KILO ST

Trafsol		PROJECT: ROCKDALE PROJECT	FIGURE: TRAFFIC SURVEY LOCATIONS	Nr. 1



Trafsol		PROJECT: ROCKDALE PROJECT	FIGURE: EXISTING TRAFFIC COUNT DATA - 2017 WEEKDAY AM & PM PEAK HOURS	Nr. 2



Trafsol		PROJECT: ROCKDALE PROJECT	FIGURE: PHOTO INVENTORY KEY PLAN	Nr: P1

01A

01B

01C

01D

02A

02B

02C

02D

03A

03B

03C

03D

04A

04B

04C

04D

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 1	N4 AND N11 (SOUTH TERMINAL)	22/09/2017
6 HOUR COUNT	TOTAL VEHICLES	FRIDAY
AM PEAK 6:45 7:45		PM PEAK 16:45 17:45

N11 (SOUTH TERMINAL)

181	78	328	0	406
	0	0	0	
280 OUT	77	351	0	428 IN

N4 (SOUTH TERMINAL)	0	0	0	6	56	0	109	N4 (SOUTH TERMINAL)
	0	0	0	5	0	0	10	
	0	0	0	4	1	0	6	
	158	242 IN			57 OUT		125	

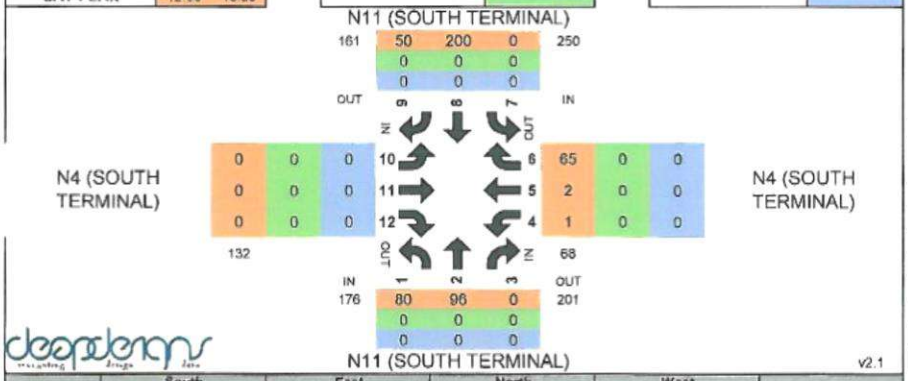
205 IN	80	125	0	329 OUT
	0	0	0	
326	155	171	0	357

N11 (SOUTH TERMINAL) v2.1

Time	South			East			North			West			Hourly	
	1	2		4	5	6	8	9						
AM PEAK	80	125		1		56	328	78					668	
PM PEAK	155	171		6	10	109	351	77					879	
TOTAL	686	818		20	26	599	1752	396					4297	
6:00	14	16		1		13	59	19						
6:15	11	13		1		12	87	24						
6:30	23	22				24	122	22						
6:45	28	37		1		17	100	20					686	6:00
7:00	12	29				15	89	24					733	6:15
7:15	16	29				11	76	12					729	6:30
7:30	24	30				13	83	22					668	6:45
7:45	30	23		2		26	70	8					624	7:00
8:00	24	28				18	57	14					596	7:15
8:15	21	29				17	57	11					587	7:30
8:30	20	32				13	43	10					553	7:45
8:45	22	27		3	1	29	32	8					516	8:00
9:00													375	8:15
9:15													240	8:30
9:30													122	8:45
9:45														9:00
10:00														9:15
10:15														9:30
10:30														9:45
10:45														10:00
11:00														10:15
11:15														10:30
11:30														10:45
11:45														11:00
12:00														11:15
12:15														11:30
12:30														11:45
12:45														12:00
13:00														12:15
13:15														12:30
13:30														12:45
13:45														13:00
14:00														13:15
14:15														13:30
14:30														13:45
14:45														14:00
15:00														14:15
15:15														14:30
15:30	42	49			4	41	73	19					228	14:45
15:45	31	49			1	37	92	17					455	15:00
16:00	53	55		2	5	48	25	18					651	15:15
16:15	35	32			1	33	60	11					833	15:30
16:30	50	57		2	1	35	76	19					845	15:45
16:45	27	27		1	3	54	72	14					816	16:00
17:00	57	66			3	9	94	21					950	16:15
17:15	34	46		2	3	12	66	23					874	16:30
17:30	37	32		3	1	34	119	19					879	16:45
17:45	34	27		1	2	40	71	9					955	17:00
18:00	17	23				24	76	19					774	17:15
18:15	23	29		1	1	24	73	13					752	17:30
18:30	1	11											519	17:45
18:45													335	18:00
19:00													176	18:15
19:15													12	18:30
19:30														18:45
19:45														19:00
20:00														19:15
20:15														19:30
20:30														19:45
20:45														20:00

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 1	N4 AND N11 (SOUTH TERMINAL)	23/09/2017
6 HOUR COUNT	TOTAL VEHICLES	SATURDAY
SAT PEAK	12:30 13:30	



v2.1

Time	South			East			West			North			Hourly	
	1	2	3	4	5	6	7	8	9	10	11	12		
SAT PEAK	80	96		1	2	65		200	50				494	
TOTAL	472	506		14	13	397		1002	171				2575	
9:00														9:00
9:15														9:15
9:30														9:30
9:45														9:45
10:00	24	23			1	15		56	4				123	10:00
10:15	28	28		1		27		33	7				247	10:15
10:30	25	46				26		47	7				398	10:30
10:45	19	29			1	12		41	10				510	10:45
11:00	32	43		1		38		52	10				583	11:00
11:15	21	22				15		60	6				563	11:15
11:30	24	26		1	1	14		33	5				516	11:30
11:45	26	28				23		53	9				543	11:45
12:00	27	21				18		67	9				509	12:00
12:15	24	17		2	1	24		54	4				511	12:15
12:30	23	35			1	14		55	12				547	12:30
12:45	15	21		1		14		52	18				529	12:45
13:00	24	22			1	14		48	10				506	13:00
13:15	18	18				23		45	10				494	13:15
13:30	24	23		2	2	15		58	9				487	13:30
13:45	22	22		2		17		37	4				470	13:45
14:00	30	17		1	2	22		78	10				511	14:00
14:15	23	15			1	24		46	7				513	14:15
14:30	20	27		1	1	19		57	18				521	14:30
14:45	23	23		2	1	23		30	4				523	14:45
15:00													363	15:00
15:15													247	15:15
15:30													106	15:30
15:45														15:45
16:00														16:00
16:15														16:15
16:30														16:30
16:45														16:45
17:00														17:00
17:15														17:15
17:30														17:30
17:45														17:45
18:00														18:00
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22:30														22:30
22:45														22:45
23:00														23:00
23:15														23:15
23:30														23:30
23:45														23:45

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 2	N4 AND N11 (NORTH TERMINAL)	22/09/2017
6 HOUR COUNT	TOTAL VEHICLES	FRIDAY
AM PEAK 6:45 7:45		PM PEAK 16:45 17:45

N11 (NORTH TERMINAL)

	266	0	212	117	329			
		0	0	0				
	312	0	222	159	381			
	OUT		8	7	IN			
	285		213	NE	OUT	127		169
N4 (NORTH TERMINAL)	85	0	43	10		0	0	0
	3	0	4	11		0	0	0
	197	0	166	12		0	0	0
				OUT	IN			N4 (NORTH TERMINAL)
	IN		2	3	OUT			
	188	0	181	7	409			
		0	0	0				
	275	0	269	6	388			

N11 (NORTH TERMINAL)

v2.1

Time	South		East			North			West			Hourly	
	2	3				7	8		10	11	12		
AM PEAK	181	7				117	212		85	3	197	802	
PM PEAK	269	6				159	222		43	4	166	869	
TOTAL	1389	33				772	1226		290	26	943	4679	
6:00	32	3				31	67		6		34		
6:15	23	1				48	57		8	1	49		
6:30	44					31	61		14	1	78		
6:45	53					37	60		10	1	63	813	6:00
7:00	47	1				29	53		28	1	60	859	6:15
7:15	41					20	47		28		42	850	6:30
7:30	40	6				31	52		19	1	32	802	6:45
7:45	44					31	44		11		32	740	7:00
8:00	46	3				27	45		5		22	669	7:15
8:15	45					29	42		4	1	23	635	7:30
8:30	45	1				24	33		6		21	584	7:45
8:45	48	1				23	27		10	1	33	565	8:00
9:00												417	8:15
9:15												273	8:30
9:30												143	8:45
9:45													9:00
10:00													9:15
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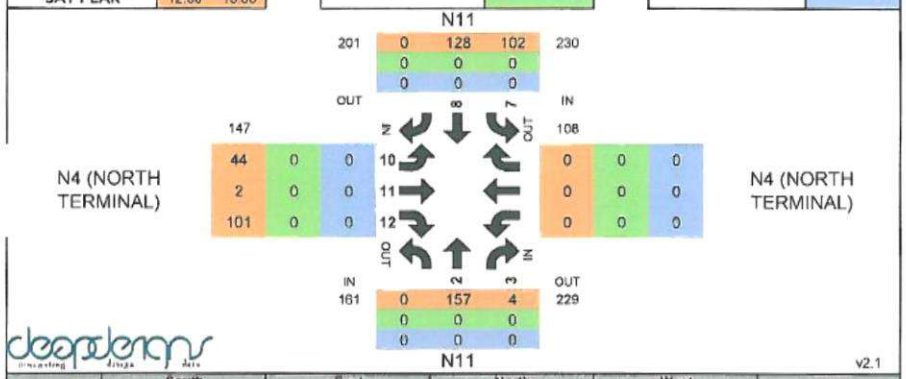
14:15													13:30
14:30													13:45
14:45													14:00
15:00													14:15
15:15													14:30
15:30	95	3				43	52		10	2	32	237	14:45
15:45	81	4				36	61		15	3	41	478	15:00
16:00	74					28	45		10	4	40	679	15:15
16:15	91					39	46		20	1	31	907	15:30
16:30	86	2				34	64		10	2	29	887	15:45
16:45	83					27	46		13	1	36	842	16:00
17:00	83	2				37	56		8	1	41	867	16:15
17:15	69	2				42	47		13	1	43	858	16:30
17:30	54	2				53	73		11	1	46	869	16:45
17:45	79					27	42		12	1	40	834	17:00
18:00	41	1				25	55		13	2	39	834	17:15
18:15	65	1				20	51		8		36	798	17:30
18:30												558	17:45
18:45												357	18:00
19:00												181	18:15
19:15													18:30
19:30													18:45
19:45													19:00
20:00													19:15
20:15													19:30
20:30													19:45
20:45													20:00

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 2	N4 AND N11 (NORTH TERMINAL)	23/09/2017
6 HOUR COUNT	TOTAL VEHICLES	SATURDAY
SAT PEAK	12:30 13:30	



v2.1

Time	South		East			North			West			Hourly	
	2	3				7	8		10	11	12		
SAT PEAK	157	4				102	128		44	2	101	538	
TOTAL	848	11				433	614		146	10	473	2535	
9:00													9:00
9:15													9:15
9:30													9:30
9:45													9:45
10:00	37					19	21		6		27	110	10:00
10:15	50					22	22		3	1	15	223	10:15
10:30	64					15	29		4		17	352	10:30
10:45	51					14	31		6		27	481	10:45
11:00	57	1				14	23		2		17	485	11:00
11:15	42					15	29		8	1	24	491	11:15
11:30	44					17	31		5		27	486	11:30
11:45	40	1				25	36		9	1	19	488	11:45
12:00	41	2				20	35		13		43	528	12:00
12:15	38	1				20	35		13	1	24	541	12:15
12:30	44	2				12	32		4		29	540	12:30
12:45	36	1				19	36		27		24	554	12:45
13:00	35	1				27	27		7	1	35	533	13:00
13:15	40					44	33		6	1	13	536	13:15
13:30	30	1				38	44		6		20	554	13:30
13:45	43					17	21		5	1	32	528	13:45
14:00	34					36	42		4	1	30	542	14:00
14:15	36					22	30		6		21	520	14:15
14:30	33	1				22	39		4		17	497	14:30
14:45	51					15	18		8	2	12	484	14:45
15:00												337	15:00
15:15												222	15:15
15:30												106	15:30
15:45													15:45
16:00													16:00
16:15													16:15
16:30													16:30
16:45													16:45
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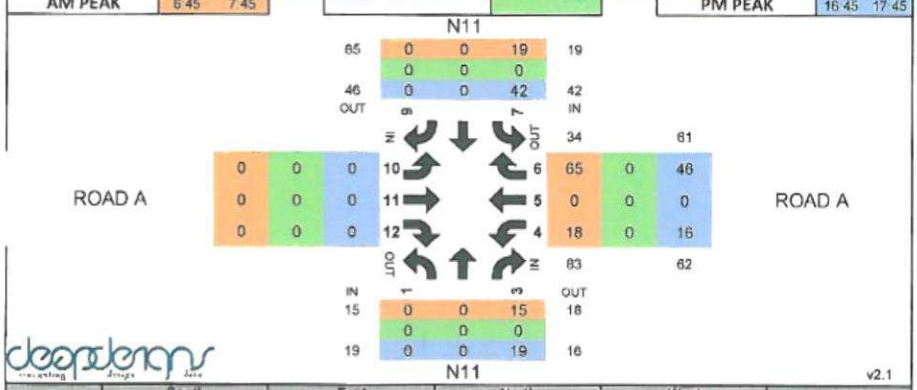
22:45													22:45
23:00													23:00
23:15													23:15
23:30													23:30
23:45													23:45

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 3	N11 AND ROAD A	22/09/2017
6 HOUR COUNT	TOTAL VEHICLES	FRIDAY
AM PEAK 6:45 7:45		PM PEAK 16:45 17:45



Time	South			East			North			West			Hourly	
	1		3	4	5	6	7		9	10	11	12		
AM PEAK			15	18		65	19						117	
PM PEAK			19	16		46	42						123	
TOTAL			93	91		293	198						675	
6:00			6	7		10	8							
6:15			1	7		10	9							
6:30			8	6		25	8							
6:45			4	2		21	4						134	6:00
7:00			4	11		18	6						144	6:15
7:15			4	3		23	1						148	6:30
7:30			3	2		3	8						117	6:45
7:45			4	4		7	7						108	7:00
8:00			2	3		7	8						89	7:15
8:15			1	4		6	4						73	7:30
8:30						7	7						71	7:45
8:45			2	1		3	4						50	8:00
9:00													39	8:15
9:15													24	8:30
9:30													10	8:45
9:45														9:00
10:00														9:15
10:15														9:30
10:30														9:45
10:45														10:00
11:00														10:15
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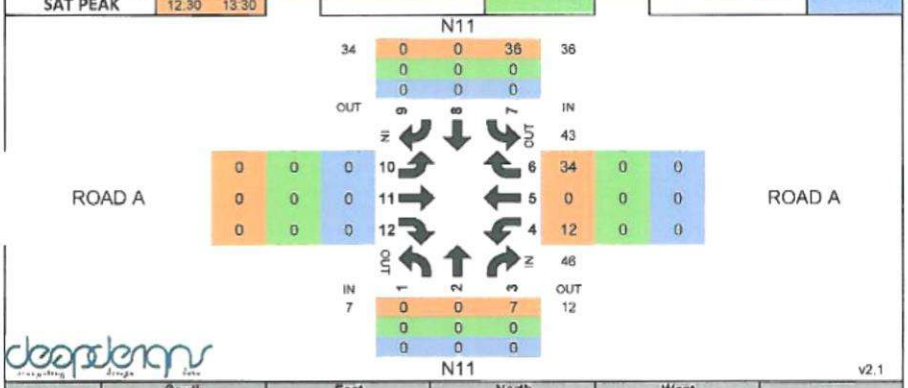
14:30														13:45
14:45														14:00
15:00														14:15
15:15														14:30
15:30			5	3		17	10						35	14:45
15:45			4	3		9	5						56	15:00
16:00			5	1		12	13						37	15:15
16:15			8	6		12	14						127	15:30
16:30			3	2		17	7						121	15:45
16:45			2	2		11	16						131	16:00
17:00			6	3		16	7						132	16:15
17:15			7	8		10	5						122	16:30
17:30			4	3		9	14						123	16:45
17:45			3	5		15	10						125	17:00
18:00			4	2		8	12						119	17:15
18:15			3	3		17	13						125	17:30
18:30													85	17:45
18:45													62	18:00
19:00													36	18:15
19:15														18:30
19:30														18:45
19:45														19:00
20:00														19:15
20:15														19:30
20:30														19:45
20:45														20:00

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 3	N11 AND ROAD A	23/09/2017
6 HOUR COUNT	TOTAL VEHICLES	SATURDAY
SAT PEAK	12:30 13:30	



Time	South			East			North			West			Hourly
	1	2	3	4	5	6	7	8	9	10	11	12	
SAT PEAK			7	12		34	36						89
TOTAL			60	58		204	189						511
9:00													
9:15													
9:30													
9:45													9:00
10:00			4	1		18	12						35 9:15
10:15				3		14	9						61 9:30
10:30			4			13	9						87 9:45
10:45			2	4		9	9						111 10:00
11:00			5	5		4	9						99 10:15
11:15			5	5		10	13						106 10:30
11:30			2	2		12	7						103 10:45
11:45			4	3		10	12						108 11:00
12:00			2	5		7	6						105 11:15
12:15			3	2		12	7						96 11:30
12:30			1	3		7	5						89 11:45
12:45			3	3		7	9						82 12:00
13:00				3		6	12						83 12:15
13:15			3	3		14	10						89 12:30
13:30			2	4		7	16						102 12:45
13:45			4			8	6						98 13:00
14:00			2	4		11	7						101 13:15
14:15			6	4		13	10						104 13:30
14:30			2	2		10	13						102 13:45
14:45			6	2		12	8						114 14:00
15:00													88 14:15
15:15													55 14:30
15:30													28 14:45
15:45													15:00
16:00													15:15
16:15													15:30
16:30													15:45
16:45													16:00
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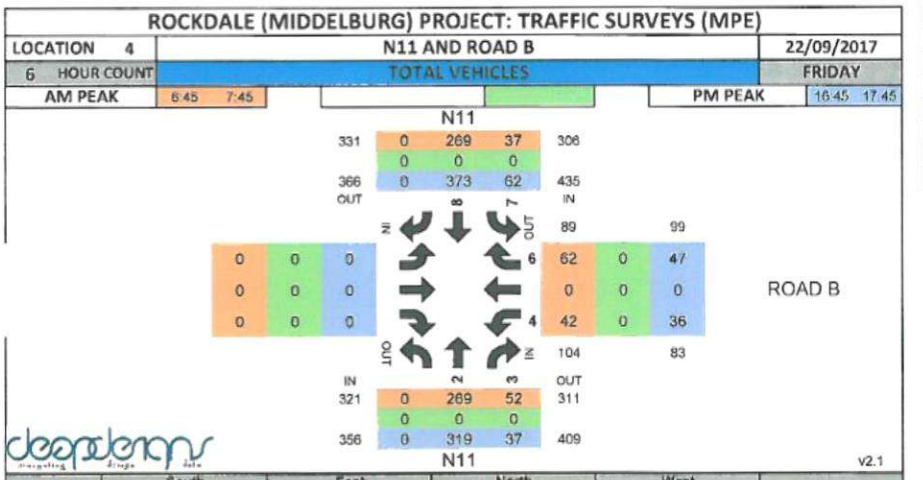
23:15													22:30
23:30													22:45
23:45													23:00



Time	South		East		North		West		Hourly	
	2	3	4	6	7	8				
AM PEAK	269	52	42	62	37	259			731	
PM PEAK	319	37	36	47	62	373			874	
TOTAL	1706	235	199	259	259	1747			4405	
6:00	61	6	13	9	10	56				
6:15	30	11	13	17	9	82				
6:30	55	12	9	22	8	76				
6:45	56	15	8	15	7	68			668	6:00
7:00	81	13	13	23	10	62			715	6:15
7:15	84	15	8	13	5	70			748	6:30
7:30	48	9	13	11	15	69			731	6:45
7:45	62	4	9	12	11	54			714	7:00
8:00	50	4	3	7	5	62			643	7:15
8:15	57	8	9	7	9	56			594	7:30
8:30	55	3	6	5	5	49			552	7:45
8:45	63	6	2	4	9	44			528	8:00
9:00									397	8:15
9:15									251	8:30
9:30									128	8:45
9:45										9:00
10:00										9:15
10:15										9:30
10:30										9:45
10:45										10:00
11:00										10:15
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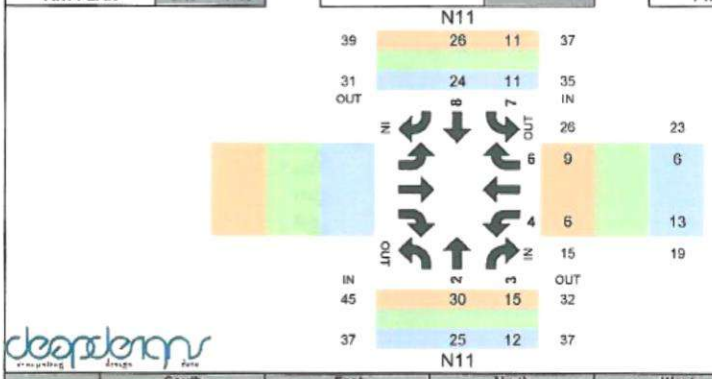
14:15										13:30
14:30										13:45
14:45										14:00
15:00										14:15
15:15										14:30
15:30	107	13	7	5	12	84			228	14:45
15:45	97	8	4	6	11	87			441	15:00
16:00	77	9	7	6	8	73			621	15:15
16:15	107	4	5	12	12	75			836	15:30
16:30	96	12	7	11	13	86			833	15:45
16:45	73	10	7	13	5	90			818	16:00
17:00	99	10	7	13	16	98			891	16:15
17:15	83	12	9	10	19	84			883	16:30
17:30	64	5	13	11	22	101			874	16:45
17:45	78	18	1	5	12	82			872	17:00
18:00	56	13	14	8	13	68			801	17:15
18:15	67	15	12	14	13	71			776	17:30
18:30									560	17:45
18:45									364	18:00
19:00									192	18:15
19:15										18:30
19:30										18:45
19:45										19:00
20:00										19:15
20:15										19:30
20:30										19:45
20:45										20:00

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 4	N11 AND ROAD B	22/09/2017
6 HOUR COUNT	MINIBUS TAXIS	FRIDAY
AM PEAK 6:45 7:45		PM PEAK 16:45 17:45



Time	South		East			North			West			Hourly	
	2	3	4		6	7	8						
AM PEAK	30	15	6		9	11	26					97	
PM PEAK	25	12	13		6	11	24					91	
TOTAL	159	62	47		51	49	129					497	
6:00	8	3	7		2	6	10						
6:15	9	4	5		9	3	9						
6:30	9	6	4		8	1	10						
6:45	7	5	1		3	1	7					137	6:00
7:00	7	3	3		3	3	4					124	6:15
7:15	13	6			1	3	7					115	6:30
7:30	3	1	2		2	4	8					97	6:45
7:45	5	2	2		3	3	4					92	7:00
8:00	3	1			2	2	5					82	7:15
8:15	4	3			3	3	4					69	7:30
8:30	5		2		2	1	2					61	7:45
8:45	1	1				2	2					48	8:00
9:00												35	8:15
9:15												18	8:30
9:30												6	8:45
9:45													9:00
10:00													9:15
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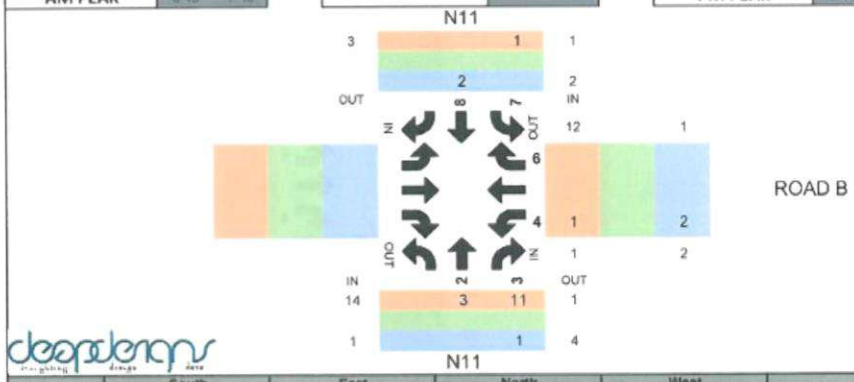
14:30													13:45
14:45													14:00
15:00													14:15
15:15													14:30
15:30	11		1			2	5					19	14:45
15:45	8	1			2		7					37	15:00
16:00	2		1		2		2					44	15:15
16:15	18	2			3	1	4					72	15:30
16:30	5	3	2			1	4					68	15:45
16:45	5	3	2		1		5					66	16:00
17:00	6	3	5		1	3	7					84	16:15
17:15	6	3	2		2	4	3					76	16:30
17:30	8	3	4		2	4	9					91	16:45
17:45	7	2	1			1	4					80	17:00
18:00	3	1	2				5					76	17:15
18:15	6	6	1			1	2					72	17:30
18:30												42	17:45
18:45												27	18:00
19:00												16	18:15
19:15													18:30
19:30													18:45
19:45													19:00
20:00													19:15
20:15													19:30
20:30													19:45
20:45													20:00

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 4	N11 AND ROAD B	22/09/2017
6 HOUR COUNT	BUSES	FRIDAY
AM PEAK 6:45 7:45		PM PEAK 16:45 17:45



Time	South		East			North			West			Hourly	
	2	3	4		6	7	8						
AM PEAK	3	11	1			1						16	
PM PEAK		1	2				2					5	
TOTAL	23	15	6			3	10					57	
6:00	1		1										
6:15	1						1						
6:30	5						4						
6:45	2	1										16	6:00
7:00		5	1			1						21	6:15
7:15	1	3										23	6:30
7:30		2										16	6:45
7:45												13	7:00
8:00												6	7:15
8:15							1					3	7:30
8:30												1	7:45
8:45	2											3	8:00
9:00												3	8:15
9:15												2	8:30
9:30												2	8:45
9:45													9:00
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15:30	5	1	1			1	1					9	14:45
15:45	2						1					12	15:00
16:00			1									13	15:15
16:15												13	15:30
16:30	1	2				1						8	15:45
16:45												5	16:00
17:00												4	16:15
17:15		1	2									7	16:30
17:30							2					5	16:45
17:45	1											6	17:00
18:00												6	17:15
18:15	2											5	17:30
18:30												3	17:45
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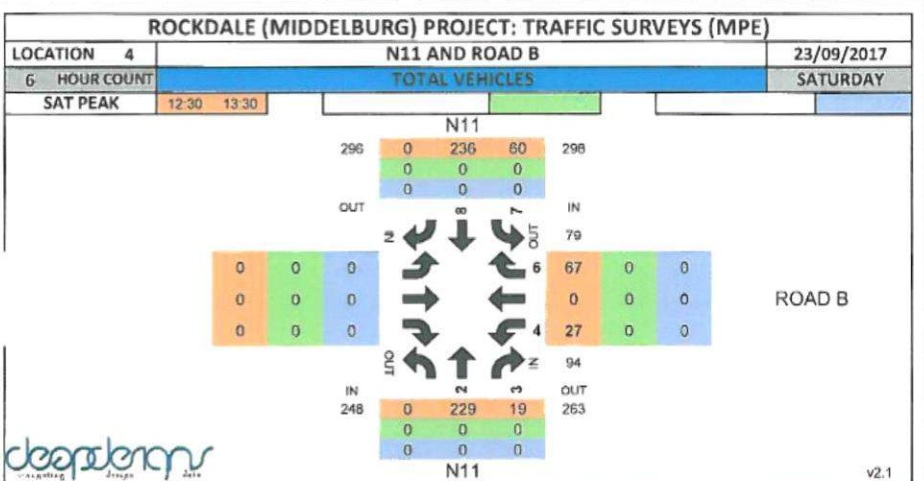

Time	South		East		North		West		Hourly	
	2	3	4	6	7	8				
SAT PEAK	229	19	27	67	60	236			638	
TOTAL	1137	123	120	314	268	1065			3027	
9:00										9:00
9:15										9:15
9:30										9:30
9:45										9:45
10:00	58	6	12	23	11	50			160	10:00
10:15	70	5	2	21	8	47			313	10:15
10:30	81	5	3	17	7	48			474	10:30
10:45	57	6	3	9	4	42			595	10:45
11:00	60	7	5	12	12	43			574	11:00
11:15	64	8	5	21	15	43			577	11:15
11:30	46	1	4	16	7	49			539	11:30
11:45	66	6	2	13	15	64			584	11:45
12:00	43	8	2	15	14	61			588	12:00
12:15	63	5	2	14	12	49			577	12:15
12:30	59	5	5	13	21	40			597	12:30
12:45	59	2	9	21	11	59			592	12:45
13:00	59	7	5	12	15	68			615	13:00
13:15	52	5	8	21	13	69			638	13:15
13:30	43	10	13	10	18	69			658	13:30
13:45	52	8	10	18	13	46			644	13:45
14:00	48	9	7	20	19	65			646	14:00
14:15	45	11	11	13	18	57			633	14:15
14:30	52	3	8	11	15	55			614	14:30
14:45	60	6	4	14	20	41			612	14:45
15:00									444	15:00
15:15									289	15:15
15:30									145	15:30
15:45										15:45
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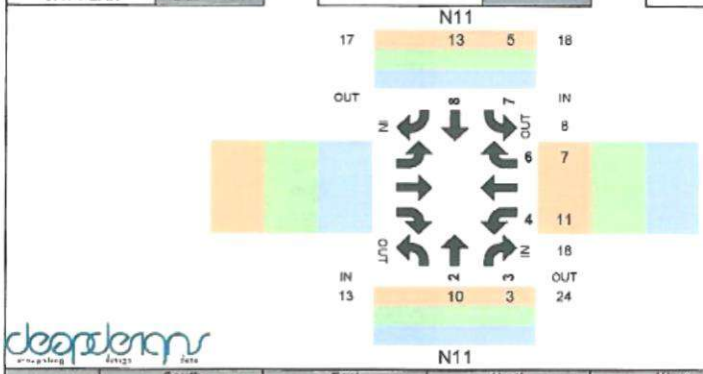
23:15										23:15
23:30										23:30
23:45										23:45

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 4	N11 AND ROAD B	23/09/2017
6 HOUR COUNT	MINIBUS TAXIS	SATURDAY
SAT PEAK	12:30 13:30	



Time	South		East		North		West		Hourly
	2	3	4	6	7	8			
SAT PEAK	10	3	11	7	5	13			49
TOTAL	58	14	29	35	27	71			234
9:00									
9:15									
9:30									
9:45									9:00
10:00	3		2	3	1	5			14 9:15
10:15	2			2	2	4			24 9:30
10:30	4				1	3			32 9:45
10:45	3	1			1	5			42 10:00
11:00	2					2			32 10:15
11:15	2		1	3	1	3			32 10:30
11:30	2	1	1		1	1			30 10:45
11:45	5	1		1	2	2			31 11:00
12:00	2			3	2	4			38 11:15
12:15	2			2	2	5			39 11:30
12:30	2		2	1	2	3			43 11:45
12:45	4	1	4	3	2	1			47 12:00
13:00	2		2	1	1	3			45 12:15
13:15	2	2	3	2		6			49 12:30
13:30	1	1	4	3	2	6			56 12:45
13:45	4	1	2	3	1				52 13:00
14:00	4	3	1	2	4	5			62 13:15
14:15	4	2	3	5	2	6			59 13:30
14:30	6		3			2			63 13:45
14:45	2	1	1	1		5			62 14:00
15:00									43 14:15
15:15									21 14:30
15:30									10 14:45
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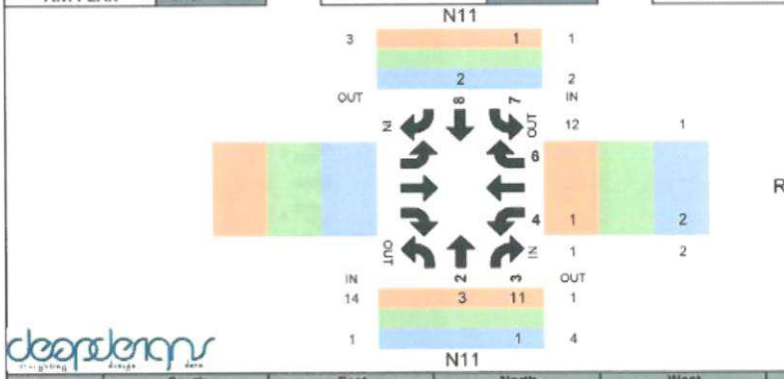
23:45									23:00

ROCKDALE (MIDDELBURG) PROJECT: TRAFFIC SURVEYS (MPE)

LOCATION 4	N11 AND ROAD B	22/09/2017
6 HOUR COUNT	BUSES	FRIDAY
AM PEAK 6:45 7:45		PM PEAK 16:45 17:45



Time	South		East			North			West			Hourly	
	2	3	4		6	7	8						
AM PEAK	3	11	1			1						16	
PM PEAK		1	2				2					5	
TOTAL	23	15	6			3	10					57	
6:00	1		1										
6:15	1						1						
6:30	5						4						
6:45	2	1										16	6:00
7:00		5	1			1						21	6:15
7:15	1	3										23	6:30
7:30		2										16	6:45
7:45												13	7:00
8:00												6	7:15
8:15							1					3	7:30
8:30												1	7:45
8:45	2											3	8:00
9:00												3	8:15
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14:30													13:45
14:45													14:00
15:00													14:15
15:15													14:30
15:30	5	1	1			1	1					9	14:45
15:45	2						1					12	15:00
16:00			1									13	15:15
16:15												13	15:30
16:30	1	2				1						8	15:45
16:45												5	16:00
17:00												4	16:15
17:15		1	2									7	16:30
17:30							2					5	16:45
17:45	1											6	17:00
18:00												6	17:15
18:15	2											5	17:30
18:30												3	17:45
18:45												2	18:00
19:00												2	18:15
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