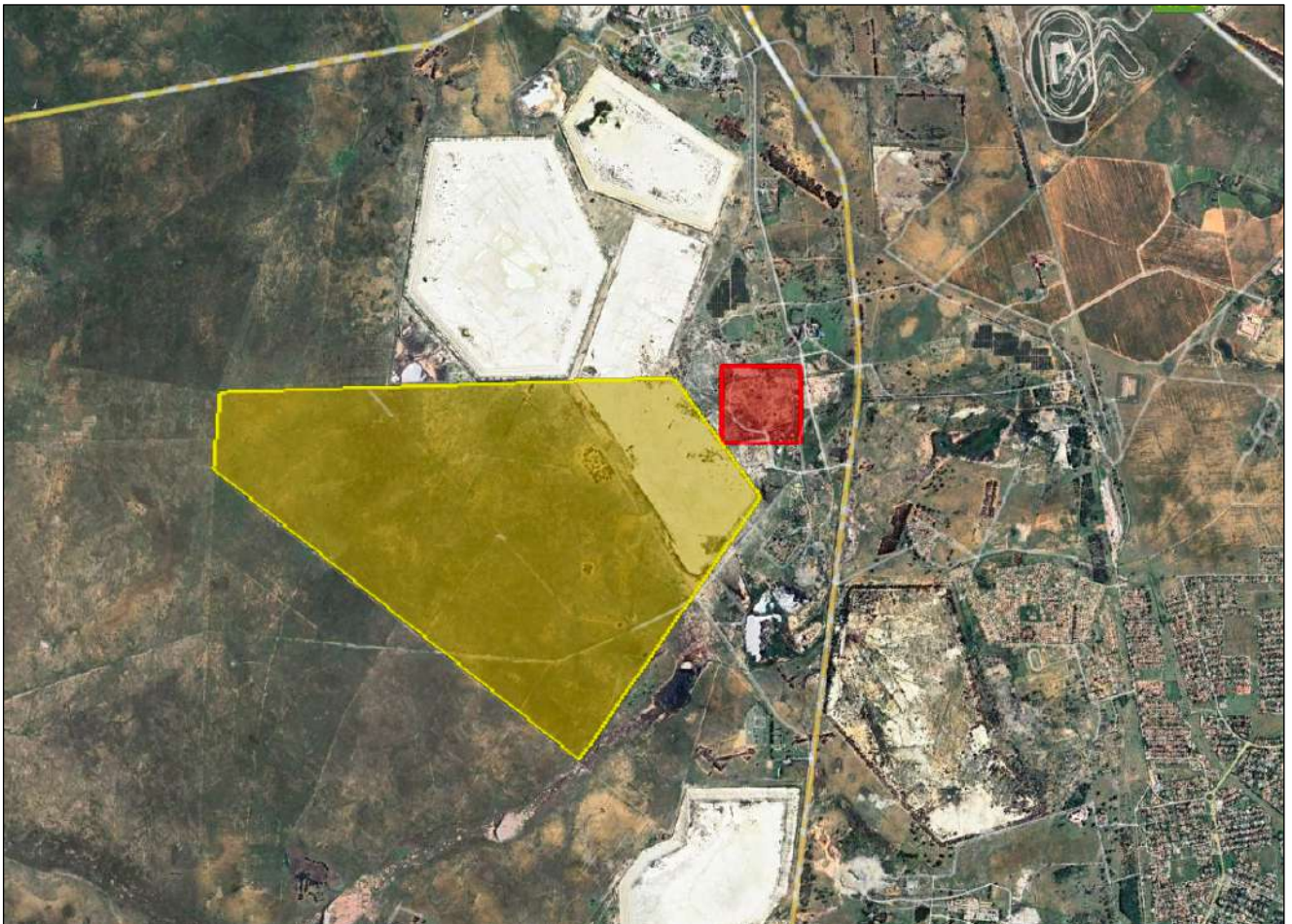




LD&S CONSULTING

LAND DEVELOPMENT AND STRUCTURAL

PROJECT NAME:	HARMONY NOOITGEDACHT TAILINGS STORAGE FACILITY
REPORT DESCRIPTION:	TRAFFIC IMPACT STATEMENT
REPORT DATE:	11 AUGUST 2025
REVISION	00
REPORT NUMBER	PJ098-TIA-REP-00



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REPORT STATUS:	Final		
REVISION NUMBER:	00		
CLIENT	Environmental Impact Management Services 8 Dalmeny Road, Pine Park Randburg, 2194 PO Box 2083 Pinegowrie 2123		
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DATE:	August 2025		
REFERENCE NUMBER:	LDS2025-098		
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EXECUTIVE SUMMARY

LD&S Consulting was appointed by Environmental Impact Management Services (EIMS) to undertake a Traffic Impact Assessment (TIA) for the proposed Harmony Nooitgedacht Tailings Storage Facility (TSF), located approximately 10 km north-west of Welkom in the Free State Province. The TSF will receive tailings via a dedicated pipeline, eliminating heavy haul truck trips associated with tailings transport. Vehicle trips will be generated primarily by personnel movements, operational support, maintenance, and periodic deliveries.

Trip Generation & Distribution Based on operational assumptions, the TSF is expected to generate 54 light vehicle trips/day and 6 heavy vehicle trips/day (one-way). Peak hour volumes are conservatively estimated at 42 inbound / 18 outbound (AM) and 24 inbound / 36 outbound (PM). Approximately 70% of traffic will originate from Welkom and approach the site from the south via the R30, while the remaining 30% will originate from Odendaalsrus via the R30 from the north. Trip assignment to the surrounding intersections was based on observed traffic patterns and site access geometry.

Traffic Impact

Traffic operations were analysed for five affected intersections on the R30:

- R34 (west) & R30
- R30 & Tshepong West access
- R30 & Steam Locomotive workshop access
- R30 & Western Holdings Mine access
- R710 (west) / R74 (east) & R30

SIDRA Intersection modelling was performed for the base year (2025), post-development (2025), and future horizon year (2030) with 2% background growth. The results indicate: Most intersections will continue to operate at acceptable Levels of Service (LOS C or better) in the 2025 horizon.

The R30 & Western Holdings Mine access intersection will experience reduced performance during the PM peak in the 2030 horizon (LOS E) due to high-priority through traffic on the R30. The R710 / R74 & R30 intersection shows capacity concerns for certain right-turn movements in 2030 (LOS F), warranting geometric improvements.

Recommendations

- Implement a right-turn lane upgrade at the R30 & Western Holdings Mine access to improve PM peak LOS to acceptable levels.
- Provide an additional right-turn lane at the R710 / R74 & R30 intersection to accommodate Welkom-origin traffic heading north.

- Enforce operational controls, including truck speed limits, load management, and regular road maintenance.

Conclusion

With the recommended upgrades and operational controls in place, the proposed Nooitgedacht TSF can be accommodated within the existing road network without significant adverse impacts on traffic operations or safety. From a traffic engineering perspective, the development is considered acceptable.

DECLARATION

This report was compiled by LD&S Consulting for Environmental Impact Management Services (EIMS), the key personnel who compiled the report is Stephan le Roux and Louis Fourie.

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Key Experience

LD&S consulting has been working in the planning, design, and construction supervision of Civil and Structural projects since 2018. Both Stephan le Roux and Louis Fourie have been involved in several studies on traffic management, road infrastructure assessments and road upgrades for more than 14 years, each having obtained their respective honours degrees from the University of Pretoria.

Declaration of Independence

We, Stephan le Roux and Louis Fourie being the authors of this report, hereby declare our independence as practicing transportation engineers, with no further interest and/or association with the LCBM project.



Stephan le Roux
LD&S Consulting



Louis Fourie
LD&S Consulting

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1 INTRODUCTION AND BACKGROUND

1.1 BACKGROUND

Environmental Impact Management Services requested LD&S Consulting to conduct a traffic analysis for the proposed Tailings Storage Facility (TSF) and supporting infrastructure located farm portions:

- A portion of the Remainder of the farm Mijannie 66.
- A Portion of the farm Goedgedacht 53.
- A portion of the farm Nooitgedacht 50.
- A portion of the farm Jacobsdal 37.
- A portion of the farm Rheedersdam 31.

Harmony Gold Mining Company Limited operates numerous gold mines in the Welkom area. The current planned Life of Mine (LOM) of the Free State operations exceed the available deposition capacity of current TSFs and therefore the proposal for the construction of the proposed Nooitgedacht TSF to cater for this additional capacity.

This report considers the traffic implications of the proposed Tailings Storage facility and associated infrastructure, presents findings, and makes necessary recommendations with regards to traffic management.

1.2 PURPOSE OF THE STUDY

The purpose of the TIA was to determine the extent and nature of the traffic generated by the proposed Tailings Storage Facility and its supporting infrastructure, to assess the impact of traffic on the existing road network and to provide design and solutions for any intersection and road shortcomings identified. The TIA addresses the following key aspects:

- The suitable and safe access to and from the site,
- The capacity of the existing and future road network within the study area,
- The potential road upgrade requirements to accommodate the proposed new tailings storage facility.

The Traffic Impact Assessment will facilitate the submission of the Environmental Impact Assessment for the proposed Tailings Storage Facility.

1.3 METHODOLOGY

The TIA was conducted in accordance with the TMH 16 (COTO, 2012), The Department of Transport Manual for Traffic Impact Studies published by the South Africa National Roads Agency Limited (SANRAL), 2012.

In terms of the guideline, a fully-fledged TIA was required to be carried out for the site. This included conducting vehicle count surveys, intersection analysis and road safety assessment where applicable. Measures such as Level of Service (LOS), delay, and volume/capacity ratio were used to quantify the intersection performance. Based on the assessment, mitigation and recommendation were proposed to ensure minimal impact on the existing road network.

1.4 REPORT STRUCTURE

The report is structured as follows:

- Section 2: Site Location and Surrounding Road Network
- Section 3: Proposed Development and Site Access
- Section 4: Traffic Flows and Trip Generation
- Section 5: Traffic Impact & Capacity Analyses
- Section 6: Road and/or Intersection Upgrade
- Section 7: Impact Assessment Methodology
- Section 8: Summary Conclusion and Recommendations
- Section 9: References
- Appendix A: Drawings
- Appendix B: Traffic counts
- Appendix C: Standard Sanral intersection designs

2 SITE LOCATION AND SURROUNDING ROAD NETWORK

2.1 SITE LOCATION

The proposed Nooitgedacht Tailings Storage Facility (TSF) is located approximately 10 km north-west of Welkom, within the Matjhabeng Local Municipality in the Free State Province. The site lies to the west of the R30 route, south of the R34, and north of the R710 regional road. Access to the facility is expected to be provided via existing mine service roads that connect to the surrounding regional road network. The TSF is situated within a predominantly mining area, characterised by existing gold mining infrastructure, open land, and associated support facilities. The locality of the proposed Nooitgedacht TSF is illustrated in Figure 2-1.

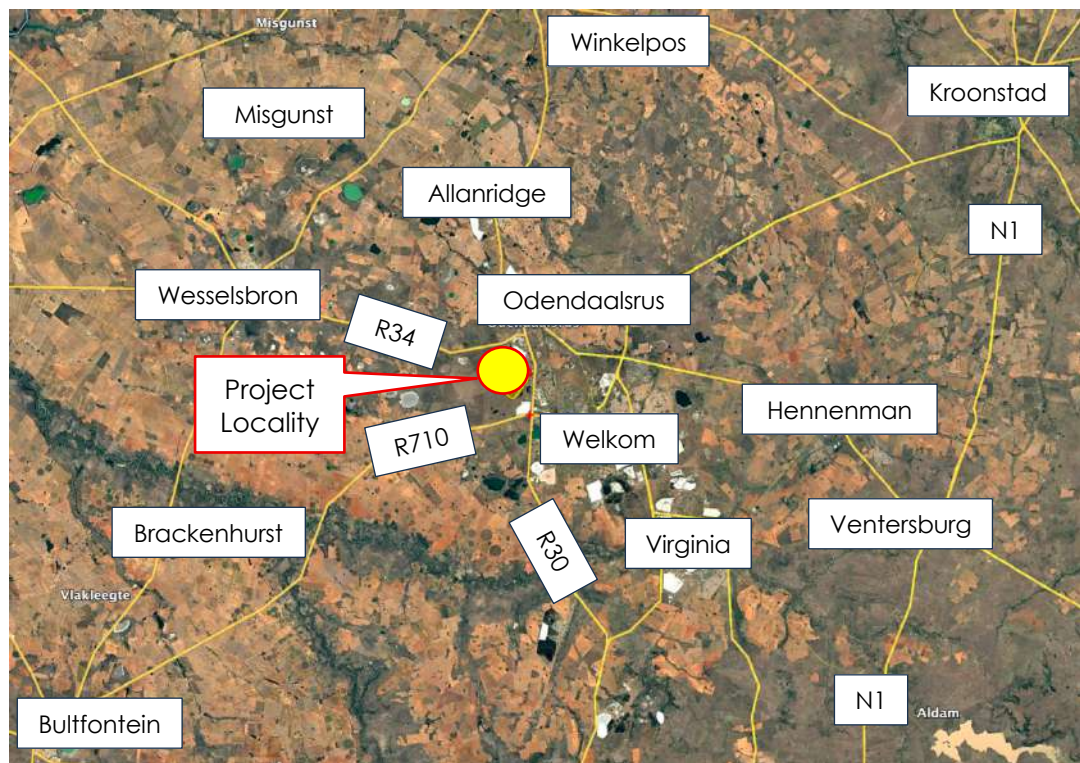


Figure 2-1: Nooitgedacht TSF Project locality

2.2 EXISTING ROAD NETWORK

The affected existing road network is illustrated in Figure 2-2. A brief description of the surrounding regional routes is provided below:

R30 (Bothaville – Welkom – Allanridge)

The R30 is a Class 2 primary distributor road, forming a major north-south corridor linking Bothaville to Welkom and further south to Allanridge and Brandfort. In the vicinity of the proposed Nooitgedacht TSF, the R30 accommodates both regional and mining-related traffic and is a key route for the movement of goods, services, and personnel between urban centres and mining operations. The R30 is a paved, single carriageway road, with periodic overtaking lanes and moderate levels of heavy vehicle activity associated with mining and agriculture.

R34 (Kroonstad – Odendaalsrus – Welkom)

The R34 is a Class 2 regional route that connects Kroonstad in the north-east with Odendaalsrus and Welkom in the south-west. It intersects the R30 just north of Welkom and serves as an important east-west corridor for regional mobility. The road is a tarred, single carriageway route used extensively by both passenger and freight vehicles, including mining-related transport. It plays a strategic role in connecting the Free State's mining belt with regional economic centres.

R710 (Welkom – Bultfontein)

The R710 runs south of the proposed development area and links Welkom to Bultfontein. It can be classified as a Class 3 distributor route providing access to smaller towns and rural areas. The route is paved and serves a mix of agricultural, mining, and local traffic. It supports light and medium-duty vehicle movement with limited freight volumes compared to the R30 and R34.

Intersections along the R30

There are 5 intersections that will be affected by the proposed development. These intersections are numbered in Figure 2-2:

- 1 – R34 (west) intersection with R30 (north and south).
- 2 – R30 (north and south) with access to Tshepong residence (east and west).
- 3 – R30 (north and south) with the steam locomotive workshop (east and west).
- 4 – R30 (north and south) with access western holdings mine (east and west).
- 5 – R710 (west), R74 (east) with R30 (north and south).

The spacing of all the affected existing intersections meet the minimum spacing requirements outlined in the TMH16. The distances between the intersections are as follows:

- Intersections 1 to 2 - 1 020m
- Intersections 2 to 3 - 2 325m
- Intersections 3 to 4 - 1 460m
- Intersections 4 to 5 - 4 234m

The guideline for minimum intersection spacing for a class 2 road according to the TMH 16 is as follows:

- Urban area all way stops and priority-controlled intersections - **800m +-15%**. All the intersections are currently priority controlled with the R30 being the priority route.

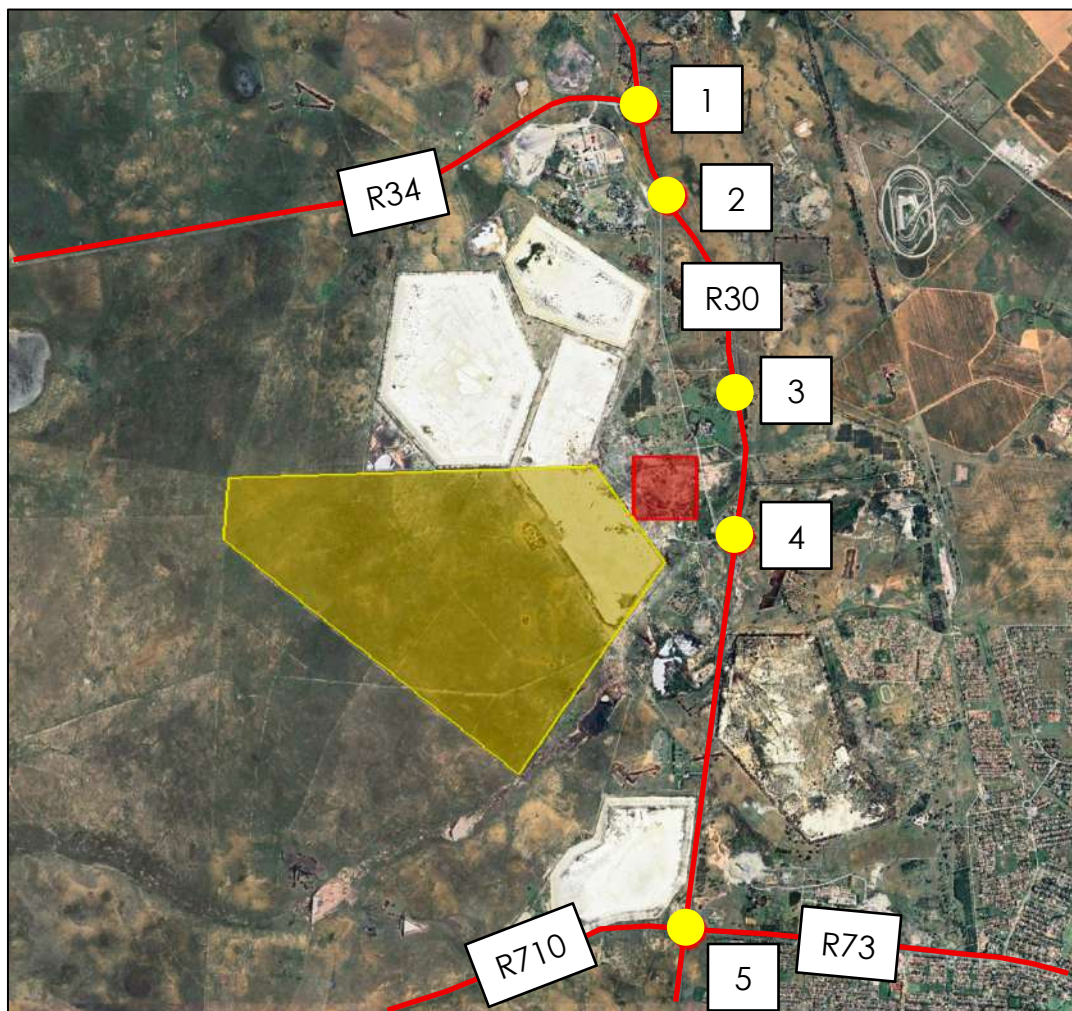


Figure 2-2: Road network

2.3 PLANNED FUTURE ROAD NETWORK

There are currently no planned routes that would affect the proposed mining development or surrounding road networks, both provincial or national.

3 PROPOSED DEVELOPMENT AND SITE ACCESS

3.1 PROPOSED DEVELOPMENT

The Nooitgedacht TSF project is currently in the planning and early implementation phase, with the establishment of the Tailings Storage Facility (TSF) forming a critical component of the mine's long-term operational strategy. The initial phase involves the construction of the TSF footprint, associated infrastructure such as access roads, laydown areas, and offices, and the installation of the pipeline system for tailings delivery.

Future phases will support ongoing mining operations and may include expansions to the TSF, additional support infrastructure, and increased on-site activity. As the facility becomes operational and traffic demand increases, particularly from construction, maintenance, and personnel transport, upgrades to the surrounding road network particularly access routes from the R30 may be required. These upgrades could include improvements to mine access roads and intersections to accommodate the expected growth in vehicle volumes, including a mix of heavy and light vehicles.

3.2 SITE ACCESS ARRANGEMENTS

Reference is made to appendix A of this report for the site access drawings. It is anticipated as outlined in this report that access will be gained from the R30 and the Western Holdings Mine Access road.

3.2.1 CLASS 2 INTERSECTIONS

As was discussed under section 2.2 there are 5 priority-controlled intersections with the R30 which is a class 2 road. The intersections are compliant with standard Sanral intersections (Refer to Figure 2-2 and Appendix E):

- 1 – Standard for temporary at-grade intersection on single carriageway.
- 2 – Standard for intersection with sheltered right turn lane.
- 3 – Standard for intersection with numbered gravel district road.
- 4 – Standard T-junction with right turn lane.
- 5 – Standard intersection with sheltered right turn.

3.2.2 CLASS 4 INTERSECTIONS

The proposed Nooitgedacht TSF will likely gain access from three intersections referred to as access 2, 3 and 4 in section 2.2 and Figure 2-2 and then in turn travel along the existing haul roads towards the proposed TSF and supporting infrastructure. A graphical illustration is provided in Figure 3-1.

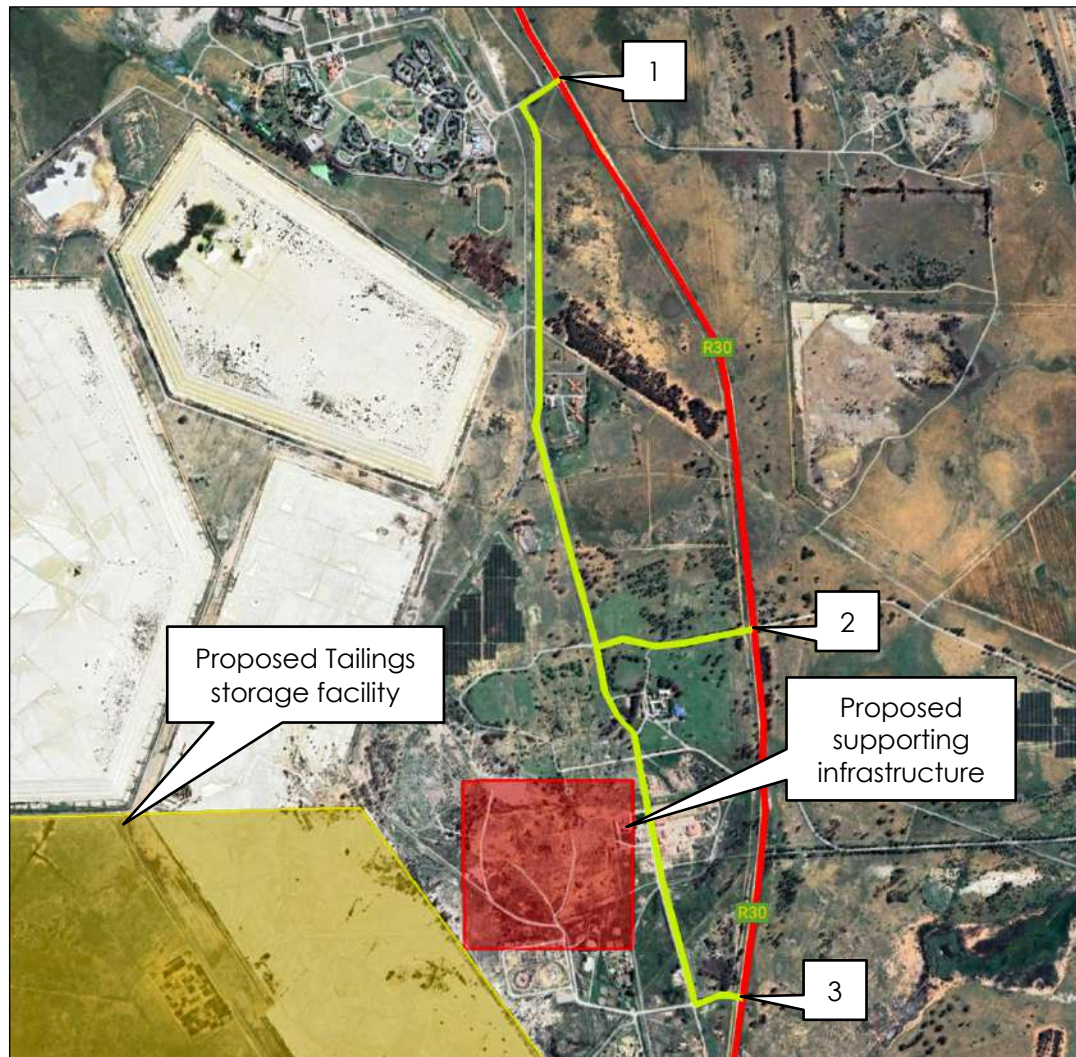


Figure 3-1: Internal access

4 TRAFFIC FLOWS AND TRIP GENERATION

4.1 EXISTING TRAFFIC FLOWS AND OPERATIONS

The existing traffic flows and movements observed on Tuesday, 27 June 2025 via manual traffic counts, were considered as the 2025 base traffic flow scenario. The available traffic counts were used to obtain the peak AM, PM and midday traffic that will be used in the analysis.

4.1.1 R34 WEST INTERSECTION WITH R30

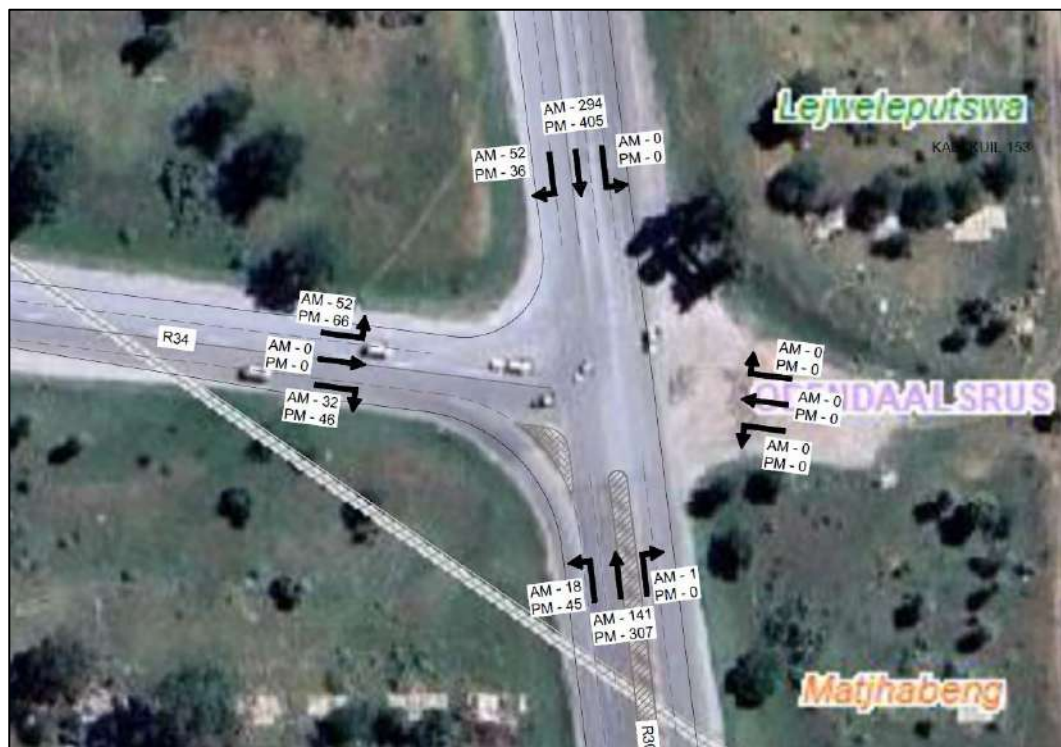


Figure 4-1: Peak hour traffic counts R34 & R30

4.1.2 HARMONY TSHEPONG WEST ACCESS INTERSECTION WITH R30

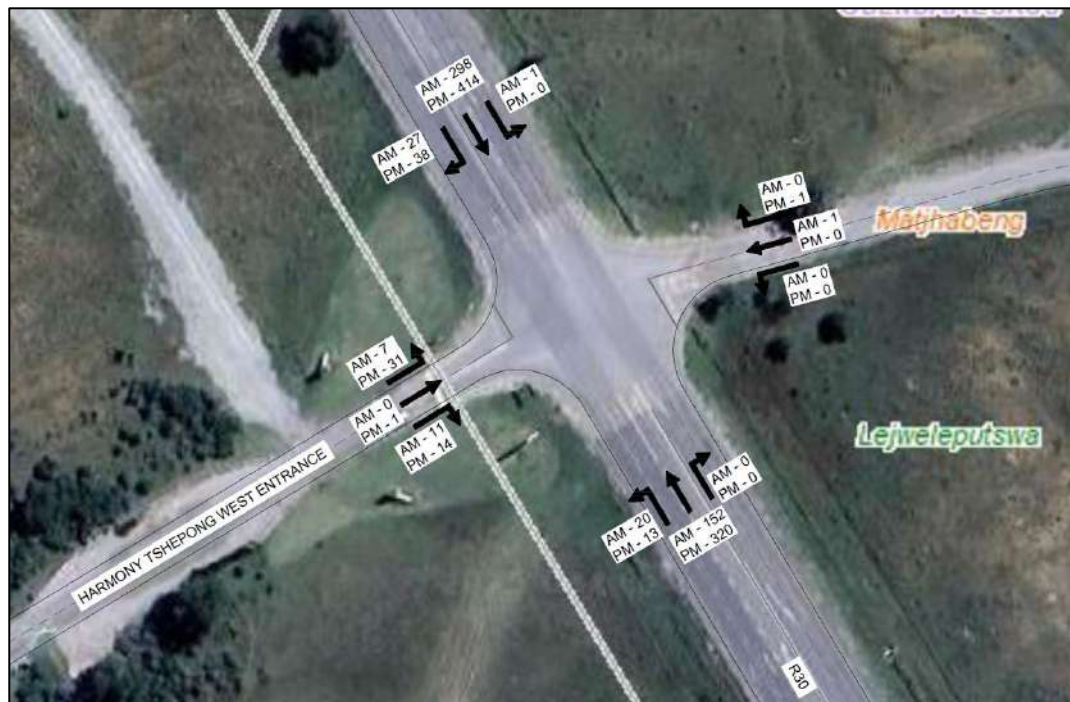


Figure 4-2: Peak hour traffic counts HTWA & R30

4.1.3 INTERSECTION R30 AND STEAM LOCOMOTIVE ACCESS



Figure 4-3: Peak hour traffic counts SLWA & R30

4.1.4 WESTERN HOLDING MINE ACCESS INTERSECTION WITH R30



Figure 4-4: Peak hour traffic counts WHMA & R30

4.1.5 R710/R73 WEST INTERSECTION WITH R30



Figure 4-5: Peak hour traffic counts R710/R73 & R30

4.2 FUTURE BACKGROUND TRAFFIC FLOWS

4.2.1 TRAFFIC GROWTH

According to Table 1.1 in the TMH 17 of 2013 a low growth area's growth rate should be between 0 to 3%. A 2% growth rate was therefore considered appropriate and was used in the study.

4.2.2 TRIP GENERATION FROM OTHER DEVELOPMENTS (LATENT RIGHTS)

No information of any known latent rights is readily available, however a growth rate of 2% has been assumed for the study area.

4.3 TRIP GENERATIONS

This report presents a conservative trip generation assessment for the proposed Nooitgedacht Tailings Storage Facility (TSF). The TSF will receive tailings via a pipeline, meaning there will be no haul truck traffic associated with tailings delivery. The main trip generation will be from supporting infrastructure including offices, laydown areas, light vehicles for staff, and occasional heavy vehicles for maintenance and deliveries

4.3.1 ASSUMPTIONS

The following assumptions were applied to estimate the trip generation for the TSF:

1. Tailings will be delivered via a pipeline, therefore no heavy haul truck trips.
2. Light vehicles will mainly consist of staff and operational support trips.
3. Heavy vehicle movements will consist of delivery trucks, maintenance vehicles, and waste removal.
4. Peak hour volumes are estimated conservatively, assuming:
 - 70% of trips originate from Welkom (south of site)
 - 30% of trips originate from Odendaalsrus (north of site)
5. Trips from Welkom will travel north on the R30 and turn left into the site.
6. Trips from Odendaalsrus will travel south on the R30 and turn right into the site.
7. Existing traffic count data from nearby intersections was used as a reference.

Based on the assumptions the traffic volumes are summarised in

Table 4-1.

Table 4-1: Assumed traffic volumes

Trip Type	Light Vehicles (LDV/sedan)	Heavy Vehicles (trucks)	Total Trips
Staff commuting (2 shifts/day)	40	0	40
Supervisors/contractors/visitors	10	0	10
Service/maintenance vehicles	3	3	6
Consumable delivery	1	2	3
Waste or sludge transport	0	1	1
Daily Totals (one-way trips)	54	6	60

4.3.2 ESTIMATED TRIP GENERATION

Table 4-2: Trip generation because of the proposed TSF

Vehicle Type	AM Peak Hour Inbound	AM Peak Hour Outbound	PM Peak Hour Inbound	PM Peak Hour Outbound
Light Vehicles	38	16	22	32
Heavy Vehicles	4	2	2	4
Total	42	18	24	36

Note: Values are conservative estimates based on comparable mining-related support facilities of similar scale. Trips are split between heavy and light vehicles to reflect operational requirements.

4.4 TRAFFIC DISTRIBUTION TO INTERSECTIONS

Table 4-3: Trip distribution

Intersection	Direction	AM Peak Added	PM Peak Added
R34 (W) int with R30 (N-S)	heading south	$42 \times 30\% = 13$	$24 \times 30\% = 7$
	heading north	$18 \times 30\% = 5$	$46 \times 30\% = 14$
R30 (N-S) int with Tshepong residence (E-W)	heading south	$42 \times 30\% = 13$	$24 \times 30\% = 7$
	heading north	$18 \times 30\% = 5$	$46 \times 30\% = 14$
R30 (N-S) with the steam locomotive workshop (E-W)	heading south	$42 \times 30\% = 13$	$24 \times 30\% = 7$
	heading north	$18 \times 30\% = 5$	$46 \times 30\% = 14$
R30 (N-S) with access western holdings mine (E-W)	heading west from north	$42 \times 30\% = 13$	$24 \times 30\% = 7$
	heading west from south	$42 \times 70\% = 29$	$24 \times 70\% = 17$
	heading north from west	$18 \times 30\% = 5$	$36 \times 30\% = 11$
	heading south from west	$18 \times 70\% = 13$	$36 \times 70\% = 25$
R710 (W), R74 (E) with R30 (N-S)	Heading north from east	$42 \times 70\% = 29$	$24 \times 70\% = 17$
	heading east from north	$18 \times 70\% = 13$	$36 \times 70\% = 25$

5 TRAFFIC IMPACT & CAPACITY ANALYSES

Traffic modelling was done with the aid of Sidra Intersection software, the scenarios that were modelled are as follows:

- Scenario 1 – Existing intersection with existing traffic volumes (2025).
- Scenario 2 – Existing intersection with additional trips (2025).
- Scenario 3 – Existing intersection with additional trips and traffic growth (2030).

5.1 R30NS & R34 INTERSECTION

The existing traffic volumes with the additional trips generated was modelled on the R34 and R30 intersection. The trips was assigned to the north and south movements heading to and from Odendaalsrus.

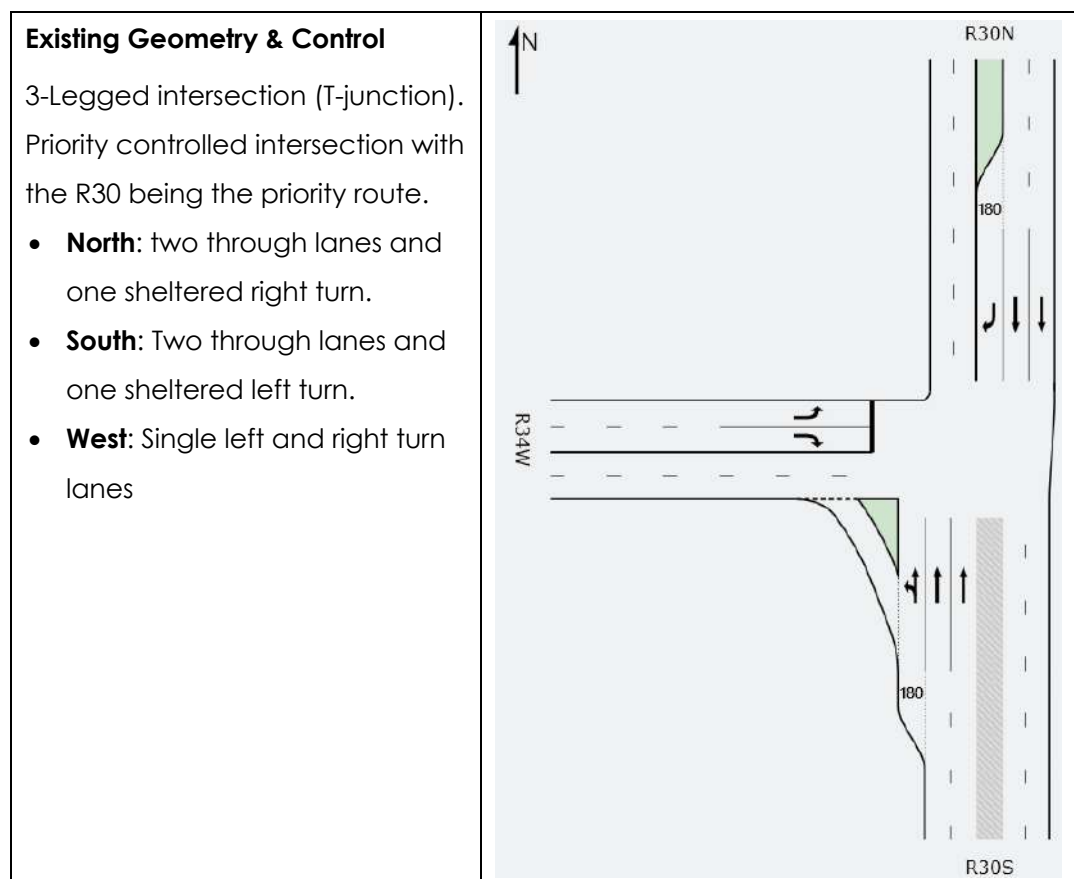


Figure 5-1: Intersection geometry

The results from the Sidra Intersection model for the intersection is summarised in Table 5-1.

Table 5-1: Traffic analysis and results

Scenario	Peak	Overall			Comment
		LOS	Delay	v/C _{max}	
Scenario 1	AM	C	15.8	0.14	Acceptable Level of service
Scenario 2	AM	C	16.0	0.16	Acceptable Level of service
Scenario 3	AM	C	16.0	0.16	Acceptable Level of service
Scenario 1	PM	C	20.8	0.16	Acceptable Level of service
Scenario 2	PM	C	23.0	0.20	Acceptable Level of service
Scenario 3	PM	C	23.9	0.21	Acceptable Level of service

The intersection operates at an acceptable Level of Service with an acceptable sight distance and acceptable operational conditions.

5.2 R30 NS & HARMONY TSHEPONG WEST ENTRANCE

The existing traffic volumes with the additional trips generated was modelled on the R30 and harmony Tshepong west entrance intersection. The trips was assigned to the north and south movements heading to and from Odendaalsrus.

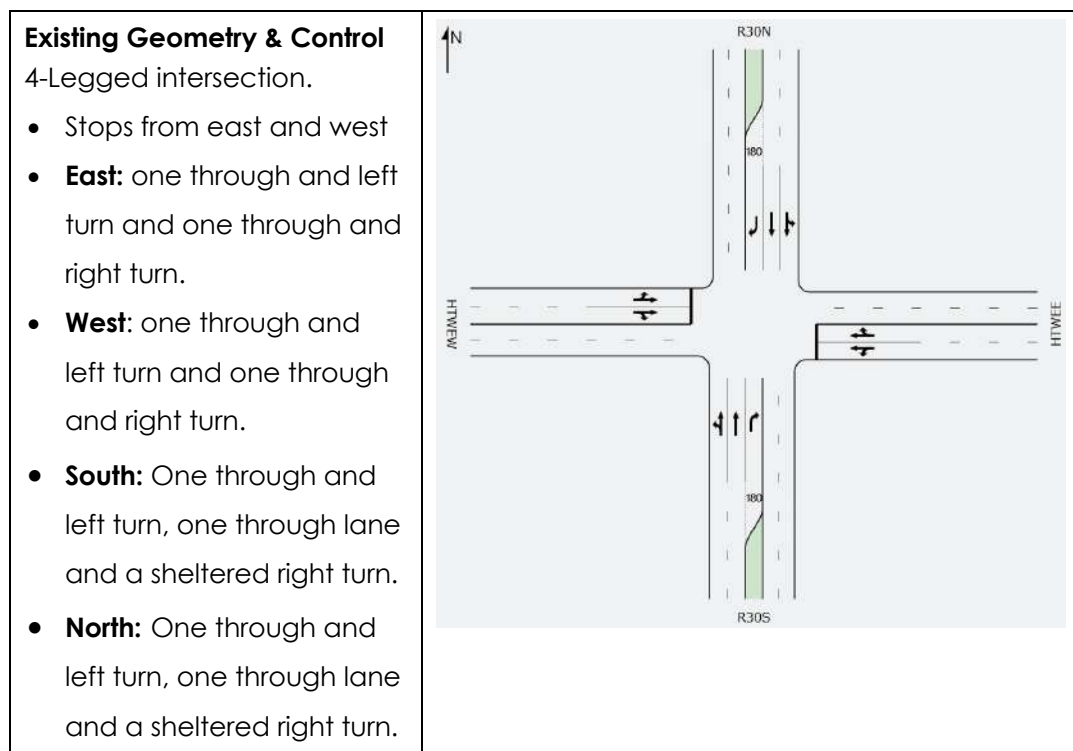


Figure 5-2: Intersection geometry

The results from the Sidra Intersection model for the intersection is summarised in Table 5-2.

Table 5-2: Traffic analysis and results

Scenario	Peak	Overall			Comment
		LOS	Delay	v/C _{max}	
Scenario 1	AM	C	19.8	0.09	Acceptable Level of service
Scenario 2	AM	C	21.4	0.10	Acceptable Level of service
Scenario 3	AM	C	22.0	0.11	Acceptable Level of service
Scenario 1	PM	E	35.4	0.11	Poor Level of service
Scenario 2	PM	E	42.0	0.15	Poor Level of service
Scenario 3	PM	E	43.0	0.14	Poor Level of service

The intersection operates at a poor level of service due to the right movements heading south (LOS E) and heading north (LOS D). The intersection has an acceptable sight distance.

5.3 R30 NS & ROAD TO LOCOMOTIVE WORKSHOP INTERSECTION

The road that intersects the R30 from the east is a gravel road and then road to the west is a surfaced road with a small road width. The width of the road may cause operational issues with larger vehicles. It was therefore not considered as an ideal access road for the proposed TSF and supporting areas.

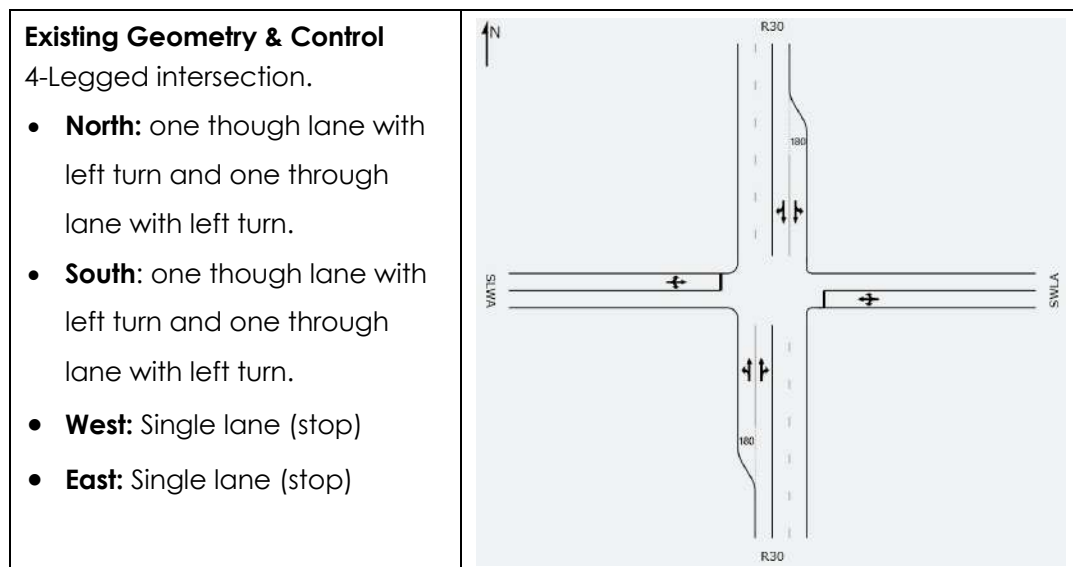


Figure 5-3: Intersection geometry

The results from the Sidra Intersection model for the intersection is summarised in

Table 5-3.

Table 5-3: Traffic analysis and results

Scenario	Peak	Overall			Comment
		LOS	Delay	v/C _{max}	
Scenario 1	AM	C	17.0	0.10	Acceptable Level of service
Scenario 2	AM	C	17.9	0.11	Acceptable Level of service
Scenario 3	AM	C	18.2	0.11	Acceptable Level of service
Scenario 1	PM	C	24.1	0.14	Acceptable Level of service
Scenario 2	PM	D	27.4	0.15	Tolerable Level of Service
Scenario 3	PM	D	28.2	0.15	Tolerable Level of Service

The intersection operates at a tolerable Level of Service as a result of the number of conflicting lanes that need to be crossed. The intersection has an acceptable sight distance.

5.4 R30 NS & WESTERN MINE ACCESS INTERSECTION

The intersection is well positioned for the access to the proposed TSF and supporting areas and infrastructure. The estimated trip generations to and from the TSF and supporting areas was therefore modelled on this intersection.

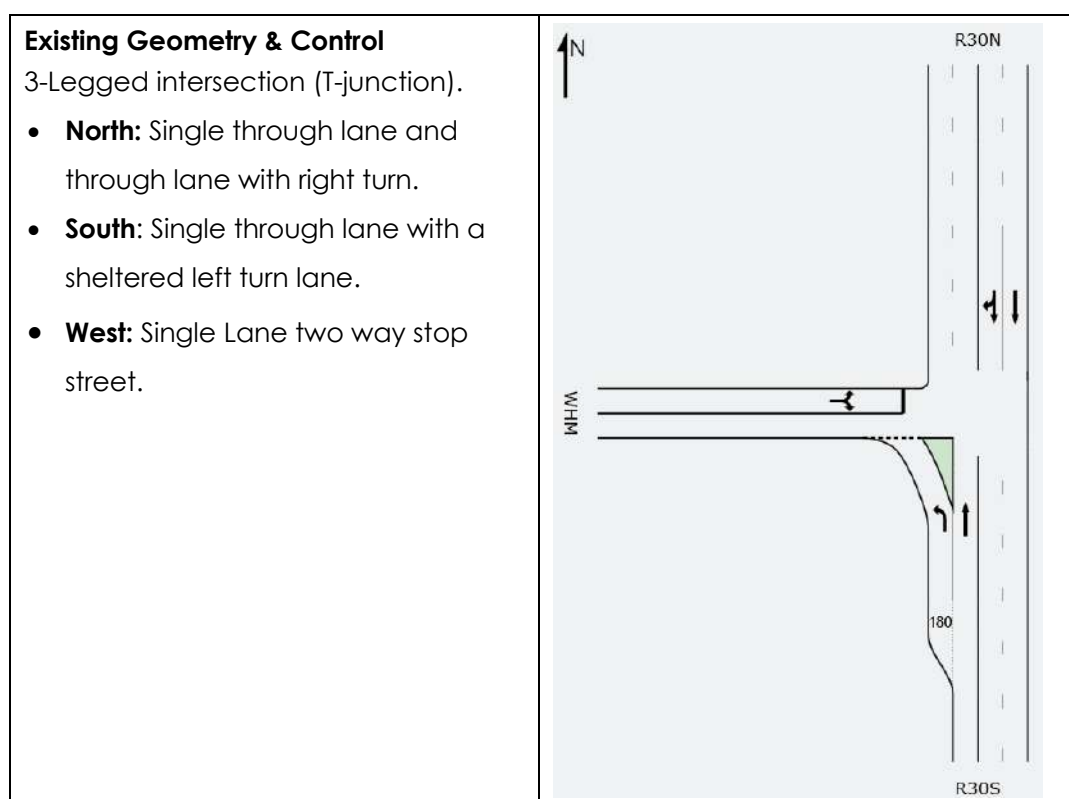


Figure 5-4: Intersection geometry

The results from the Sidra Intersection model for the intersection is summarised in Table 5-4.

Table 5-4: Traffic analysis and results

Scenario	Peak	Overall			Comment
		LOS	Delay	v/C _{max}	
Scenario 1	AM	C	17.7	0.11	Acceptable Level of service
Scenario 2	AM	C	18.9	0.12	Acceptable Level of service
Scenario 3	AM	C	21.1	0.22	Acceptable Level of service
Scenario 1	PM	C	20.3	0.21	Acceptable Level of service
Scenario 2	PM	C	22.7	0.23	Acceptable Level of service
Scenario 3	PM	E	45.5	0.70	Poor Level of service

The intersection operates at a poor level of service for vehicles leaving the TSF and supporting areas onto the R30 during scenario 3 in the PM peak. This is mainly due to the priority for vehicles travelling at high speeds along the R30.

5.5 R710&R73 INTERSECTION WITH R30

This intersection carries the trips to and from Welkom towards the proposed TSF area. The assumption made for the purpose of the study is that 70% of the traffic is attributed to the Welkom area and is therefore modelled on this intersection.

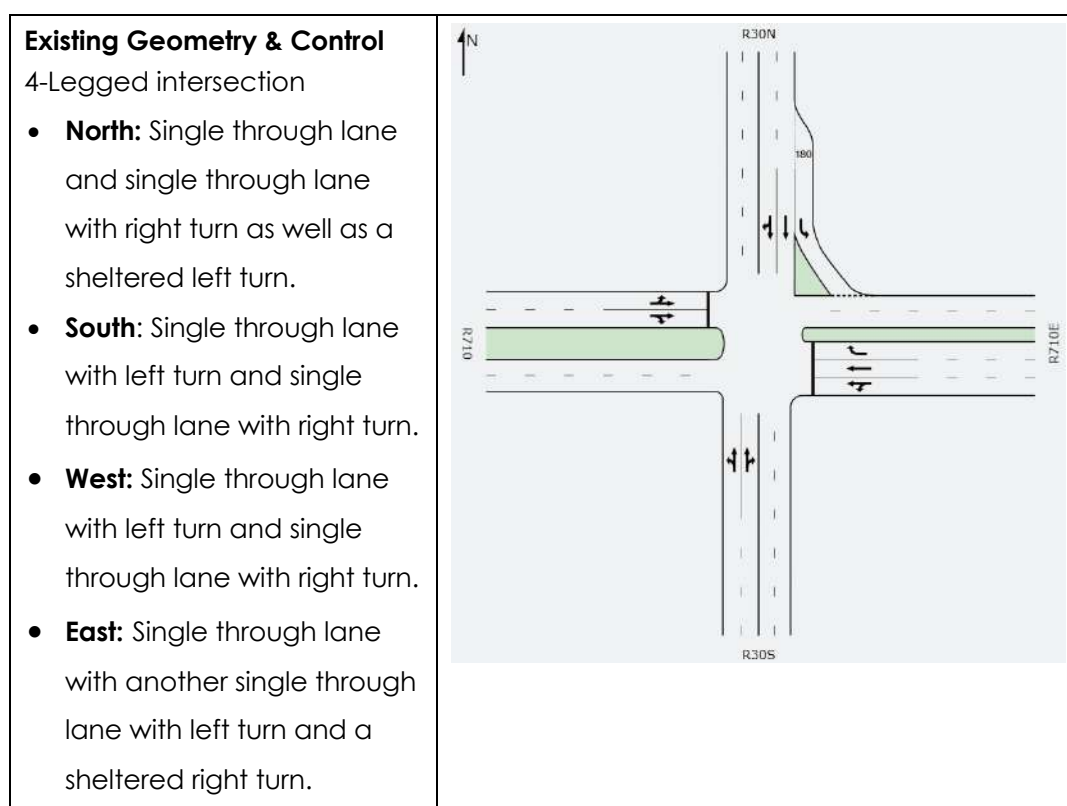


Figure 5-5: Intersection geometry

The results from the Sidra Intersection model for the intersection is summarised in Table 5-4.

Table 5-5: Traffic analysis and results

Scenario	Peak	Overall			Comment
		LOS	Delay	v/C_{max}	
Scenario 1	AM	C	17.1	0.24	Acceptable Level of service
Scenario 2	AM	C	17.3	0.28	Acceptable Level of service
Scenario 3	AM	C	17.8	0.35	Acceptable Level of service
Scenario 1	PM	D	26.1	0.74	Fair Level of service
Scenario 2	PM	E	38.3	0.87	Poor Level of service
Scenario 3	PM	F	55.4	0.94	Failing Level of service

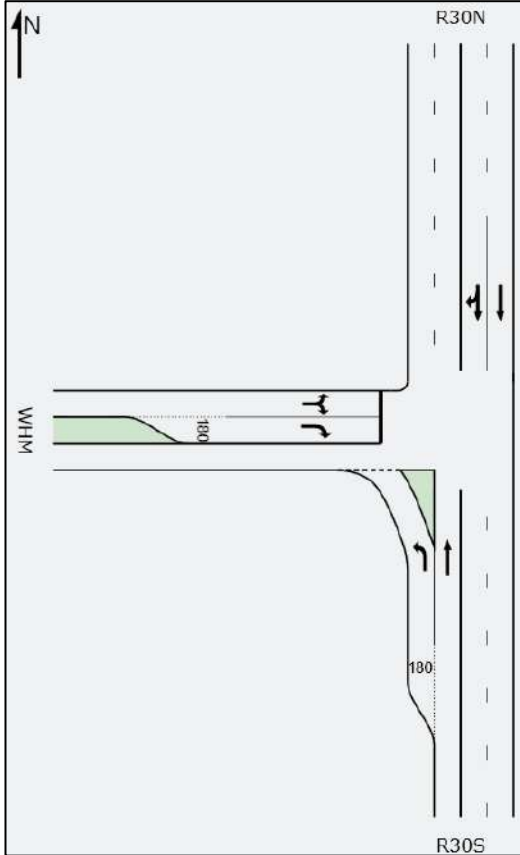
The intersection operates at an acceptable Level of service, except for the right turn from the east onto the R30, this movement results in a Level of Service F during scenario 3.

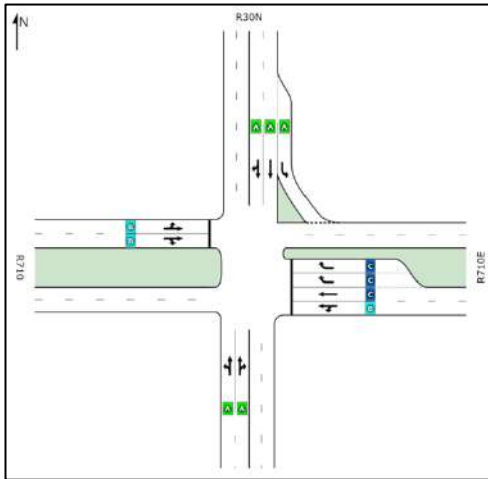
6 ROAD AND/OR INTERSECTION UPGRADE

6.1 R30 INTERSECTIONS

Based on the evaluations done on the intersections that will be affected by the proposed TSF and supporting area trip generation, some upgrade recommendations are proposed. A summary of the recommendations is provided in Table 6-1.

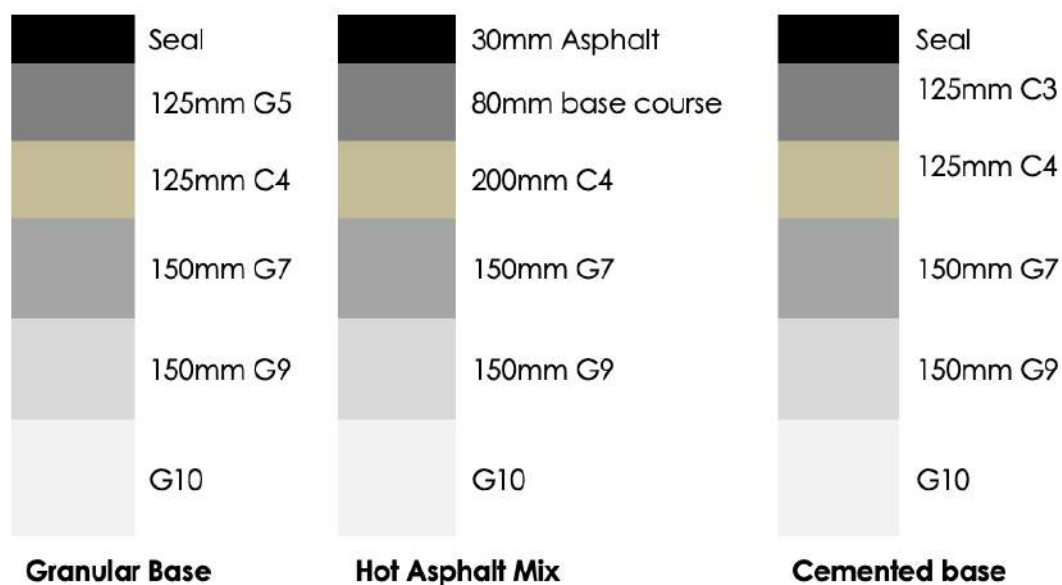
Table 6-1: Intersection recommendations

Intersection	Findings	Recommendations
R34 (W) int with R30 (N-S)	Acceptable Level of service	No upgrades or alterations recommended
R30 (N-S) int with Tshepong residence (E-W)	Poor level of service for vehicles turning onto the R30 during PM Peak	No upgrades or alterations recommended since very little traffic volume was observed for the east and west connecting roads.
R30 (N-S) with the steam locomotive workshop (E-W)	Tolerable Level of Service	No upgrades or alterations recommended
R30 (N-S) with access western holdings mine (E-W)	Poor Level of service during PM peak once trips have been introduced.	Additional right turn lane to improve the level of service to D. 

R710 (W), R74 (E) with R30 (N-S)	Failing level of service for vehicles travelling from Welkom (east) onto the R30 heading north	Add additional right turn lane as indicated. 
---	--	--

6.2 INTERNAL ROAD LAYERWORKS

Based on the traffic counts as well as the expected trip generation, the equivalent standard axle (E80) for the 20 year life cycle was estimated at 105 436. It is further assumed that the road classifies as a lightly trafficked rural road which classifies as a Road category C according to the TMH4 (1996). The TMH proposes the following pavement designs for the class of road. These layerworks should be considered for all new routes and intersection as well as repair works on roads.



7 IMPACT ASSESSMENT METHODOLOGY

The following potential traffic-related impacts have been identified for the proposed development:

- 1. Additional traffic loading on the existing paved and gravel sections may cause degradation of pavement surfaces, shoulder wear, and accelerated deterioration at intersections and access points.**
 - a. Mitigation Alternative 1: *Implement regular pavement inspections and targeted maintenance (pothole repair, shoulder grading where unpaved).*
 - b. Mitigation Alternative 2: *Upgrade any remaining gravel sections to paved standard and reinforce high-stress areas (e.g., heavy vehicle turning radii) with thicker surfacing or concrete pads.*
- 2. Added traffic volumes and frequency could increase noise levels, particularly from heavy vehicles.**
 - a. Mitigation Alternative 1: Enforce site speed limits for heavy vehicles (≤ 40 km/h near sensitive receptors).
 - b. Mitigation Alternative 2: Ensure smooth, well-maintained pavement to reduce vibration and impact noise.
- 3. Air quality impacts from dust emissions will primarily occur on any remaining gravel or unsealed surfaces (e.g., laydown areas, unpaved shoulders).**
 - a. Mitigation Alternative 1: Apply dust suppression methods (dust palliatives or water spraying) to unsealed sections.
 - b. Mitigation Alternative 2: Upgrade unpaved areas to sealed surfaces where practical.
- 4. Stormwater management challenges may arise from increased runoff on paved sections and sediment-laden flows from any remaining gravel surfaces.**
 - a. Mitigation Alternative 1: Provide formal stormwater crossings and side drains along access roads.
 - b. Mitigation Alternative 2: Implement water diversion, attenuation facilities, and silt traps to protect road surfaces and adjacent land.
- 5. Erosion risks are reduced on paved sections but remain a concern at unsealed road shoulders, drainage outlets, and during heavy rainfall.**
 - a. Mitigation Alternative 1: *Install silt-trap structures and erosion control measures at vulnerable low points.*
 - b. Mitigation Alternative 2: *Upgrade critical gravel areas to paved surfaces and ensure a formal stormwater management plan is implemented.*

Table 7-1: Impact Assessment

Impact Description				Pre Mitigation							Post Mitigation								Priority Factor Criteria			
Identifier	Impact	Alternative	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Cumulative Impact	Irreplaceable loss	Priority Factor	Final score
1	Layerwork deterioration	1	Constr	-1	3	4	3	4	3	-10.5	-1	3	2	2	1	3	-6	Med	1	1	1.00	-6
1	Layerwork deterioration	2	Constr	-1	3	4	3	4	3	-10.5	-1	3	2	1	1	2	-3.5	High	1	2	1.13	-3.94
2	Noise Impact	1	Oper	-1	1	1	1	2	3	-3.75	-1	1	1	2	1	2	-2.5	Med	1	1	1.00	-2.5
2	Noise Impact	2	Oper	-1	1	1	1	2	3	-3.75	-1	1	1	2	1	2	-2.5	High	1	1	1.00	-2.5
3	Air Quality Impact	1	Constr	-1	2	1	3	2	3	-6	-1	2	1	2	1	2	-3	Med	1	1	1.00	-3
3	Air Quality Impact	2	Constr	-1	2	1	3	2	3	-6	-1	2	1	2	1	2	-3	High	1	1	1.00	-3
4	SWMP Impact	1	Constr	-1	2	2	1	3	2	-4	-1	2	2	2	1	2	-3.5	Med	1	2	1.13	-3.94
4	SWMP Impact	2	Constr	-1	2	2	1	3	2	-4	-1	2	2	2	1	2	-3.5	High	1	2	1.13	-3.94
5	Erosion impact	1	Constr	-1	2	2	2	3	2	-4.5	-1	2	2	2	1	2	-3.5	Med	1	2	1.13	-3.94
5	Erosion impact	2	Constr	-1	2	2	2	3	2	-4.5	-1	2	2	2	1	2	-3.5	High	1	2	1.13	-3.94

8 SUMMARY CONCLUSION AND RECOMMENDATIONS

8.1 RECOMMENDATIONS

- Implement a right-turn lane upgrade at the R30 & Western Holdings Mine access to improve PM peak LOS to acceptable levels.
- Provide an additional right-turn lane at the R710 / R74 & R30 intersection to accommodate Welkom-origin traffic heading north.
- Enforce operational controls, including truck speed limits, load management, and regular road maintenance.

8.2 CONCLUSION



With the recommended upgrades and operational controls in place, the proposed Nooitgedacht TSF can be accommodated within the existing road network without significant adverse impacts on traffic operations or safety. From a traffic engineering perspective, the development is considered acceptable.

9 REFERENCES

- Joubert, Sampson, et al, TMH 16 Volume 1 - South African Traffic Impact and Site Assessment Manual, COTO, August 2012.
- Joubert, Sampson, et al, TMH 16 Volume 2 - South African Traffic Impact and Site Traffic Assessment Standards and requirements Manual, COTO, August 2012.
- Department of Transport, Guidelines for Traffic Impact Studies, Report No. PR 93/645, Pretoria, 1995.
- Department of Transport, South African Trip Generation Rates, Report No. RR 92/228, Pretoria, 1995.
- Committee of Transport Officials, South African Trip Data Manual, TMH17, Version 1.01, 2013
- Transportation Research Board. Highway Capacity Manual, Special Report No. 209, 2000.

APPENDIX A: DRAWINGS



<p>NOTES AND SPECIFICATIONS</p> <p>1. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE REQUIREMENTS OF THE RELEVANT SABS REQUIREMENTS.</p> <p>2. ALL DIMENSIONS ARE IN MILLIMETERS.</p> <p>3. DO NOT SCALE FROM THIS DRAWING.</p> <p>4. ALL DIMENSIONS TO BE CHECKED AND APPROVED ON SITE.</p> <p>5. THE DRAWING MUST BE READ IN CONJUNCTION WITH THE ARCHITECTS PLAN IF SO APPLICABLE</p> <p>6. FINAL POSITION OF SERVICES ARE TO BE DETERMINED ON SITE.</p>	<p>DRAWING INFORMATION</p> <table><thead><tr><th>REV</th><th>DESCRIPTION</th><th>DESIGN</th><th>CHECKED</th><th>APPROVED</th></tr></thead><tbody><tr><td>00</td><td>ISSUED FOR INFORMATION</td><td>LPF</td><td>LPF</td><td>LPF</td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></tbody></table>	REV	DESCRIPTION	DESIGN	CHECKED	APPROVED	00	ISSUED FOR INFORMATION	LPF	LPF	LPF																																									<p>PROFESSIONAL ENGINEER</p> <p>INITIALS AND SURNAME: _____</p> <p>DATE: _____</p> <p>PR NUMBER: _____</p> <p>SIGNATURE: _____</p> <p>PROJECT STATUS</p> <div><div><input checked="" type="radio"/> INFORMATION ONLY</div><div><input type="radio"/> DESIGN DRAWINGS</div><div><input type="radio"/> TENDER DRAWING</div><div><input type="radio"/> APPROVED CONSTRUCTION DRAWING</div><div><input type="radio"/> AS-BUILT DRAWINGS</div></div>	<p>CLIENT INFORMATION</p> <div><div><p>EIMS</p><p>ENVIRONMENTAL IMPACT MANAGEMENT SERVICES</p><p>8 Dalmeny Road Pine Park Randburg 2194</p></div><div><p>ENVIRONMENTAL IMPACT MANAGEMENT SERVICES</p><p>8 Dalmeny Road Pine Park Randburg 2194</p></div></div>	<p>CONSULTANT INFORMATION</p> <div><div><p>LD&S CONSULTING</p></div><div><p>LD&S CONSLTING 34 Nuwe Hoop Street Maroelana Pretoria 0081 info@ldands.com</p></div></div>	<p>DRAWING INFORMATION</p> <div><div><p>PROJECT NAME</p><p>HARMONY NOOTGEDACHT TAILINGS STORAGE FACILITY TRAFFIC IMPACT ASSESSMENT</p></div><div><p>DRAWING NUMBER</p><p>PJ098-TIA-RD-001</p></div><div><p>DRAWING NAME</p><p>R34-W AND R30-NS</p></div></div> <div><div><p>DATE: 03 AUGUST 2025</p></div><div><p>REVISION: 00</p></div><div><p>DRAWING SCALE: NTS</p></div></div>
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DRAWING INFORMATION

PROJECT NAME

HARMONY NOOITGEDACHT TAILINGS STORAGE FACILITY TRAFFIC IMPACT ASSESSMENT

DRAWING NUMBER

PJ098-TIA-RD-002

DRAWING NAME



R34-W AND R30-NS

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DRAWING INFORMATION

PROJECT NAME

HARMONY NOOTGEDACHT TAILINGS STORAGE FACILITY TRAFFIC IMPACT ASSESSMENT

DRAWING NUMBER

PJ098-TIA-RD-004

DRAWING NAME

R34-W AND R30-NS

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DRAWING NUMBER

PJ098-TIA-RD-005

DRAWING NAME

R34-W AND R30-NS

DATE: 03 AUGUST 2025

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APPENDIX B: CLASSIFIED TRAFFIC COUNT

LD&S CONSULTING

R30, Welkom, Traffic Surveys
Free State

Report No T2025/069

June 2025



TRAFFTRANS (PTY) LTD
TRAFFIC-LAB

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012 543 1379

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27 June 2025

LD&S Consulting
34 Nuwe Hoop Street
Maroelana
Pretoria

Attention: Louis Fourie

Dear Sirs

TRAFFIC SURVEYS: R30, WELKOM

We are pleased to submit our summary report on the traffic surveys conducted along the R30, in the Welkom area, Free State, during June 2025.

We trust this report meets with your requirements, however, should you require any further information, please do not hesitate to contact us.

Yours faithfully

LA HAIGH Dip Transpotation
TRAFFTRANS (PTY) LTD

LD&S CONSULTING

R30, Welkom, Traffic Surveys

REPORT NUMBER T2025/069

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1. INTRODUCTION	1
2. SCOPE OF THE REPORT	1
3. REVIEW OF THE SURVEY	1
3.1 Manual Traffic Intersection Surveys	1
3.2 Notes	1

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FIGURE 1:	Locality Plan	2
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LIST APPENDICES

APPENDIX A:	Manual Traffic Intersection Surveys
-------------	-------------------------------------

1. INTRODUCTION

LD&S Consulting appointed Trafftrans (Pty) Ltd to undertake traffic surveys along the R30, in the Welkom area, Free State.

2. SCOPE OF THE REPORT

The survey consisted of manual survey on a normal weekday at four locations. The locations of the stations are shown in **Figure 1**.

3. REVIEW OF THE SURVEY

3.1 Manual Traffic Surveys

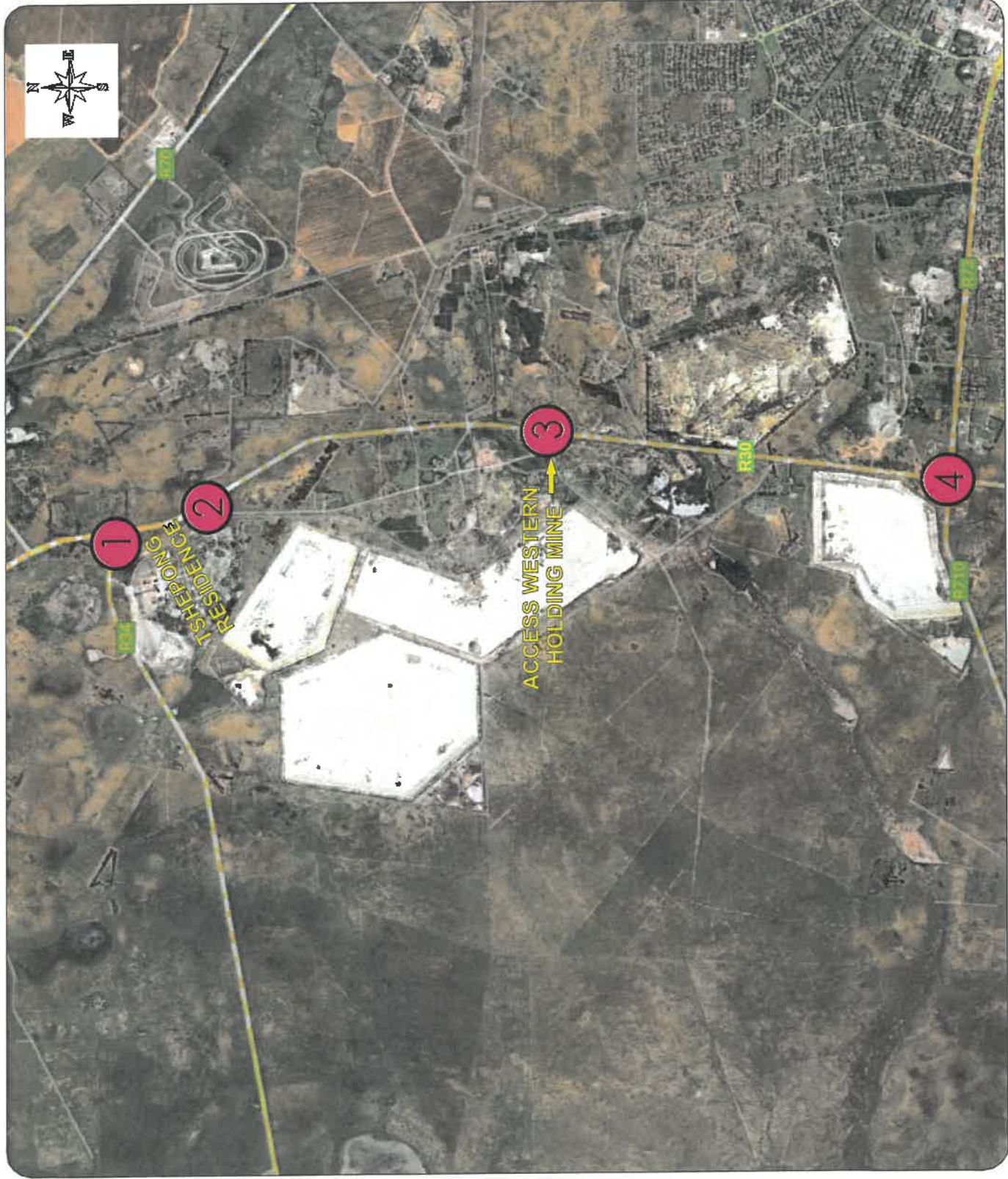
The traffic survey was conducted on Thursday, 26 June 2025, covering a 6-hour period from 06:00 to 09:00 and 15:00 to 18:00, at the following locations:

- M1: R30 & R34
- M2: R30 & Access to Tshepong Residence
- M3: R30 & Access to Western Holdings Mine
- M4: R30 & R73 / R710

The vehicles were classified as light and heavy, per turning movement in 15-minute intervals. The detail results of the traffic counts are attached as Appendix A.

3.2 Notes

None



PROJECT

R30,
WELKOM

LOCALITY PLAN

KEY



MANUAL COUNTS


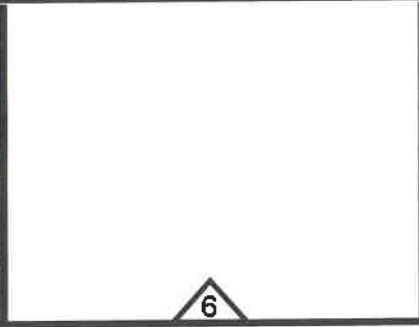



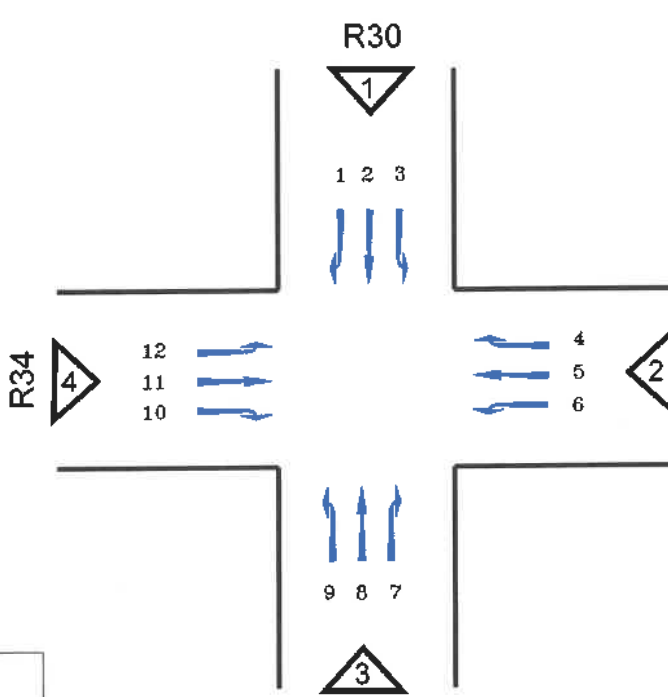
TRAFFTRANS (PTY) LTD

Proj. T2025/069 Fig. 1

APPENDIX A

MANUAL TRAFFIC INTERSECTION SURVEYS


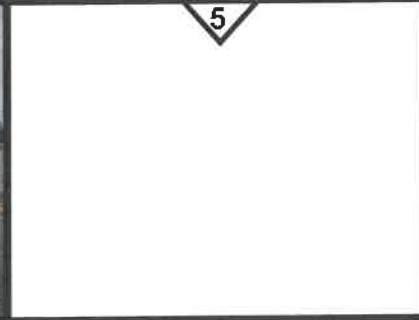







CO-ORDINATES

LATITUDE: 27° 53' 39.5" S

LONGITUDE: 26° 41' 00.3" E

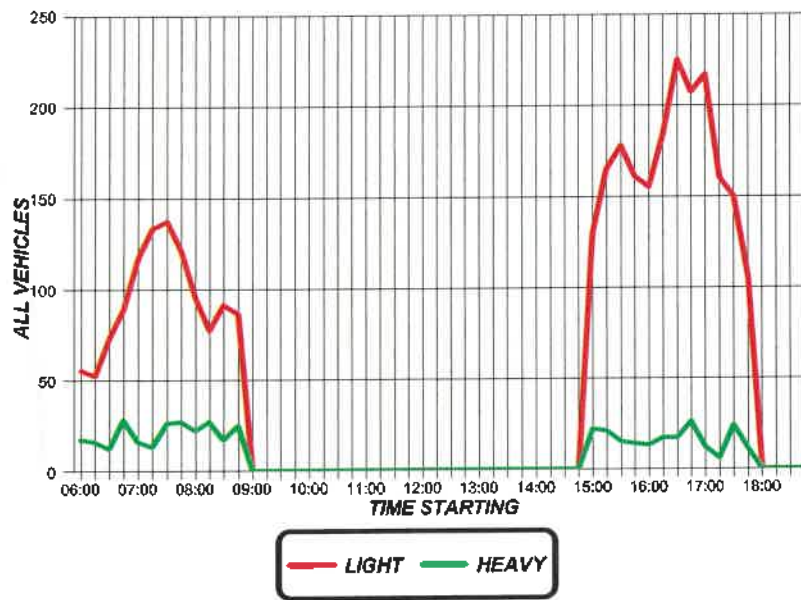




LOCATION:	<input type="text" value="INTERSECTION: R30 & R34"/>		
AREA:	<input type="text" value="WELKOM"/>	STATION NUMBER:	<input type="text" value="M1"/>
DATE:	<input type="text" value="26/06/2025"/>	DAY:	<input type="text" value="THURSDAY"/>
	TIME:		<input type="text" value="06:00-09:00 & 15:00-18:00"/>
TYPE OF COUNT:	<input type="text" value="CLASSIFIED COUNTS PER TURNING MOVEMENT"/>		
DESCRIPTION:	<input type="text" value="CLASSIFICATION: LIGHT & HEAVY VEHICLES"/>		

	STATION LAYOUT R30, WELKOM	PROJ. T2025/069
		DATE JUN. 2025

TRAFFTRANS (EDMS) BPK

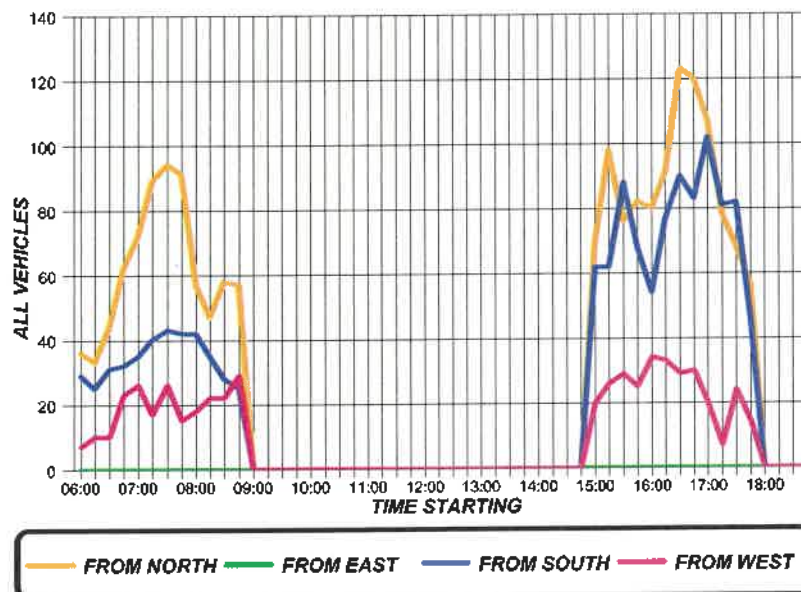
6 HOUR VOLUMES THROUGH STATION R30 & R34



PREPARED BY TRAFFITRANS

STATION M1

APPROACH VOLUMES R30 & R34



PREPARED BY TRAFFITRANS

SUMMARY OF TRAFFIC COUNTS



STATION: M1
LOCATION: N/S R30
E/W R34

LAT: 27° 53' 39.5" S
LONG: 26° 41' 00.3" E

DATE: 26/06/2025
Thursday

MOVEMENT		AM PEAK HOUR				MIDDAY PEAK HOUR				PM PEAK HOUR				6 HOUR COUNT						
		LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL
FROM	NO	VOL	VOL	%	VOL		VOL	VOL	%	VOL		VOL	VOL	%	VOL		VOL	VOL	%	VOL
NORTH	1 R	33	16	33%	49	0.84					n.a.	22	12	35%	34	0.84	161	91	36%	252
	2 T	252	16	6%	268							369	11	3%	380		1440	96	6%	1536
	3 L																			
EAST	4 R					n.a.					n.a.					n.a.				
	5 T																			
	6 L																			
SOUTH	7 R	1			1	0.87					n.a.					0.84	1			1
	8 T	122	9	7%	131							251	17	6%	268		1020	88	8%	1108
	9 L	15	3	17%	18							34	2	6%	36		174	19	10%	193
WEST	10 R	28	3	10%	31	0.88					n.a.	48	7	13%	55	0.93	200	22	10%	222
	11 T																			
	12 L	25	36	59%	61							47	24	34%	71		166	128	44%	294
TOTAL		476	83	15%	559	0.86					n.a.	771	73	9%	844	0.87	3162	444	12%	3606
		PERCENTAGE OF: 6H 15.5%					PERCENTAGE OF: 6H n.a					PERCENTAGE OF: 6H 23.4%								

ADT _N :	697	ADT _E :	NA	ADT _S :	656	ADT _W :	196
AADT _N :	664	AADT _E :	NA	AADT _S :	625	AADT _W :	186
ADTT _N :	942	ADTT _E :	NA	ADTT _S :	265	ADTT _W :	385
AADTT _N :	741	AADTT _E :	NA	AADTT _S :	209	AADTT _W :	303

STARTING TIME OF PEAK HOUR
AM MID PM
06:45 n.a 16:00

NOTE: SEE ATTACHED SHETCH FOR LAYOUT OF STATION

PREPARED BY TRAFFTRANS (PTY) LTD

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
LOCATION: E/W R34
DATE OF SURVEY : 26/06/2025

STATION NO : M1

TYPE OF SURVEY 6H TURNING MOVEMENTS
TYPE OF VEHICLE: ALL

End Time	MOVEMENTS																									
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
06:15	11		25												23		6		1				6		72	
06:30	8		25												23		2		4				6		68	
06:45	9		35												30		1		1				9		86	
07:00	11	39	51	136											25	101	7	16	4	10			19	40	117	342
07:15	12	40	60	171											31	109	4	14	8	17			19	52	133	403
07:30	9	41	80	226											36	122	4	16	6	19			11	57	146	481
07:45	17	49	77	268									1	1	39	131	3	18	13	31			13	61	163	559
08:00	14	52	77	294									1	35	141	7	18	5	32				10	52	148	590
08:15	13	53	44	278									1	31	141	11	25	10	34				8	42	117	574
08:30	21	65	26	224									1	30	135	5	26	5	33				17	46	104	532
08:45	16	64	42	189											19	115	9	32	15	35			7	42	106	477
09:00	15	65	42	154											14	94	11	36	13	43			16	48	111	440
09:15																										
09:30																										
09:45																										
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15:00																										
15:15	8	8	61	61											53	53	9	9	6	8			12	12	151	151
15:30	3	11	95	156											49	102	13	22	13	21			13	25	186	337
15:45	8	19	68	224											81	183	7	29	15	36			14	39	193	530
16:00	10	29	72	296											58	241	10	39	15	51			10	49	175	705
16:15	6	27	74	309											46	234	6	38	18	61			16	53	168	722
16:30	5	29	86	300											72	257	6	30	15	63			16	58	201	737
16:45	8	29	115	347											80	256	10	33	11	59			16	62	242	786
17:00	15	34	105	380											70	268	13	36	11	55			19	71	233	844
17:15	8	36	99	405											85	307	17	45	9	46			11	66	229	905
17:30	6	37	72	391											70	305	11	51	3	34			4	52	166	870
17:45	14	43	54	330											70	295	12	53	10	33			14	48	174	802
18:00	5	33	51	276											38	263	8	48	9	31			5	34	116	685
TOTAL	6H	252	6H	1536	6H		6H		6H		6H		6H	1	6H	1108	6H	193	6H	222	6H		6H	294	6H	3806

STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																											
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
AM	AM Peak Hour From: 06:45 to 07:45																										
Vol	17	49	77	268									1	1	39	131	3	18	13	31				13	61	163	559
MID	Midday Peak Hour From: to																										
Vol																											
PM	PM Peak Hour From: 16:00 to 17:00																										
Vol	8	34	115	380											80	268	10	36	11	55				18	71	242	844

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
LOCATION: E/W R34
DATE OF SURVEY: 26/06/2025

STATION NO: M1

TYPE OF SURVEY 6H TURNING MOVEMENTS
TYPE OF VEHICLE: LIGHT

End Time	MOVEMENTS																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
06:15	5		19											21		5		1						4		55	
06:30	4		21											20		2		3						2		52	
06:45	8		32											27		1		1						4		73	
07:00	8	25	45	117										23	91	5	13	4	9					4	14	89	269
07:15	10	30	56	154										31	101	3	11	8	16					9	19	117	331
07:30	7	33	76	209										33	114	4	13	6	19					7	24	133	412
07:45	8	33	75	252									1	1	35	122	3	15	10	28				5	25	137	476
08:00	6	31	73	280										1	29	128	6	16	5	29				2	23	121	508
08:15	8	29	37	261										1	27	124	10	23	9	30				4	18	95	486
08:30	10	32	24	209										1	29	120	3	22	5	29				6	17	77	430
08:45	10	34	38	172											15	100	9	28	15	34				4	16	91	384
09:00	8	36	38	137											12	83	11	33	12	41				5	19	86	349
09:15																											
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15:00																											
15:15	4	4	59	59											45	45	6	6	7	7				8	8	129	129
15:30	3	7	87	146											45	90	10	16	13	20				7	15	165	294
15:45	8	15	63	209											75	165	7	23	14	34				11	26	178	472
16:00	8	23	67	276											54	219	10	33	13	47				9	35	161	633
16:15	3	22	72	289											44	218	7	34	16	56				13	40	155	659
16:30	3	22	81	283											68	241	4	28	15	58				13	46	184	678
16:45	6	20	115	335											74	240	10	31	9	53				11	46	225	725
17:00	10	22	101	369											65	251	13	34	8	48				10	47	207	771
17:15	8	27	93	390											81	286	17	44	8	40				10	44	217	833
17:30	6	30	70	379											68	288	11	51	2	27				3	34	160	809
17:45	7	31	48	312											64	278	10	51	10	28				11	34	160	734
18:00	3	24	50	261											35	248	7	45	6	26				4	28	105	632
TOTAL	6H	161	6H	1440	6H		6H		6H		6H		6H	1	6H	1020	6H	174	6H	200	6H		6H	186	6H	3162	

STARTING TIMES PEAK PERIOD VOLUME FOR STATION																											
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
AM	AM Peak Hour From: 07:00 to 08:00																										
Vol	8	31	75	280									1	1	35	128	3	16	10	29				5	23	137	508
MID	Midday Peak Hour From: to																										
Vol																											
PM	PM Peak Hour From: 16:15 to 17:15																										
Vol	6	27	115	390											74	288	10	44	9	40				11	44	225	833
PREPARED BY TRAFFTRANS (PTY) LTD																											

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
LOCATION: E/W R34
DATE OF SURVEY: 26/06/2025

STATION NO: M1

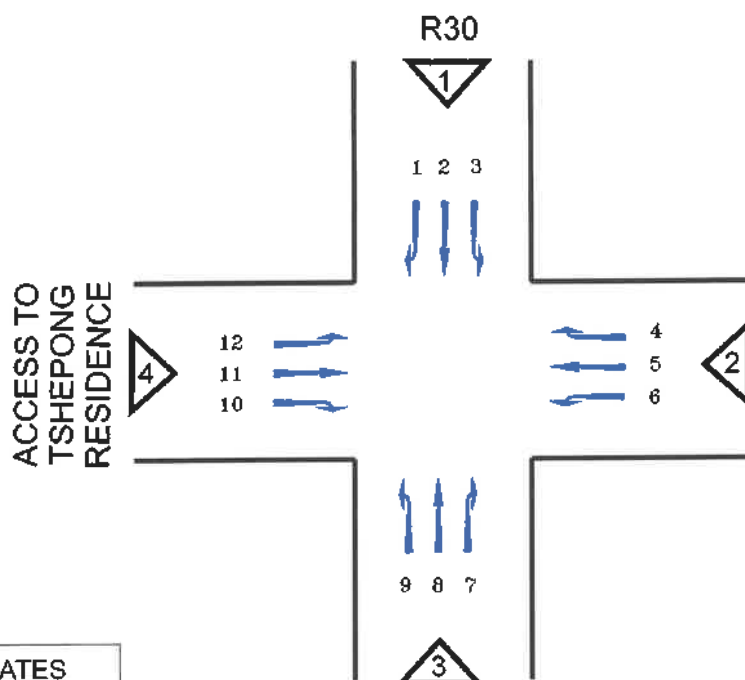
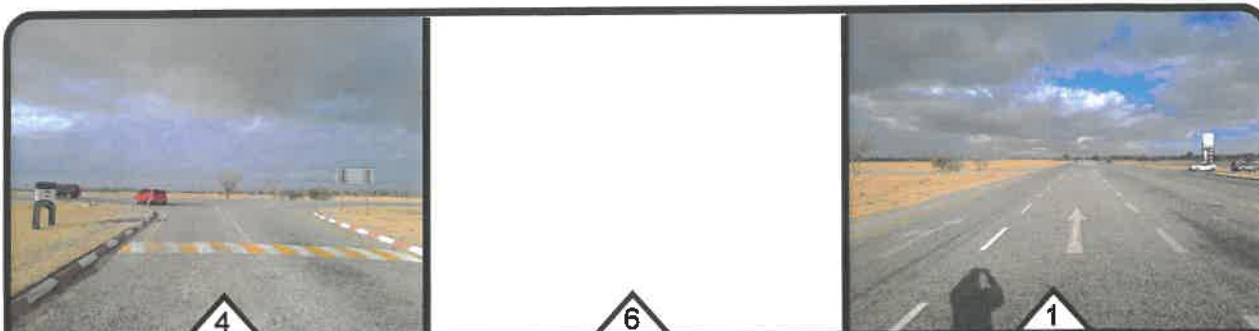
TYPE OF SURVEY: 6H TURNING MOVEMENTS
TYPE OF VEHICLE: HEAVY

End Time	MOVEMENTS																									
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
06:15	6		6												2		1						2		17	
06:30	4		4												3			1					4		16	
06:45	1		3												3								5		12	
07:00	3	14	6	19											2	10	2	3		1			15	26	28	73
07:15	2	10	4	17												8	1	3		1			9	33	16	72
07:30	2	8	4	17											3	8		3					4	33	13	69
07:45	9	16	2	16											4	9		3	3	3			8	36	26	83
08:00	8	21	4	14											6	13	1	2		3			8	29	27	82
08:15	5	24	7	17											4	17	1	2	1	4			4	24	22	88
08:30	11	33	2	15											1	15	2	4		4			11	31	27	102
08:45	6	30	4	17											4	15		4		1			3	26	17	93
09:00	7	29	4	17											2	11		3	1	2			11	29	25	91
09:15																										
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14:30																										
14:45																										
15:00																										
15:15	4	4	2	2											8	8	3	3	1	1			4	4	22	22
15:30		4	8	10											4	12	3	6		1			6	10	21	43
15:45		4	5	15											6	18		6	1	2			3	13	15	58
16:00	2	6	5	20											4	22		6	2	4			1	14	14	72
16:15	3	5	2	20											2	16	1	4	2	5			3	13	13	63
16:30	2	7	5	17											4	16	1	2		5			5	12	17	59
16:45	2	9		12											6	16		2	2	6			7	16	17	61
17:00	5	12	4	11											5	17		2	3	7			9	24	26	73
17:15		9	6	15											4	19		1	1	6			1	22	12	72
17:30		7	2	12											2	17			1	7			1	18	6	61
17:45	7	12	6	18											6	17	2	2		5			3	14	24	68
18:00	2	9	1	15											3	15	1	3	3	5			1	6	11	53
TOTAL	6H	91	6H	96	6H		6H		6H		6H		6H		6H	88	6H	19	6H	22	6H		6H	128	6H	444

STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
AM	AM Peak Hour From: 07:30 to 08:30																									
Vol	3	33	6	15										2	15	2	4		4				15	31	28	102
MID	Midday Peak Hour From: to																									
Vol																										
PM	PM Peak Hour From: 16:00 to 17:00																									
Vol	5	12	4	11										5	17		2	3	7				9	24	26	73

PREPARED BY TRAFFTRANS (PTY) LTD

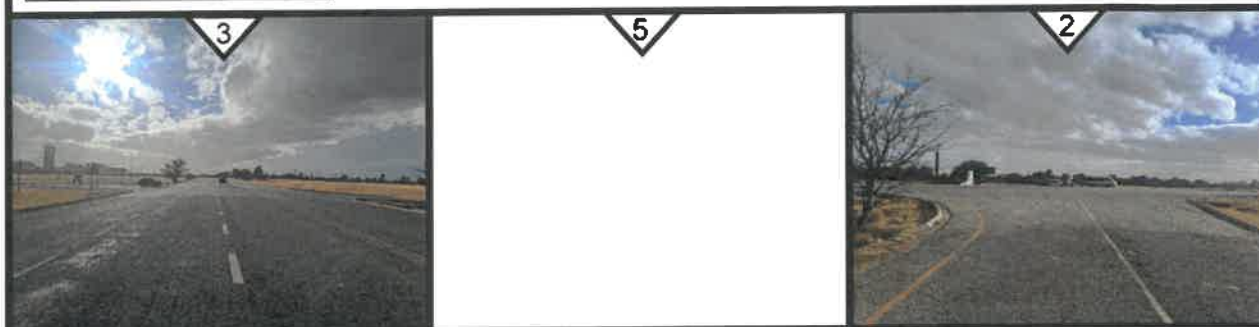
KEY: QH - QUARTER HOURLY VOLUMES
H - HOURLY VOLUMES



CO-ORDINATES

LATITUDE: 27° 54' 10.6" S

LONGITUDE: 26° 41' 11.1" E



LOCATION:

INTERSECTION: R30 & ACCESS TO TSHEPONG RESIDENCE

AREA:

WELKOM

STATION NUMBER:

M2

DATE:

26/06/2025

DAY:

THURSDAY

TIME:

06:00-09:00 & 15:00-18:00

TYPE OF COUNT:

CLASSIFIED COUNTS PER TURNING MOVEMENT

DESCRIPTION:

CLASSIFICATION: LIGHT & HEAVY VEHICLES



STATION LAYOUT

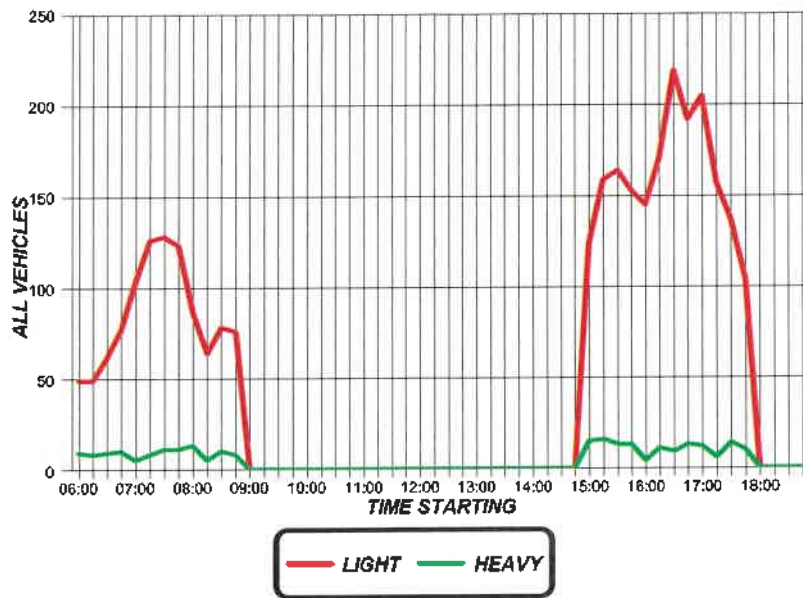
R30, WELKOM

PROJ. T2025/069

DATE JUN. 2025

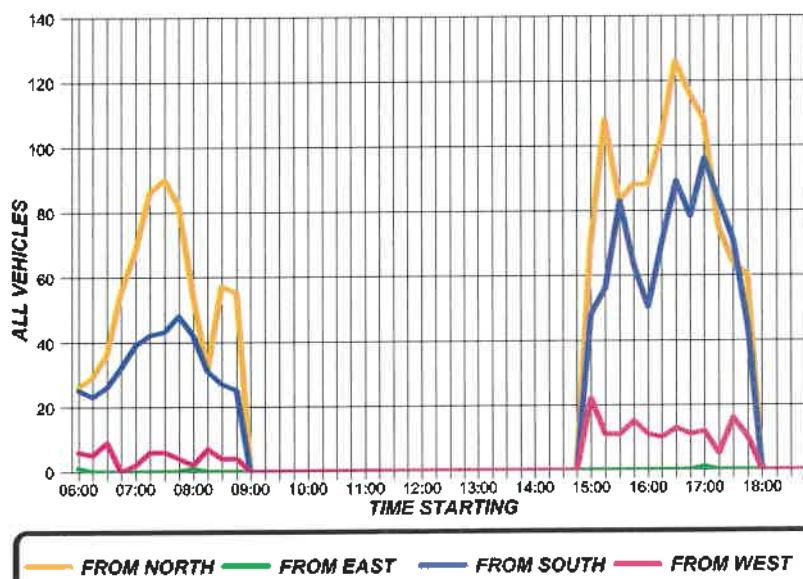
TRAFFTRANS (EDMS) BPK

6 HOUR VOLUMES THROUGH STATION R30 & Access to Tshepong Residence



STATION M2

APPROACH VOLUMES R30 & Access to Tshepong Residence



SUMMARY OF TRAFFIC COUNTS



STATION: M2
LOCATION: N/S R30
E/W Access to Tshepong Residence

LAT: 27° 54' 10.6" S
LONG: 26° 41' 11.1" E

DATE: 26/6/2025
Thursday

MOVEMENT		AM PEAK HOUR					MIDDAY PEAK HOUR					PM PEAK HOUR					6 HOUR COUNT			
		LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL
FROM	NO	VOL	VOL	%	VOL		VOL	VOL	%	VOL		VOL	VOL	%	VOL		VOL	VOL	%	VOL
NORTH	1 R	23	4	15%	27	0.83					n.a.	32	6	16%	38	0.86	143	30	17%	173
	2 T	285	13	4%	298							398	16	4%	414		1494	86	5%	1580
	3 L	1			1												3			3
EAST	4 R					n.a.					n.a.	1			1	n.a.	2			2
	5 T																1			1
	6 L																			
SOUTH	7 R					0.91					n.a.					0.81				
	8 T	139	13	9%	152							304	16	5%	320		1085	84	7%	1169
	9 L	18	2	10%	20							12	1	8%	13		58	7	11%	65
WEST	10 R	10	1	9%	11	0.58					n.a.	12	2	14%	14	0.87	57	13	19%	70
	11 T											1			1		2			2
	12 L	5	2	29%	7							27	4	13%	31		107	23	18%	130
TOTAL		481	35	7%	516	0.84					n.a.	787	45	5%	832	0.84	2952	243	8%	3195
		PERCENTAGE OF:		6H	16.2%		PERCENTAGE OF:		6H	n.a		PERCENTAGE OF:		6H	26.0%					

ADTN:	712	ADTE:	NA	ADTs:	686	ADTw:	89
AADTN:	678	AADTE:	NA	AADTs:	653	AADTw:	85
ADTTN:	450	ADTTE:	NA	ADTTs:	282	ADTTw:	102
AADTTN:	354	AADTTE:	NA	AADTTs:	222	AADTTw:	80

STARTING TIME OF PEAK HOUR
AM MID PM
07:00 n.a 16:15

NOTE: SEE ATTACHED SHETCH FOR LAYOUT OF STATION

PREPARED BY TRAFFTRANS (PTY) LTD

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
 LOCATION: E/W Access to Tshepong Residence
 DATE OF SURVEY: 26/6/2025

STATION NO: M2

TYPE OF SURVEY 6H TURNING MOVEMENTS
 TYPE OF VEHICLE: ALL

End Time	MOVEMENTS																						TOTALS			
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T				12 L	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
06:15	7		19				1								23		2		1				5		58	
06:30	2		27												22		1		2				3		57	
06:45	7		29												26				4				5		71	
07:00	3	19	52	127				1							32	103		3		7				13	87	273
07:15	9	21	59	167											34	114	5	6	1	7			1	9	109	324
07:30	4	23	81	221	1	1									37	129	5	10	3	8			3	9	134	401
07:45	6	22	84	276		1									39	142	4	14	3	7			3	7	139	469
08:00	8	27	74	298		1									42	152	6	20	4	11				7	134	516
08:15	3	21	51	290		1			1	1					40	158	2	17		10			2	8	99	506
08:30	2	19	28	237	1	1				1					31	152		12	3	10			4	9	69	441
08:45	3	16	54	207		1				1					27	140		8	3	10			1	7	88	390
09:00	9	17	46	179		1				1					23	121	2	4	2	8			2	9	84	340
09:15																										
09:30																										
09:45																										
10:00																										
10:15																										
10:30																										
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14:45																										
15:00																										
15:15	11	11	58	58											45	45	3	3	5	5			17	17	139	139
15:30	10	21	98	156											55	100	1	4	4	9			7	24	175	314
15:45	11	32	72	228											80	180	3	7	3	12			8	32	177	491
16:00	6	38	82	310											59	239	4	11	6	18			9	41	166	657
16:15	11	38	77	329											48	242	2	10	5	18			6	30	149	667
16:30	7	35	95	326											69	256	1	10	2	16			8	31	182	674
16:45	11	35	115	369											82	258	7	14	5	18			8	31	228	725
17:00	9	38	107	394											75	274	3	13	3	15			8	30	205	764
17:15	11	36	97	414			1	1							94	320	2	13	4	14	1	1	7	31	217	832
17:30	9	40	86	385				1							78	329	5	17	2	14		1	3	26	163	813
17:45	9	38	55	325				1							68	315	3	13	2	11		1	14	32	151	736
18:00	5	34	64	272	1	1			1						40	280	4	14	3	11	1	2	6	30	114	645
TOTAL	6H	173	6H	1580	6H	3	6H	2	6H	1	6H		6H		6H	1169	6H	65	6H	70	6H	2	6H	130	6H	3195

STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																											
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
AM	AM Peak Hour From: 07:00 to 08:00																										
Vol	6	27	84	298		1									39	152	4	20	3	11				3	7	139	516
MID	Midday Peak Hour From: 10 to 11																										
Vol																											
PM	PM Peak Hour From: 16:15 to 17:15																										
Vol	11	38	115	414				1							82	320	7	13	5	14			1	8	31	228	832

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
 H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
 LOCATION: E/W Access to Tshepong Residence
 DATE OF SURVEY: 26/6/2025

STATION NO: M2

TYPE OF SURVEY 6H TURNING MOVEMENTS
 TYPE OF VEHICLE: LIGHT

End Time	MOVEMENTS																								TOTALS	
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L			
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
06:15	4		16				1								21		2		1				4		49	
06:30	1		23												20		1		2				2		49	
06:45	4		29												25				1				3		62	
07:00	2	11	47	115				1							28	94		3		4				9	77	237
07:15	7	14	57	156											33	106	5	6	1	4			1	6	104	292
07:30	4	17	77	210	1	1									35	121	4	9	3	5			2	6	126	369
07:45	5	18	80	261		1									36	132	3	12	2	6			2	5	128	435
08:00	7	23	71	285		1									35	139	6	18	4	10			5		123	481
08:15	2	18	44	272		1			1	1					35	141	2	15		9			2	6	86	463
08:30	2	16	26	221	1	1				1					28	134		11	3	9			4	8	64	401
08:45	3	14	50	191		1				1					23	121		8	1	8			1	7	78	351
09:00	8	15	42	162		1				1					21	107	2	4	1	5			2	9	76	304
09:15																										
09:30																										
09:45																										
10:00																										
10:15																										
10:30																										
10:45																										
11:00																										
11:15																										
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13:45																										
14:00																										
14:15																										
14:30																										
14:45																										
15:00																										
15:15	9	9	57	57											37	37	3	3	4	4			14	14	124	124
15:30	9	18	91	148											48	85	1	4	3	7			7	21	159	283
15:45	10	28	67	215											76	181	2	6	3	10			6	27	164	447
16:00	3	31	77	292											58	219	3	9	6	16			6	33	153	600
16:15	11	33	77	312											46	228	2	8	4	16			5	24	145	621
16:30	4	28	92	313											64	244	1	8	2	15			8	25	171	633
16:45	11	29	113	359											78	246	7	13	4	16			6	25	219	688
17:00	8	34	101	383											71	259	2	12	3	13			7	26	192	727
17:15	9	32	92	398			1	1							91	304	2	12	3	12	1	1	6	27	205	787
17:30	8	36	64	370				1							76	316	4	15	2	12		1	3	22	157	773
17:45	9	34	49	306				1							62	300	3	11	2	10		1	12	28	137	691
18:00	3	29	52	257	1	1		1							38	267	3	12	2	9	1	2	4	25	104	603
TOTAL	6H	143	6H	1494	6H	3	6H	2	6H	1	6H		6H		6H	1085	6H	58	6H	57	6H	2	6H	107	6H	2952

STARTING TIMES PEAK PERIOD VOLUME FOR STATION																															
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS						
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H					
AM	AM Peak Hour From:															07:00		to		08:00											
Vol	5	23	60	285		1								36	139	3	18	2	10				2	5	128	481					
MID	Midday Peak Hour From:																	to													
Vol																															
PM	PM Peak Hour From:															16:15		to		17:15											
Vol	11	32	113	398				1						78	304	7	12	4	12			1	6	27	219	787					
PREPARED BY TRAFFTRANS (PTY) LTD																															

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
 H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
 LOCATION: E/W Access to Tshepong Residence
 DATE OF SURVEY : 26/6/2025

STATION NO : M2

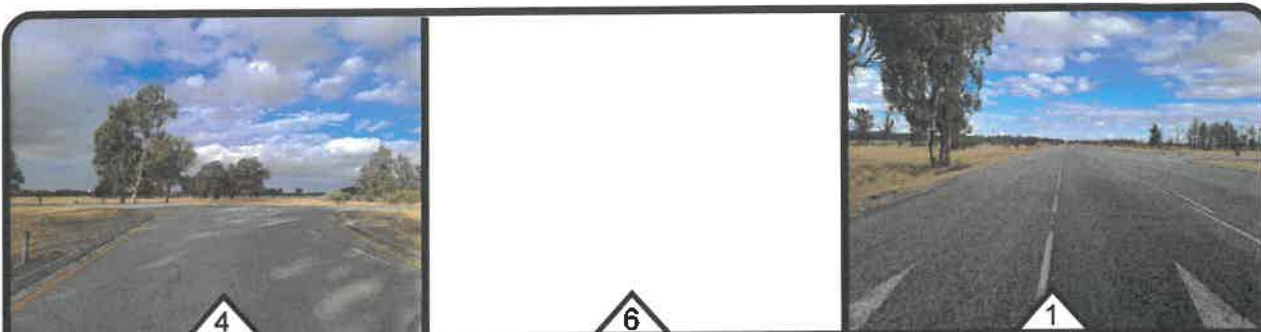
TYPE OF SURVEY 6H TURNING MOVEMENTS
 TYPE OF VEHICLE: HEAVY

End Time	MOVEMENTS																								TOTALS		
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L				
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
06:15	3			3											2									1		9	
06:30	1			4											2									1		8	
06:45	3														1				3					2		9	
07:00	1	8	5	12											4	9				3					4	10	36
07:15	2	7	2	11											1	8				3					3	5	32
07:30		6	4	11											2	8	1	1		3				1	3	8	32
07:45	1	4	4	15											3	10	1	2	1	1				1	2	11	34
08:00	1	4	3	13											7	13		2		1				2	11	35	
08:15	1	3	7	18											5	17		2		1				2	13	43	
08:30		3	2	18											3	18		1		1				1	5	40	
08:45		2	4	16											4	19			2	2					10	39	
09:00	1	2	4	17											2	14			1	3					8	36	
09:15																											
09:30																											
09:45																											
10:00																											
10:15																											
10:30																											
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14:30																											
14:45																											
15:00																											
15:15	2	2	1	1											8	8			1	1				3	3	15	15
15:30	1	3	7	8											7	15			1	2				3	16	31	
15:45	1	4	5	13											4	19	1	1		2				2	5	13	44
16:00	3	7	5	18											1	20	1	2		2				3	8	13	57
16:15		5		17											2	14		2	1	2				1	6	4	46
16:30	3	7	3	13											5	12		2		1				6	11	41	
16:45		6	2	10											4	12		1	1	2				2	6	9	37
17:00	1	4	6	11											4	15	1	1		2				1	4	13	37
17:15	2	6	5	16											3	16		1	1	2				1	4	12	45
17:30	1	4	2	15											2	13	1	2		2				4	6	40	
17:45		4	6	19											6	15		2		1				2	4	14	45
18:00	2	5	2	15											2	13	1	2	1	2				2	5	10	42
TOTAL	6H	30	6H	86	6H		6H		6H		6H		6H		6H	84	6H	7	6H	13	6H		6H	23	6H	243	

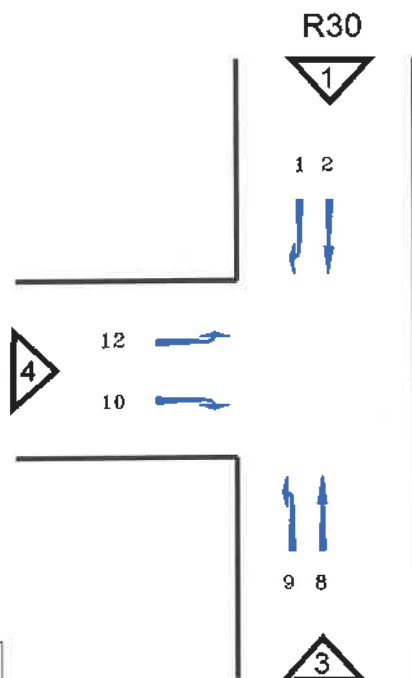
STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
AM	AM Peak Hour From: 07:15 to 08:15																									
Vol	1	3	7	18										5	17		2		1					2	13	43
MID	Midday Peak Hour From: to																									
Vol																										
PM	PM Peak Hour From: 15:00 to 16:00																									
Vol		7	6	18										6	20		2		2				2	8	14	57

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
 H - HOURLY VOLUMES



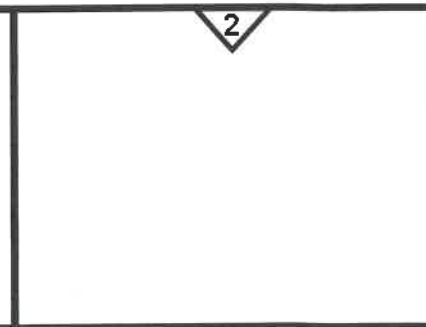
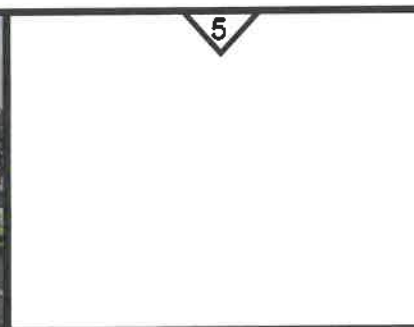
ACCESS WESTERN
HOLDINGS MINE



CO-ORDINATES

LATITUDE: 27° 56' 7.6" S

LONGITUDE: 26° 41' 37.4" E



LOCATION:

INTERSECTION: R30 & ACCESS WESTERN HOLDINGS MINE

AREA:

WELKOM

STATION NUMBER:

M3

DATE:

26/06/2025

DAY:

THURSDAY

TIME:

06:00-09:00 & 15:00-18:00

TYPE OF COUNT:

CLASSIFIED COUNTS PER TURNING MOVEMENT

DESCRIPTION:

CLASSIFICATION: LIGHT & HEAVY VEHICLES



STATION LAYOUT

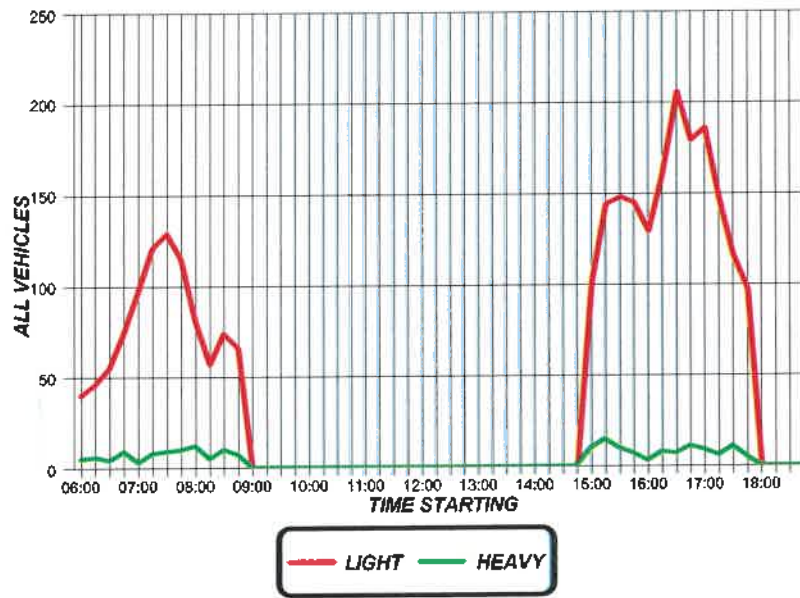
R30, WELKOM

PROJ. T2025/069

DATE JUN. 2025

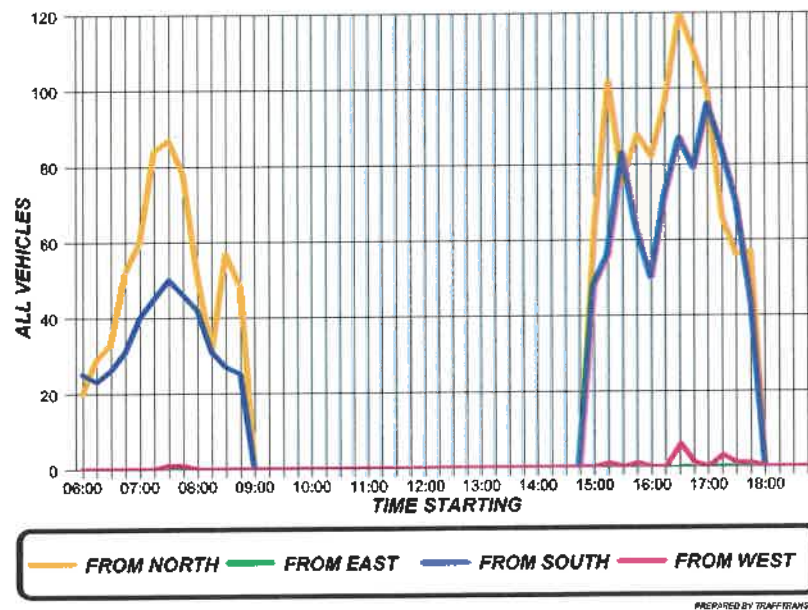
TRAFFTRANS (EDMS) BPK

6 HOUR VOLUMES THROUGH STATION R30 & Access to Western Holdings Mine



STATION M3

APPROACH VOLUMES R30 & Access to Western Holdings Mine



SUMMARY OF TRAFFIC COUNTS



STATION: M3
LOCATION: N/S R30
E/W Access to Western Holdings Mine

LAT: 27° 56' 07.6" S
LONG: 26° 41' 37.4" E

DATE: 26/6/2025
Thursday

MOVEMENT		AM PEAK HOUR					MIDDAY PEAK HOUR					PM PEAK HOUR					6 HOUR COUNT			
		LIGHT VOL	HEAVY VOL	%	TOTAL VOL	PHF	LIGHT VOL	HEAVY VOL	%	TOTAL VOL	PHF	LIGHT VOL	HEAVY VOL	%	TOTAL VOL	PHF	LIGHT VOL	HEAVY VOL	%	TOTAL VOL
NORTH	1 R	3			3	0.81					n.a.					0.85	4			4
	2 T	292	14	5%	306							408	18	4%	426		1542	99	6%	1641
	3 L																			
EAST	4 R					n.a.					n.a.					n.a.				
	5 T																			
	6 L																			
SOUTH	7 R					0.83					n.a.					0.83				
	8 T	154	15	9%	169							313	17	5%	330		1134	90	7%	1224
	9 L	11	1	8%	12							4			4		18	1	5%	19
WEST	10 R	2			2	0.25					n.a.	4			4	0.29	12			12
	11 T																			
	12 L											3			3		4			4
TOTAL		462	30	6%	492	0.82					n.a.	732	35	5%	767	0.83	2714	190	7%	2904
		PERCENTAGE OF: 6H 16.9%					PERCENTAGE OF: 6H n.a					PERCENTAGE OF: 6H 26.4%								

ADTN:	683	ADTE:	NA	ADTs:	692	ADTw:	15
AADTN:	651	AADTE:	NA	AADTs:	659	AADTw:	15
ADTTN:	224	ADTTE:	NA	ADTTs:	252	ADTTw:	5
AADTTN:	177	AADTTE:	NA	AADTTs:	198	AADTTw:	4

STARTING TIME OF PEAK HOUR
AM MID PM
07:00 n.a 16:15

NOTE: SEE ATTACHED SKETCH FOR LAYOUT OF STATION

PREPARED BY TRAFFTRANS (PTY) LTD

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
 LOCATION: E/W Access to Western Holdings Mine
 DATE OF SURVEY : 26/6/2025

STATION NO : M3

TYPE OF SURVEY 6H TURNING MOVEMENTS
 TYPE OF VEHICLE: ALL

End Time	MOVEMENTS																											
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS			
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H		
06:15			20												25											46		
06:30			29												22		1									52		
06:45			33												26											59		
07:00			52	134											31	104		1								83	239	
07:15			60	174											39	118	1	2								100	294	
07:30			84	229											42	138	3	4								129	371	
07:45	2	2	85	281											43	155	7	11	1	1						138	450	
08:00	1	3	77	306											45	169	1	12	1	2						125	492	
08:15		3	51	297											42	172		11		2						93	485	
08:30		3	31	244											31	161		8		2						62	418	
08:45		1	57	216											27	145		1		1						84	364	
09:00	1	1	47	186											25	125										73	312	
09:15																												
09:30																												
09:45																												
10:00																												
10:15																												
10:30																												
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14:15																												
14:30																												
14:45																												
15:00																												
15:15			63	63											48	48										111	111	
15:30			102	165											56	104			1	1						159	270	
15:45			75	240											83	187				1						168	428	
16:00			88	328											63	250			1	2						152	580	
16:15			82	347											50	252				2						132	601	
16:30			97	342											70	266	2	2		1						169	611	
16:45			120	387											66	269	1	3	3	4			3	3		213	666	
17:00			110	409											78	284	1	4	1	4				3		190	704	
17:15			99	426											96	330		4		4				3		195	767	
17:30			66	395											83	343	1	3	2	6			1	4		153	751	
17:45			56	331											70	327		2	1	4				1		127	665	
18:00			57	278											43	292	1	2	1	4				1		102	577	
TOTAL	6H	4	6H	1641	6H		6H		6H		6H		6H		6H	1224	6H	19	6H	12	6H		6H	4	6H	2904		

STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
AM	AM Peak Hour From: 07:00 to 08:00																									
Vol	2	3	85	306											43	169	7	12	1	2					138	492
MID	Midday Peak Hour From: to																									
Vol																										
PM	PM Peak Hour From: 16:15 to 17:15																									
Vol			120	426											86	330	1	4	3	4			3	3	213	767

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
 H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S

R30

LOCATION: E/W

Access to Western Holdings Mine

STATION NO : M3

TYPE OF SURVEY 6H TURNING MOVEMENTS

DATE OF SURVEY :

26/6/2025

TYPE OF VEHICLE: LIGHT

End Time	MOVEMENTS																						TOTALS				
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T				12 L		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
06:15			17											23												40	
06:30			25											20		1										46	
06:45			30											25												55	
07:00			47	119										27	95		1									74	215
07:15			58	160										38	110	1	2									97	272
07:30			80	215										39	129	2	3									121	347
07:45	2	2	80	265										39	143	7	10	1	1							129	421
08:00	1	3	74	292										38	154	1	11	1	2							115	462
08:15		3	44	278										37	153		10		2							81	446
08:30		3	29	227										28	142		8		2							57	382
08:45		1	51	198										23	126		1		1							74	327
09:00	1	1	42	166										23	111											66	278
09:15																											
09:30																											
09:45																											
10:00																											
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14:00																											
14:15																											
14:30																											
14:45																											
15:00																											
15:15			61	61										40	40											101	101
15:30			94	155										49	89			1	1							144	245
15:45			70	225										78	167				1							148	393
16:00			83	308										61	228			1	2							145	538
16:15			81	328										48	236				2							129	566
16:30			94	328										65	252	2	2		1							161	583
16:45			117	375										82	256	1	3	3	4			3	3			206	641
17:00			104	396										73	268	1	4	1	4				3			179	675
17:15			93	408										93	313		4		4				3			186	732
17:30			64	378										79	327	1	3	2	6			1	4			147	718
17:45			50	311										65	310		2	1	4				1			116	628
18:00			54	261										41	278	1	2	1	4				1			97	546
TOTAL	6H	4	6H	1542	6H		6H		6H		6H		6H		6H	1134	6H	18	6H	12	6H		6H	4	6H	2714	

STARTING TIMES PEAK PERIOD VOLUME FOR STATION																											
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
AM	AM Peak Hour From: 07:00 to 08:00																										
Vol	2	3	80	292										39	154	7	11	1	2							129	462
MID	Midday Peak Hour From: to																										
Vol																											
PM	PM Peak Hour From: 16:15 to 17:15																										
Vol			117	408										82	313	1	4	3	4			3	3		206	732	
PREPARED BY TRAFFTRANS (PTY) LTD																											

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
 LOCATION: E/W Access to Western Holdings Mine
 DATE OF SURVEY: 26/6/2025

STATION NO: M3

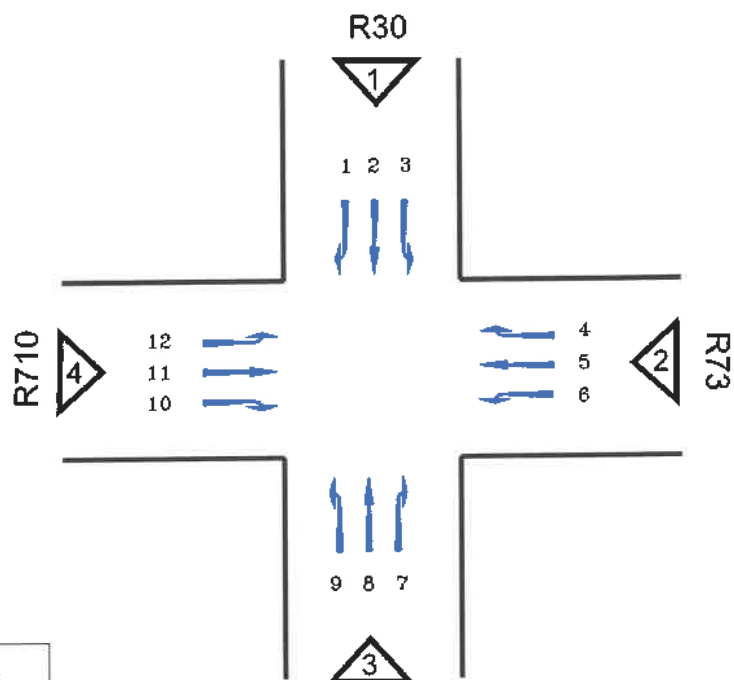
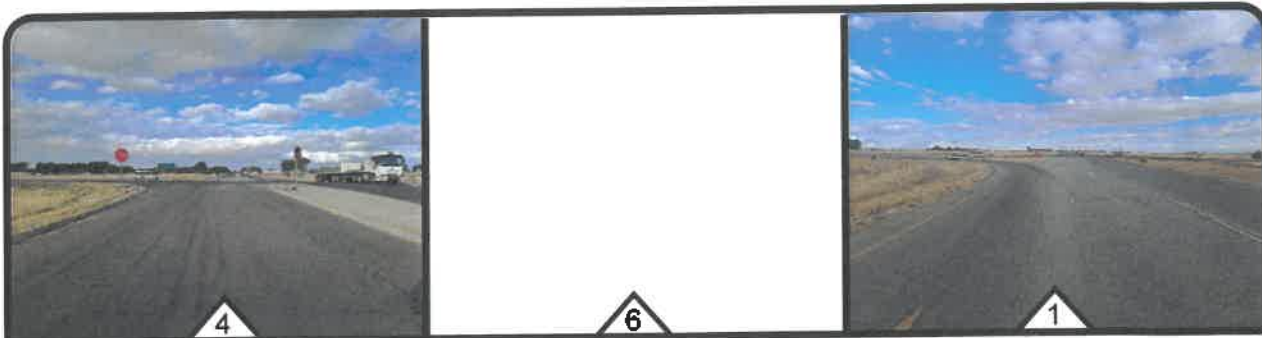
TYPE OF SURVEY: 6H TURNING MOVEMENTS
 TYPE OF VEHICLE: HEAVY

End Time	MOVEMENTS																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
06:15			3												2											5	
06:30			4												2											6	
06:45			3												1											4	
07:00			5	15											4	9										9	24
07:15			2	14											1	8										3	22
07:30			4	14											3	9	1	1								8	24
07:45			5	16											4	12		1								9	29
08:00			3	14											7	15		1								10	30
08:15			7	19											5	19		1								12	39
08:30			2	17											3	19										5	36
08:45			6	18											4	19										10	37
09:00			5	20											2	14										7	34
09:15																											
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15:15			2	2											8	8										10	10
15:30			8	10											7	15										15	25
15:45			5	15											5	20										10	35
16:00			5	20											2	22										7	42
16:15			1	19											2	16										3	35
16:30			3	14											5	14										8	28
16:45			3	12											4	13										7	25
17:00			6	13											5	16										11	29
17:15			6	18											3	17										9	35
17:30			2	17											4	16										6	33
17:45			6	20											5	17										11	37
18:00			3	17											2	14										5	31
TOTAL	6H		6H	99	6H		6H		6H		6H		6H		6H	90	6H	1	6H		6H		6H		6H		190

STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
AM	AM Peak Hour From: 07:15 to 08:15																									
Vol			7	19											5	19		1							12	39
MID	Midday Peak Hour From: to																									
Vol																										
PM	PM Peak Hour From: 15:00 to 16:00																									
Vol			6	20											5	22									11	42

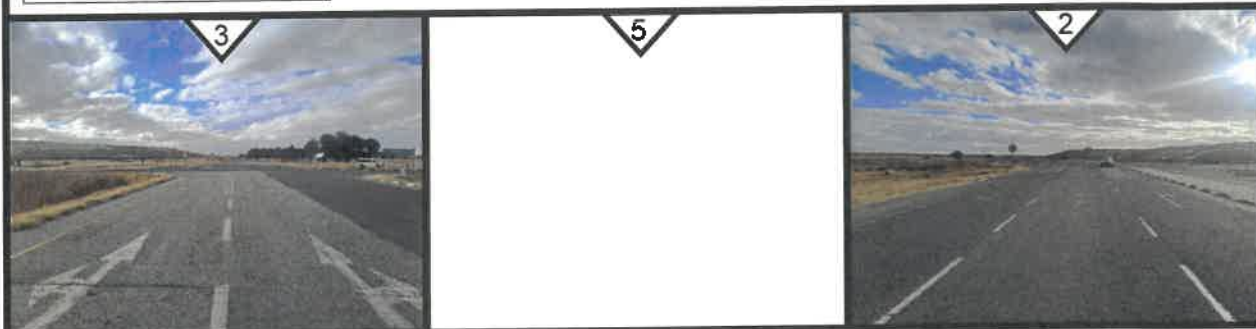
PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
 H - HOURLY VOLUMES



CO-ORDINATES

LATITUDE: 27° 58' 24.1" S
LONGITUDE: 26° 41' 18.4" E



LOCATION:

INTERSECTION: R30 & R73/R710

AREA:

WELKOM

STATION NUMBER:

M4

DATE:

26/06/2025

DAY:

THURSDAY

TIME:

06:00-09:00 & 15:00-18:00

TYPE OF COUNT:

CLASSIFIED COUNTS PER TURNING MOVEMENT

DESCRIPTION:

CLASSIFICATION: LIGHT & HEAVY VEHICLES



STATION LAYOUT

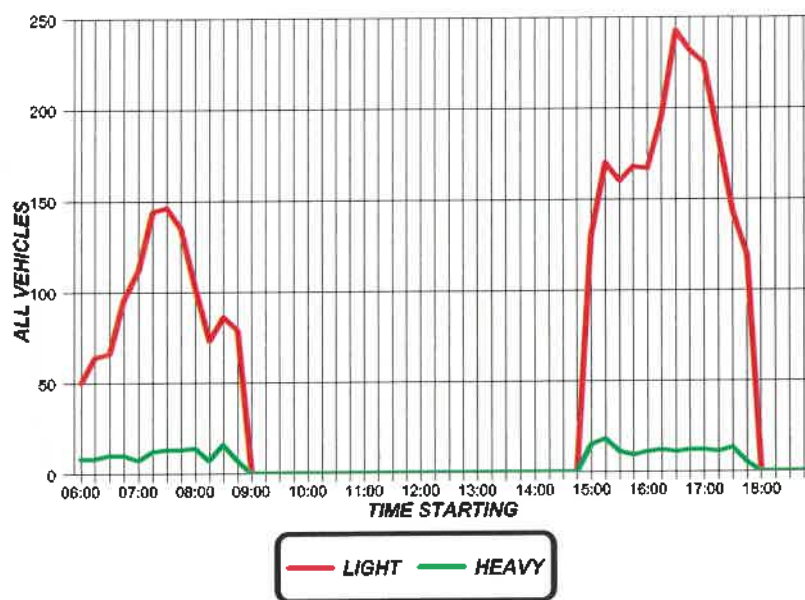
R30, WELKOM

PROJ. T2025/069

DATE JUN. 2025

TRAFFTRANS (EDMS) BPK

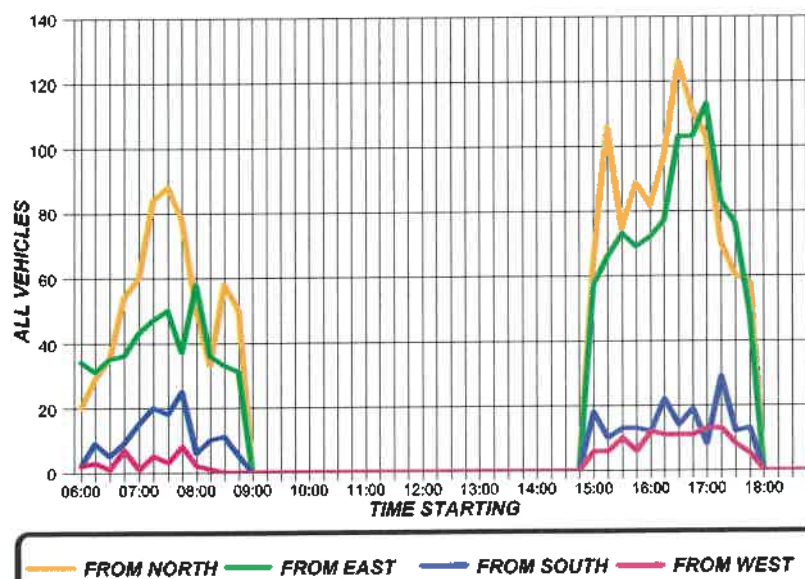
6 HOUR VOLUMES THROUGH STATION R30 & R73 / R710



PREPARED BY TRAFFITRANS

STATION M4

APPROACH VOLUMES R30 & R73 / R710



PREPARED BY TRAFFITRANS

SUMMARY OF TRAFFIC COUNTS



STATION: M4
LOCATION: N/S R30
E/W R73 / R710

LAT: 27° 58' 24.1" S
LONG: 26° 41' 18.4" E

DATE: 26/6/2025
Thursday

MOVEMENT		AM PEAK HOUR					MIDDAY PEAK HOUR					PM PEAK HOUR					6 HOUR COUNT			
		LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL	PHF	LIGHT	HEAVY		TOTAL
FROM	NO	VOL	VOL	%	VOL		VOL	VOL	%	VOL		VOL	VOL	%	VOL		VOL	VOL	%	VOL
NORTH	1 R	2			2	0.81					n.a.	7	1	13%	8	0.83	26	7	21%	33
	2 T	42	1	2%	43							37	2	5%	39		190	24	11%	214
	3 L	252	13	5%	265							375	15	4%	390		1364	69	5%	1433
EAST	4 R	104	5	5%	109	0.88					n.a.	290	11	4%	301	0.86	975	57	6%	1032
	5 T	34	10	23%	44							61	1	2%	62		216	35	14%	251
	6 L	22	2	8%	24							32	1	3%	33		119	9	7%	128
SOUTH	7 R	7	1	13%	8	0.78					n.a.	20	3	13%	23	0.76	87	10	10%	97
	8 T	61	7	10%	68							27	5	16%	32		177	23	12%	200
	9 L	2			2							8			8		21			21
WEST	10 R					0.57					n.a.	5			5	0.94	8			8
	11 T	10			10							30	7	19%	37		87	18	17%	105
	12 L	1	6	86%	7							3	1	25%	4		19	13	41%	32
TOTAL		537	45	8%	582	0.85					n.a.	895	47	5%	942	0.87	3289	265	7%	3554

PERCENTAGE OF: 6H 16.4%

PERCENTAGE OF: 6H n.a

PERCENTAGE OF: 6H 26.5%

STARTING TIME OF PEAK HOUR
AM MID PM
07:00 n.a 16:15

ADT _N :	700	ADT _E :	722	ADT _S :	157	ADT _W :	105
AADT _N :	667	AADT _E :	688	AADT _S :	149	AADT _W :	100
ADTT _N :	390	ADTT _E :	372	ADTT _S :	95	ADTT _W :	123
AADTT _N :	307	AADTT _E :	293	AADTT _S :	75	AADTT _W :	97

NOTE: SEE ATTACHED SHETCH FOR LAYOUT OF STATION

PREPARED BY TRAFFTRANS (PTY) LTD

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
LOCATION: E/W R73 / R710
DATE OF SURVEY : 26/6/2025

STATION NO : M4

TYPE OF SURVEY 6H TURNING MOVEMENTS
TYPE OF VEHICLE: ALL

End Time	MOVEMENTS																								TOTALS	
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L			
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
06:15			5		15		23		7		4				2					2					58	
06:30	1		11		17		18		7		6		4		5					3					72	
06:45	2		8		25		26		7		2		2		2		1					1			76	
07:00	2	5	9	33	43	100	25	92	4	25	7	19	5	11	4	13		1		7	12		1	106	312	
07:15		5	19	47	41	126	30	99	9	27	4	19	2	13	11	22	2	3			10	1	2	119	373	
07:30		4	6	42	78	187	25	106	13	33	9	22	3	12	17	34		3		2	9	3	5	156	457	
07:45	2	4	9	43	77	239	32	112	13	39	5	25	1	11	17	49		2		1	10	2	6	159	540	
08:00		2	9	43	69	265	22	109	9	44	6	24	2	8	23	68		2		7	10	1	7	148	582	
08:15		2	10	34	40	264	37	116	14	49	7	27		6	5	62	1	1		2	12		6	116	579	
08:30	2	4	7	35	24	210	23	114	10	48	3	21	1	4	8	53	1	2			10	1	4	80	503	
08:45	1	3	11	37	46	179	19	101	12	45	2	18	3	6	8	44		2			9		2	102	446	
09:00	3	6	8	36	39	149	25	104	3	39	3	15	5	9		21		2			2		1	86	384	
09:15																										
09:30																										
09:45																										
10:00																										
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14:45																										
15:00																										
15:15	1	1	10	10	53	53	39	39	13	13	5	5	7	7	9	9	2	2			6	6			145	145
15:30	4	5	25	35	77	130	48	87	11	24	7	12	4	11	6	15		2		4	10	2	2	188	333	
15:45		5	4	39	71	201	70	157	1	25	2	14	2	13	11	26		2		8	18	2	4	171	504	
16:00		5	3	42	86	287	53	210	8	33	8	22	2	15	10	36	1	3		3	21	3	7	177	681	
16:15	1	5	8	40	73	307	45	216	19	39	8	25	5	13	5	32	2	3	3	3	6	21	3	10	178	714
16:30		1	17	32	80	310	61	229	10	38	6	24	10	19	10	36	2	5	1	4	8	25	2	10	207	733
16:45	3	4	8	36	115	354	78	237	20	57	5	27	2	19	9	34	3	8	2	6	9	26		8	254	816
17:00		4	9	42	102	370	70	254	16	65	17	36	8	25	9	33	2	9	2	8	8	31	1	6	244	883
17:15	5	8	5	39	93	390	92	301	16	62	5	33	3	23	4	32	1	8		5	12	37	1	4	237	942
17:30	2	10	5	27	63	373	73	313	5	57	5	32	15	28	11	33	3	9		4	12	41	1	3	195	930
17:45	4	11	6	25	50	308	64	299	10	47	2	29	8	34	4	28		6		2	5	37	3	6	156	832
18:00		11	2	18	56	262	34	263	14	45		12	3	29	10	29		4				29	5	10	124	712
TOTAL	6H	33	6H	214	6H	1433	6H	1032	6H	251	6H	128	6H	97	6H	200	6H	21	6H	8	6H	105	6H	32	6H	3554

STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																											
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS		
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	
AM	AM Peak Hour From: 07:00 to 08:00																										
Vol	2	2	9	43	77	265	32	109	13	44	5	24	1	8	17	68		2				1	10	2	7	159	582
MID	Midday Peak Hour From: to																										
Vol																											
PM	PM Peak Hour From: 18:15 to 17:15																										
Vol	3	8	8	39	115	390	78	301	20	62	5	33	2	23	9	32	3	8	2	6	9	37		4	254	942	

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
LOCATION: E/W R73 / R710
DATE OF SURVEY: 26/6/2025

STATION NO: M4

TYPE OF SURVEY 6H TURNING MOVEMENTS
TYPE OF VEHICLE: LIGHT

End Time	MOVEMENTS																				TOTALS					
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R				11 T		12 L	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
06:15			4		13		21		5		4				2						1				50	
06:30			8		17		17		6		6		3		4						3				64	
06:45	2		7		23		25		5		1		1				1						1		66	
07:00	2	4	6	25	41	94	24	87	4	20	6	17	3	7	3	9		1			7	11		1	96	276
07:15		4	18	39	40	121	29	95	8	23	4	17	1	8	10	17	2	3				10		1	112	338
07:30		4	6	37	74	178	25	103	10	27	8	19	3	8	16	29		3			2	9		1	144	418
07:45	2	4	9	39	72	227	30	108	10	32	4	22	1	8	16	45		2			1	10	1	1	146	498
08:00		2	9	42	66	252	20	104	6	34	6	22	2	7	19	61		2			7	10		1	135	537
08:15		2	7	31	37	249	32	107	11	37	7	25		6	5	56	1	1			2	12		1	102	527
08:30		2	6	31	23	198	21	103	10	37	3	20	1	4	7	47	1	2				10	1	2	73	456
08:45	1	1	9	31	42	168	16	89	7	34	1	17	3	6	7	38		2				9		1	86	396
09:00	3	4	8	30	34	136	23	92	3	31	3	14	5	9		19		2				2		1	79	340
09:15																										
09:30																										
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15:15	1	1	10	10	51	51	32	32	13	13	3	3	7	7	8	8	2	2			3	3			130	130
15:30	3	4	19	29	76	127	44	76	9	22	7	10	4	11	5	13		2			3	6			170	300
15:45		4	3	32	67	194	67	143		22	2	12	2	13	11	24		2			8	14			160	480
16:00		4	3	35	81	275	51	194	7	29	8	20	1	14	10	34	1	3			3	17	3	3	168	628
16:15		3	8	33	73	297	43	205	14	30	7	24	5	12	5	31	2	3	3	3	4	18	3	6	167	665
16:30			16	30	78	299	59	220	10	31	6	23	7	15	8	34	2	5	1	4	7	22	1	7	195	690
16:45	3	3	8	35	112	344	74	227	19	50	4	25	2	15	9	32	3	8	2	6	7	21		7	243	773
17:00		3	9	41	96	358	66	242	16	59	17	34	8	22	8	30	2	9	2	8	7	25	1	5	232	837
17:15	4	7	4	37	89	375	91	290	16	61	5	32	3	20	2	27	1	8		5	9	30	1	3	225	895
17:30	2	9	5	26	61	358	71	302	4	55	5	31	14	27	9	28	3	9		4	9	32	1	3	184	884
17:45	3	9	6	24	45	291	61	289	9	45	2	29	8	33	4	23		6		2	4	29	1	4	143	784
18:00		9	2	17	53	248	33	256	14	43		12	3	28	9	24		4				22	5	8	119	671
TOTAL	6H	26	6H	190	6H	1364	6H	975	6H	216	6H	119	6H	87	6H	177	6H	21	6H	8	6H	87	6H	19	6H	3289

STARTING TIMES PEAK PERIOD VOLUME FOR STATION																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
AM	AM Peak Hour From: 07:00 to 08:00																									
Vol	2	2	9	42	72	252	30	104	10	34	4	22	1	7	16	61		2			1	10	1	1	146	537
MID	Midday Peak Hour From: to																									
Vol																										
PM	PM Peak Hour From: 16:15 to 17:15																									
Vol	3	7	8	37	112	375	74	290	19	61	4	32	2	20	9	27	3	8	2	5	7	30		3	243	895
PREPARED BY TRAFFTRANS (PTY) LTD																										

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
H - HOURLY VOLUMES

TRAFFIC SURVEY: VEHICLE COUNTS - WELKOM



LOCATION: N/S R30
LOCATION: E/W R73 / R710
DATE OF SURVEY : 26/6/2025

STATION NO : M4

TYPE OF SURVEY 6H TURNING MOVEMENTS
TYPE OF VEHICLE: HEAVY

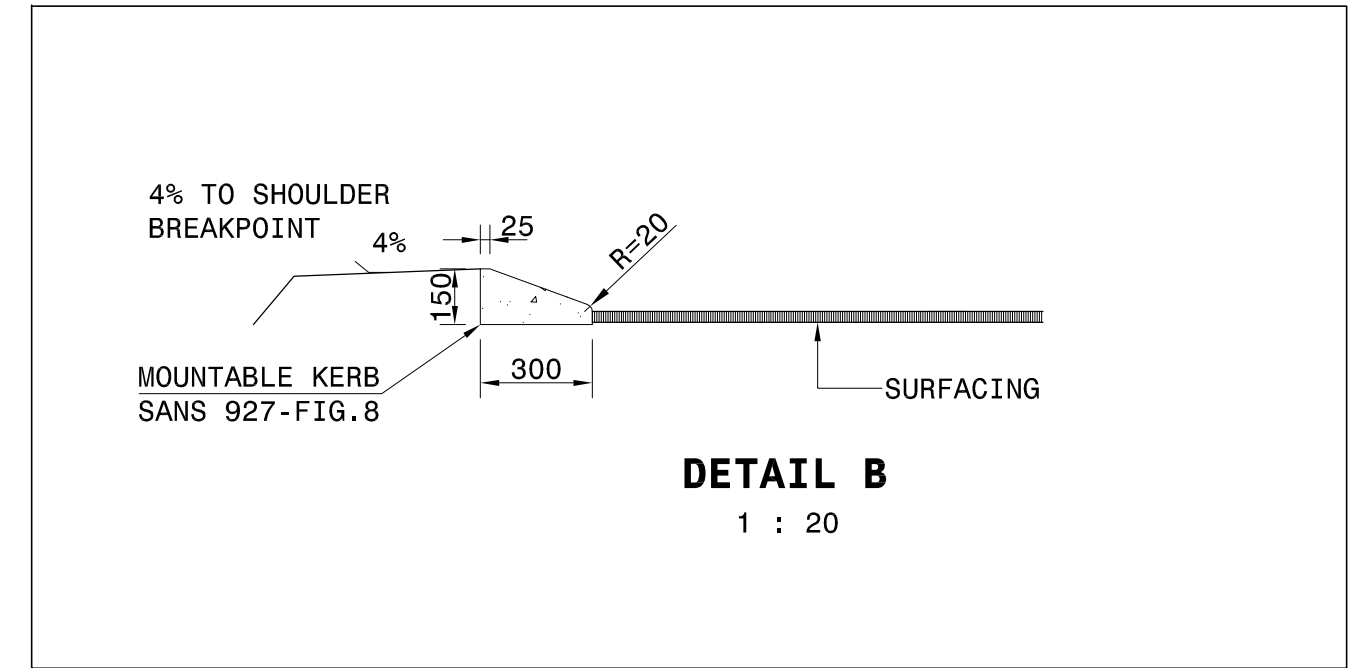
End Time	MOVEMENTS																									
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
06:15			1		2		2		2												1				8	
06:30	1		3				1		1				1		1										8	
06:45			1		2		1		2		1		1		2										10	
07:00		1	3	8	2	6	1	5		5	1	2	2	4	1	4						1			10	36
07:15		1	1	8	1	5	1	4	1	4		2	1	5	1	5							1	1	7	35
07:30				5	4	9		3	3	6	1	3		4	1	5							3	4	12	39
07:45				4	5	12	2	4	3	7	1	3		3	1	4							1	5	13	42
08:00				1	3	13	2	5	3	10		2		1	4	7							1	6	13	45
08:15			3	3	3	15	5	9	3	12		2				6								5	14	52
08:30	2	2	1	4	1	12	2	11		9		1			1	6							2	7	7	47
08:45		2	2	6	4	11	3	12	5	11	1	1			1	6							1	16	16	50
09:00		2		6	5	13	2	12		8		1				2									7	44
09:15																										
09:30																										
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15:00																										
15:15					2	2	7	7			2	2			1	1					3	3			15	15
15:30	1	1	6	6	1	3	4	11	2	2		2			1	2				1	4	2	2	18	33	
15:45		1	1	7	4	7	3	14	1	3		2				2					4	2	4	11	44	
16:00		1		7	5	12	2	16	1	4		2	1	1		2					4		4	9	53	
16:15	1	2		7		10	2	11	5	9	1	1		1		1					2	3		4	11	49
16:30		1	1	2	2	11	2	9		7		1	3	4	2	2					1	3	1	3	12	43
16:45		1		1	3	10	4	10	1	7	1	2		4		2					2	5		1	11	43
17:00		1		1	6	11	4	12		6		2		3	1	3					1	6		1	12	46
17:15	1	1	1	2	4	15	1	11		1		1		3	2	5					3	7		1	12	47
17:30		1		1	2	15	2	11	1	2		1	1	1	2	5					3	9			11	46
17:45	1	2		1	5	17	3	10	1	2				1		5					1	8	2	2	13	48
18:00		2		1	3	14	1	7		2				1	1	5						7		2	5	41
TOTAL	6H	7	6H	24	6H	69	6H	57	6H	35	6H	9	6H	10	6H	23	6H		6H		6H	18	6H	13	6H	265

STARTING TIMES AND COMBINED PEAK PERIOD VOLUME FOR STATION																										
	1 R		2 T		3 L		4 R		5 T		6 L		7 R		8 T		9 L		10 R		11 T		12 L		TOTALS	
	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H	QH	H
AM	AM Peak Hour From: 07:15 to 08:15																									
Vol			2	3	4	15	3	9	5	12	1	2			1	6							5	16	52	
MID	Midday Peak Hour From: to																									
Vol																										
PM	PM Peak Hour From: 15:00 to 16:00																									
Vol	1	1		7	5	12	3	16	1	4		2		1		2					1	4	2	4	13	53

PREPARED BY TRAFFTRANS (PTY) LTD

KEY: QH - QUARTER HOURLY VOLUMES
H - HOURLY VOLUMES

APPENDIX C: SANRAL STANDARD DESIGN DRAWINGS



DESIGN SPEED (km/h)	SIGHT DISTANCE (D) (m)
50	150
60	180
70	210
80	240
90	270
100	300
110	330
120	360

