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Transport Directorate

LOCAL AREA MANAGEMENT SOUTH REGION

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PROJECT	TRAFFIC MANAGEMENT – THORNTON ROAD / KLIPFONTEIN SERVICE ROAD / NORTH LINK ROAD INTERSECTION, ATHLONE
REFERENCE	TNDS6393

1 INTRODUCTION

1.1 Background

The City of Cape Town's Transport and Urban Development Authority (TDA) has commissioned an investigation into the current traffic operations at the Thornton Road / Klipfontein Service Road / North Link Road intersection in Athlone. Thereafter, to provide recommendations to improve traffic operations within the study area. The study area is shown in

Figure 1.

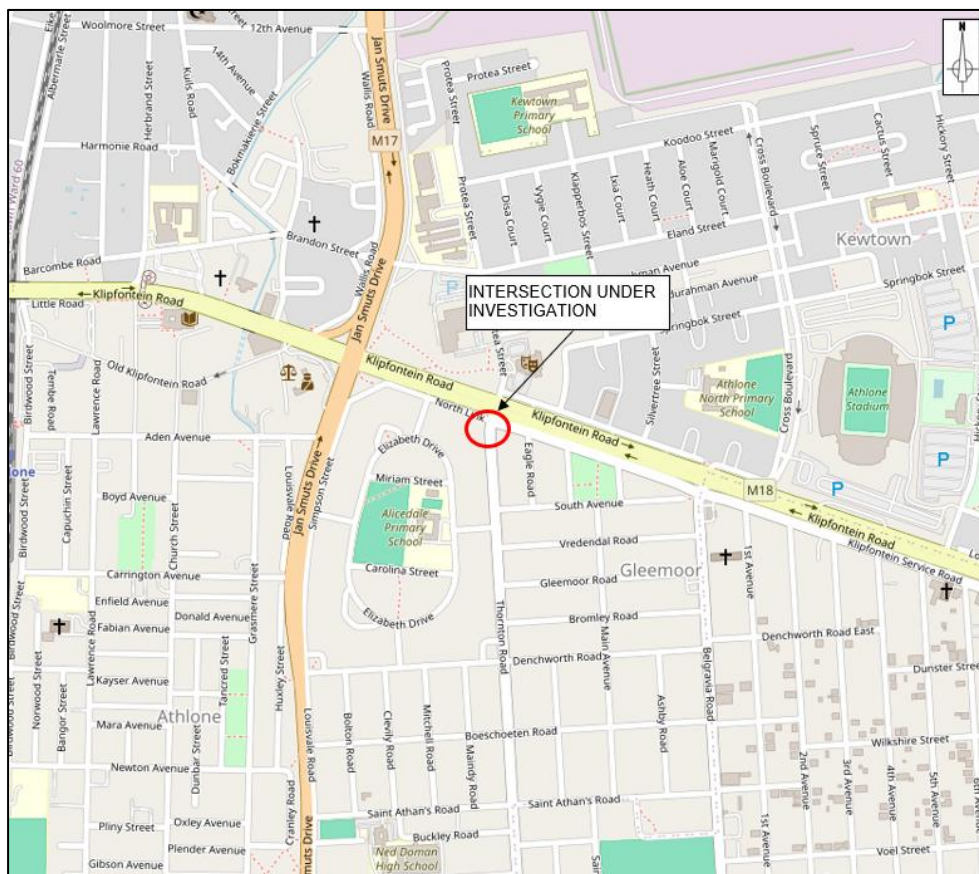


Figure 1: Locality Map

2 STATUS QUO

2.1 Existing Road Network

The Thornton Road / Klipfontein Service Road / North Link Road intersection is a priority-controlled intersection with stops at the side roads (Klipfontein Service Road and North Link Road). The intersection is located approximately 25m south of the Klipfontein Road / Thornton Road / Protea Street signalised intersection. There is a keep clear box provided in the intersection to ensure that vehicles do not queue in the intersection and block the traffic flow from the signalised intersection. There are pedestrian crossings provided at the eastern and western legs of the intersection. The existing road network of the study area is shown in Figure 2.



Figure 2: Existing Road Network

A description of the investigated road sections is provided below.

- Thornton Road is a two-lane, two-way roadway (approximately 6.4m wide) and is classified as a Class 4 collector street. It serves as a link between Klipfontein Road and Conquest Road. There are sidewalks provided along both sides of

the road. There is an existing pedestrian crossing approximately 190m south of the Klipfontein Service Road / North Link Road intersection. There is also a raised intersection approximately 177m south of the Klipfontein Service Road / North Link Road intersection.

- Klipfontein Service Road is a two-lane, two-way roadway (approximately 6.7m wide) and is classified as a Class 5 local street. It serves as a link between Thornton Road and Yusuf Gool Boulevard. There is an existing sidewalk along the southern edge of the road. There is a pedestrian crossing provided approximately 190m from Thornton Road.
- North Link Road is a two-lane, two-way roadway (approximately 6.2m wide) and is classified as a Class 5 local street. It serves as a link between Thornton Road and Simpson Street. There is an existing sidewalk along the southern edge of the road.

2.2 Traffic Flows

A traffic count was conducted at the Thornton Road / Klipfontein Service Road / North Link Road intersection on Thursday, 25 January 2024, in the AM peak period from 06h30 to 08h30 and in the PM peak period from 16h00 to 18h00.

The AM and PM peak hour traffic was determined to be between 07h30 – 08h30 and 16h30 – 17h30 respectively. The AM and PM peak hour total traffic flows are illustrated in Figure 3.



Figure 3: AM and PM Peak Hour Traffic Flows: Total Vehicles

Based on the traffic counts, the following was observed:

AM Peak Hour

- During the AM peak hour, the traffic volumes were relatively high at the south and east approaches of the intersection.
- The highest traffic flows at each approach were as follows:
 - At the south approach, the through movements accounted for 97.6% of 255 veh/hr.
 - At the east approach, the right-turn movements accounted for 96.3% of 217 veh/hr.
 - At the north approach, the through movements accounted for 82.8% of 192 veh/hr.
 - At the west approach, the left-turn movements accounted for 92.7% of 123 veh/hr.

PM Peak Hour

- During the PM peak hour, the traffic volumes were relatively high at the north and south approaches of the intersection.
- The highest traffic flows at each approach were as follows:
 - At the north approach, the through movements accounted for 77.3% of 453 veh/hr.
 - At the south approach, the through movements accounted for 94% of 250 veh/hr.
 - At the east approach, the right turn movements accounted for 66.7% of 78 veh/hr.
 - At the west approach, the left turn movement accounted for 78.9% of 38 veh/hr.

Furthermore, the minibus taxi flows were analysed to determine the minibus taxi operations at the Thornton Road / Klipfontein Service Road / North Link Road intersection. The AM and PM peak hour minibus taxi flows are illustrated in Figure 4.



Figure 4: AM and PM Peak Hour Traffic Flows: Minibus Taxis

Based on the minibus taxi counts, the following was observed:

AM Peak Hour

- During the AM peak hour, the highest minibus taxi flows were right turners from the east approach (44 veh/hr). A few minibus taxis turn left from the north approach (19 veh/hr) and the west approach (15 veh/hr) and travel straight from the south approach (14 veh/hr) and the north approach (9 veh/hr).
- Minibus taxis constitute 68% of the total vehicles turning left from the north approach and 21% of the total vehicles turning right from the east approach.

PM Peak Hour

- During the PM peak hour, most minibus taxis turn left from the north approach (27 veh/hr). A relatively low number of minibus taxis turn right from the east approach (7 veh/hr).
- Minibus taxis constitute 34.6% of the total vehicles turning left from the north approach and 13.5% of the total vehicles turning right from the east approach.

There were minimal bus and heavy vehicle operations observed at the intersection during the AM and PM peak hours.

2.3 Site Observations

A site survey of the study area was undertaken on Friday, 26 January 2024 during the AM (06:30-06:45) peak period. The following traffic observations were noted:

- Generally, there is traffic congestion along Klipfontein Road during the observed period.
- The queues from the east approach of Jan Smuts Drive / Klipfontein Road signalised intersection back up into the Klipfontein Road / Thornton Road / Protea Street intersection.
- Long traffic queues were observed along Klipfontein Service Road and Thornton Road.
- There is a relatively high number of vehicles that travel from Klipfontein Service Road and Thornton Road and then turn left into Klipfontein Road at the Klipfontein Road / Thornton Road / Protea Street intersection. Minibus taxis were amongst the vehicles making this movement from Klipfontein Service Road, which could be attributed to rat-running.
- There were two (2) traffic officers stationed at the east and south approaches of the Klipfontein Road / Thornton Road / Protea Street intersection. The traffic officers manage traffic operations regardless of the instruction from the traffic signals to ensure that vehicles do not queue in the intersection when there are long queues from the Jan Smuts Drive / Klipfontein Road intersection. Furthermore, they give the vehicles from the south approach more time to enter the intersection in order to clear the queues on Thornton Road and Klipfontein Service Road.
- There are two lanes at the south approach of the Klipfontein Road / Thornton Road / Protea Street intersection. The second lane is used as a second left turn lane by the traffic from Klipfontein Service Road. Therefore, when vehicles from the south approach of the intersection are allowed to proceed, the queues from Thornton Road and Klipfontein Service Road clear simultaneously.
- There are no direct accesses to properties along the section of Klipfontein Service Road between Thornton Road and West Street.

For site observation images, refer to Appendix A.

2.4 Crash Data

A review of the traffic crash data from the City of Cape Town for the Klipfontein Service Road / Thornton Road / North Link Road intersection that occurred in 2019, 2021, January 2022 to October 2022 and from January 2023 to June 2023 is summarised in Table 1.

Table 1: Summary of Crash Data

Intersection	No of Crashes	Injury Severity			
		Fatal	Serious	Slight	No Injuries
THORNTON RD X KLIPFONTEIN RD X NORTH LINK RD, ATHLONE	35	0	1	3	73

The total number of crashes that occurred at the Klipfontein Service Road / Thornton Road / North Link Road intersection is 35. Although the times of the crashes vary, most of the crashes occurred between 06h00 and 18h00, which relates to daytime traffic. From the crash data, there were no fatal injuries; however, there was 1 serious injury, 3 slight injuries and 73 no injuries (damage only). There were no pedestrian related crashes observed during the surveyed years.

Table 2 summarises the number of crashes by crash type at the intersection under investigation. The most frequently occurring crash types were sideswipe (in the same direction), which accounted for approximately 34% of the total number of crashes and head/ rear-end which accounted for approximately 20% of the total number of crashes. Collectively, these crashes accounted for approximately 54% of the total number of crashes. Most of the sideswipe (in the same direction) crashes were due to driver error.

Table 2: Summary of Crash Data By Crash Type

Crash Type	No of Crashes
Accident with fixed/other object	3
Approach at angle - one or both turning	5
Approach at angle- both travel straight	2
Head/Rear end	7
Reversing	2
Sideswipe - opposite direction	3
Sideswipe - same direction	12
Turn right in face of oncoming traffic	1
Total	35

3 PROPOSED FUTURE TRAFFIC OPERATIONS

Based on the investigation, it was identified that Klipfontein Service Road (between Thornton Road and Belgravia Road) is utilised as a minibus taxi rat-running route to bypass congestion along Klipfontein Road. Therefore, it is recommended that the section of Klipfontein Service Road between Thornton Road and Eagle Road be permanently closed off to discourage rat-running along this route.

The road closure is mainly intended to affect vehicles from the properties in Eagle Road and West Road, which will be re-routed to South Avenue in order to access Thornton Road. However, there is no certainty that minibus taxis will not also utilise these routes.

In addition, it is recommended that East Street, between Klipfontein Service Road and South Avenue, also be permanently closed off to discourage rat-running between the park and the tennis court located along opposite sides of the road, to prevent pedestrian and vehicle conflict along this link.

The proposed traffic operations are illustrated in Figure 5.



Figure 5: Proposed Traffic Operations

APPENDIX A

Site Observations

Traffic operations at the Thornton Road / Klipfontein Service Road / North Link Road intersection



Traffic queue along Klipfontein Service Road (1)



Traffic queue along Klipfontein Service Road (2)



Vehicles from Klipfontein Service Road turning right into Thornton Road (1)



Vehicles from Klipfontein Service Road turning right into Thornton Road (2)



Traffic queue along Thornton Road



Traffic queue along North Link Road

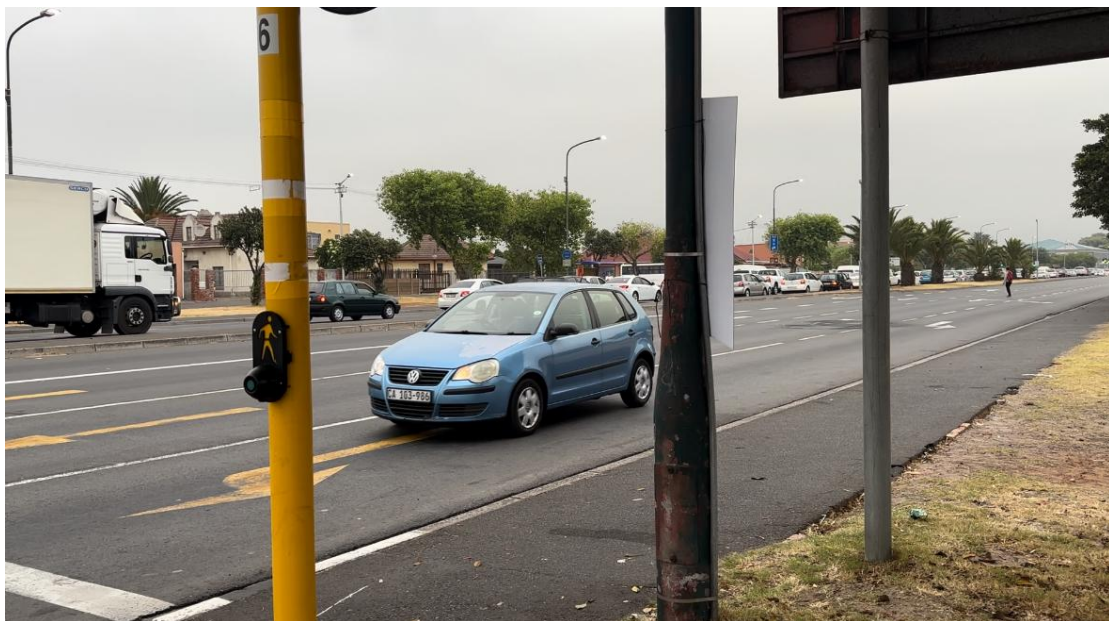


Vehicles from North Link Road turning left into Thornton Road

Traffic operations at the Klipfontein Road / Thornton Road / Protea Street intersection



Traffic officer stopping traffic from the east approach although the traffic light is still green to prevent vehicles from queuing in the intersection when there is traffic back up at the west leg exit



Long traffic queues from the Jan Smuts Drive / Klipfontein Road intersection (east approach)



Double left turn movement at Thornton Road