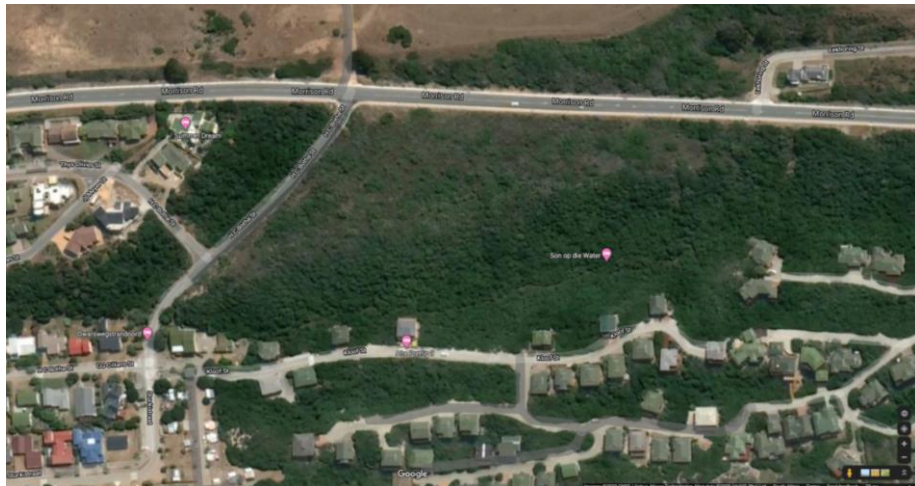


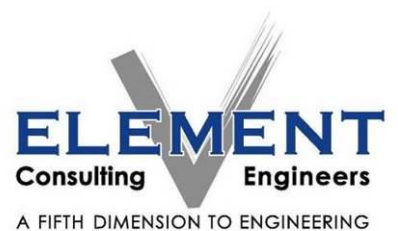
KAAPLANDSE ONDERWYS TRUST

PROPOSED RESIDENTIAL DEVELOPMENT ON ERF 720, DWARSWEG, MOSSEL BAY



TRAFFIC IMPACT STATEMENT

JANUARY 2022



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KAAPLANDSE ONDERWYS TRUST

PROPOSED DEVELOPMENT ON DWARSWEGSTRAND KOT RESORT, DWARSWEG, MOSSEL BAY

TRAFFIC IMPACT STATEMENT

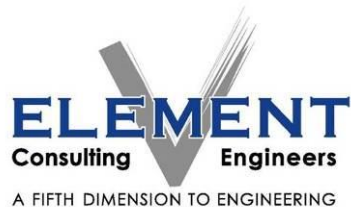
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**PROPOSED DEVELOPMENT ON DWARSWEGSTRAND KOT RESORT,
DWARSWEG, MOSSEL BAY**

TRAFFIC IMPACT STATEMENT

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1 INTRODUCTION

1.1 Background

Element Consulting Engineers (ECE) has been appointed by Kaaplandse Onderwys Trust (K.O.T) to undertake a traffic impact statement for the proposed extension to the Dwarswegstrand KOT Resort, Dwarsweg, Mossel Bay.

1.2 Proposed development

The project proposes the development of the following:

- 26 self-catering units as holiday accommodation properties.
- Gate house with a waste enclosure.
- Conference room and lapa building.
- Swimming pool and ablution facilities.

1.3 Locality, access and layout

The proposed extension to the Dwarswegstrand KOT Resort, Dwarsweg, Mossel Bay is located on erf 720, Dwarsweg, near the town of Great Brak River in the Western Cape. The site is located south of the N2 freeway and south-east of the T-junction of Morrison Road (MR348) and HC Botha Street.

The site is bounded to the west by HC Botha Street, to the north by Morrison Road (MR348) and to the south and east by existing developments

Proposed access to the development is obtained directly via HC Botha Street approximately 65m south of Morrison Road. Morrison Road (MR348) is a single lane peri-urban minor arterial running in an easterly and westerly direction. HC Botha Street is a single lane access road providing access to residents at Dwarswegstrand as well as access to the beach at Dwarswegstrand.

The location of the proposed development is indicated on Figure 1 in relation to Outeniqua Strand in an eastern direction and Botha Strand in a south-western direction. A preliminary site development plan is presented in figure 2 below.



Figure 1: Locality Plan of proposed development on Erf 720, Dwarsweg, Mossel Bay

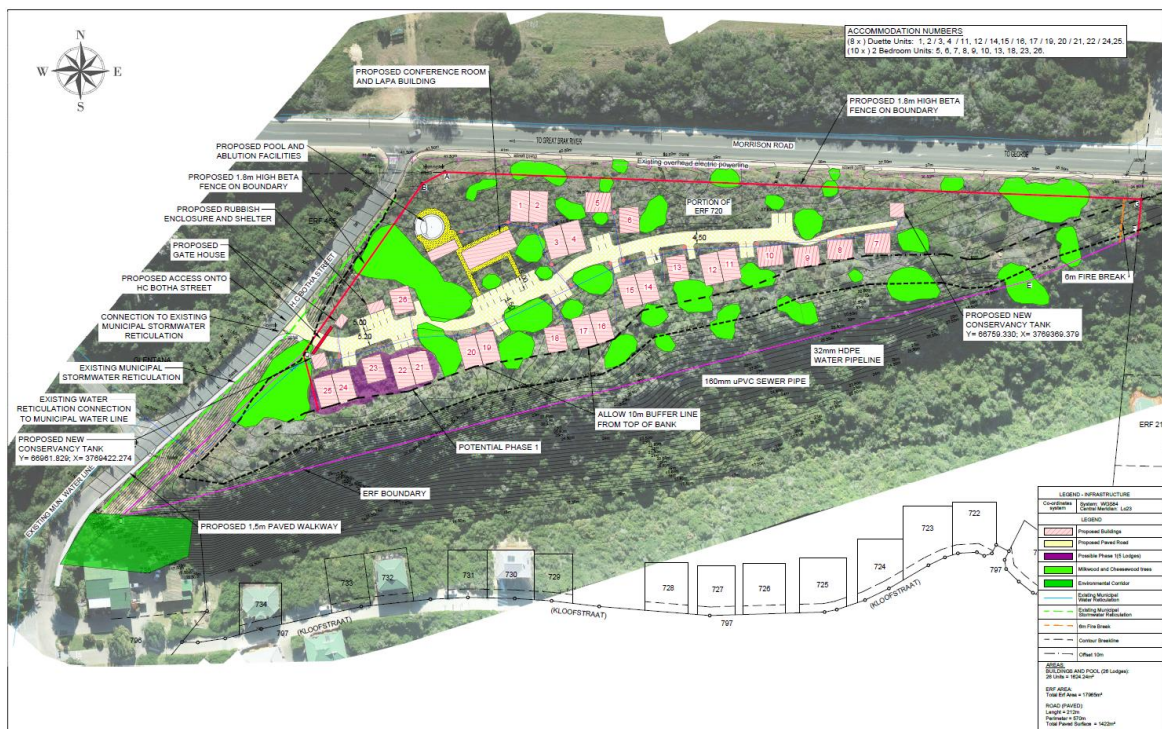


Figure 2: Site Development Plan: Erf 720, Dwarsweg, Mossel Bay

1.4 Other developments

The existing KOT development is located adjacent to and south of the study area. The extent of this development, background traffic and approved rights were studied as input into this report.

1.5 Purpose of the report

The purpose of the report is to assess the traffic impact of the proposed development on the adjacent road network.

1.6 Extent of analysis

The traffic impact of the proposed development, proposed road configuration alterations as well as the other developments mentioned, were evaluated for the intersections affected by the development as well as the road upgrades.

The intersections analysed for the traffic impact statement were the following:

- Intersection 1: Proposed development access and HC Botha Street.
- Intersection 2: Morrison Road and HC Botha Street.

The impact of the proposed development was evaluated for both the weekday morning and afternoon peak hours. The assessment years are for the base year 2022 and horizon year 2027.

2 TRIP GENERATION

2.1 Trip generation rates

Trip generation rates used in the report were obtained from the “South African Trip Data Manual” Version 1.01 September 2013 (TMH 17). The following trip generation rates were used to calculate trip generation during the peak hour of the adjacent road network:

- Hotel: Resort (Land use code 330)
Rates of 0.3 and 0.4 trips / dwelling unit for the AM and PM peak hours with a 60:40 (AM) and 50:50 (PM) directional split.

Reduction factors may be applied to the number of new trips generated. An adjustment factor of 30% was implemented for low ownership since the proposed dwelling units will serve as a self-catering holiday accommodation and will mostly not add to the peak hour traffic.

The trip generation volumes are calculated in the following table in line with the trip generation rates and reduction factor discussed above:

TMH 17 Classification	Peak Hour	Units	Trip Adjustment Factor	Trip Generation Rate	Split		Trips		Sub Total
					In	Out	In	Out	
330 Hotel, Resort	AM	26	30%	0.3	60%	40%	3	2	5
	PM		30%	0.4	50%	50%	4	4	8

Table 1: Trip Generation: Development (New Trips)

2.2 Trip distribution and assignment

It is anticipated that the traffic that will be generated by the proposed development will be distributed on the road network as follows:

- All access to the development will be via the sole access from HC Botha Street at the western boundary of the property.
- 66% of traffic from the development will distribute towards Morrison Road
- 34% of traffic from the development will be attracted towards Dwarswegstrand.
- 60% of the traffic developed towards Morrison Road will distribute to Mossel Bay and 40% to George.

The trip distribution is indicated diagrammatically in the figure below:

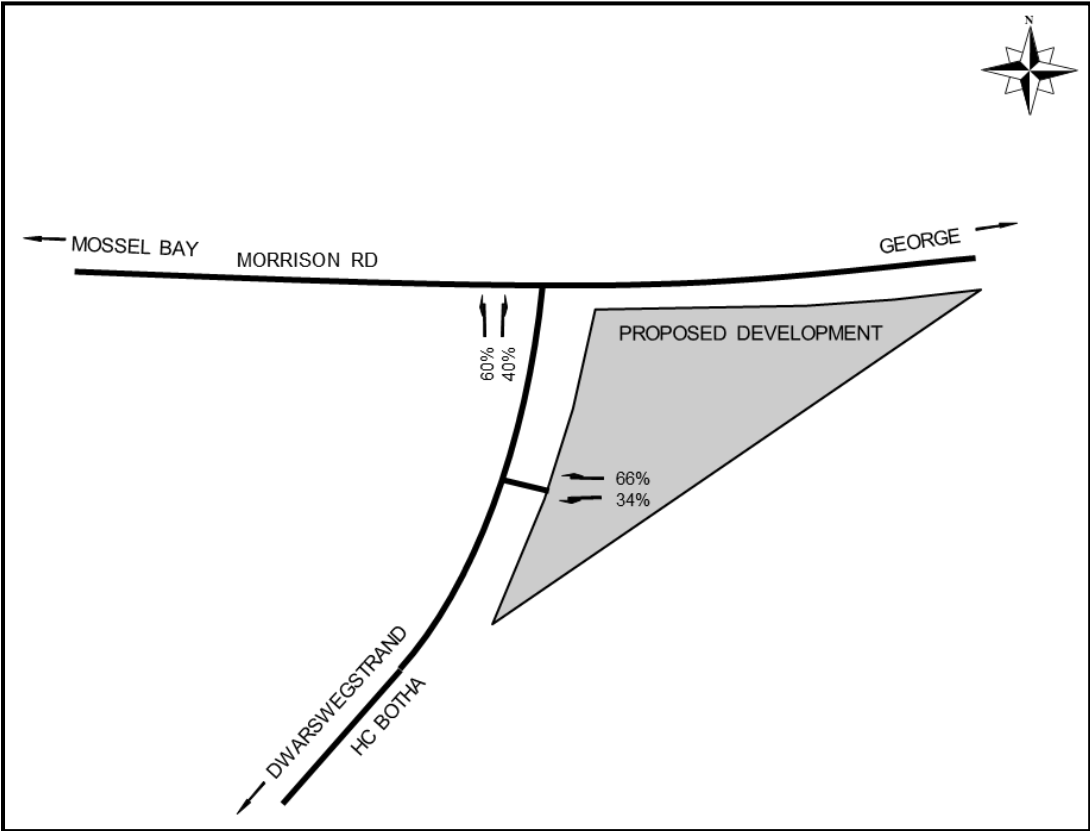


Figure 3: Trip distribution & assignment

3 TRAFFIC DEMAND

3.1 Background traffic

Based on the defined study area, traffic counts were conducted from 06:00 to 18:000 on Thursday, 9th of November 2017 at the intersection of Morrison Road (MR348) and HC Botha Street to obtain true traffic volumes experienced in the area. The traffic counts were conducted on a normal work and school day. No rain was present during the counting hours.

Traffic volumes for the 2022 base year for this study were inflated by 3.5% to account for the time lapse between the count date and the report.

The volumes of the 2022 base year are indicated diagrammatically in the figures below for the weekday morning and weekday afternoon peak hour periods respectively:

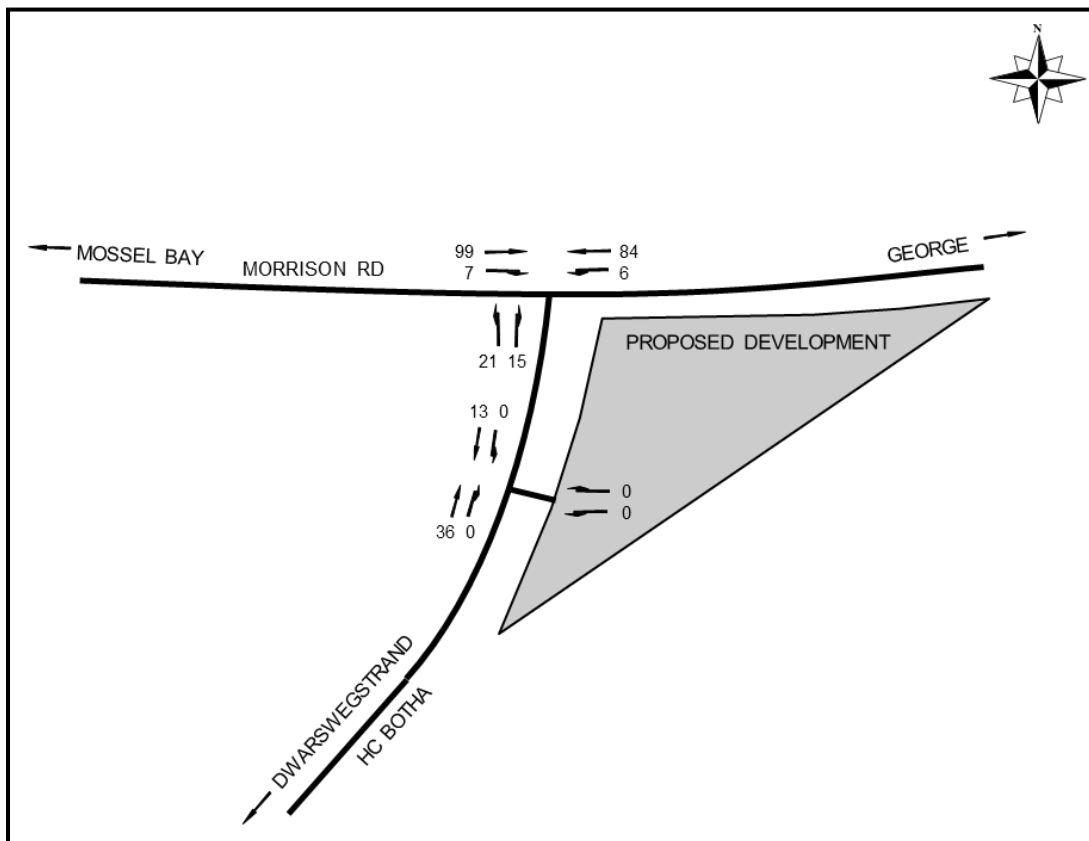


Figure 4: Background traffic: 2022 Base year: AM Peak Hour

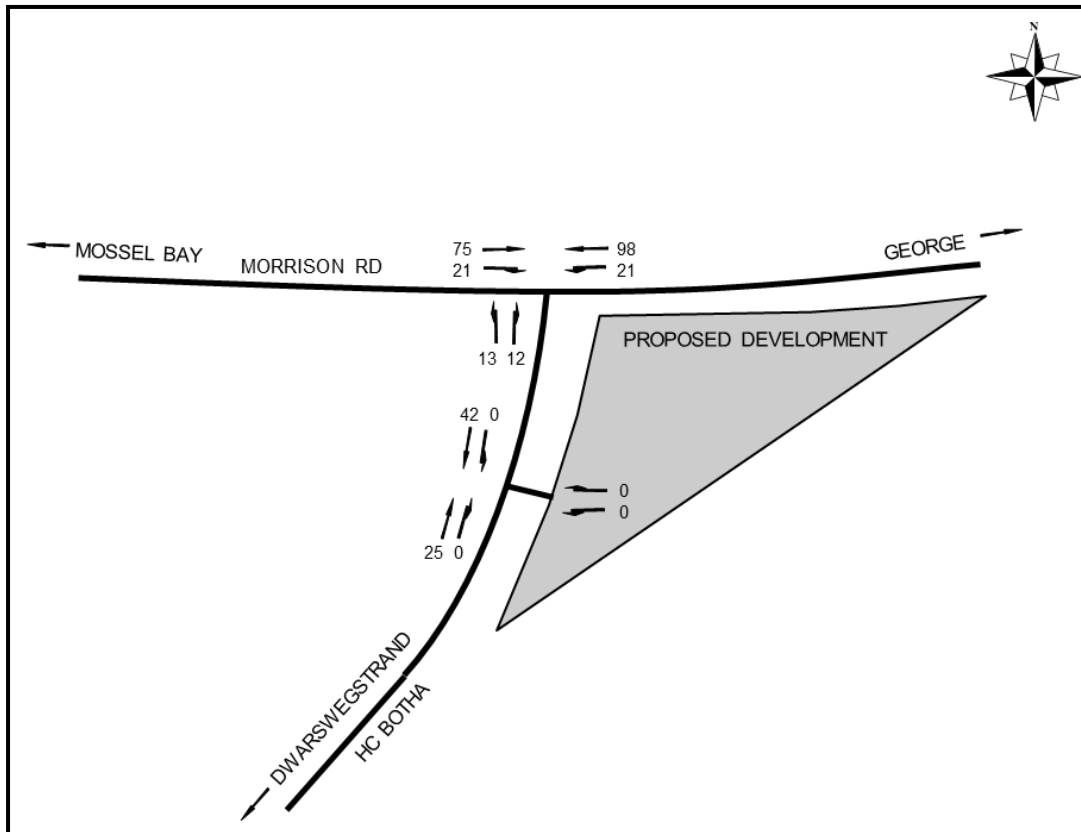


Figure 5: Background traffic: 2022 Base year: PM Peak Hour

3.2 Traffic growth rates

The TMH17: South African Trip Data Manual, recommends the following growth rate factors for different development areas:

Development Area	Growth rate
Low growth areas	0 - 3%
Average growth areas	3 - 4%
Above average growth areas	4 - 6%
Fast growing areas	6 - 8%
Exceptionally high growth areas	> 8%

Source: City Council of Pretoria (1998)

Table 2: TMH17 Growth Rate Factors

The proposed development forms part of an area experiencing average growth, although limited geographically, whilst approved developments are not fully built-up yet. It is hence expected that the area will develop at an average growth rate, in line with the table above, of approximately 3.5%. A growth rate of 3.5% per annum will thus be applied.

A standard horizon period of 5 years will be used to determine the impact of the proposed development on the surrounding road network.

3.3 Background traffic (horizon year 2027)

The background volumes of the 2027 horizon year are indicated diagrammatically in the figures below for the weekday morning and weekday afternoon peak hour periods respectively:

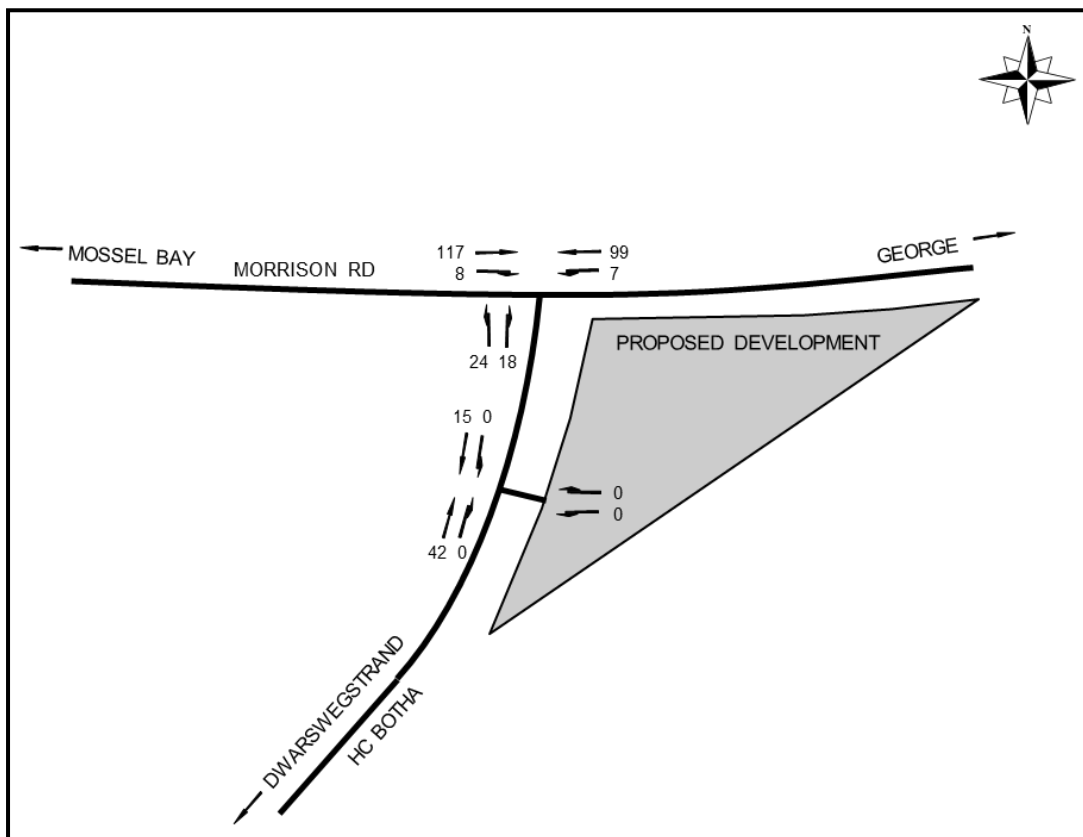


Figure 6: Background traffic: 2027 Horizon year: AM Peak Hour

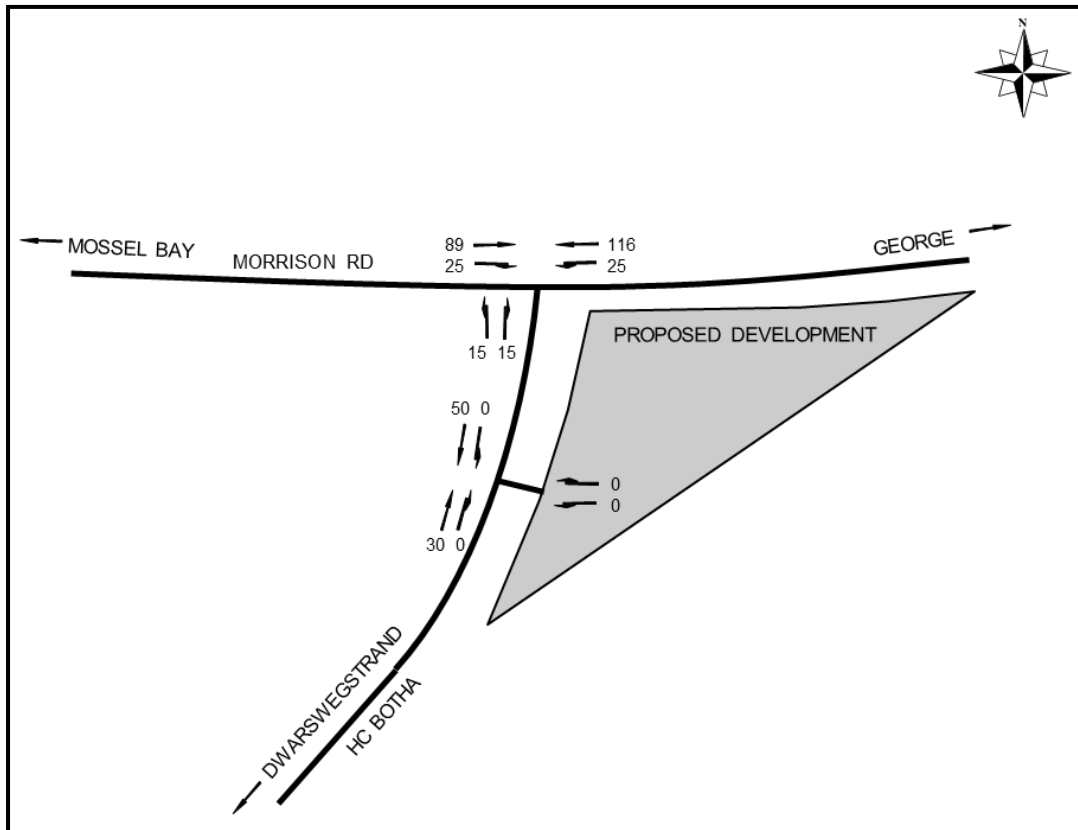


Figure 7: Background traffic: 2027 Horizon year: PM Peak Hour

3.4 Development traffic

The traffic generated by the proposed development, assigned to the road network, is indicated on the figures below for the weekday morning and weekday afternoon peak hour periods respectively:

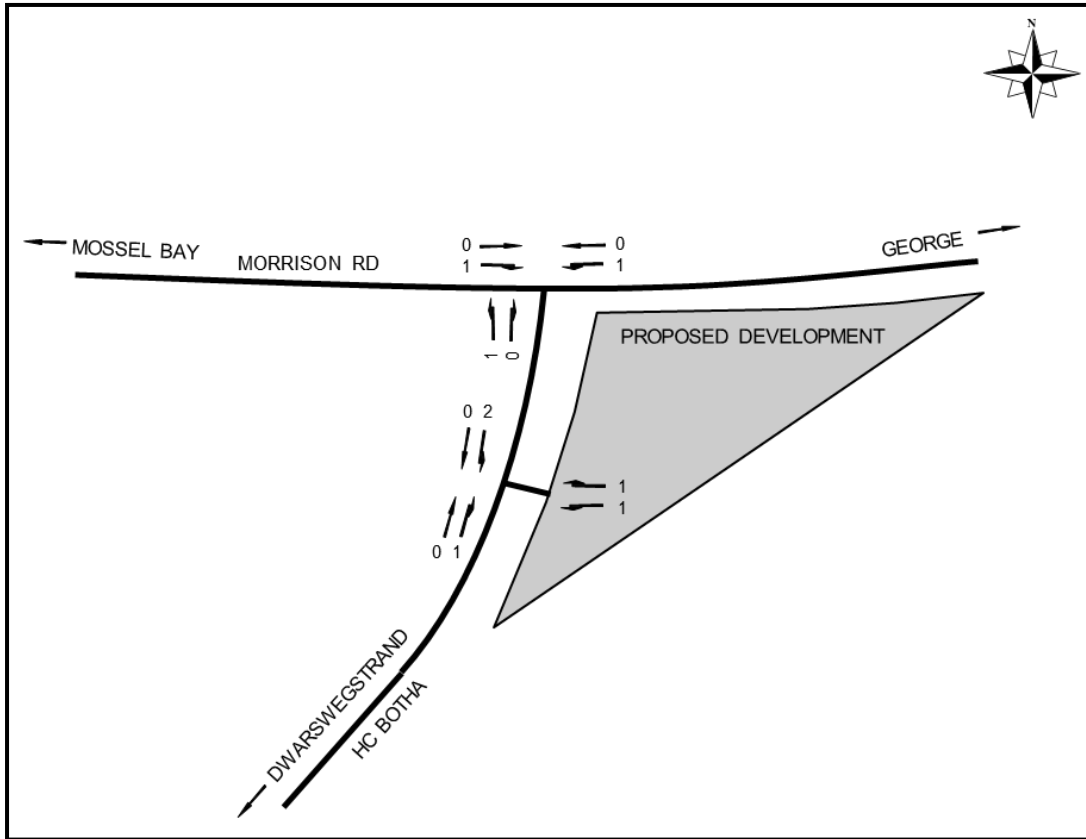


Figure 8: Development Traffic: AM Peak Hour

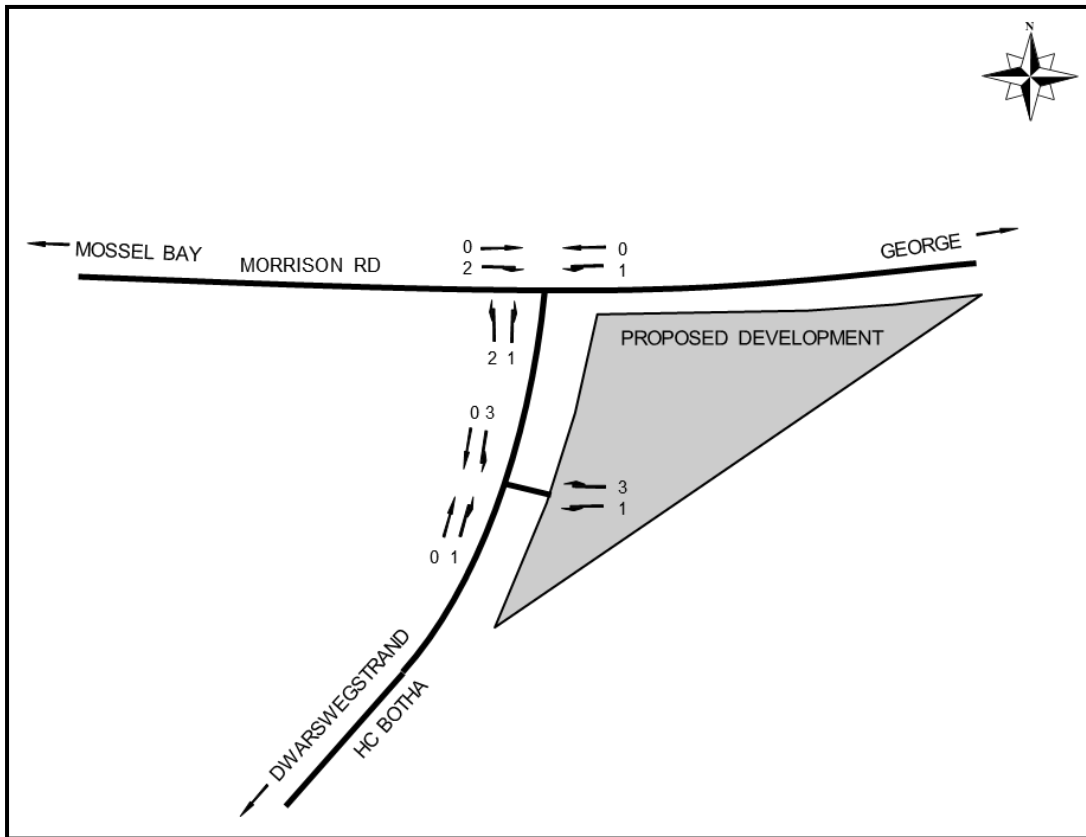


Figure 9: Development Traffic: PM Peak Hour

3.5 Passer-by trips

No passer-by trips were attracted by the proposed development

3.6 Other traffic

There is no other development expected and located adjacent and/or in the study area.

3.7 Total future traffic demand

The total future traffic demand, consisting of the background 2027 traffic demand plus development traffic is indicated on the figures below for the weekday morning and weekday afternoon peak hour periods respectively.

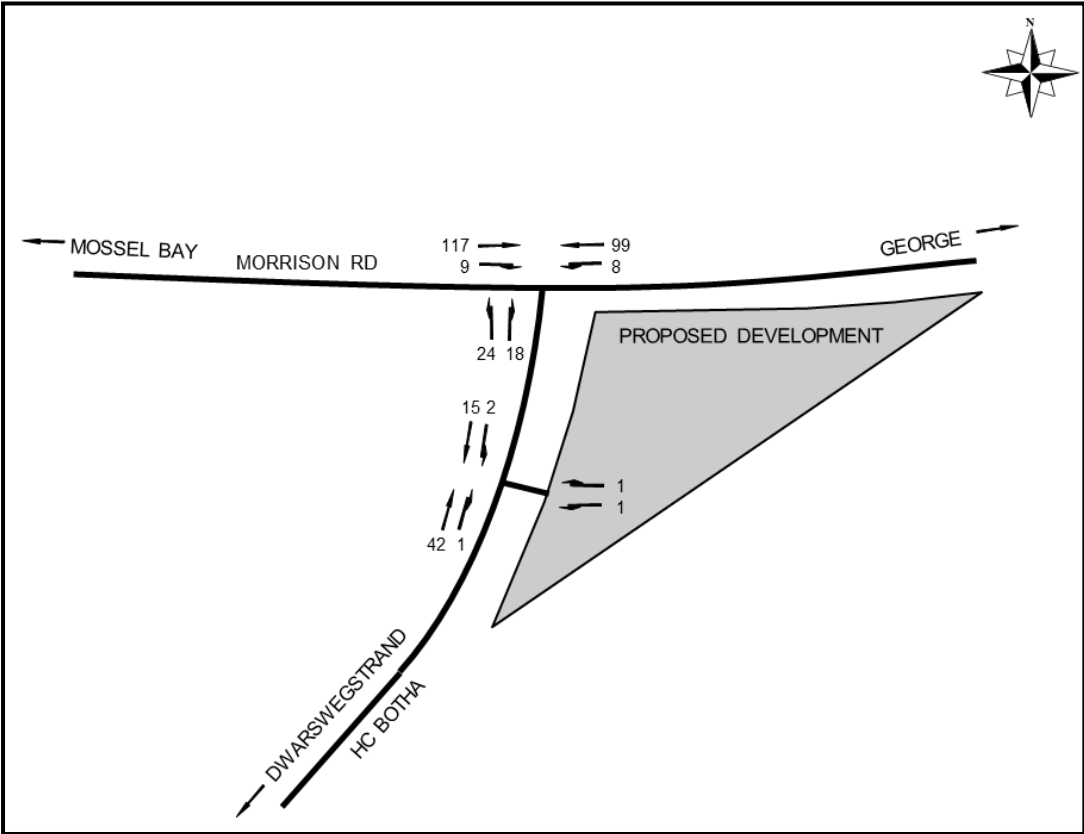


Figure 10: Total Traffic Demand: Horizon Year 2027: AM Peak Hour

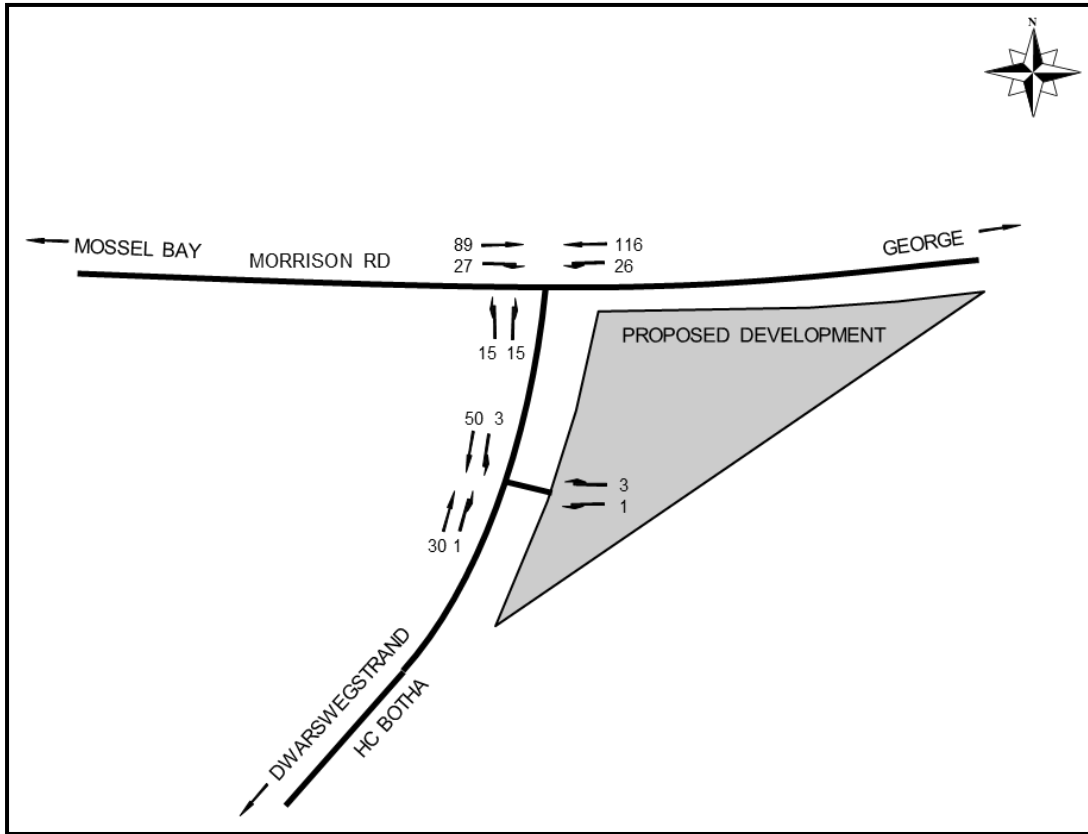


Figure 11: Total Traffic Demand: Horizon Year 2027: PM Peak Hour

4 CAPACITY ANALYSIS

A capacity analysis was performed for the weekday AM and PM peak hours for the existing background (2022), future background (2027) and total future traffic (2027) conditions. The capacity analysis was performed by means of the Sidra Intersection 8.0 software to compare the impact of the development against the background traffic.

A discussion of the analysis of the intersection and scenarios is presented below.

4.1 Intersection 1: Development Access and HC Botha Street

4.1.1 Existing Geometry

The proposed access is located on a portion of free-flowing road with one lane north and one lane south.

4.1.2 Proposed Geometry

The proposed intersection geometry to service the development consists of a shared through and right lane from the south, a shared left and through lane from the north, and a shared left and right lane from the east from the proposed development. The intersection is stop controlled from the east (development). This geometry is shown in the figure below.

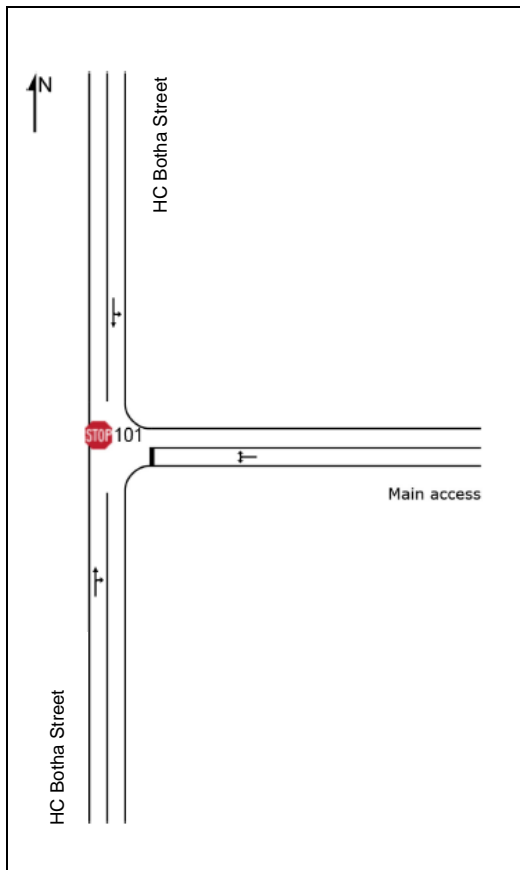


Figure 12: Intersection 1: Geometry: Development Access and HC Botha Street

4.1.3 Analysis

The analysis was performed for both the weekday morning and afternoon peak hour periods for the horizon year 2027.

The results of the analysis indicate that the development has a negligible impact on the Level of Service during both the morning and afternoon horizon year peak hours and the intersection will continue to operate at a Level of Service A for both the morning and afternoon peak hours.

4.1.4 Mitigation measures

No mitigation measures are required or for the intersection from a purely capacity analysis perspective.

4.2 Intersection 2: Morrison Road and HC Botha Street

4.2.1 Existing Geometry

The existing intersection geometry consists of through lanes on Morrison Road and side road stop at HC Botha Street. This layout is indicated in the following diagram:

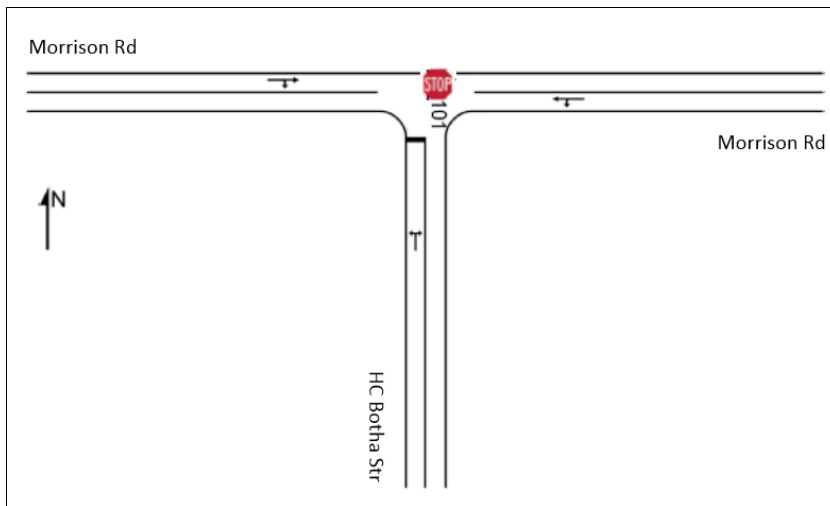


Figure 13: Intersection: Geometry: Morrison Road and HC Botha Street

4.2.2 Analysis

The analysis was performed for both the weekday morning and afternoon peak hour periods for the horizon year 2027.

The results of the analysis indicate that the development has a negligible impact on the Level of Service during both the morning and afternoon horizon year peak hours and the intersection will continue to operate at a Level of Service A for both the morning and afternoon peak hours.

4.2.3 Warrants for right turn lanes

The total horizon year 2027 traffic at the intersection was analysed against the warrants for right turn lanes to consider the safety of right turn manoeuvres alongside and opposed to the main traffic stream in Morrison Road. The warrants consider the total advancing volume, the total opposing volume, the percentage right turn movements as well as the vehicle speed on the through route. The analysis was performed for the worst-case scenario, i.e. the afternoon peak hour.

The necessity of a right turn lane was not triggered on the warrant analysis for this intersection. The analysis is presented on the graph in the following diagram.

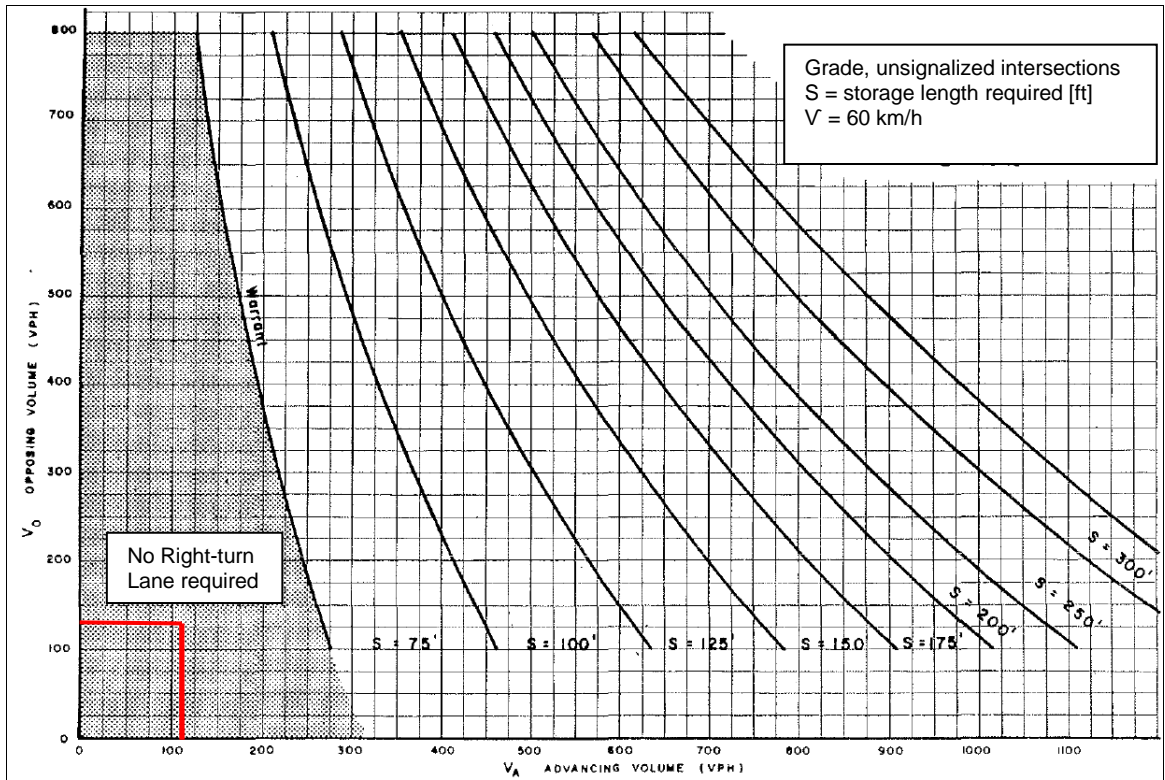


Figure 14: Warrant analysis for right-turn lane

4.2.4 Mitigation measures

No upgrades or other mitigation measures are required or proposed for the intersection.

5 SALIENT ISSUES

A number of salient issues are addressed below and shall also be considered in parallel to all relevant approved documentation and applicable legislation:

5.1 Access gate configuration & stacking distance

The design of the main access gate shall provide separate visitors and residents lanes in order to minimise congestion at the gate. A minimum stacking distance of at least 2 vehicles per lane is required at the access gate.

5.2 Sight Distances

Sight distances at the proposed access point is excellent in both the horizontal and vertical alignments and satisfactory for development purposes. An array of photographs below provides clarity on the sight distances at both access points.



Figure 15: North-eastern view along HC Botha street at proposed access point indicating very good sight distance in the vertical and horizontal alignments.



Figure 16: South-western view along HC Botha street at proposed access point indicating very good sight distance in the vertical and horizontal alignments.

5.3 Refuse removal

Refuse removal shall be performed by the Local Municipality in accordance with a signed services agreement. Access for municipal refuse removal vehicles shall be incorporated into the contractor's access arrangements. The provision of a solid waste collection area shall be incorporated into the access gate complex or in close vicinity to the access gate, in a manner so as not to hinder normal operations at the gate.

6 CONCLUSIONS

The following conclusions can be reached from the Traffic Impact Statement for the proposed development of erf 720, Dwarsweg, Mossel Bay:

1. The purpose of the study is to assess the traffic impact of the proposed development on the adjacent road network.
2. The proposed development consists of 26 self-catering units as holiday accommodation properties;
3. The proposed development is located south-east of the T-junction of Morrison Road (MR348) and HC Botha Street;
4. Access to the development is obtained via one single access point from HC Botha Street;
5. Trip generation rates for the proposed development were determined in accordance with the TMH17 South African Trip Data Manual;
6. The peak hour trip generation of the proposed development during the morning and afternoon peak hour of the adjacent road network is 5 vehicles (AM) and 8 vehicles (PM);
7. A capacity analysis was performed for the weekday AM and PM peak hours for the existing background (2022), future background (2027) and total future traffic (2027) conditions. The capacity analysis was performed by means of the Sidra Intersection 8.0 software to compare the impact of the development against the background traffic. The analysis concluded the following:
 - Intersection 1 (Development Access and HC Botha Street): The development has a negligible impact on the Level of Service during both the morning and afternoon horizon year peak hours and the intersection will continue to operate at a Level of Service A for both the morning and afternoon peak hours;
 - Intersection 2 (Morrison Road and HC Botha Street): The development has a negligible impact on the Level of Service during both the morning and afternoon horizon year peak hours and the intersection will continue to operate at a Level of Service A for both the morning and afternoon peak hours;
8. Sight distances at the proposed access point is excellent in both the horizontal and vertical alignments and satisfactory for development purposes;

9. Refuse removal shall be performed by the Local Municipality in accordance with a signed services agreement. The provision of a solid waste collection area shall be incorporated into the access gate complex or in close vicinity to the access gate, in a manner so as not to hinder normal operations at the gate;

7 RECOMMENDATIONS

In line with the conclusions above, the following is recommended:

1. That the proposed development of erf 720, Dwarsweg, Mossel Bay, be approved from a Traffic Engineering perspective;