TECHWORLD
consulting ENGINEERS

<< Tel: +27 12 348 0386
<< Fax: +27 12 348 3587
<< Cell: +27 83 447 9961
<< Email: admin@techworld.co.za

Number 78
Glenmore Ave
Cnr Glenmore & Glenwood Rd
Lynnwood Glen
South Africa

<< PO Box 12530
Hatfield
0028
South Africa

Traffic Engineering
Transportation Planning
Transport Economy
Project Management
Project Financing & Viability

FUEL VIABILITY STUDY

Proposed New Filling Station on R565

Portion 135 Boschhoek 103-JQ

Rustenburg Municipality

September 2021

APPLICATION

OUR REFERENCE	REP01/TW1268/16Sep21
DATE	16 September 2021
CLIENT	JJJ ENGINEERING & CIVILS PTY(LTD)
ADDRESS	P.O. Box 3391, Rustenburg, 0300
FOR ATTENTION	Jacques Swarts
SUBJECT	FUEL VIABILITY STUDY: PROPOSED NEW FILLING STATION ON R565, PORTION 135 BOSCHHOEK 103-JQ, RUSTENBURG MUNICIPALITY

This investigation determines the viability of a proposed new filling station (Class 3 rest and service facility) on Route R565 approximately midway between Rustenburg and Sun City (North West Province). The site is situated on Portion 135 of the farm Boschhoek 103-JQ, on the eastern side of Route R565 opposite the existing TOTAL and ENGEN sites in Boshoek.

Full access to application site from Route R565, directly opposite the northern access to the existing TOTAL site, has already been approved by SANRAL (September 2017) for the current zoning of “Business 1” for a retail centre. This access was however approved with the condition that it must also provide access to the neighbouring properties (namely the Remainder of Portion 57, Portion 46, and the Remainder of Portion 104). A new application will be submitted to SANRAL to obtain access at the same position, with similar conditions, for the rezoning to “Special” for the purposes of a filling station with ancillary shops.

The two (2) existing filling stations opposite the application site on Route R565 (TOTAL and ENGEN) were selected as benchmark sites for the proposed new filling station. Traffic and fuel related surveys were subsequently done at the benchmark sites to estimate market area specific fuel parameters and monthly fuel sales.

The average fuel sales of the proposed new filling station are estimated as ±300,200 litres/month in the expected opening year (2023). A 10% margin of error applies based on the extent and quality of available data. Fuel sales between ±270,200 litres/month (pessimistic scenario) and ±330,250 litres/month (optimistic scenario) can thus be expected at the proposed new site in the short term.

The viability of a filling station is directly related to the expected fuel sales based on the assumption that the development and operational cost of filling stations – in urban areas under similar circumstances – are approximately the same. Since the expected fuel sales of the proposed new site is more than 300,000 litres/month, which is generally accepted as a viable proposition for a new filling station, it is concluded that the proposed new site will be viable from a financial point of view.

The fuel sales are expected to increase with the traffic in the area (although not proportionately). A growth rate of 2.0% p.a. in background traffic is assumed as a conservative estimate for the future.

Three (3) filling stations, including the two benchmark sites, are located within a 3km radius from the application site. The application site is expected to capture on average about 20% of the monthly fuel sales of the existing sites in the market area. The viability of the existing sites will not be jeopardised based on the estimated current fuel sales at the existing sites and the expected impact.

Please note that the fuel surveys were conducted during three normal weekdays (12-hours) and then factored (with 7-day counts) to average monthly sales which is not entirely accurate but nevertheless an acceptable indication of the expected fuel sales and the expected impact on existing filling stations.

Your consideration of this fuel viability study is hereby requested. Please do not hesitate to contact us immediately for any discussions or enquiries.

Kind Regards

Pieter Kruger for TECHWORLD

SUMMARY SHEET

ACCESSIBILITY OF THE APPLICATION SITE				
Planned Access Arrangements	Full access to the filling station is planned from Route R565, directly opposite the northern access to the existing TOTAL site.			
BENCHMARK SITES:				
1. TOTAL Site	Located on the western side of Route R565, south-west of the application site, with full access from Route R565.			
2. ENGEN Site	Located on the western side of Route R565, north-west of the application site, with full access from Route R565.			
DESCRIPTION	**UNITS**	**LIGHT VEHICLES**	**HEAVY VEHICLES**	**TOTAL VEHICLES**
BENCHMARK SITE 1: TOTAL				
Interception Rates	%	±3.59%	±0.60%	
Average Fills	litres/veh	±20.2	±234.9	
Estimated 2021 Market	vehicles/day	±13,330	±960	±14,290
Estimated 2021 Fuel Sales	litres/month	±281,000	±39,100	±320,100
BENCHMARK SITE 2: ENGEN				
Interception Rates	%	±4.92%	±1.33%	
Average Fills	litres/veh	±22.0	±87.8	
Estimated 2021 Market	vehicles/day	±13,330	±960	±14,290
Estimated 2021 Fuel Sales	litres/month	±418,700	±32,350	±451,050

DESCRIPTION		UNITS	LIGHT VEHICLES	HEAVY VEHICLES	TOTAL VEHICLES
APPLICATION SITE: PORTION 135 BOSCHHOEK 103-JQ					
Interception Rates		%	±3.00%	±0.90%	
Average Fills		litres/veh	±21.0	±180.0	
Estimated 2023 Market		vehicles/day	±13,870	±1,000	±14,870
Estimated 2023 Fuel Sales		litres/month	±253,400	±46,800	±300,200
10% Margin of Error	Pessimistic Scenario	litres/month			±270,200
	Optimistic Scenario	litres/month			±330,250

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TITLE PAGE OF REPORT

TITLE OF REPORT	Fuel Viability Study: Proposed New Filling Station on R565, Portion 135 Boschhoek 103-JQ, Rustenburg Municipality
DESCRIPTION	This investigation determines the viability of a proposed new filling station on Route R565, approximately midway between Rustenburg and Sun City (North West Province).

DATE	STATUS OF REPORT
September 2021	Final Report
CLIENT	**TOWN PLANNER**
JJJ ENGINEERING & CIVILS PTY(LTD) P.O. Box 3391 Rustenburg, 0300 Jacques Swarts 083 520 5768	
PROJECT NUMBER	**REPORT NUMBER**
TW1268	REP01/TW1268/16Sep21
POSTAL ADDRESS	**PHYSICAL ADDRESS**
PO Box 12530 Hatfield, 0028 Tel: (012) 348 0386 Fax: (012) 348 3587	78 Glenmore Avenue C/O Glenmore Avenue & Glenwood Road Lynnwood Glen, 0081 Email: admin@techworld.co.za
PROJECT TEAM	**COPYRIGHT**
P Kruger, M Ryan, M Wilson	TECHWORLD

1 APPLICATION SITE

Description and location of the application site.

THE LOCATION OF THE SITE IN TERMS OF THE PROPERTY DESCRIPTION IS AS FOLLOWS		
Erf / Portion	Portion 135	
Suburb / Farm	Farm Boschhoek 103-JQ	
Location	On the eastern side of Route R565 opposite the existing TOTAL and ENGEN sites in Boshoek.	
THE SITE IS SERVED – DIRECTLY AND INDIRECTLY – BY THE FOLLOWING STREET NETWORK		
Route R565	Route R565 is a two-lane single carriageway road on the western boundary of the site.	Class 2 road under the jurisdiction of SANRAL.
THE SIZE AND / OR EXTENT OF THE SITE IS THE FOLLOWING		
Extent of Total Property	±1.3337 ha	
THE EXISTING ZONING OF THE SITE IS THE FOLLOWING		
Existing Zoning	"*Business 1*" for a retail centre.	
THE PLANNED ZONING OF THE SITE IS THE FOLLOWING		
Planned Zoning	"*Special*" for a filling station with ancillary shops.	
THE FOLLOWING ILLUSTRATIONS ARE ATTACHED		
Illustrations	Refer to: *Figure 1: Locality Plan and Market Area* *Figure 2: Site Area* *Appendix A: Site Layout Plan*	

2 METHODOLOGY	***The approach and methodology followed in the execution of this study is described in this section***
THE FOLLOWING GENERAL APPROACH AND METHODOLOGY WERE UTILIZED	
Viability	The TECHWORLD FUEL FORECAST MODEL (TFFM) was calibrated for the market area based on the actual traffic demand and fuel parameters at the benchmark sites and the application site. The traffic surveys are discussed in detail in Sections 4 and 5.
THE STUDY PERIOD FOR THE DEVELOPMENT IS THE FOLLOWING	
Expected Opening (Base) Year	2023
THE FOLLOWING TRAFFIC REPORTS WERE CONSIDERED	
Traffic Reports	None
3 MARKET AREA AND NETWORK	***This section describes the identification of an appropriate market area, and the characteristics of the network included in the market area.***
3.1 LATENT DEVELOPMENT RIGHTS IN THE MARKET AREA	
THE FOLLOWING LATENT LAND USE RIGHTS EXIST IN THE MARKET AREA	
Latent Land Use Rights	No latent land use rights were considered which is a conservative approach from a viability point of view.
Growth in Background Traffic	A growth rate of 2.0% p.a. in background traffic is assumed as a conservative estimate for the future.
3.2 MARKET AREA	
THE MARKET AREA WAS DETERMINED BASED ON THE FOLLOWING	
Potential Market for Proposed New Filling Station	The proposed new filling station will serve the transient market along Route R565 between Rustenburg and Sun City, as well as the local market of Boshoek.

3.3 ROAD NETWORK DESCRIPTION

ROAD NETWORK PLANNING IN THE MARKET AREA	
Road Master Planning	Route R565 is a Class 2 road with an existing road reserve width of ±26.0m.
THE FOLLOWING ROAD NETWORK IMPROVEMENTS ARE COMMITTED IN THE AREA	
Committed Road Improvements	None

3.4 ACCESS AND CIRCULATION

ACCESS TO THE FILLING STATION CAN BE OBTAINED FROM THE FOLLOWING STREETS	
Route R565	Full access to application site from Route R565, directly opposite the northern access to the existing TOTAL site, has already been approved by SANRAL (September 2017) for the current zoning of "Business 1" for a retail centre. This access was however approved with the condition that it must also provide access to the neighbouring properties (namely the Remainder of Portion 57, Portion 46, and the Remainder of Portion 104). A new application will be submitted to SANRAL to obtain access at the same position, with the same conditions, for the rezoning to "Special" for the purposes of a filling station with ancillary shops.
CIRCULATION BY FUEL TANKERS WILL BE AS FOLLOWS	
Circulation	The site is large enough to provide efficient access and safe / appropriate circulation for fuel tankers.
THE FOLLOWING ILLUSTRATIONS ARE ATTACHED	
Illustrations	Refer to: *Appendix A: Site Layout Plan* *Appendix B: SANRAL Approval, September 2017* *Appendix C: Conceptual Layout Plan and Access Arrangements*

4 TRAFFIC DEMAND

The existing traffic demand is described in this section.

4.1 EXISTING (2021) TRAFFIC CHARACTERISTICS

TRAFFIC COUNTS WERE CONDUCTED DURING THE FOLLOWING PERIODS		
Electronic traffic counts at CTO station E1 on R565, ±280m south of the application site	Wednesday 24/03/2021 to Tuesday 30/03/2021	Refer to: *Table 1: Current (2021) Average Daily Traffic Demand (ADT) at CTO Station E1 on R565*
Weekday 12-hour counts at the intersection of R565 and the northern access to TOTAL	Wednesday 09/06/2021 Counting Period - 06:00 to 18:00	Refer to: *Table 2: Current (2021) Weekday 12-Hour Traffic Demand at Application Site*
THE CURRENT (2021) AVERAGE DAILY TRAFFIC DEMAND AT CTO STATION E1 IS AS FOLLOWS		
On R565, south of Application Site	Light Vehicles Heavy Vehicles Total Vehicles	±13,240 ±1,150 ±14,390
THE CURRENT (2021) 12-HOUR TRAFFIC DEMAND AT THE APPLICATION SITE IS AS FOLLOWS		
R565 / Northern Access to TOTAL Site Intersection	Light Vehicles Heavy Vehicles Total Vehicles	±8,910 ±790 ±9,700

4.2 ESTIMATED BASE YEAR (2023) TRAFFIC AT THE APPLICATION SITE

AVERAGE DAILY TRAFFIC DEMAND (ADT)	
Conversion Factors: 12-Hour to ADT	The estimated traffic demand at the proposed new filling station was calculated by converting the 12-hour traffic counts into average daily traffic demand (ADT). The electronic counts at CTO station E1 on Route R565 were used to calculate conversion factors from 12-hour to ADT as 1.50 for light vehicles and 1.23 for heavy vehicles.

ANNUAL TRAFFIC GROWTH RATE		
Growth in Background Traffic	A growth rate of 2.0% p.a. in background traffic is assumed as a conservative estimate for the future.	
THE ESTIMATED BASE YEAR (2023) ADT AT THE APPLICATION SITE IS AS FOLLOWS		
R565 / Northern Access to TOTAL Site Intersection	Light Vehicles	±13,900
	Heavy Vehicles	±1,000
	Total Vehicles	±14,900
THE FOLLOWING TABLES AND ILLUSTRATIONS ARE ATTACHED		
Tables and Illustrations	Refer to: *Table 3: Conversion Factors: 12-Hour Traffic Counts to Average Daily Traffic Demand (ADT)* *Figure 3: Existing Traffic Demand and Fuel Sales Characteristics of Filling Stations* *Appendix D: Traffic Surveys*	

5 BENCHMARK FILLING STATIONS

The traffic and fuel related characteristics of the benchmark filling stations within the market area are described in this section.

5.1 BENCHMARK FILLING STATIONS IN THE MARKET AREA

Benchmark Filling Stations	Two (2) existing filling stations on Route R565 (TOTAL and ENGEN) were selected as benchmark sites for the proposed new filling station. Traffic and fuel related surveys were subsequently done at the benchmark sites to estimate market area specific fuel parameters and monthly fuel sales. Both sites are located on the western side of Route R565 in Boshoek, opposite the application site, with full access from Route R565.

5.2 TRAFFIC AND FUEL RELATED CHARACTERISTICS OF BENCHMARK SITES

TRAFFIC AND FUEL RELATED SURVEYS WERE CONDUCTED DURING THE FOLLOWING PERIODS		
Weekday 12-Hour Counts and Fuel Related Surveys at the Benchmark Filling Stations	Tuesday 08/06/2021 to Thursday 10/06/2021 Counting Period - 06:00 to 18:00	Refer to: *Table 4: Current (2021) Traffic and Fuel Related Characteristics of Benchmark Filling Stations*
THE 12-HOUR TRAFFIC DEMAND AT THE BENCHMARK SITES ARE AS FOLLOWS		
Route R565	Light Vehicles Heavy Vehicles Total Vehicles	± 8,890 ± 780 ± 9,670

THE INTERCEPTION RATES AT THE BENCHMARK SITES ARE AS FOLLOWS

Interception Rates

The interception rates at the benchmark sites were surveyed as follows:

EXISTING SITE	LIGHT VEHICLES	HEAVY VEHICLES
1. TOTAL Site	±3.59%	±0.60%
2. ENGEN Site	±4.92%	±1.33%
AVERAGE	**±4.26%**	**±0.96%**

THE AVERAGE FILLS AT THE BENCHMARK SITES ARE AS FOLLOWS

Average Fills (Litres / Vehicle)

The average fills at the benchmark sites were surveyed as follows:

EXISTING SITE	LIGHT VEHICLES	HEAVY VEHICLES
1. TOTAL Site	±20.2 litres/veh	±234.9 litres/veh
2. ENGEN Site	±22.0 litres/veh	±87.8 litres/veh
WEIGHTED AVERAGE	**±20.9 litres/veh**	**±181.4 litres/veh**

THE CURRENT (2021) ESTIMATED AVERAGE MONTHLY FUEL SALES AT THE BENCHMARK SITES ARE AS FOLLOWS	
Average Monthly Fuel Sales (litres)	The average fuel sales at the benchmark sites were estimated as ±320,100 litres/month for the TOTAL site and ±451,050 litres/month for the ENGEN site. Please note that the fuel surveys were conducted during three normal weekdays (12-hours) and then factored (with 7-day counts) to average monthly sales which is not entirely accurate but nevertheless an acceptable indication of the expected fuel sales and the expected impact on existing filling stations.
THE FOLLOWING TABLES AND ILLUSTRATIONS ARE ATTACHED	
Tables and Illustrations	Refer to: *Table 5: Current (2021) Estimated Monthly Fuel Sales of Benchmark Filling Stations* *Figure 1: Locality Plan and Study Area* *Figure 3: Existing Traffic Demand and Fuel Sales Characteristics of Filling Stations* *Appendix D: Traffic Surveys*

6 VIABILITY OF PLANNED FILLING STATION

The viability of the application site is determined in this chapter.

6.1 APPROACH AND METHODOLOGY

THE FOLLOWING APPROACH AND METHODOLOGY WAS UTILIZED	
Viability	Filling Stations have several profit centres in addition to fuel sales, i.e. convenience stores, fast food outlets, car washes, and ATM's. A conservative approach is to determine the viability based only on fuel sales. The future growth in traffic must also be considered since it can be expected that fuel sales will increase with the growth in bypassing traffic. However, if a filling station is viable from its opening, it follows that the viability will only improve given no other changes.

	The viability of a filling station is directly related to the expected fuel sales based on the assumption that the development and operational cost of filling stations – in urban areas under similar circumstances – are approximately the same. Expected fuel sales between 250,000 and 300,000 litres/month is generally accepted as a viable proposition for a new filling station given average parameters in terms of development and operational cost.
Fuel Sales	The expected fuel sales of a filling station depend on the prevailing traffic demand (i.e. market), the interception rates, the average fill, and the average trading days per month. The interception rate(s) depend on the traffic demand, the configuration and quality of access, and the number of competing filling stations in the market area, while the average fill depends on the type of traffic and income levels in the market area (Living Standard Measure or LSM).

6.2 PREVAILING TRAFFIC DEMAND AT THE APPLICATION SITE

THE TRAFFIC MARKET AT THE PROPOSED NEW FILLING STATION IS AS FOLLOWS		
Traffic Market	The proposed new filling station will serve the transient market along Route R565 between Rustenburg and Sun City, as well as the local market of Boshoek.	
THE 2023 AVERAGE DAILY TRAFFIC MARKET AT THE PROPOSED NEW SITE IS AS FOLLOWS		
Total Market	Light Vehicles	± 13,870
	Heavy Vehicles	± 1,000
	Total Vehicles	± 14,870

6.3 EXPECTED TRAFFIC AND FUEL RELATED CHARACTERISTICS AT THE SITE

THE EXPECTED INTERCEPTION RATES AT THE PROPOSED NEW SITE ARE AS FOLLOWS	
Recommended Interception Rates for the Proposed New Filling Station	The surveyed fuel parameters of the benchmark sites and other similar filling stations indicate that interception rates of ±3.00% for light vehicles and ±0.90% for heavy vehicles can be expected at the proposed new filling station.

Expected Daily Patrons at the Proposed New Filling Station	The expected daily patrons at the proposed new filling station – exclusively for fuel purposes – are ±425 vehicles of which ±416 will be light vehicles with ±9 heavy vehicles.
THE EXPECTED AVERAGE FILLS AT THE PROPOSED NEW SITE ARE AS FOLLOWS	
Recommended Average Fills (litres per vehicle) for the Proposed New Filling Station	The surveyed fuel parameters of the benchmark sites and other similar filling stations indicate that an average fill of ±21.0 litres for light vehicles and ±180.0 litres for heavy vehicles can be expected at the proposed new filling station.
THE AVERAGE TRADING DAYS PER MONTH AT THE PROPOSED NEW SITE IS AS FOLLOWS	
Average Trading Days per Month	Since the expected monthly or annual fuel sales is based on factored daily fuel sales based on short term traffic counts, it is prudent to use less trading days than the average calendar days per month as a multiplier. In this instance – based on the extent of the traffic surveys - it is recommended to use 29 average trading days per month.

6.4 EXPECTED FUEL SALES AT THE PROPOSED NEW SITE

THE EXPECTED FUEL SALES AT THE PROPOSED NEW SITE ARE CALCULATED AS FOLLOWS	
Fuel Sales to Light Vehicles per month	= vehicles/day x litres/vehicle x days/month = 416 x 21.0 x 29 = ±253,400 litres / month
Fuel Sales to Heavy Vehicles per month	= vehicles/day x litres/vehicle x days/month = 9 x 180.0 x 29 = ±46,800 litres / month
Total Fuel Sales per month	= ±300,200 litres / month
THE VIABILITY OF THE PROPOSED NEW SITE IS BASED ON THE FOLLOWING	
Margin of Error for Estimated Monthly Fuel Sales	A 10% margin of error applies based on the extent and quality of available data. Fuel sales between ±270,200 litres/month (pessimistic scenario) and ±330,250 litres/month (optimistic scenario) can thus be expected at the proposed new filling station.

Ramp-up Percentages / Time to Mature	The full potential of a filling station is generally only realized after an initial ramp-up period. Ramp-up percentages of 85%, 90% and 95% are assumed for the first three years of operation. Fuel sales of ±255,200 litres/month are thus expected at opening (2023).
THE EXPECTED FUTURE FUEL SALES AT THE PROPOSED NEW SITE ARE AS FOLLOWS	
Expected Future Fuel Sales due to Growth in Background Traffic	The fuel sales are expected to increase with the traffic in the area (although not proportionately). A growth rate of 2.0% p.a. in background traffic is assumed as a conservative estimate for the future. The proposed new filling station is expected to sell ±310,900 litres fuel per month by 2028 (5-year operational period).
THE FOLLOWING TABULATED DATA ARE ATTACHED	
Tabulated Data	Refer to: *Table 6: Estimated 2023 Monthly Fuel Sales for the Proposed New Filling Station* *Table 7: Expected Future Monthly Fuel Sales for the Proposed New Filling Station*

7 IMPACT ON OTHER FILLING STATIONS

The expected impact of the proposed new filling station on other filling stations in the market area are described in this section.

7.1 COMPETING FILLING STATIONS IN THE MARKET AREA

Competing Filling Stations	A filling station can practically only influence the fuel sales of another filling station if they share the same traffic market. The impact of an application site on existing filling stations is thus limited to the proportion of shared traffic between these sites as calculated in the following sections. Three (3) filling stations, including the two benchmark sites, are located within a 3km radius from the application site.

7.2 EXPECTED IMPACT OF PROPOSED NEW FILLING STATION ON BENCHMARK FILLING STATIONS IN THE MARKET AREA

Expected Impact of the Proposed New Filling Station on the Benchmark Filling Stations	Based on the distribution of traffic in the area, the location of accesses, the shared traffic between filling stations, and the current fuel sales parameters of existing benchmark filling stations in the area, it is technically possible to calculate the expected impact of a new filling station on existing filling stations. This calculation assumes "all things are equal", i.e. all filling stations are modern facilities that offer the same quality of service which is a reasonable assumption for free markets conditions. The expected impact of the proposed new filling station on the benchmark sites in terms of reduced fuel sales, were based on the following: ➢ Any filling station generally serves only a proportion of the total bypassing traffic market, ➢ The number of filling stations required to serve any traffic market fully can be calculated mathematically with the existing interception rates at that site. For example, it can be shown that on average about ±4.5 filling stations are required to serve one traffic stream fully assuming an average interception rate of 3.5% and an average fill of 21 litres, ➢ An additional filling station, i.e. the number of filling stations increase to ±5.5 (4.5 + 1) in the same market, will reduce the interception rate of the existing site to 2.9% which translates into a reduction of 18.3% in the current fuel sales, ➢ However, if the same traffic market is not shared between filling stations based on inflows and outflows between filling stations, the reduction in interception rates is only applicable to the proportion of the traffic market that is shared between the existing site and the application site, ➢ For argument's sake the reduction of 18.3% in fuel sales will decrease to only 9.1% if only 50% of the traffic market is shared, Given that all the parameters and the shared traffic markets are known (were surveyed) for the benchmark sites, it is calculated that the proposed new site will capture on average about 20% of the monthly fuel sales of the benchmark sites.

	The viability of the benchmark sites will not be affected given their existing fuel sales and the expected impact of the proposed new site on these sites.

7.3 EXPECTED IMPACT OF PROPOSED NEW FILLING STATION ON OTHER EXISTING FILLING STATIONS IN THE MARKET AREA

Expected Impact of the Proposed New Filling Station on Other Existing Filling Stations	The expected impact of the proposed new site on all the existing filling stations within the market area, excluding the benchmark sites, can be calculated similarly. Only one other filling station (i.e. Milling Filling Station) is located within a 3km radius from the proposed new filling station. The interception rates expected at the proposed new filling station – which was based on survey data at the benchmark sites – indicate that about 5.5 filling stations are required to serve the entire market at the application site (i.e. about 4.5 filling stations without the proposed new filling station). The impact of one additional filling station is therefore expected to reduce the monthly fuel sales of the existing filling stations with ±22.4%. The traffic market is however not distributed uniformly in the market area. The shared traffic market between the existing site and the application site was estimated as ±90.0%. The application site is expected to capture at most ±20.1% (=22.4% x 90.0%) of the monthly fuel sales of the existing site.
THE FOLLOWING ILLUSTRATIONS ARE ATTACHED	
Illustrations	Refer to: *Figure 1: Locality Plan and Market Area*

8 CONCLUSIONS AND RECOMMENDATIONS

This section contains the conclusions and recommendations of the report.

8.1 CONCLUSIONS

THE FOLLOWING IS CONCLUDED	
Planned Development	Proposed New Filling Station on R565, Portion 135 Boschhoek 103-JQ, Rustenburg Municipality.
Location	On the eastern side of Route R565 opposite the existing TOTAL and ENGEN sites in Boshoek.
Latent Land Use Rights	No latent land use rights were considered which is a conservative approach from a viability point of view.
Planned Access Arrangements	Full access to application site from Route R565, directly opposite the northern access to the existing TOTAL site, has already been approved by SANRAL (September 2017) for the current zoning of "Business 1" for a retail centre. This access was however approved with the condition that it must also provide access to the neighbouring properties (namely the Remainder of Portion 57, Portion 46, and the Remainder of Portion 104). A new application will be submitted to SANRAL to obtain access at the same position, with the same conditions, for the rezoning to "Special" for the purposes of a filling station with ancillary shops.
Circulation by Fuel Tankers	The site is large enough to provide efficient access and safe / appropriate circulation for fuel tankers.
Benchmark Sites	The two (2) existing filling stations opposite the application site on Route R565 (TOTAL and ENGEN) were selected as benchmark sites for the proposed new filling station. Traffic and fuel related surveys were subsequently done at the benchmark sites to estimate market area specific fuel parameters and monthly fuel sales.
Viability	The average fuel sales of the proposed new filling station are estimated as ±300,200 litres/month in the expected opening year (2023). A 10% margin of error applies based on the extent and quality of available data.

	Fuel sales between ±270,200 litres/month (pessimistic scenario) and ±330,250 litres/month (optimistic scenario) can thus be expected at the proposed new site in the short term. The fuel sales are expected to increase with the traffic in the area (although not proportionately). A growth rate of 2.0% p.a. in background traffic is assumed as a conservative estimate for the future.
Expected Impact on Existing Filling Stations	Three (3) filling stations, including the two benchmark sites, are located within a 3km radius from the application site. The application site is expected to capture on average about 20% of the monthly fuel sales of the existing sites in the market area. The viability of the existing sites will not be jeopardised based on the estimated current fuel sales at the existing sites and the expected impact.

8.2 RECOMMENDATIONS

THE FOLLOWING IS RECOMMENDED	
Recommendation	The viability of a filling station is directly related to the expected fuel sales based on the assumption that the development and operational cost of filling stations – in urban areas under similar circumstances – are approximately the same. Since the expected fuel sales of the proposed new site is more than 300,000 litres/month, which is generally accepted as a viable proposition for a new filling station, it is concluded that the proposed new site will be viable from a financial point of view.

TABLES

Table 1: Current (2021) Average Daily Traffic Demand (ADT) at CTO Station E1 on R565

LOCATION	DIRECTION	EXISTING (2021) AVERAGE DAILY TRAFFIC DEMAND (ADT)		
		LIGHT VEHICLES	HEAVY VEHICLES	TOTAL VEHICLES
On R565, ±520m north of Main Road	Northbound	±6,788	±514	±7,302
	Southbound	±6,453	±634	±7,087
	TOTAL	**±13,241**	**±1,148**	**±14,389**
	Vehicle Classification	±92.0%	±8.0%	100.0%

Table 2: Current (2021) Weekday 12-Hour Traffic Demand at Application Site

LOCATION	APPROACH	12-HOUR TRAFFIC DEMAND		
		LIGHT VEHICLES	HEAVY VEHICLES	TOTAL VEHICLES
R565 / Northern Access of TOTAL Site	Southern	±3,980	±404	±4,384
	Northern	±4,517	±364	±4,881
	Western	±413	±17	±430
	TOTAL	**±8,910**	**±785**	**±9,695**
	Vehicle Classification	±91.9%	±8.1%	100.0%

Table 3: Conversion Factors: 12-Hour Traffic Counts to Average Daily Traffic Demand (ADT)

LOCATION	DIRECTION	2021 12-HOUR TRAFFIC COUNTS		2021 AVERAGE DAILY TRAFFIC (ADT)		CONVERSION FACTOR	
		LIGHT VEHICLES	HEAVY VEHICLES	LIGHT VEHICLES	HEAVY VEHICLES	LIGHT VEHICLES	HEAVY VEHICLES
Along R565	Northbound	±4,404	±458	±6,788	±514	±1.54	±1.12
	Southbound	±4,427	±475	±6,453	±634	±1.46	±1.34
	Total	**±8,831**	**±933**	**±13,241**	**±1,148**	**±1.50**	**±1.23**

TABLES

Table 4: Current (2021) Traffic and Fuel Related Characteristics of Benchmark Filling Stations

EXISTING FILLING STATION	VEHICLE CLASS	AVERAGE FILL (litres/veh)	12-HOUR PATRONS	12-HOUR TRAFFIC COUNTS	INTERCEPTION RATES
1. TOTAL Site	Light Vehicles	±20.2	±320	±8,892	±3.59%
	Heavy Vehicles	±234.9	±5	±778	±0.60%
2. ENGEN Site	Light Vehicles	±22.0	±437	±8,892	±4.92%
	Heavy Vehicles	±87.8	±10	±778	±1.33%

Table 5: Current (2021) Estimated Monthly Fuel Sales of Benchmark Filling Stations

EXISTING FILLING STATION	VEHICLES CLASS	DAILY PATRONS	AVERAGE FILL (litres/veh)	MONTHLY TRADING DAYS	MONTHLY FUEL SALES (litres)
1. TOTAL Site	Light Vehicles	±479	±20.2	±29	±280,985
	Heavy Vehicles	±6	±234.9	±29	±39,138
	Total Vehicles	±485			±320,123
2. ENGEN Site	Light Vehicles	±656	±22.0	±29	±418,684
	Heavy Vehicles	±13	±87.8	±29	±32,370
	Total Vehicles	±668			±451,054

Table 6: Estimated 2023 Monthly Fuel Sales for the Proposed New Filling Station

VEHICLE CLASS	AVERAGE DAILY TRAFFIC DEMAND (ADT)	INTERCEPTION RATES	EXPECTED DAILY PATRONS	AVERAGE FILL (litres/veh)	MONTHLY TRADING DAYS	MONTHLY FUEL SALES (litres)
Light Vehicles	±13,871	±3.00%	±416	±21.0	±29	±253,417
Heavy Vehicles	±996	±0.90%	±9	±180.0	±29	±46,807
Total Vehicles	**±14,867**		**±425**			**±300,224**

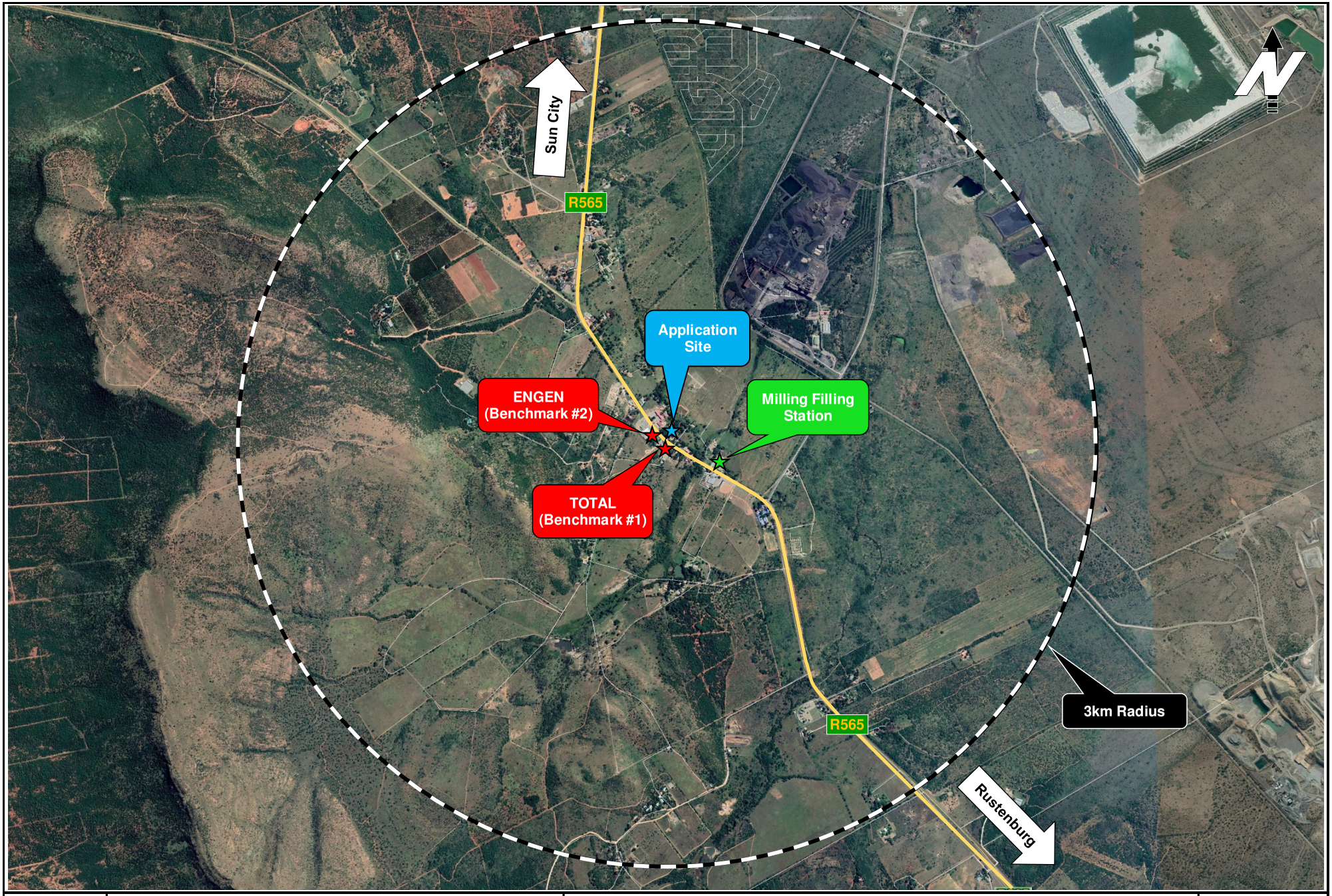
Table 7: Expected Future Monthly Fuel Sales for the Proposed New Filling Station

YEAR	RAMP-UP PERCENTAGE	EXPECTED AVERAGE MONTHLY FUEL SALES (litres)		
		LIGHT VEHICLES	HEAVY VEHICLES	TOTAL VEHICLES
2023	85%	±215,400	±39,800	±255,200
2024	90%	±229,600	±42,500	±272,100
2025	95%	±243,900	±45,300	±289,200
2026	100%	±258,450	±48,150	±306,600
2027	100%	±260,150	±48,600	±308,750
2028	100%	±261,850	±49,050	±310,900

FIGURES

FIGURES

Figure 1: Locality Plan and Market Area

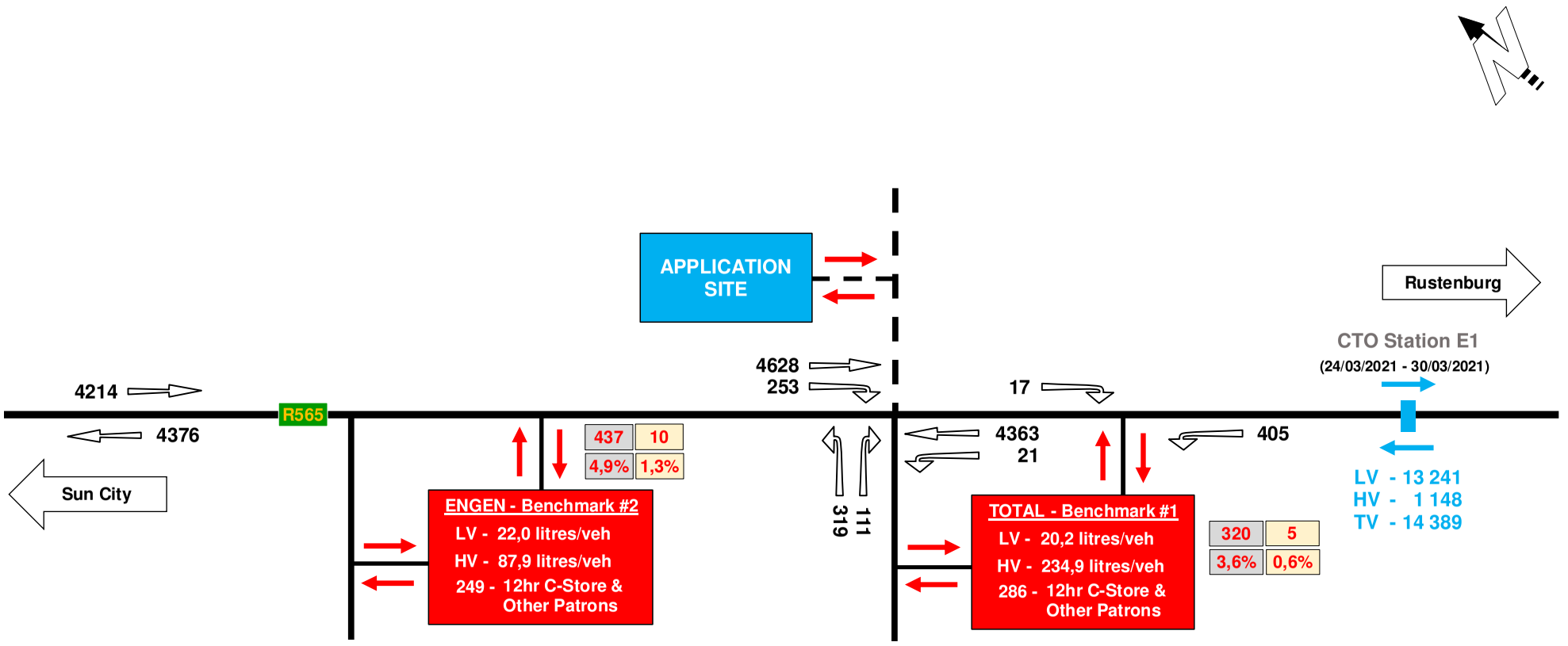


TECHWORLD consulting ENGINEERS	PROPOSED NEW FILLING STATION PORTION 135 BOSCHHOEK 103-JQ	Locality Plan and Market Area	FIGURE 1

Figure 2: Site Area

TECHWORLD consulting ENGINEERS	PROPOSED NEW FILLING STATION PORTION 135 BOSCHHOEK 103-JQ	Site Area	FIGURE 2

Figure 3: Existing Traffic Demand and Fuel Sales Characteristics of Filling Stations



LEGEND - Tue 08/06/2021 to Thu 10/06/2021	
253	Light Vehicles - 12 Hr Patrons (fuel)
1,5%	Light Vehicles - Interception Rate (fuel)
7	Heavy Vehicles - 12 Hr Patrons (fuel)
0,8%	Heavy Vehicles - Interception Rate (fuel)
LV - 18,09	Light Vehicles - Average Fill (litres/veh)
HV - 24,86	Heavy Vehicles - Average Fill (litres/veh)
LV - 5 248	Light Vehicles - ADLT
HV - 2 129	Heavy Vehicles - ADTT
151	12 Hour Count - Total Vehicles

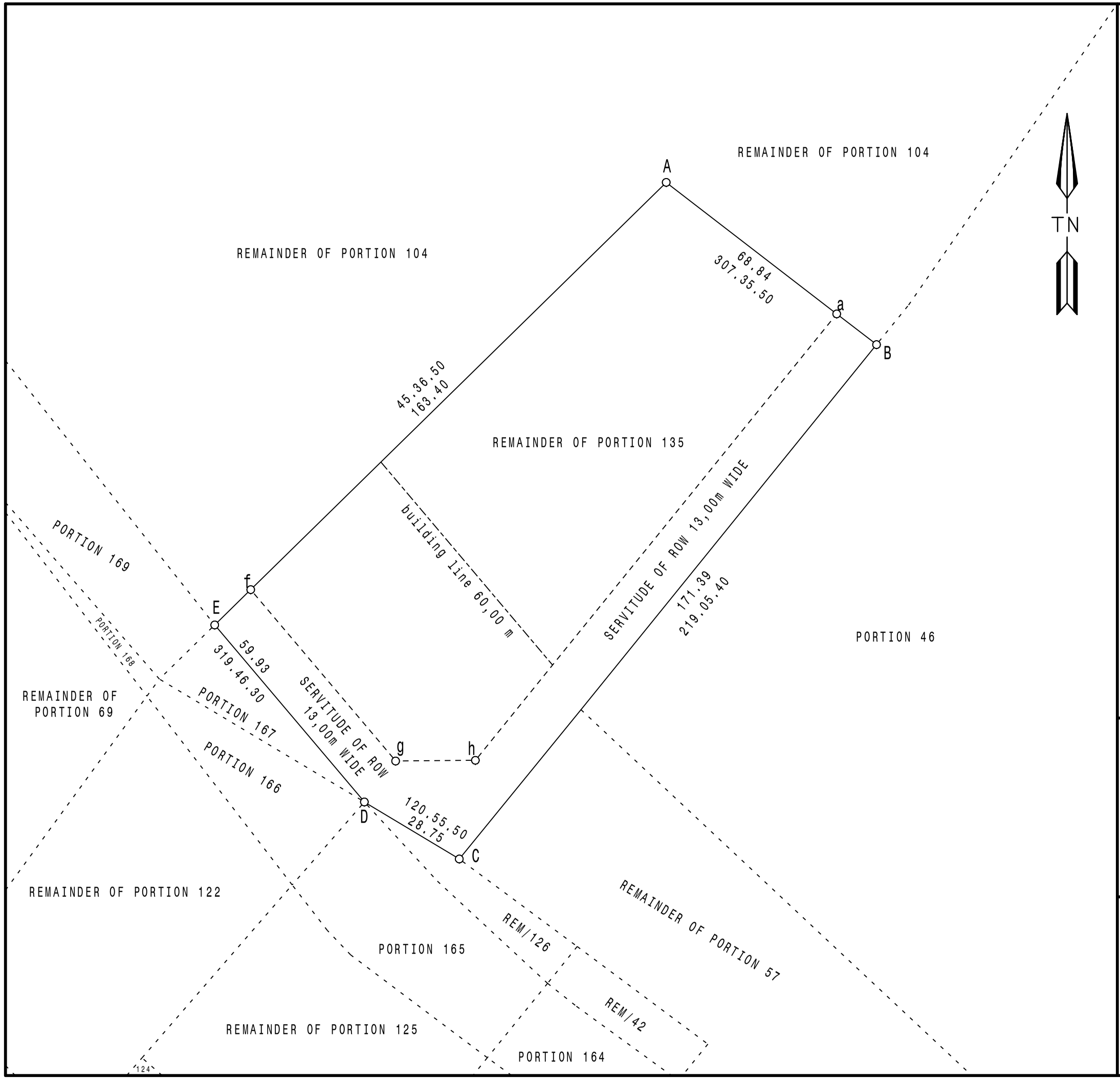
TECHWORLD consulting ENGINEERS	PROPOSED NEW FILLING STATION PORTION 135 BOSCHHOEK 103-JQ	Existing Traffic Demand and Fuel Sales Characteristics of Filling Stations	FIGURE 3

APPENDICES

APPENDICES

APPENDICES

Appendix A: Site Layout Plan



SKETCH PLAN
FOR THE REZONING OF THE REMAINDER OF PORTION 135 IN TERMS OF SECTION 17(1) AND THE REMOVAL OF RESTRICTIVE TITLE CONDITIONS IN TERMS OF SECTION 17(2) OF THE RUSTERNBURG LOCAL MUNICIPALITY SPLUM BY-LAW, 2018
OF THE FARM
BOSCHHOEK No. 103-JQ

RUSTENBURG LOCAL MUNICIPALITY
BOJANALA LOCAL MUNICIPALITY
NORTH WEST PROVINCE
SCALE : 1: 1000 (A3)

NOTES:

1. The figure A B C D E A represents 1.3337 Ha of land being the Remainder of Portion 135

2. The figure a B C D E f g h represents the Proposed Right of Way Servitude 13,00m wide over the Remainder of Portion 135

3. GENERAL NOTES
   All areas and dimensions are approximate and will be finalised during the actual survey

4. G.P.S CORDINATES OF SITE
   25°30'03" S and 27°05'29" E

Compiled in October 2020 by me

.....
M.P.A. COETSEE GPr LS0105-D
PROFESSIONAL LAND SURVEYOR

KMC GEOMATICS INC.
PROFESSIONAL LAND SURVEYORS · TOWN PLANNERS · DRONE SURVEYORS
10 KRUGER STREET, P.O. BOX 560, GROBLERSDAL, 0470
TEL 013 262 4136 · FAX 086 602 4136
admin@kmcgeo.co.za · martin@kmcgeo.co.za
www.kmcgeo.co.za
CADASTRAL-, TOPOGRAPHICAL-, DRONE- & ENGINEERING SURVEYS
SECTIONAL TITLE PRACTITIONER, TOWN PLANNING
KMC
LAND SURVEY · TOWN PLANNING · MAPPING
DRONE SURVEY & AGRICULTURAL ANALYSIS

APPENDICES

Appendix B: SANRAL Approval, September 2017

THE SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
Reg. No.1998/009584/30

Northern Region
38 Ida Street, Menlo Park, Pretoria
Private Bag X17, Lynnwood Ridge, 0040, South Africa
Tel +27 (0) 12 426 6200 Fax +27 (0) 12 348 1680/ 0883/ 1512
Offices in Val de Grace – Pretoria (Head Office), Cape Town, Pietermaritzburg, Port Elizabeth

Reference:	N11/2/3-R565/1-4	Fax Number:	
Date:	28 September 2017	Direct Line:	+27 (0) 12 426 6242
Contact Person:	Jan Oliver	Website:	www.nra.co.za
Email:	oliverj@nra.co.za		

Creating wealth through infrastructure

Maxim Town and Regional Planners
PO Box 21114
Protea Park
0305

For attention: Simone Swanepoel

Dear Madam

COMMENT ON PROPOSED NEW RETAIL CENTRE DEVELOPMENT SITUATED ON PORTION 135 OF THE FARM BOSCHOEK

Maxim's request for comments dated 9 April 2017, Traffic Impact Study prepared by SEJ Geospatial Consulting, my email dated 12 July 2017, various Maxim follow up emails, and my letter dated 10 August 2017, refer.

SANRAL finalised its strategy / access management plan to consolidate accesses through Boschoek, in an attempt to restore mobility through Boschoek.

The South African National Roads Agency Limited (SANRAL) hereby gives its consent for the rezoning of Portion 135 of the farm Boschoek in terms of Section 48 of The South African National Roads Agency Limited and National Roads Act, 1998 (Act 7 of 1998), subject to the following conditions:

1.1 Access position as proposed in the Traffic Impact Study prepared by SEJ Geospatial Consulting opposite the northern access to the Total filling station is in principle acceptable subject to the following:

1.1.1 Access to national road R565 will not be for the exclusive use of the proposed development but must serve the surrounding area. Provision must therefore be made for access to portions 57, 46 and Remainder of Portion 104 as well as the properties to the back. Such provision must be secured by (the applicant) through registration of right-of-way road servitudes and proof thereof must be provided to SANRAL.

1.1.2 The intersection of the R565 must be designed and constructed as a conventional four legged intersection with exclusive turning lanes according to SANRAL's typical intersection layout. Detailed design drawings must be submitted to SANRAL for consideration and approval prior to commencement / opening of the retail development.

1.1.3 The property is subject to a statutory building restriction of 60m measured from the R565 road reserve boundary (refer par. 1.2). (The proposed site layout drawing shows structures (buildings) within the 60m building restriction area.) No relaxation of the 60m building restriction area will be considered until the conditions in paragraphs 1.1.1 and 1.1.2 above has been met.

1.2 No new structures or any other thing whatsoever, including anything is attached to the land on which it stands even though it does not from part of that land, shall be erected, constructed or established within a distance of 60 metres measured from the common boundary of Portion 135 and national road R565.

1.3 A palisade fence or wall must be erected on the R565 road reserve boundary by the applicant at his/her/their costs to prevent pedestrian and vehicular interaction between the R565 and Portion 135. The maintenance of the wall / fence shall be the responsibility of the applicant.

1.4 No storm water disposal from the above-mentioned development into the R565 road reserve boundaries will be allowed without the written approval of SANRAL, and the applicant shall accept SANRAL's storm water where applicable.

1.5 No third party outdoor advertising visible from national road R40 may be displayed on the property without the written approval of SANRAL.

Yours faithfully

28/9/2017

For REGIONAL MANAGER: NORTHERN REGION

PROJECT	FIGURE:	NUMBER:
PORTION 135 - BOSCHOEK ACCESS STUDY	CONCEPTUAL SITE ACCESS LAYOUT	1

APPENDICES

Appendix C: Conceptual Layout Plan and Access Arrangements

P O BOX 12530
HATFIELD 0028
TEL. 012 - 348 0386
assist@techworld.co.za
TECHWORLD

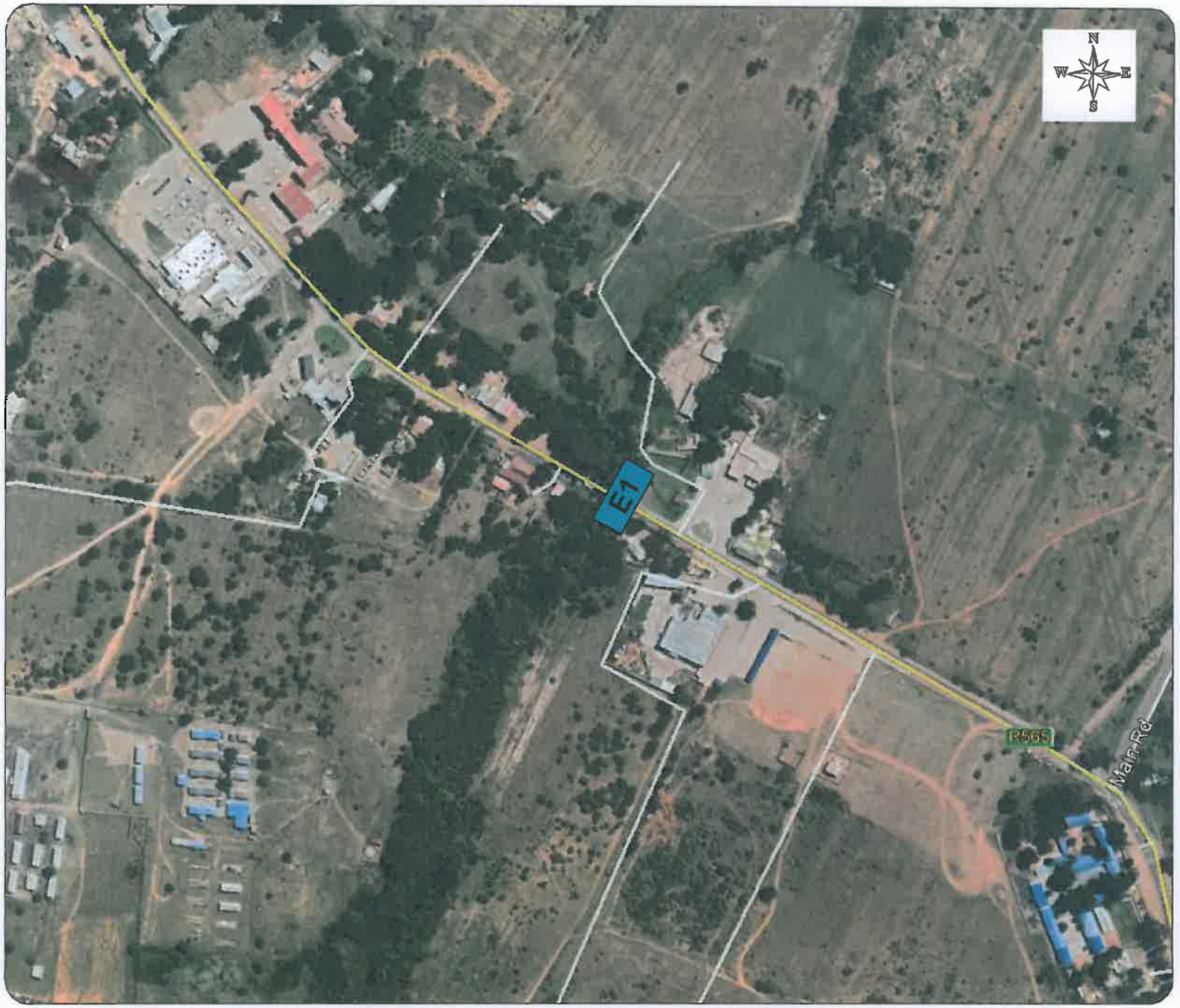
PROPOSED NEW FILLING STATION
PORTION 135 BOSCHHOEK 103-JQ

Conceptual Layout Plan and Access Arrangements

APPENDIX C

APPENDICES

Appendix D: Traffic Surveys



PROJECT

R565,
PORTION 135,
BOSCHHOEK

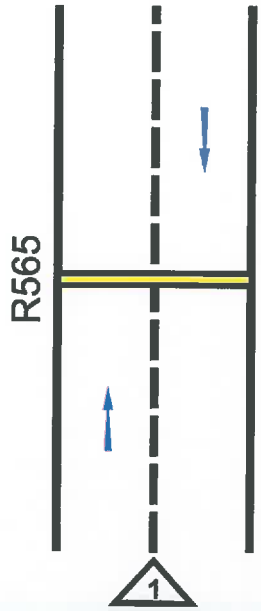
LOCALITY PLAN

KEY

ELECTRONIC COUNTS

TRAFFTRANS (PTY) LTD

Proj. T2021/033 Fig. 1



CO-ORDINATE

Latitude	25° 30' 10.0" S
Longitude	27° 05' 38.5" E

LOCATION:	ROAD LINK: R565 - ± 520M NORTH OF MAIN RD.
AREA:	BOSCHHOEK
STATION NUMBER:	E 1
DATE:	FROM WEDNESDAY: 24/03/2021 TO TUESDAY: 30/03/2021
TYPE OF COUNT:	CLASSIFIED COUNTS PER DIRECTION
DESCRIPTION:	CLASSIFICATION: LIGHT AND HEAVY VEHICLES

STATION LAYOUT

R565, PORTION 135, BOSCHHOEK

PROJ. T2021/033

DATE MAR. 2021

TRAFFTRANS (EDMS) BPK

SUMMARY OF 7 -DAY ELECTRONIC TRAFFIC COUNTS

ALL VEHICLES

LOCATION: E1: R565 - ± 520M NORTH OF MAIN RD LAT: 25° 30' 10.0" S

TYPE OF VEHICLE: ALL VEHICLES LONG: 27° 05' 38.5" E

STARTING DATE: 24-Mar-2021 Wednesday

AADT:	**14431** Veh/day
AADTT:	**1140** Veh/day
Q_{30}:	**1610** Veh/hr

AWDT:	**14864** Veh/day
ADT:	**14390** Veh/day
ADTT:	**1150** HV/day
SPLIT:	**51:49** N:S

TYPE	NORTHBOUND							SOUTHBOUND							NORTHBOUND & SOUTHBOUND						
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
24 HOUR TOTAL	7324	7201	6404	7884	9181	7865	5254	7307	7167	6179	7547	8115	7257	6038	14631	14368	12583	15431	17296	15122	11292
PEAK HOUR AM																					
START TIME	06:30	05:30	05:30	05:30	06:30	10:30	10:45	10:45	06:30	06:15	06:30	10:30	10:30	10:45	06:15	06:30	06:15	06:15	06:30	10:30	10:45
FLOW	545	512	522	563	524	534	347	465	450	394	472	536	532	395	1000	946	883	1008	986	1066	739
% OF 24 HOUR FLOW	7.4%	7.1%	8.2%	7.1%	5.7%	6.8%	6.6%	6.4%	6.3%	6.4%	6.3%	6.6%	7.3%	6.5%	6.8%	6.6%	7.0%	6.5%	5.7%	7.0%	6.5%
PEAK HOUR PM																					
START TIME	17:00	17:15	16:45	17:00	17:15	14:00	16:45	14:45	15:15	14:45	14:30	13:15	13:30	17:15	16:30	16:00	16:15	14:30	16:15	13:30	17:15
FLOW	663	659	589	637	890	642	437	623	691	600	677	701	528	530	1223	1210	1099	1244	1451	1169	963
% OF 24 HOUR FLOW	9.1%	9.2%	9.2%	8.1%	9.7%	8.2%	8.3%	8.5%	9.6%	9.7%	9.0%	8.6%	7.3%	8.8%	8.4%	8.4%	8.7%	8.1%	8.4%	7.7%	8.5%
PEAK QUARTER HOUR AM																					
START TIME	05:30	05:45	05:30	05:45	05:30	10:30	11:00	06:45	06:30	06:45	06:45	11:00	10:45	11:30	06:45	06:45	06:45	06:45	06:45	10:30	11:30
FLOW	158	155	165	164	151	147	90	139	122	117	135	142	146	127	277	274	254	281	275	281	214
PEAK QUARTER HOUR PM																					
START TIME	17:00	17:45	17:30	17:45	18:00	14:00	17:15	15:30	16:00	16:15	15:15	15:15	13:45	17:30	15:30	16:30	16:45	15:00	16:45	14:00	17:15
FLOW	170	196	161	174	246	172	122	186	179	161	192	202	150	137	331	321	312	327	372	301	253
OTHER FACTORS																					
PEAK HOUR FACTOR - AM	0.86	0.83	0.79	0.86	0.87	0.91	0.96	0.84	0.92	0.84	0.87	0.94	0.91	0.78	0.90	0.86	0.87	0.90	0.90	0.95	0.86
PEAK HOUR FACTOR - PM	0.98	0.84	0.91	0.92	0.90	0.93	0.90	0.84	0.97	0.93	0.88	0.87	0.88	0.97	0.92	0.94	0.88	0.95	0.98	0.97	0.95
HEAVY VEHICLES (% of 24hour)	7.5%	7.6%	9.1%	7.9%	6.7%	5.7%	4.3%	9.6%	10.2%	9.9%	9.1%	9.3%	8.0%	6.1%	8.6%	8.9%	9.5%	8.5%	7.9%	6.8%	5.3%
24 HOUR TRAFFIC (% of week)	14.3%	14.1%	12.5%	15.4%	18.0%	15.4%	10.3%	14.7%	14.4%	12.5%	15.2%	16.4%	14.6%	12.2%	14.5%	14.3%	12.5%	15.3%	17.2%	15.0%	11.2%
NIGHT TRAFFIC (% of 24 hour)	25.2%	25.4%	24.1%	25.6%	31.4%	25.9%	27.7%	22.2%	21.1%	20.7%	20.2%	23.9%	28.9%	30.1%	23.7%	23.3%	22.4%	23.0%	27.9%	27.3%	28.9%
12 HOUR TRAFFIC (06:00 to 18:00	5478	5373	4862	5862	6302	5826	3801	5685	5654	4902	6019	6176	5162	4223	11163	11027	9764	11881	12478	10988	8024

7 - DAY ELECTONIC TRAFFIC COUNTS
ALL VEHICLES

LOCATION: E1: R565 - ± 520M NORTH OF MAIN RD
TYPE OF VEHICLE ALL VEHICLES
STARTING DATE: 24-Mar-2021 Wednesday
LAT 25° 30' 10.0" S
LONG 27° 05' 38.5" E

		NORTHBOUND									SOUTHBOUND									NORTHBOUND & SOUTHBOUND								
TYPE		HOURLY FLOW							AVERAGE		HOURLY FLOW							AVERAGE		HOURLY FLOW							AVERAGE	
From	To	Mon	Tue	Wed	Thu	Fri	Sat	Sun	7 Day	5 Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun	7 Day	5 Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun	7 Day	5 Day
00:00	01:00	37	20	21	15	18	52	69	33	22	39	19	12	13	15	49	74	32	20	76	39	33	28	33	101	143	65	42
01:00	02:00	23	12	8	14	16	44	51	24	15	31	13	10	12	16	33	60	25	16	54	25	18	26	32	77	111	49	31
02:00	03:00	20	5	8	18	12	23	44	19	13	22	15	13	21	31	36	57	28	20	42	20	21	39	43	59	101	46	33
03:00	04:00	27	26	13	23	26	38	29	26	23	38	41	31	51	40	56	44	43	40	65	67	44	74	66	94	73	69	63
04:00	05:00	164	164	162	157	190	102	57	142	167	152	124	121	128	127	99	62	116	130	316	288	283	285	317	201	119	258	298
05:00	06:00	464	474	490	508	490	280	190	414	485	315	243	194	215	237	190	117	216	241	779	717	684	723	727	470	307	630	726
06:00	07:00	515	482	476	534	482	329	177	428	498	457	425	377	441	403	237	150	356	421	972	907	853	975	885	566	327	784	918
07:00	08:00	463	441	417	446	476	317	205	395	449	349	387	335	396	428	300	180	339	379	812	828	752	842	904	617	385	734	828
08:00	09:00	356	340	333	394	343	292	209	324	353	358	380	291	401	398	401	243	353	366	714	720	624	795	741	693	452	677	719
09:00	10:00	339	356	317	379	357	339	270	337	350	426	382	370	441	447	510	315	413	413	765	738	687	820	804	849	585	750	763
10:00	11:00	351	358	324	391	399	504	300	375	365	440	416	331	416	494	505	349	422	419	791	774	655	807	893	1009	649	797	784
11:00	12:00	390	377	345	463	446	530	347	414	404	465	412	362	408	520	473	388	433	433	855	789	707	871	966	1003	735	847	838
12:00	13:00	439	415	331	468	534	592	346	446	437	489	426	347	494	597	466	383	457	471	928	841	678	962	1131	1058	729	904	908
13:00	14:00	446	439	361	490	608	598	377	474	469	473	474	389	546	663	526	384	494	509	919	913	750	1036	1271	1124	761	968	978
14:00	15:00	508	491	422	570	489	642	401	503	496	542	527	487	609	470	480	439	508	527	1050	1018	909	1179	959	1122	840	1011	1023
15:00	16:00	516	482	433	519	543	574	375	492	499	565	660	590	673	581	434	434	562	614	1081	1142	1023	1192	1124	1008	809	1054	1112
16:00	17:00	492	550	515	571	757	578	361	546	577	587	660	571	641	684	428	453	575	629	1079	1210	1086	1212	1441	1006	814	1121	1206
17:00	18:00	663	642	588	637	868	531	433	623	680	534	505	452	553	491	402	505	492	507	1197	1147	1040	1190	1359	933	938	1115	1187
18:00	19:00	512	481	351	536	833	478	368	508	543	352	399	260	377	476	417	502	398	373	864	880	611	913	1309	895	870	906	915
19:00	20:00	278	285	201	336	541	365	241	321	328	301	267	185	263	362	379	378	305	276	579	552	386	599	903	744	619	626	604
20:00	21:00	133	168	140	207	324	251	175	200	194	162	146	216	181	245	330	241	217	190	295	314	356	388	569	581	416	417	384
21:00	22:00	91	90	80	104	200	168	97	119	113	101	120	128	126	183	203	156	145	132	192	210	208	230	383	371	253	264	245
22:00	23:00	56	62	40	65	142	130	71	81	73	60	69	69	86	124	154	63	89	82	116	131	109	151	266	284	134	170	155
23:00	24:00	41	41	28	39	87	108	61	58	47	49	57	38	55	83	149	61	70	56	90	98	66	94	170	257	122	128	104
TOTAL 24Hrs		7324	7201	6404	7884	9181	7865	5254	7302	7600	7307	7167	6179	7547	8115	7257	6038	7088	7264	14631	14368	12583	15431	17296	15122	11292	14390	14864

Prepare by TRAFFTRANS (PTY) LTD

Traffic Count Survey

Job No:	MT0098
Count Date:	2021/06/08
Site Name:	Boschhoek
Count Method	Manual Count

Reg no. 2018/540851/07
VAT no. 4730285055
Address 457 Bramble Street
Waterkloof Glen
Pretoria
0181
Email traffic@mctraff.co.za

Intersection Type			Road Names	
SITE no.	Layout	Traffic Control	Road N/S	Road E/W
SITE1a	Access Count	None	R565	Total Garage
SITE1b	Average Fills	None	R565	Total Garage
SITE2	T-Junction	1 Way Stop	R565	Unnammed
SITE3a	Access Count	None	R565	Engen Garage
SITE3b	Average Fills	None	R565	Engen Garage
SITE4	Link	None	R565	
SITE7				
SITE8				
SITE9				
SITE10				

NOTES:

McTRAFF traffic@mctraff.co.za	**Boschhoek**	**2021/06/08**

Project: **MT0098_Boschhoek**

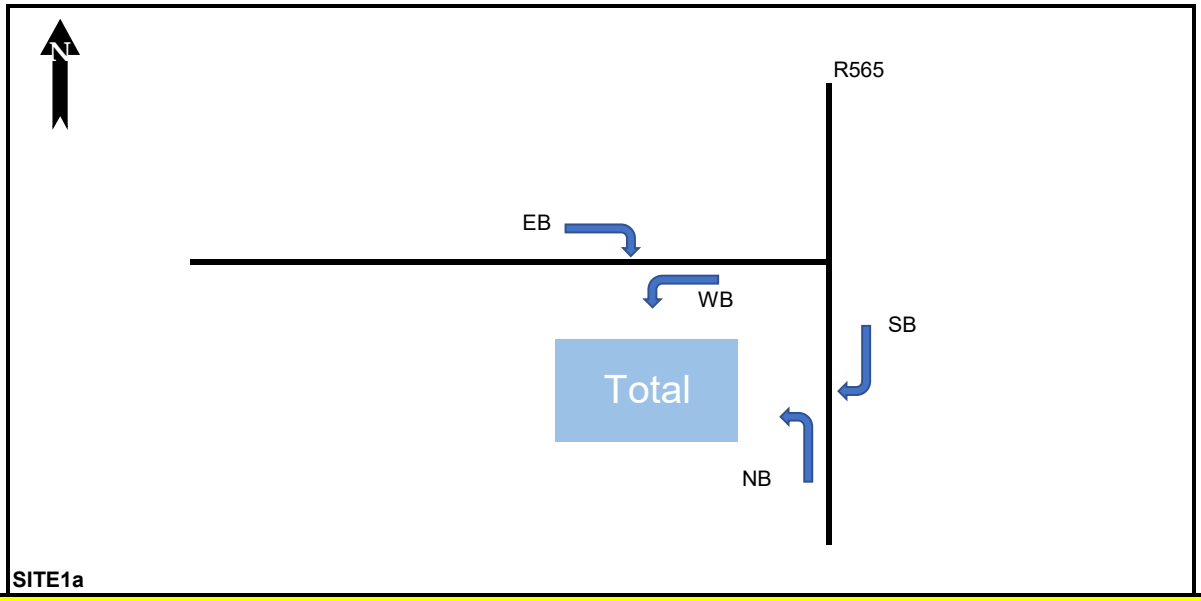
Intersection: R565_Total Garage

Date: 08-Jun-21

Day: Tuesday

Location: 1a

AM PEAK:	06h30	07h30
PM PEAK:	16h45	17h45



SITE1a_TOTAL_0906

12 HOUR		NB												
Time		LV			HV			TOTAL			LV			
Start	End	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total	Fuel
06h00	06h15	0	1	1	0	0	0	0	1	1	1	1	2	0
06h15	06h30	6	3	9	0	0	0	6	3	9	1	2	3	0
06h30	06h45	3	1	4	0	0	0	3	1	4	2	2	4	0
06h45	07h00	0	3	3	0	1	1	0	4	4	3	1	4	0
07h00	07h15	8	5	13	0	0	0	8	5	13	2	1	3	0
07h15	07h30	4	2	6	0	0	0	4	2	6	1	2	3	0
07h30	07h45	5	2	7	0	0	0	5	2	7	0	0	0	0
07h45	08h00	3	2	5	0	0	0	3	2	5	2	2	4	1
08h00	08h15	1	1	2	0	0	0	1	1	2	0	2	2	0
08h15	08h30	5	1	6	0	0	0	5	1	6	1	0	1	0
08h30	08h45	1	0	1	0	0	0	1	0	1	3	2	5	0
08h45	09h00	4	1	5	0	0	0	4	1	5	1	0	1	0
09h00	09h15	2	2	4	0	0	0	2	2	4	2	1	3	0
09h15	09h30	2	3	5	0	1	1	2	4	6	4	1	5	0
09h30	09h45	5	3	8	0	0	0	5	3	8	0	1	1	0
09h45	10h00	3	2	5	0	0	0	3	2	5	5	0	5	0
10h00	10h15	3	2	5	0	1	1	3	3	6	2	1	3	0
10h15	10h30	1	4	5	0	0	0	1	4	5	0	1	1	0
10h30	10h45	2	2	4	0	0	0	2	2	4	3	4	7	0
10h45	11h00	0	3	3	0	0	0	0	3	3	2	0	2	0
11h00	11h15	2	4	6	0	0	0	2	4	6	1	1	2	0
11h15	11h30	2	2	4	0	0	0	2	2	4	5	1	6	0
11h30	11h45	3	5	8	0	0	0	3	5	8	7	2	9	0
11h45	12h00	1	3	4	0	0	0	1	3	4	3	2	5	0

12h00	12h15	3	8	11	0	0	0	3	8	11	1	0	1	0
12h15	12h30	5	2	7	0	0	0	5	2	7	0	1	1	0
12h30	12h45	2	3	5	0	0	0	2	3	5	4	4	8	0
12h45	13h00	5	6	11	0	0	0	5	6	11	3	1	4	0
13h00	13h15	1	2	3	0	0	0	1	2	3	1	4	5	0
13h15	13h30	2	6	8	0	0	0	2	6	8	3	0	3	0
13h30	13h45	5	5	10	0	0	0	5	5	10	1	1	2	0
13h45	14h00	5	4	9	0	1	1	5	5	10	1	2	3	0
14h00	14h15	6	3	9	0	0	0	6	3	9	2	2	4	0
14h15	14h30	2	7	9	0	0	0	2	7	9	1	1	2	0
14h30	14h45	5	5	10	0	0	0	5	5	10	1	4	5	1
14h45	15h00	6	8	14	1	0	1	7	8	15	1	2	3	0
15h00	15h15	5	3	8	0	0	0	5	3	8	4	3	7	0
15h15	15h30	7	2	9	0	0	0	7	2	9	2	3	5	0
15h30	15h45	8	5	13	0	0	0	8	5	13	0	1	1	0
15h45	16h00	6	3	9	0	0	0	6	3	9	1	4	5	0
16h00	16h15	4	7	11	0	0	0	4	7	11	2	4	6	0
16h15	16h30	11	4	15	0	0	0	11	4	15	2	3	5	0
16h30	16h45	6	2	8	0	0	0	6	2	8	2	3	5	0
16h45	17h00	8	5	13	0	0	0	8	5	13	2	3	5	0
17h00	17h15	12	11	23	0	0	0	12	11	23	5	1	6	0
17h15	17h30	3	6	9	0	0	0	3	6	9	3	1	4	0
17h30	17h45	7	4	11	0	0	0	7	4	11	4	1	5	0
17h45	18h00	12	6	18	0	0	0	12	6	18	2	2	4	0
AM		**15**	**11**	**26**	**0**	**1**	**1**	**15**	**12**	**27**	**8**	**6**	**14**	**0**
PM		**29**	**18**	**47**	**0**	**0**	**0**	**29**	**18**	**47**	**8**	**13**	**21**	**0**

Project: **MT0098_Boschhoek**

Intersection: R565_Engen Garage

Date: 08-Jun-21

Day: Tuesday

Location: 3a

AM PEAK:	**06h30**	**07h30**
PM PEAK:	**16h45**	**17h45**

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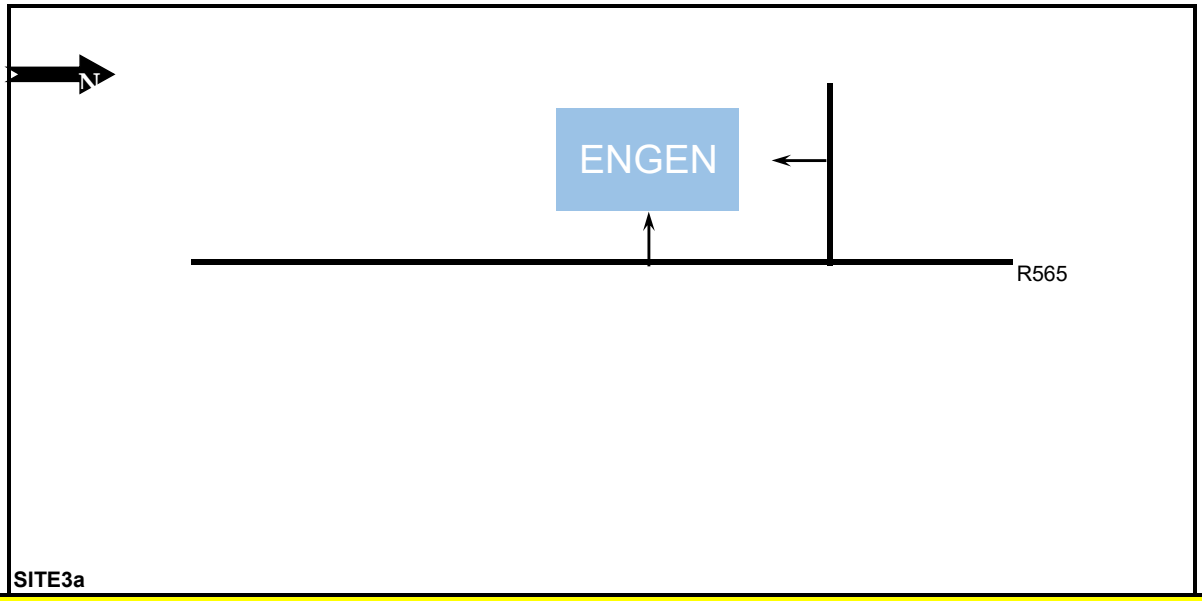

SITE3a

SITE3a_TOTAL_0906

12 HOUR

Time		LV			HV			TOTAL		
Start	**End**	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total
06h00	06h15	5	3	8	0	1	1	5	4	9
06h15	06h30	4	3	7	1	0	1	5	3	8
06h30	06h45	6	6	12	1	1	2	7	7	14
06h45	07h00	5	7	12	0	1	1	5	8	13
07h00	07h15	8	8	16	0	0	0	8	8	16
07h15	07h30	4	6	10	0	0	0	4	6	10
07h30	07h45	9	4	13	0	0	0	9	4	13
07h45	08h00	5	5	10	1	0	1	6	5	11
08h00	08h15	3	2	5	0	0	0	3	2	5
08h15	08h30	6	7	13	0	0	0	6	7	13
08h30	08h45	5	5	10	0	0	0	5	5	10
08h45	09h00	12	4	16	0	0	0	12	4	16
09h00	09h15	6	6	12	0	1	1	6	7	13
09h15	09h30	2	4	6	1	1	2	3	5	8
09h30	09h45	7	4	11	1	1	2	8	5	13
09h45	10h00	9	5	14	0	0	0	9	5	14
10h00	10h15	6	5	11	0	0	0	6	5	11
10h15	10h30	3	3	6	1	1	2	4	4	8
10h30	10h45	11	5	16	0	0	0	11	5	16
10h45	11h00	6	5	11	0	0	0	6	5	11
11h00	11h15	8	6	14	0	0	0	8	6	14
11h15	11h30	10	5	15	0	0	0	10	5	15
11h30	11h45	9	10	19	1	0	1	10	10	20
11h45	12h00	11	11	22	0	0	0	11	11	22

12h00	12h15	11	13	24	0	0	0	11	13	24
12h15	12h30	9	9	18	0	0	0	9	9	18
12h30	12h45	8	7	15	0	0	0	8	7	15
12h45	13h00	12	8	20	0	0	0	12	8	20
13h00	13h15	10	14	24	0	0	0	10	14	24
13h15	13h30	11	3	14	0	0	0	11	3	14
13h30	13h45	9	10	19	0	0	0	9	10	19
13h45	14h00	12	8	20	0	0	0	12	8	20
14h00	14h15	12	2	14	0	0	0	12	2	14
14h15	14h30	13	6	19	0	1	1	13	7	20
14h30	14h45	8	8	16	0	0	0	8	8	16
14h45	15h00	19	6	25	0	0	0	19	6	25
15h00	15h15	5	4	9	0	0	0	5	4	9
15h15	15h30	11	6	17	0	0	0	11	6	17
15h30	15h45	13	3	16	0	0	0	13	3	16
15h45	16h00	15	5	20	0	0	0	15	5	20
16h00	16h15	20	4	24	0	0	0	20	4	24
16h15	16h30	13	6	19	0	0	0	13	6	19
16h30	16h45	12	3	15	0	0	0	12	3	15
16h45	17h00	4	2	6	0	0	0	4	2	6
17h00	17h15	11	6	17	1	1	2	12	7	19
17h15	17h30	14	8	22	0	0	0	14	8	22
17h30	17h45	19	6	25	0	0	0	19	6	25
17h45	18h00	9	7	16	1	0	1	10	7	17
AM		**23**	**27**	**50**	**1**	**2**	**3**	**24**	**29**	**53**
PM		**49**	**15**	**64**	**0**	**0**	**0**	**49**	**15**	**64**

Traffic Count Survey

Job No:	MT0098
Count Date:	2021/06/09
Site Name:	Boschhoek
Count Method	Manual Count

Reg no. 2018/540851/07
VAT no. 4730285055
Address 457 Bramble Street
Waterkloof Glen
Pretoria
0181
Email traffic@mctraff.co.za

Intersection Type			Road Names	
SITE no.	Layout	Traffic Control	Road N/S	Road E/W
SITE1a	Access Count	None	R565	Total Garage
SITE1b	Average Fills	None	R565	Total Garage
SITE2	T-Junction	1 Way Stop	R565	Unnammed
SITE3a	Access Count	None	R565	Engen Garage
SITE3b	Average Fills	None	R565	Engen Garage
SITE4	Link	None	R565	
SITE7				
SITE8				
SITE9				
SITE10				

NOTES:

McTRAFF traffic@mctraff.co.za	**Boschhoek**	**2021/06/09**

Project:	**MT0098_Boschhoek**
Intersection:	R565_Total Garage
Date:	09-Jun-21
Day:	Wednesday
Location:	1a

AM PEAK:	**06h30**	**07h30**
PM PEAK:	**16h45**	**17h45**

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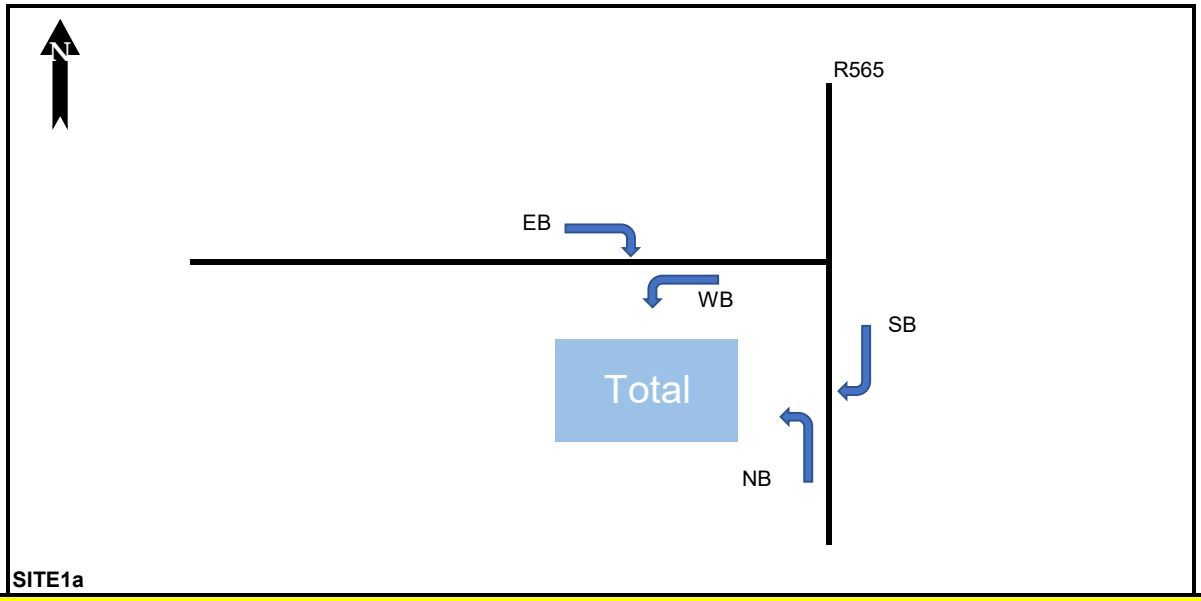

SITE1a

SITE1a_TOTAL_0906

12 HOUR		NB												
Time		LV			HV			TOTAL			LV			
Start	End	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total	Fuel
06h00	06h15	1	2	3	0	0	0	1	2	3	1	1	2	0
06h15	06h30	3	1	4	0	0	0	3	1	4	5	3	8	0
06h30	06h45	3	5	8	0	0	0	3	5	8	2	0	2	0
06h45	07h00	1	3	4	0	1	1	1	4	5	0	3	3	0
07h00	07h15	5	3	8	0	0	0	5	3	8	2	0	2	0
07h15	07h30	5	4	9	0	1	1	5	5	10	6	0	6	0
07h30	07h45	5	3	8	0	0	0	5	3	8	1	1	2	0
07h45	08h00	5	11	16	0	0	0	5	11	16	1	0	1	0
08h00	08h15	1	5	6	0	1	1	1	6	7	3	0	3	0
08h15	08h30	3	2	5	0	1	1	3	3	6	1	4	5	0
08h30	08h45	3	3	6	0	0	0	3	3	6	1	0	1	0
08h45	09h00	1	1	2	1	0	1	2	1	3	0	0	0	0
09h00	09h15	4	5	9	0	0	0	4	5	9	2	2	4	0
09h15	09h30	4	6	10	0	0	0	4	6	10	1	0	1	0
09h30	09h45	8	2	10	0	0	0	8	2	10	2	3	5	0
09h45	10h00	1	2	3	0	0	0	1	2	3	2	2	4	0
10h00	10h15	4	0	4	0	0	0	4	0	4	4	1	5	0
10h15	10h30	5	2	7	0	1	1	5	3	8	4	3	7	0
10h30	10h45	2	1	3	0	1	1	2	2	4	1	5	6	0
10h45	11h00	2	2	4	0	0	0	2	2	4	2	0	2	0
11h00	11h15	5	3	8	0	1	1	5	4	9	3	0	3	0
11h15	11h30	4	3	7	0	0	0	4	3	7	7	2	9	0
11h30	11h45	2	2	4	0	1	1	2	3	5	5	3	8	1
11h45	12h00	4	1	5	0	0	0	4	1	5	5	0	5	0

12h00	12h15	2	0	2	0	0	0	2	0	2	1	1	2	0
12h15	12h30	3	6	9	0	0	0	3	6	9	1	0	1	0
12h30	12h45	3	3	6	0	0	0	3	3	6	8	3	11	0
12h45	13h00	4	4	8	0	0	0	4	4	8	1	1	2	0
13h00	13h15	4	3	7	0	0	0	4	3	7	2	0	2	0
13h15	13h30	7	2	9	0	0	0	7	2	9	3	3	6	1
13h30	13h45	4	2	6	0	0	0	4	2	6	0	1	1	0
13h45	14h00	5	7	12	0	0	0	5	7	12	3	1	4	0
14h00	14h15	7	1	8	0	0	0	7	1	8	3	2	5	0
14h15	14h30	5	4	9	0	0	0	5	4	9	3	1	4	0
14h30	14h45	6	3	9	0	0	0	6	3	9	2	1	3	0
14h45	15h00	9	5	14	0	0	0	9	5	14	1	1	2	0
15h00	15h15	5	2	7	0	0	0	5	2	7	1	1	2	0
15h15	15h30	7	2	9	0	0	0	7	2	9	2	1	3	0
15h30	15h45	12	4	16	0	0	0	12	4	16	1	3	4	0
15h45	16h00	8	5	13	0	0	0	8	5	13	1	3	4	0
16h00	16h15	9	6	15	0	0	0	9	6	15	2	3	5	0
16h15	16h30	4	3	7	0	0	0	4	3	7	2	2	4	0
16h30	16h45	9	6	15	0	0	0	9	6	15	3	3	6	0
16h45	17h00	4	4	8	0	0	0	4	4	8	2	1	3	0
17h00	17h15	8	7	15	0	0	0	8	7	15	3	4	7	0
17h15	17h30	6	6	12	0	1	1	6	7	13	2	5	7	0
17h30	17h45	6	3	9	0	0	0	6	3	9	5	3	8	0
17h45	18h00	9	8	17	0	0	0	9	8	17	3	3	6	0
AM		**14**	**15**	**29**	**0**	**2**	**2**	**14**	**17**	**31**	**10**	**3**	**13**	**0**
PM		**26**	**19**	**45**	**0**	**0**	**0**	**26**	**19**	**45**	**9**	**9**	**18**	**0**

Project: **MT0098_Boschhoek**

Intersection: Engen Garage

Date: 24-Jun-21

Day: Thursday

Location: 1b

Light Vehicles In Litres

No.	Petrol							Diesel						
1	10.00	34.09	5.80	11.50	2.90	8.76	18.46	18.46	31.10					
2	17.01	23.34	5.00	73.00	11.61	17.52	6.16	6.16	63.00					
3	11.69	29.18	7.02	14.59	4.64	17.52	29.19	29.19	14.00					
4	9.36	17.52	18.45	1.14	26.01	29.57	12.03	12.03	5.92					
5	29.19	18.44	5.85	5.80	11.68	11.68	40.63	40.63	29.19					
6	8.76	9.35	17.51	8.71	9.35	17.52	64.05	64.05	17.75					
7	17.76	31.19	9.35	11.60	17.52	7.35	14.28	14.28	6.15					
8	11.69	17.40	9.36	22.80	5.52	75.00		42.70	12.31					
9	11.69	24.95	40.61	17.41	34.08	13.01		69.05	12.31					
10	17.00	5.88	31.20	32.61	5.84	11.69		42.95	18.45					
11	7.01	17.41	24.96	5.88	7.02	25.35		11.60	51.46					
12	13.01	11.60	11.59	8.71	8.76	9.35		29.02	46.13					
13	18.46	18.70	24.05	31.19	17.51	7.60		17.50	29.18					
14	7.60	29.80	17.13	17.41	17.51	17.50		18.45	12.30					
15	30.00	11.76	5.80	5.80	17.52	6.40		61.00	12.20					
16	17.51	24.04	11.50	11.60	4.59	8.25		12.50						
17	9.34	17.10	5.60	18.70	23.35	9.34		31.00						
18	17.52	18.07	8.70	37.40	17.75	75.02		70.01						
19	5.84	31.01	11.61	23.60	11.68			44.00						
20	11.69	8.72	18.01	5.80	29.19			65.20						

Count	153
Average Petrol	17
Average Diesel	30
Average Total	20

Heavy Vehicles In Litres With Axel Counts

No.	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels
1	65.15	2												
2	157.00	6												
3	61.01	2												
4	70.98	2												
5	402.59	7												
6	553.51	5												
7	334.40	5												
8														
9														
10														
11														
12														
13														
14														
15														

Count	7
Average Total	235

Project: **MT0098_Boschhoek**

Intersection: R565_Unnammed

Date: 09-Jun-21

Day: Wednesday

Location: 2

AM PEAK:	06h45	07h45
PM PEAK:	16h00	17h00

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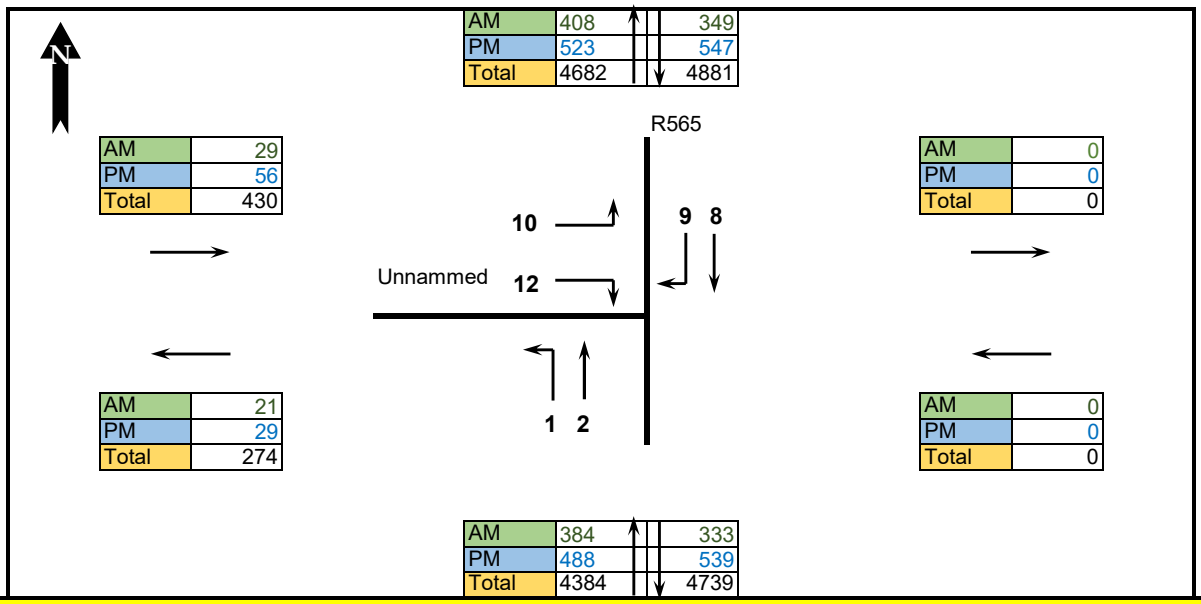


SITE2_Total_0906

12 Hour

Time		South			East			North			West			Hourly
Start	End	MOV 1	MOV 2	MOV 3	MOV 4	MOV 5	MOV 6	MOV 7	MOV 8	MOV 9	MOV 10	MOV 11	MOV 12	
06:00	06:15	0	93	0	0	0	0	0	82	3	4	0	0	
06:15	06:30	0	78	0	0	0	0	0	64	5	4	0	1	
06:30	06:45	0	107	0	0	0	0	0	63	3	5	0	1	
06:45	07:00	1	89	0	0	0	0	0	103	4	6	0	2	*718*
07:00	07:15	0	110	0	0	0	0	0	81	3	4	0	1	*735*
07:15	07:30	0	95	0	0	0	0	0	72	10	8	0	0	*768*
07:30	07:45	1	88	0	0	0	0	0	74	2	8	0	0	*762*
07:45	08:00	0	94	0	0	0	0	0	53	2	10	0	1	*717*
08:00	08:15	0	77	0	0	0	0	0	77	3	5	0	1	*681*
08:15	08:30	0	97	0	0	0	0	0	60	5	8	0	3	*669*
08:30	08:45	0	85	0	0	0	0	0	66	1	4	0	0	*652*
08:45	09:00	0	81	0	0	0	0	0	53	0	2	0	1	*629*
09:00	09:15	0	60	0	0	0	0	0	68	3	4	0	4	*605*
09:15	09:30	0	63	0	0	0	0	0	91	3	7	0	3	*599*
09:30	09:45	0	84	0	0	0	0	0	80	5	5	0	4	*621*
09:45	10:00	0	71	0	0	0	0	0	70	6	3	0	0	*634*
10:00	10:15	1	73	0	0	0	0	0	70	7	5	0	0	*651*
10:15	10:30	4	69	0	0	0	0	0	87	8	9	0	3	*664*
10:30	10:45	1	72	0	0	0	0	0	92	8	6	0	5	*670*
10:45	11:00	1	79	0	0	0	0	0	92	5	3	0	2	*702*
11:00	11:15	0	79	0	0	0	0	0	71	4	2	0	4	*706*
11:15	11:30	1	79	0	0	0	0	0	94	9	5	0	2	*716*
11:30	11:45	0	89	0	0	0	0	0	79	13	8	0	1	*722*
11:45	12:00	0	79	0	0	0	0	0	76	7	8	0	1	*711*

12:00	12:15	1	76	0	0	0	0	0	114	3	2	0	2	*749*
12:15	12:30	0	67	0	0	0	0	0	84	3	3	0	0	*716*
12:30	12:45	1	104	0	0	0	0	0	100	8	7	0	2	*748*
12:45	13:00	1	95	0	0	0	0	0	82	4	4	0	2	*765*
13:00	13:15	0	104	0	0	0	0	0	107	4	6	0	3	*791*
13:15	13:30	0	74	0	0	0	0	0	107	7	0	0	3	*825*
13:30	13:45	1	85	0	0	0	0	0	107	3	7	0	3	*809*
13:45	14:00	0	92	0	0	0	0	0	121	7	10	0	2	*853*
14:00	14:15	2	73	0	0	0	0	0	116	3	8	0	5	*836*
14:15	14:30	2	82	0	0	0	0	0	133	5	4	0	0	*871*
14:30	14:45	0	120	0	0	0	0	0	109	6	8	0	5	*913*
14:45	15:00	0	107	0	0	0	0	0	137	6	7	0	2	*940*
15:00	15:15	0	12	0	0	0	0	0	155	3	4	0	3	*910*
15:15	15:30	0	94	0	0	0	0	0	135	3	5	0	2	*923*
15:30	15:45	0	102	0	0	0	0	0	157	6	12	0	2	*954*
15:45	16:00	0	114	0	0	0	0	0	146	5	11	0	1	*972*
16:00	16:15	0	116	0	0	0	0	0	153	5	12	0	8	*1089*
16:15	16:30	0	104	0	0	0	0	0	127	6	6	0	2	*1095*
16:30	16:45	0	136	0	0	0	0	0	116	11	10	0	7	*1096*
16:45	17:00	2	130	0	0	0	0	0	124	5	9	0	2	*1091*
17:00	17:15	0	128	0	0	0	0	0	106	13	10	0	5	*1059*
17:15	17:30	1	134	0	0	0	0	0	105	6	14	0	5	*1079*
17:30	17:45	0	113	0	0	0	0	0	94	8	12	0	4	*1030*
17:45	18:00	0	110	0	0	0	0	0	75	4	15	0	1	*963*
AM		**2**	**382**	**0**	**0**	**0**	**0**	**0**	**330**	**19**	**26**	**0**	**3**	**762**
PM		**2**	**486**	**0**	**0**	**0**	**0**	**0**	**520**	**27**	**37**	**0**	**19**	**1091**

Project: **MT0098_Boschhoek**

Intersection: R565_Engen Garage

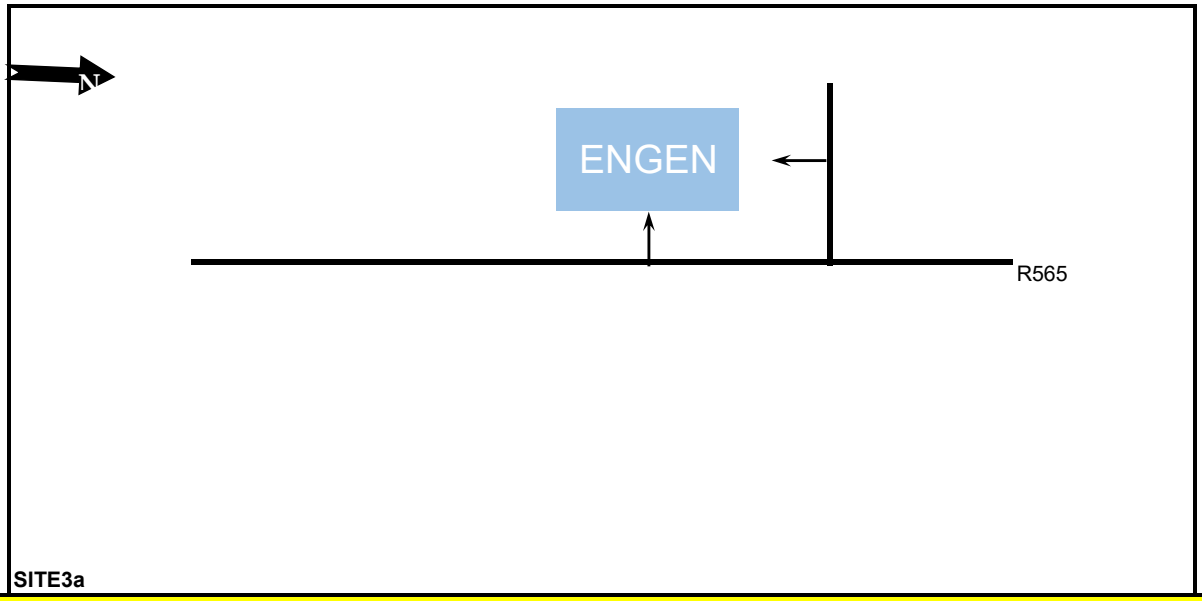
Date: 09-Jun-21

Day: Wednesday

Location: 3a

AM PEAK:	06h30	07h30
PM PEAK:	16h45	17h45

McTRAFF
traffic@mctraff.co.za



SITE3a

SITE3a_TOTAL_0906

12 HOUR

Time		LV			HV			TOTAL		
Start	**End**	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total
06h00	06h15	10	4	14	0	2	2	10	6	16
06h15	06h30	9	4	13	0	1	1	9	5	14
06h30	06h45	4	7	11	0	1	1	4	8	12
06h45	07h00	5	2	7	0	0	0	5	2	7
07h00	07h15	9	3	12	0	1	1	9	4	13
07h15	07h30	8	7	15	0	0	0	8	7	15
07h30	07h45	5	8	13	0	0	0	5	8	13
07h45	08h00	9	4	13	1	0	1	10	4	14
08h00	08h15	7	3	10	0	1	1	7	4	11
08h15	08h30	7	4	11	0	1	1	7	5	12
08h30	08h45	8	4	12	0	1	1	8	5	13
08h45	09h00	5	7	12	0	0	0	5	7	12
09h00	09h15	7	4	11	0	0	0	7	4	11
09h15	09h30	9	6	15	1	0	1	10	6	16
09h30	09h45	7	4	11	1	0	1	8	4	12
09h45	10h00	9	1	10	0	0	0	9	1	10
10h00	10h15	9	2	11	0	0	0	9	2	11
10h15	10h30	4	4	8	1	0	1	5	4	9
10h30	10h45	15	4	19	0	0	0	15	4	19
10h45	11h00	11	6	17	1	0	1	12	6	18
11h00	11h15	11	3	14	0	0	0	11	3	14
11h15	11h30	7	4	11	0	0	0	7	4	11
11h30	11h45	8	5	13	0	1	1	8	6	14
11h45	12h00	7	6	13	0	1	1	7	7	14

12h00	12h15	8	4	12	0	0	0	8	4	12
12h15	12h30	15	5	20	0	0	0	15	5	20
12h30	12h45	8	5	13	0	1	1	8	6	14
12h45	13h00	9	8	17	1	0	1	10	8	18
13h00	13h15	9	8	17	0	0	0	9	8	17
13h15	13h30	9	2	11	0	0	0	9	2	11
13h30	13h45	15	6	21	0	0	0	15	6	21
13h45	14h00	13	2	15	0	0	0	13	2	15
14h00	14h15	9	0	9	0	0	0	9	0	9
14h15	14h30	8	0	8	0	0	0	8	0	8
14h30	14h45	11	6	17	0	2	2	11	8	19
14h45	15h00	12	9	21	1	0	1	13	9	22
15h00	15h15	11	8	19	1	0	1	12	8	20
15h15	15h30	9	8	17	1	0	1	10	8	18
15h30	15h45	16	5	21	0	0	0	16	5	21
15h45	16h00	11	3	14	0	0	0	11	3	14
16h00	16h15	19	6	25	0	0	0	19	6	25
16h15	16h30	16	6	22	0	0	0	16	6	22
16h30	16h45	10	4	14	0	0	0	10	4	14
16h45	17h00	5	2	7	1	1	2	6	3	9
17h00	17h15	10	4	14	0	0	0	10	4	14
17h15	17h30	20	10	30	0	0	0	20	10	30
17h30	17h45	9	6	15	0	0	0	9	6	15
17h45	18h00	11	6	17	0	0	0	11	6	17
AM		**26**	**19**	**45**	**0**	**2**	**2**	**26**	**21**	**47**
PM		**50**	**18**	**68**	**1**	**1**	**2**	**51**	**19**	**70**

Project: **MT0098_Boschhoek**

Intersection: Engen Garage

Date: 24-Jun-21

Day: Thursday

Location: 3b

Light Vehicles In Litres

No.	Petrol							Diesel						
1	24.90	11.60	11.75	8;76				40.16	62.80					
2	11.60	14.60	7.59	5.84				30.51	34.00					
3	5.80	5.80	17.51	12.31				29.02	44.00					
4	8.71	13.02	8.75	29.20				46.40	40.59					
5	17.23	8.71	11.69					33.09	8.76					
6	42.95	17.41	17.76					17.74	12.31					
7	11.61	11.61	8.76					29.02	18.46					
8	18.71	35.01	17.50					34.08	51,4					
9	11.61	57.50	12.30					76.30	13.00					
10	2.90	8.71	29.49					12.49	12.29					
11	5.79	29.40	11.52					26.99	6.20					
12	8.71	55.05	25.34					11.69	17.50					
13	5.80	44.60	12.31					31.20	6.20					
14	18.30	20.30	7.35					44.80	40.60					
15	14.06	29.02	5.87					12.50	31.19					
16	11.41	17.41	8.72					37.50						
17	33.10	11.60	17.40					24.90						
18	29.11	29.00	5.88					72.30						
19	8.71	12.40	17.41					32.90						
20	14.50	7.36	46.39					50.00						

Count	98
Average Petrol	17
Average Diesel	31
Average Total	22

Heavy Vehicles In Litres With Axel Counts

No.	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels	Liters	Axels
1	158.01	2												
2	61.00	2												
3	67.01	2												
4	65.01	2												
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

Count	4
Average Total	88

Project: **MT0098_Boschhoek**

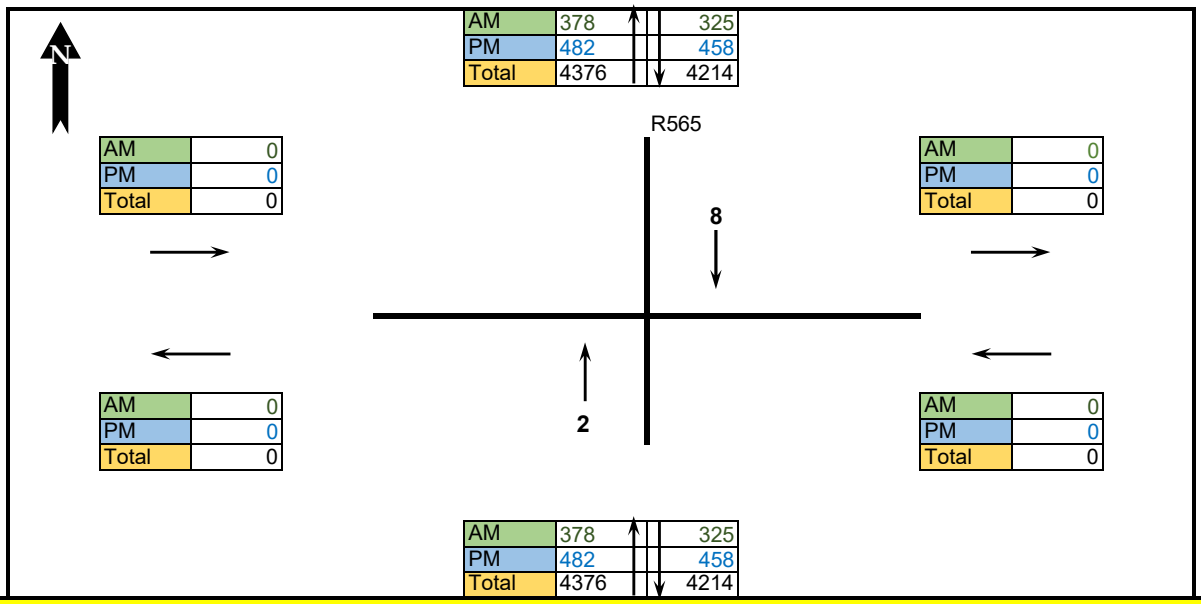
Intersection: R565_

Date: 09-Jun-21

Day: Wednesday

Location: 4

AM PEAK:	06h45	07h45
PM PEAK:	16h00	17h00



SITE4_Total_0906

12 Hour

Time		South			East			North			West			Hourly
Start	End	MOV 1	MOV 2	MOV 3	MOV 4	MOV 5	MOV 6	MOV 7	MOV 8	MOV 9	MOV 10	MOV 11	MOV 12	
06:00	06:15	0	92	0	0	0	0	0	75	0	0	0	0	
06:15	06:30	0	95	0	0	0	0	0	69	0	0	0	0	
06:30	06:45	0	97	0	0	0	0	0	33	0	0	0	0	
06:45	07:00	0	90	0	0	0	0	0	93	0	0	0	0	*644*
07:00	07:15	0	94	0	0	0	0	0	82	0	0	0	0	*653*
07:15	07:30	0	93	0	0	0	0	0	72	0	0	0	0	*654*
07:30	07:45	0	101	0	0	0	0	0	78	0	0	0	0	*703*
07:45	08:00	0	87	0	0	0	0	0	50	0	0	0	0	*657*
08:00	08:15	0	75	0	0	0	0	0	79	0	0	0	0	*635*
08:15	08:30	0	92	0	0	0	0	0	60	0	0	0	0	*622*
08:30	08:45	0	70	0	0	0	0	0	59	0	0	0	0	*572*
08:45	09:00	0	87	0	0	0	0	0	79	0	0	0	0	*601*
09:00	09:15	0	71	0	0	0	0	0	73	0	0	0	0	*591*
09:15	09:30	0	66	0	0	0	0	0	83	0	0	0	0	*588*
09:30	09:45	0	91	0	0	0	0	0	68	0	0	0	0	*618*
09:45	10:00	0	78	0	0	0	0	0	76	0	0	0	0	*606*
10:00	10:15	0	70	0	0	0	0	0	68	0	0	0	0	*600*
10:15	10:30	0	62	0	0	0	0	0	48	0	0	0	0	*561*
10:30	10:45	0	81	0	0	0	0	0	92	0	0	0	0	*575*
10:45	11:00	0	67	0	0	0	0	0	93	0	0	0	0	*581*
11:00	11:15	0	74	0	0	0	0	0	76	0	0	0	0	*593*
11:15	11:30	0	67	0	0	0	0	0	92	0	0	0	0	*642*
11:30	11:45	0	83	0	0	0	0	0	72	0	0	0	0	*624*
11:45	12:00	0	76	0	0	0	0	0	75	0	0	0	0	*615*

12:00	12:15	0	76	0	0	0	0	0	98	0	0	0	0	*639*
12:15	12:30	0	68	0	0	0	0	0	100	0	0	0	0	*648*
12:30	12:45	0	84	0	0	0	0	0	95	0	0	0	0	*672*
12:45	13:00	0	90	0	0	0	0	0	80	0	0	0	0	*691*
13:00	13:15	0	84	0	0	0	0	0	77	0	0	0	0	*678*
13:15	13:30	0	81	0	0	0	0	0	106	0	0	0	0	*697*
13:30	13:45	0	73	0	0	0	0	0	95	0	0	0	0	*686*
13:45	14:00	0	87	0	0	0	0	0	117	0	0	0	0	*720*
14:00	14:15	0	81	0	0	0	0	0	107	0	0	0	0	*747*
14:15	14:30	0	80	0	0	0	0	0	117	0	0	0	0	*757*
14:30	14:45	0	121	0	0	0	0	0	135	0	0	0	0	*845*
14:45	15:00	0	99	0	0	0	0	0	106	0	0	0	0	*846*
15:00	15:15	0	95	0	0	0	0	0	158	0	0	0	0	*911*
15:15	15:30	0	102	0	0	0	0	0	128	0	0	0	0	*944*
15:30	15:45	0	101	0	0	0	0	0	121	0	0	0	0	*910*
15:45	16:00	0	93	0	0	0	0	0	62	0	0	0	0	*860*
16:00	16:15	0	116	0	0	0	0	0	130	0	0	0	0	*853*
16:15	16:30	0	116	0	0	0	0	0	106	0	0	0	0	*845*
16:30	16:45	0	128	0	0	0	0	0	149	0	0	0	0	*900*
16:45	17:00	0	122	0	0	0	0	0	73	0	0	0	0	*940*
17:00	17:15	0	133	0	0	0	0	0	94	0	0	0	0	*921*
17:15	17:30	0	146	0	0	0	0	0	99	0	0	0	0	*944*
17:30	17:45	0	122	0	0	0	0	0	47	0	0	0	0	*836*
17:45	18:00	0	119	0	0	0	0	0	69	0	0	0	0	*829*
AM		**0**	**378**	**0**	**0**	**0**	**0**	**0**	**325**	**0**	**0**	**0**	**0**	**703**
PM		**0**	**482**	**0**	**0**	**0**	**0**	**0**	**458**	**0**	**0**	**0**	**0**	**940**

Traffic Count Survey

Job No:	MT0098
Count Date:	2021/06/10
Site Name:	Boschhoek
Count Method	Manual Count

Reg no. 2018/540851/07
VAT no. 4730285055
Address 457 Bramble Street
Waterkloof Glen
Pretoria
0181
Email traffic@mctraff.co.za

Intersection Type			Road Names	
SITE no.	Layout	Traffic Control	Road N/S	Road E/W
SITE1a	Access Count	None	R565	Total Garage
SITE1b	Average Fills	None	R565	Total Garage
SITE2	T-Junction	1 Way Stop	R565	Unnammed
SITE3a	Access Count	None	R565	Engen Garage
SITE3b	Average Fills	None	R565	Engen Garage
SITE4	Link	None	R565	
SITE7				
SITE8				
SITE9				
SITE10				

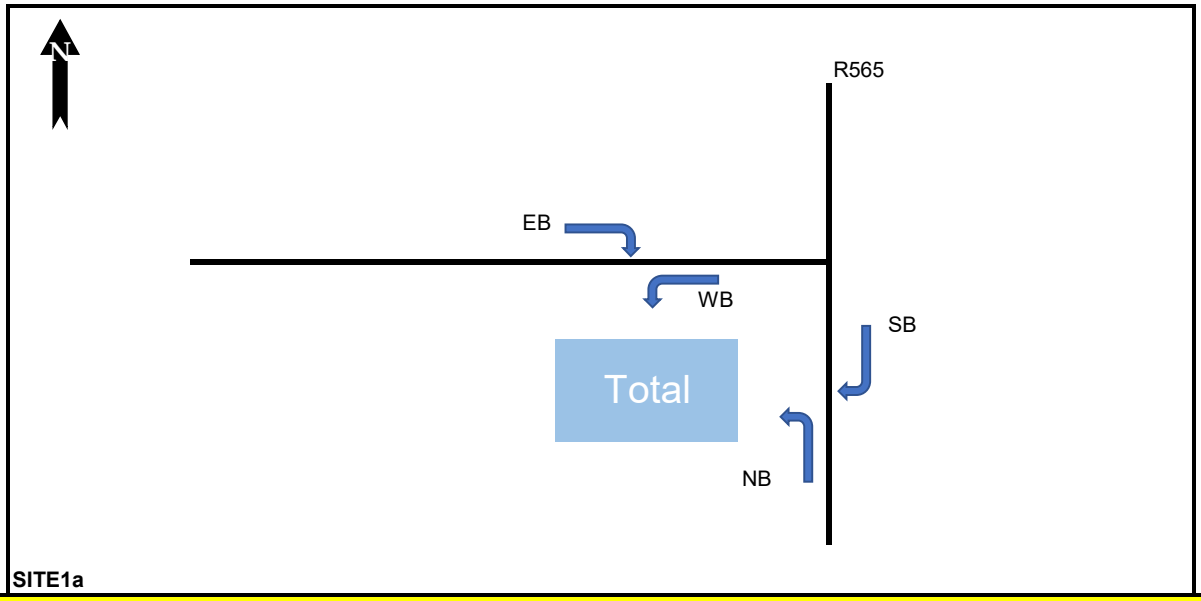
NOTES:

McTRAFF traffic@mctraff.co.za	**Boschhoek**	**2021/06/10**

Project:	**MT0098_Boschhoek**
Intersection:	R565_Total Garage
Date:	10-Jun-21
Day:	Thursday
Location:	1a

AM PEAK:	**06h30**	**07h30**
PM PEAK:	**16h45**	**17h45**

McTRAFF
traffic@mctraff.co.za



SITE1a

SITE1a_TOTAL_1006

12 HOUR		NB												
Time		LV			HV			TOTAL			LV			
Start	**End**	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total	Fuel
06h00	06h15	7	3	10	0	1	1	7	4	11	2	5	7	0
06h15	06h30	4	6	10	0	1	1	4	7	11	0	2	2	0
06h30	06h45	3	1	4	0	0	0	3	1	4	3	0	3	0
06h45	07h00	6	3	9	0	0	0	6	3	9	2	1	3	0
07h00	07h15	3	6	9	0	2	2	3	8	11	2	0	2	0
07h15	07h30	3	2	5	0	0	0	3	2	5	2	0	2	0
07h30	07h45	1	0	1	0	0	0	1	0	1	1	0	1	0
07h45	08h00	3	3	6	0	0	0	3	3	6	2	1	3	0
08h00	08h15	1	5	6	1	1	2	2	6	8	1	1	2	0
08h15	08h30	4	3	7	0	0	0	4	3	7	4	0	4	0
08h30	08h45	0	0	0	0	0	0	0	0	0	0	0	0	0
08h45	09h00	0	3	3	0	0	0	0	3	3	3	1	4	0
09h00	09h15	1	3	4	0	0	0	1	3	4	0	1	1	0
09h15	09h30	1	4	5	0	0	0	1	4	5	0	1	1	0
09h30	09h45	9	7	16	0	0	0	9	7	16	7	3	10	0
09h45	10h00	0	0	0	0	0	0	0	0	0	0	0	0	0
10h00	10h15	2	4	6	0	0	0	2	4	6	1	2	3	0
10h15	10h30	2	4	6	0	0	0	2	4	6	2	2	4	0
10h30	10h45	1	2	3	0	2	2	1	4	5	1	3	4	0
10h45	11h00	1	6	7	0	1	1	1	7	8	2	3	5	0
11h00	11h15	3	1	4	0	1	1	3	2	5	1	1	2	0
11h15	11h30	5	5	10	1	1	2	6	6	12	2	0	2	0
11h30	11h45	2	1	3	0	0	0	2	1	3	0	2	2	0
11h45	12h00	3	0	3	0	0	0	3	0	3	5	2	7	0

12h00	12h15	6	7	13	0	0	0	6	7	13	2	3	5	0
12h15	12h30	2	4	6	0	0	0	2	4	6	1	3	4	0
12h30	12h45	4	2	6	1	1	2	5	3	8	0	2	2	0
12h45	13h00	3	4	7	0	0	0	3	4	7	1	2	3	0
13h00	13h15	1	2	3	0	0	0	1	2	3	5	1	6	0
13h15	13h30	3	1	4	0	1	1	3	2	5	4	3	7	0
13h30	13h45	3	1	4	0	0	0	3	1	4	2	2	4	1
13h45	14h00	5	2	7	0	0	0	5	2	7	3	1	4	0
14h00	14h15	3	1	4	0	0	0	3	1	4	1	4	5	0
14h15	14h30	6	1	7	0	0	0	6	1	7	2	2	4	0
14h30	14h45	5	1	6	1	0	1	6	1	7	2	5	7	0
14h45	15h00	4	7	11	0	0	0	4	7	11	3	2	5	0
15h00	15h15	5	2	7	0	0	0	5	2	7	3	2	5	0
15h15	15h30	10	5	15	0	0	0	10	5	15	6	1	7	0
15h30	15h45	2	4	6	0	0	0	2	4	6	3	4	7	0
15h45	16h00	5	1	6	0	0	0	5	1	6	1	2	3	0
16h00	16h15	4	2	6	0	0	0	4	2	6	4	3	7	0
16h15	16h30	3	2	5	0	0	0	3	2	5	4	2	6	0
16h30	16h45	7	5	12	0	0	0	7	5	12	3	3	6	0
16h45	17h00	7	1	8	0	0	0	7	1	8	2	1	3	0
17h00	17h15	5	7	12	0	0	0	5	7	12	1	3	4	0
17h15	17h30	6	6	12	0	0	0	6	6	12	2	4	6	0
17h30	17h45	4	8	12	0	0	0	4	8	12	0	3	3	0
17h45	18h00	5	3	8	0	0	0	5	3	8	3	3	6	0
AM		**15**	**12**	**27**	**0**	**2**	**2**	**15**	**14**	**29**	**9**	**1**	**10**	**0**
PM		**21**	**10**	**31**	**0**	**0**	**0**	**21**	**10**	**31**	**13**	**9**	**22**	**0**

Project: **MT0098_Boschhoek**

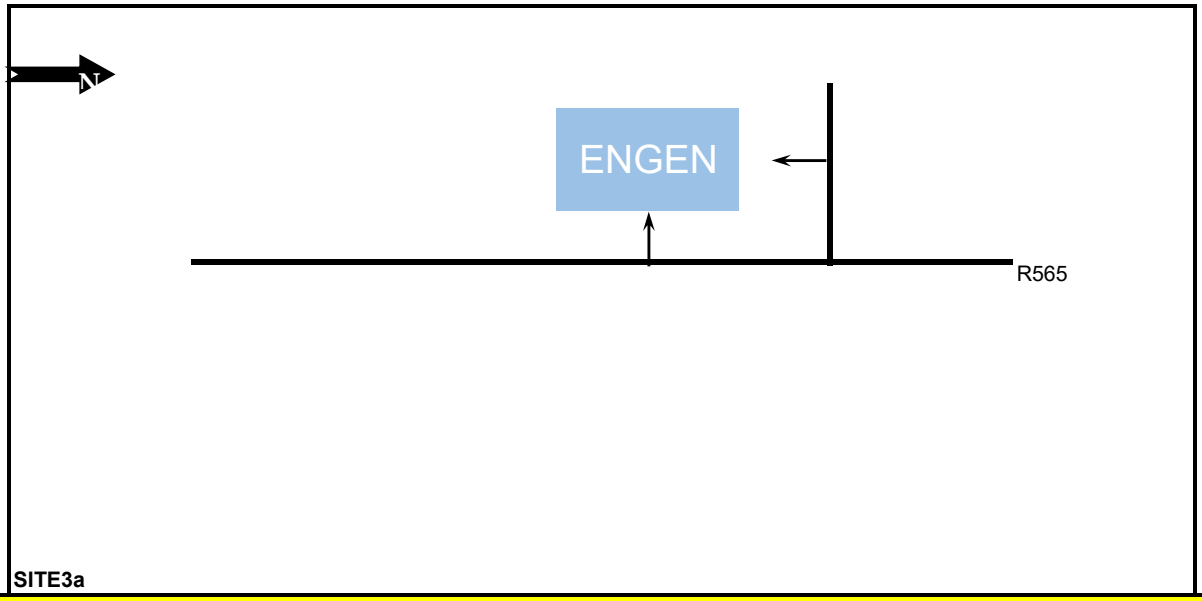
Intersection: R565_Engen Garage

Date: 10-Jun-21

Day: Thursday

Location: 3a

AM PEAK:	06h30	07h30
PM PEAK:	16h45	17h45



SITE3a

SITE3a_TOTAL_1006

12 HOUR

Time		LV			HV			TOTAL		
Start	**End**	Fuel	Other	Total	Fuel	Other	Total	Fuel	Other	Total
06h00	06h15	10	4	14	0	2	2	10	6	16
06h15	06h30	9	4	13	0	1	1	9	5	14
06h30	06h45	8	3	11	0	2	2	8	5	13
06h45	07h00	10	3	13	0	3	3	10	6	16
07h00	07h15	2	4	6	0	0	0	2	4	6
07h15	07h30	12	6	18	0	1	1	12	7	19
07h30	07h45	12	3	15	0	1	1	12	4	16
07h45	08h00	7	5	12	1	0	1	8	5	13
08h00	08h15	17	7	24	1	0	1	18	7	25
08h15	08h30	6	3	9	1	0	1	7	3	10
08h30	08h45	9	7	16	0	0	0	9	7	16
08h45	09h00	6	4	10	1	0	1	7	4	11
09h00	09h15	6	5	11	0	0	0	6	5	11
09h15	09h30	7	2	9	0	0	0	7	2	9
09h30	09h45	13	2	15	0	0	0	13	2	15
09h45	10h00	11	4	15	0	0	0	11	4	15
10h00	10h15	11	3	14	0	0	0	11	3	14
10h15	10h30	6	6	12	1	0	1	7	6	13
10h30	10h45	9	2	11	1	0	1	10	2	12
10h45	11h00	7	4	11	0	0	0	7	4	11
11h00	11h15	9	7	16	0	0	0	9	7	16
11h15	11h30	15	8	23	0	0	0	15	8	23
11h30	11h45	12	6	18	0	0	0	12	6	18
11h45	12h00	12	6	18	0	0	0	12	6	18

12h00	12h15	8	3	11	0	2	2	8	5	13
12h15	12h30	7	3	10	0	1	1	7	4	11
12h30	12h45	6	2	8	0	2	2	6	4	10
12h45	13h00	8	2	10	0	2	2	8	4	12
13h00	13h15	2	3	5	0	0	0	2	3	5
13h15	13h30	10	5	15	0	1	1	10	6	16
13h30	13h45	10	2	12	0	1	1	10	3	13
13h45	14h00	6	4	10	1	0	1	7	4	11
14h00	14h15	14	6	20	1	0	1	15	6	21
14h15	14h30	5	2	7	1	0	1	6	2	8
14h30	14h45	7	6	13	0	0	0	7	6	13
14h45	15h00	5	3	8	1	0	1	6	3	9
15h00	15h15	5	4	9	0	0	0	5	4	9
15h15	15h30	6	2	8	0	0	0	6	2	8
15h30	15h45	10	2	12	0	0	0	10	2	12
15h45	16h00	9	3	12	0	0	0	9	3	12
16h00	16h15	9	2	11	0	0	0	9	2	11
16h15	16h30	5	5	10	1	0	1	6	5	11
16h30	16h45	7	2	9	1	0	1	8	2	10
16h45	17h00	6	3	9	0	0	0	6	3	9
17h00	17h15	7	6	13	0	0	0	7	6	13
17h15	17h30	12	6	18	0	0	0	12	6	18
17h30	17h45	0	0	0	0	0	0	0	0	0
17h45	18h00	19	10	29	0	0	0	19	10	29
AM		**32**	**16**	**48**	**0**	**6**	**6**	**32**	**22**	**54**
PM		**27**	**12**	**39**	**2**	**0**	**2**	**29**	**12**	**41**