# UPDATED TRAFFIC IMPACT ASSESSMENT
## PROPOSED PARKDENE FILLING STATION ON ERF 11221 GEORGE

29 April 2021


**Report prepared by:**

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# UPDATED TRAFFIC IMPACT ASSESSMENT
## PROPOSED PARKDENE FILLING STATION ON ERF 11221 GEORGE

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### ANNEXURE

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**DECLARATION**

It is herewith certified that this UPDATED TRAFFIC IMPACT ASSESSMENT: PROPOSED PARKDENE FILLING STATION ON ERF 11221 GEORGE has been prepared according to the requirements of the South African Traffic Impact and Site Traffic Assessment Manual.

Signed: ……

DATE: 29 April 2021

| | |
|---|---|
| Name: | Cobus Havenga |
| Qualification: | Pr Eng, B Eng Civil, Hons Transportation Engineering |
| ECSA Registration Number: | 970277 |
| Company: | Corli Havenga Transportation Engineers |

# UPDATED TRAFFIC IMPACT ASSESSMENT
## PROPOSED PARKDENE FILLING STATION ON ERF 11221 GEORGE

### 1. BACKGROUND

This updated Traffic Impact Assessment was requested by the local municipality as part of the approval of the access designs for the proposed filling station on Erf 11221 George.

The original Traffic Impact Study was conducted by Vela VKE Consulting Engineer in March 2012[(1)]. The report was approved by George Local Municipality, see letter dated 12 December 2012, copy presented in the annexure.

### 2. SITE LOCATION

The proposed filling station is located on the corner of Nelson Mandela Boulevard and Main Street as depicted on the Google Maps aerial photo below.


**Site location**

## 3. EXISTING ROADS

The site is bordered by Nelson Mandela Boulevard, Main Street and Golf Street. The streets are depicted in the photos below.

**The Site**

**Golf Street next to site towards Main Street**

**Main Street next to site towards Nelson Mandela Boulevard**

**Nelson Mandela Boulevard towards the N2**

There are existing bus-stops and pedestrian crossings along Main Street on both sides of the street next to the site that was not there when the original study was done. The facilities are depicted in the photos below.

**Existing bus-stops next to site**


**Existing bus-stops next to site**

**Existing bus-stops next to site**

## 4. PROPOSED ACCESS

The access design used in this report was done by Element Consulting Engineers as depicted in Plan No P190254/C/100 in the annexure. The bus stops along Main Street did not exist at the time the original traffic impact study was conducted.

The bus stops along Main Street are accommodated in the access design of the filling station. Access off Main Street is limited to entrance only, exit cannot be allowed. Full access is off Golf Street.

## 5. HISTORIC AND EXISTING TRAFFIC DEMAND DATA

The current lock down conditions is expected to have an impact on the peak hour and 12-hour traffic volumes. It is however difficult to quantify this impact. We do however have four sets of data we can use to try and quantify the impact. The lock down is not the only factor impacting traffic demand, the economy has been under pressure as well before the lockdown and congestion may also have an impact on traffic flow.

The 12-hour manual traffic count at the intersection of Nelson Mandela Boulevard and Main Street done on 8 November 2011[(1)] indicated the following:

| | |
|---|---|
| Morning peak hour: | 06:45-07:45<br>1 759 vehicles |
| Afternoon peak hour: | 16:45-17:45<br>1 592 vehicles |
| Total 12-hour traffic volume through intersection: | **12 404** vehicles |

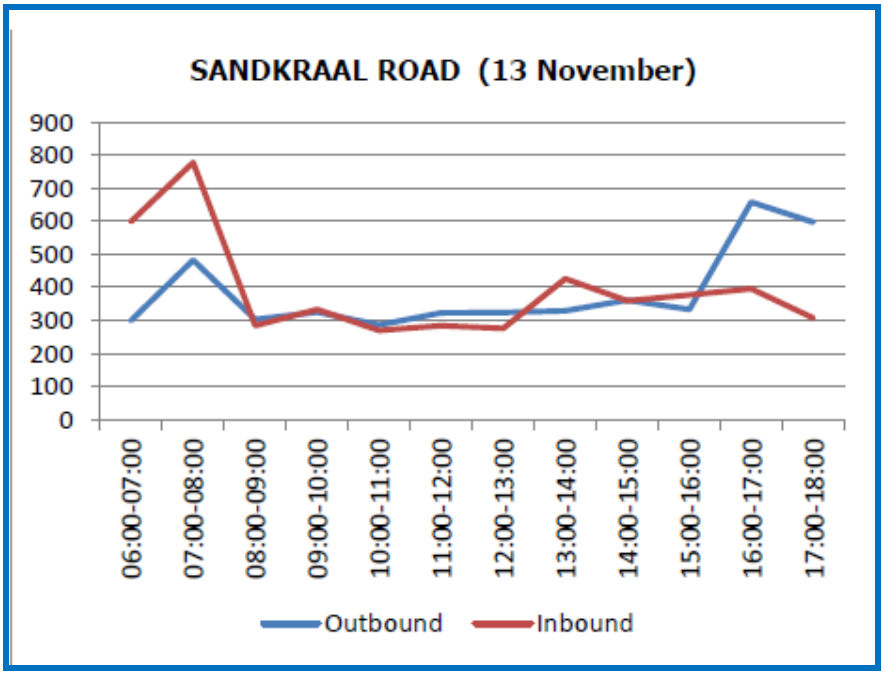
The Updated Market Study for this filling station presented traffic data which were obtained on Thursday, 13 November 2014 between (06:00-18:00). Unfortunately the peak hour and peak hour volumes cannot be extracted from the data.

Total 12-hour traffic volume through intersection: **14 815** vehicles

The data from the study indicates that the peak hours along Nelson Mandela Boulevard occurred at around 07:00-08:00 in the morning and 16:30-17:30 during the afternoon. The data is presented below.

## TRAFFIC COUNT ALONG SANDKRAAL STREET
## 13 NOVEMBER 2014 UPDATED FOR 2015

| Time | Outbound | Inbound |
|---|---|---|
| 06:00-07:00 | 300 | 600 |
| 07:00-08:00 | 483 | 778 |
| 08:00-09:00 | 303 | 285 |
| 09:00-10:00 | 325 | 334 |
| 10:00-11:00 | 287 | 270 |
| 11:00-12:00 | 323 | 285 |
| 12:00-13:00 | 324 | 276 |
| 13:00-14:00 | 329 | 427 |
| 14:00-15:00 | 362 | 360 |
| 15:00-16:00 | 334 | 377 |
| 16:00-17:00 | 658 | 396 |
| 17:00-18:00 | 598 | 308 |
| **Total** | **4626** | **4696** |
| **Total Projected 3rd Quarter 2015** | **4 765** | **4 837** |



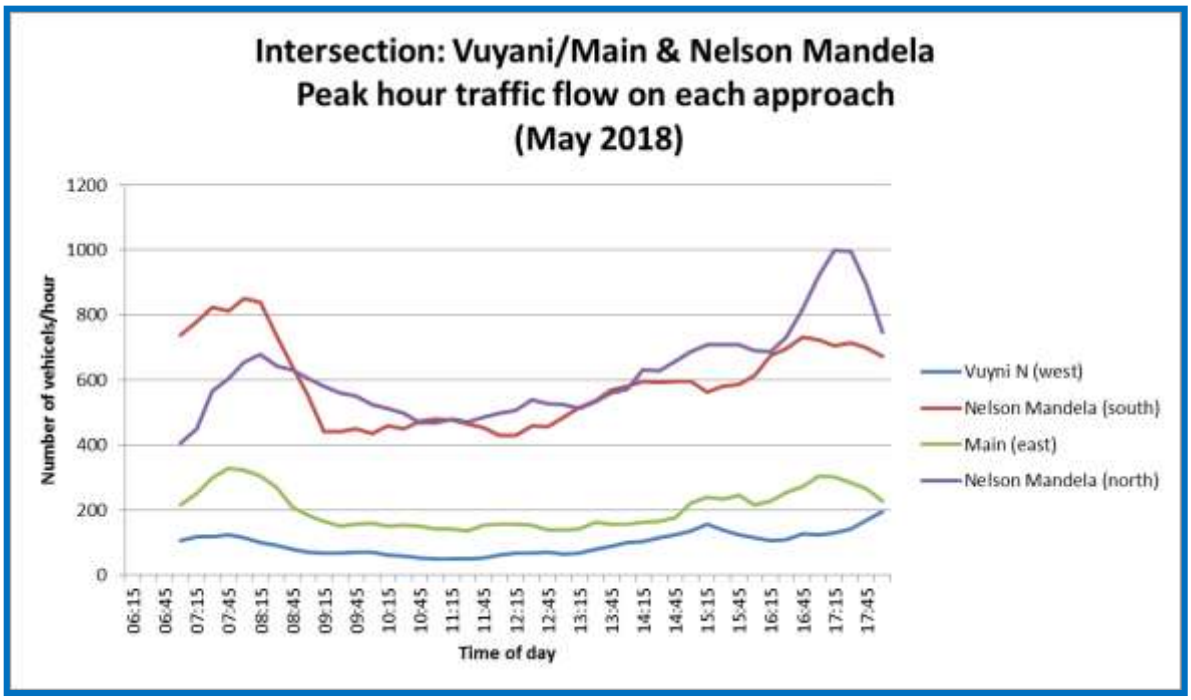

Corli Havenga Transportation Engineers conducted traffic surveys on Thursday, 31 May 2018 between 06:00-18:00. The peak traffic hours and traffic flows recorded were as follows:

Moring peak hour: 07:00-08:00
1 945 vehicles

Afternoon peak hour: 16:30-17:30
2 138 vehicles

Total 12-hour traffic volume through intersection: **18 123** vehicles

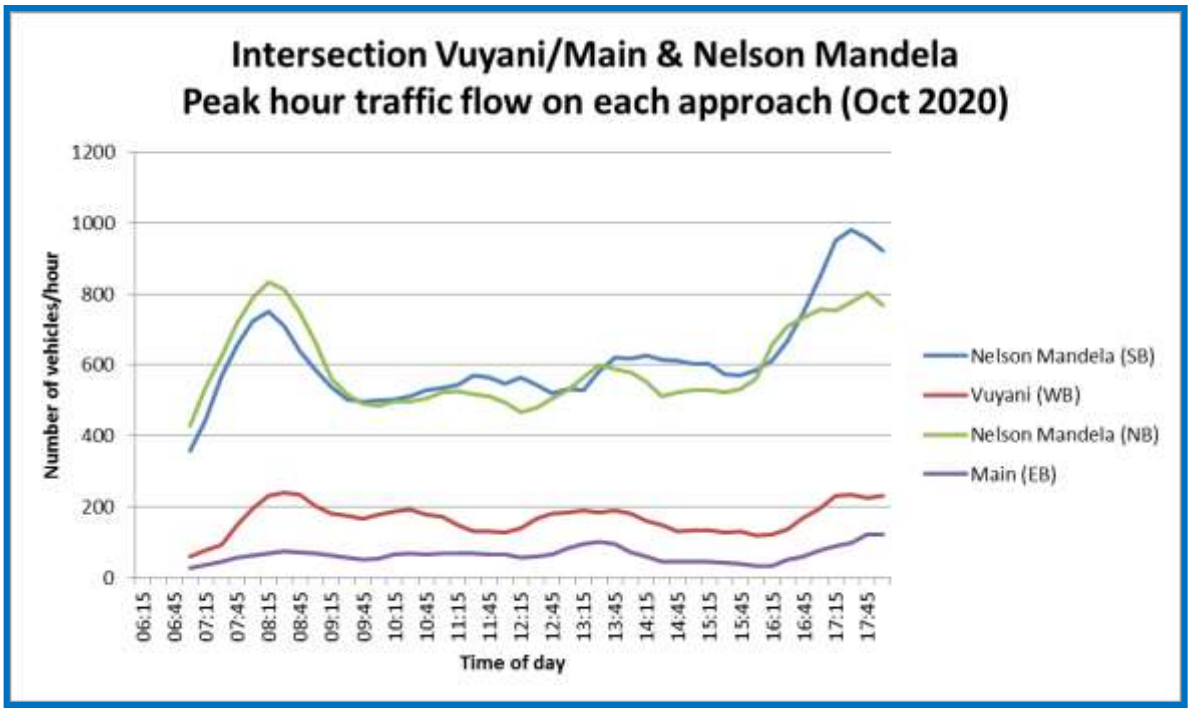
The graph below depicts the 12-hour traffic flow on each approach.




Traffic counts were conducted for the purpose of this updated study between 06:00-18:00 on Wednesday, 21 October 2020. The peak traffic hours and traffic flows recorded were as follows:

| | |
|---|---|
| Moring peak hour: | 07:30-08:30<br>1 884 vehicles |
| Afternoon peak hour: | 16:45-17:45<br>2 106 vehicles |
| Total 12-hour traffic volume through intersection: | **17 225** vehicles |

The graph below depicts the 12-hour traffic flow on each approach.



We compared the peak hour traffic flow along Main Street and Nelson Mandela Boulevard in both directions during 2011, 2018 and 2020. The data is presented in Table 1.

| Year | Morning peak hour | | | Afternoon peak hour | | |
|---|---|---|---|---|---|---|
| | Inbound | Outbound | Total | Inbound | Outbound | Total |
| 2011 | 225 | 284 | 509 | 273 | 140 | 413 |
| 2018 | 275 | 324 | 599 | 329 | 285 | 614 |
| 2020 | 170 | 231 | 401 | 224 | 232 | 456 |

**Table 1: In- and out-bound along Main Street**

| Year | Morning peak hour | | | Afternoon peak hour | | |
|---|---|---|---|---|---|---|
| | Inbound | Outbound | Total | Inbound | Outbound | Total |
| 2011 | 809 | 585 | 1394 | 462 | 901 | 1363 |
| 2018 | 851 | 656 | 1507 | 715 | 995 | 1710 |
| 2020 | 834 | 745 | 1579 | 802 | 958 | 1760 |

**Table 2: In- and out-bound along Nelson Mandela Boulevard**

The traffic flow on Main Street shows a significant drop from 2018 to 2020 but along Nelson Mandela Boulevards a slight increase from 2018 to 2020.

At the time the traffic survey was conducted in 2018 heavy congestion was observed on the outbound direction along Nelson Mandela Boulevard during the afternoon peak period. The photos below, taken in 2018, depict the congestion.

**Queues along Nelson Mandela Boulevard**

**Congestion at the intersection of Nelson Mandela Boulevard and Main Street**

**Queues along Nelson Mandela Boulevard**

The same occurred during the afternoon peak hour in October 2020 as depicted in the photos below.

**Congestion at the intersection of Nelson Mandela Boulevard and Main Street**

**Queues along Nelson Mandela Boulevard**

**Congestion at the intersection of Nelson Mandela Boulevard and Main Street**

Comparing the peak hour traffic flow of 2011, 2018 and 2020 show the turning movements into and from Main Street significantly lower. An adjustment is proposed. No adjustment is proposed on the main movement on Nelson Mandela Boulevard. The data shows it is not really affected. The adjusted peak hour traffic flows are presented in Figure 1.

Traffic counts were also done at the intersection of Main Street and Golf Street between 06:00-18:00. The data was also adjusted with the same ratios as the data at the intersection of Main Street and Nelson Mandela Boulevard. The data and adjusted peak hour traffic flows are presented in Figure 2 in the annexure.

The existing peak hour traffic demand used in the capacity analysis is depicted in Figure 3 in the annexure.

## 6. TRIP GENERATION

The South African Trip Data Manual[(2)] does not consider a filling station as peak hour trip generator. The document also states that related uses such as a car wash and convenience shop are also not regarded as trip generators; the primary business is fuelling of motor vehicles.

The South African Trip Generation Rates (1995)[(3)] made recommendations for trip generation rates for filling stations; in urban areas a trip attraction rate of 4% with a 50:50 directional split. The filling station industry currently uses rates of between 2% and 4.5% depending on the approach.

The market study only used the outbound traffic flow along Nelson Mandela Boulevard and the traffic flow along Main Street for the feasibility study of the filling station. In line with this the same was done for trip generation purposes. The peak hour traffic flows are as follows:

Nelson Mandela Boulevard traffic flow:

| | | |
|---|---|---|
| Outbound | a.m. peak hour: | 645 |
| | p.m. peak hour: | 828 |

Main Street traffic flow:

| | | |
|---|---|---|
| Inbound: | a.m. peak hour: | 312 |
| | p.m. peak hour: | 350 |
| Outbound | a.m. peak hour: | 305 |
| | p.m. peak hour: | 285 |

The attraction rate on the Nelson Mandela Boulevard outbound approach is regarded as 3% for the purpose of this study. The expected number of peak hour trips for the filling station is depicted in Table 3.

| Peak hour | Peak hour Traffic volume | Attraction rate | Directional split (in/out) | Total number of peak hour trips | New trips in | New trips out |
|---|---|---|---|---|---|---|
| **Nelson Mandela Boulevard approach** | | | | | | |
| Weekday (a.m.) | 645 | 3% | 50:50 | 20 | 10 | 10 |
| Weekday (p.m.) | 828 | 3% | 50:50 | 24 | 12 | 12 |
| **Main Street approach** | | | | | | |
| Inbound (a.m.) | 312 | 4% | 50:50 | 12 | 6 | 6 |
| Outbound (a.m.) | 305 | 4% | 50:50 | 12 | 6 | 6 |
| Inbound (p.m.) | 350 | 4% | 50:50 | 14 | 7 | 7 |
| Outbound (p.m.) | 285 | 4% | 50:50 | 11 | 6 | 5 |

**Table 3: Expected weekday morning and afternoon peak hour trip generation**

In terms of COTO TMH 16 Volume 1[4], *"A Traffic Impact Assessment shall be undertaken and submitted when an application is made for a change in land use and when the highest total additional hourly vehicular trip generation as a result of the application exceeds 50 trips per hour".*

## 7. TRIP ASSIGNMENT

The expected peak hour trip assignment is depicted in Figure 4 in the annexure.

## 8. BACKGROUND TRAFFIC GROWTH

The annual peak hour growth rates based on the available peak hour data of 2011, 2018 and 2020 are presented in Table 4.

| Year | Total (a.m. peak hour) | Total (p.m. peak hour) | Annual growth rate (%) | Annual growth rate (%) |
|---|---|---|---|---|
| 2011 | 1394 | 1363 | | |
| 2018 | 1507 | 1710 | 1.12 | 3.29 |
| 2020 | 1672* | 1845* | 2.07 | 3.42 |

*Adjusted peak hour traffic flow

**Table 4: Annual peak hour growth rates**

The morning annual peak hour growth rate is lower that the afternoon peak hour rate. A rate of 2% per annum will be applied during the morning peak hour and 3.3% during the afternoon peak hour.

## 9. CAPACITY ANALYSIS

The Vistro 2020 software package[5] was used to simulate the operating conditions of the two intersections in proximity of the site. The following design scenarios were adopted for the purposes of this investigation:

Scenario 1: 2020 - existing weekday a.m. and p.m. peak hour traffic demand (Figure 3).
Scenario 2: 2025 expected weekday **a.m. peak hour** traffic demand with **2%** per annum background traffic growth and expected traffic demand from the proposed development (Figure 5).
2025 expected weekday **p.m. peak hour** traffic demand with **3.3%** per annum background traffic growth and expected traffic demand from the proposed development (Figure 5).

The Peak hour factor (PHF) used in the capacity analyses is .0.95 and the queue lengths indicated are 50% values.

The operation of priority-controlled intersections is acceptable when the following conditions are met for each individual turning movement:

| Period | Maximum Volume/Capacity | Minimum Level of service (TRB 2004) |
|---|---|---|
| Normal 15-minute peak | 85% | D |

**Table 4: Performance measures priority-controlled intersections**

For signalised intersections the following will apply:

| Period | Maximum Volume/Capacity | |
|---|---|---|
| | Left-turn/through | Right-turn |
| Normal 15-minute peak | 90% | 95% |

**Table 5: Performance measures for signalised intersections**

Where these conditions cannot be met, the conditions are acceptable when the following parameters are met on each approach:

| Period | Maximum Volume/Capacity | | Minimum Level of service (TRB 2004 | |
|---|---|---|---|---|
| | LT & ST | RT | LT & ST | RT |
| Normal 15-minute peak | 95% | 100% | D | E |

L – Left-turn, T – Through, R – Right-turn

**Table 6: Performance measures for signalised intersections**

Copies of the Vistro Summary sheets are attached at the back of the report.

### 9.1 INTERSECTION: NELSON MANDELA BOULEVARD & VUYANI NCAMAZANA/MAIN STREET

#### 9.1.1 Scenario 1

This is currently a signalised intersection.

#### 9.1.1.1 Scenario 1 a.m.

| Name | Nelson Mandela | | | Nelson Mandela | | | Vuyani Ncamazana | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 34 | 774 | 126 | 137 | 679 | 16 | 22 | 26 | 47 | 100 | 42 | 179 |
| X, volume / capacity | 0,73 | | 0,29 | 0,38 | 0,38 | 0,05 | 0,19 | | | 0,62 | | |
| 50th-Percentile Queue Length [veh/ln] | 7,04 | | 1,20 | 2,38 | 2,50 | 0,18 | 1,02 | | | 4,35 | | |
| 50th-Percentile Queue Length [m/ln] | 53,63 | | 9,18 | 18,16 | 19,07 | 1,39 | 7,74 | | | 33,17 | | |
| d_M, Delay for Movement [s/veh] | 14,27 | 14,27 | 14,25 | 8,27 | 8,23 | 18,73 | 17,93 | 17,93 | 17,93 | 25,88 | 25,88 | 25,88 |
| Movement LOS | B | B | B | A | A | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 14,27 | | | 8,43 | | | 17,93 | | | 25,88 | | |
| Approach LOS | B | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 13,91 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0,618 | | | | | | | | | | | |

#### 9.1.1.2 Scenario 1 p.m.

| Name | Nelson Mandela | | | Nelson Mandela | | | Vuyani Ncamazana | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 93 | 662 | 116 | 189 | 872 | 11 | 11 | 32 | 89 | 132 | 21 | 137 |
| X, volume / capacity | 0,69 | | 0,34 | 0,49 | 0,49 | 0,03 | 0,29 | | | 0,55 | | |
| 50th-Percentile Queue Length [veh/ln] | 6,25 | | 1,31 | 3,42 | 3,61 | 0,11 | 1,50 | | | 3,70 | | |
| 50th-Percentile Queue Length [m/ln] | 47,64 | | 9,99 | 26,07 | 27,53 | 0,87 | 11,43 | | | 28,21 | | |
| d_M, Delay for Movement [s/veh] | 13,21 | 13,21 | 17,91 | 9,57 | 9,51 | 17,20 | 19,52 | 19,52 | 19,52 | 23,80 | 23,80 | 23,80 |
| Movement LOS | B | B | B | A | A | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 13,83 | | | 9,59 | | | 19,52 | | | 23,80 | | |
| Approach LOS | B | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 13,45 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0,572 | | | | | | | | | | | |

Note:

The intersection and the individual movements on each approach to the intersection operate at acceptable levels of service during both peak hours.

#### 9.1.2 Scenario 2

The intersection layout will change as part of the upgrading of the N2 bridge and the in-bound approach will have an additional through lane.

#### 9.1.2.1 Scenario 2 a.m.

| Name | Nelson Mandela | | | Nelson Mandela | | | Vuyani Ncamazana | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 37 | 855 | 139 | 162 | 739 | 18 | 24 | 29 | 53 | 121 | 46 | 198 |
| X, volume / capacity | 0,40 | 0,40 | 0,35 | 0,42 | 0,42 | 0,04 | 0,22 | | | 0,71 | | |
| 50th-Percentile Queue Length [veh/ln] | 2,70 | 2,74 | 1,46 | 2,72 | 2,87 | 0,15 | 1,14 | | | 5,45 | | |
| 50th-Percentile Queue Length [m/ln] | 20,61 | 20,87 | 11,09 | 20,70 | 21,86 | 1,11 | 8,69 | | | 41,50 | | |
| d_M, Delay for Movement [s/veh] | 8,48 | 8,47 | 16,24 | 8,69 | 8,64 | 11,14 | 18,23 | 18,23 | 18,23 | 30,02 | 30,02 | 30,02 |
| Movement LOS | A | A | B | A | A | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 9,52 | | | 8,70 | | | 18,23 | | | 30,02 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 12,68 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0,472 | | | | | | | | | | | |

#### 9.1.2.2 Scenario 2 p.m.

| Name | Nelson Mandela | | | Nelson Mandela | | | Vuyani Ncamazana | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 108 | 775 | 136 | 235 | 1007 | 13 | 13 | 37 | 105 | 166 | 24 | 160 |
| X, volume / capacity | 0,41 | 0,41 | 0,47 | 0,58 | 0,58 | 0,03 | 0,37 | | | 0,67 | | |
| 50th-Percentile Queue Length [veh/ln] | 2,65 | 2,76 | 1,94 | 4,37 | 4,60 | 0,10 | 1,85 | | | 4,95 | | |
| 50th-Percentile Queue Length [m/ln] | 20,22 | 21,00 | 14,78 | 33,31 | 35,06 | 0,78 | 14,11 | | | 37,74 | | |
| d_M, Delay for Movement [s/veh] | 8,53 | 8,50 | 24,87 | 10,87 | 10,75 | 11,01 | 20,83 | 20,83 | 20,83 | 27,74 | 27,74 | 27,74 |
| Movement LOS | A | A | C | B | B | B | C | C | C | C | C | C |
| d_A, Approach Delay [s/veh] | 10,69 | | | 10,78 | | | 20,83 | | | 27,74 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 13,44 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0,545 | | | | | | | | | | | |

Note:

The intersection and the individual movements on each approach to the intersection continue to operate at acceptable levels of service during both peak hours.

### 9.2 INTERSECTION: MAIN STREET & GOLF STREET

#### 9.2.1 Scenario 1

This is currently a two-way stop.

#### 9.2.1.1 Scenario 1 a.m.

| Name | Golf | | | Golf | | | Main | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 152 | 0 | 26 | 1 | 0 | 4 | 1 | 167 | 160 | 2 | 165 | 0 |
| V/C, Movement V/C Ratio | 0,16 | 0,00 | 0,07 | 0,00 | 0,00 | 0,01 | 0,00 | 0,00 | 0,11 | 0,00 | 0,00 | 0,00 |
| d_M, Delay for Movement [s/veh] | 10,54 | 16,61 | 16,40 | 9,25 | 15,32 | 18,39 | 0,00 | 0,00 | 7,84 | 0,00 | 0,00 | 7,54 |
| Movement LOS | B | C | C | A | C | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0,90 | 0,90 | 0,90 | 0,05 | 0,05 | 0,05 | 0,36 | 0,36 | 0,36 | 0,00 | 0,00 | 0,00 |
| 95th-Percentile Queue Length [m/ln] | 6,85 | 6,85 | 6,85 | 0,37 | 0,37 | 0,37 | 2,74 | 2,74 | 2,74 | 0,00 | 0,00 | 0,00 |
| d_A, Approach Delay [s/veh] | 11,40 | | | 16,56 | | | 3,82 | | | 0,00 | | |
| Approach LOS | B | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4,96 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

#### 9.2.1.2 Scenario 1 p.m.

| Name | Golf | | | Golf | | | Main | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 148 | 1 | 13 | 1 | 1 | 6 | 3 | 225 | 134 | 12 | 145 | 0 |
| V/C, Movement V/C Ratio | 0,16 | 0,00 | 0,03 | 0,00 | 0,00 | 0,02 | 0,00 | 0,00 | 0,09 | 0,00 | 0,00 | 0,00 |
| d_M, Delay for Movement [s/veh] | 10,04 | 15,90 | 15,74 | 9,66 | 15,19 | 18,06 | 0,00 | 0,00 | 7,76 | 0,00 | 0,00 | 7,66 |
| Movement LOS | B | C | C | A | C | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0,71 | 0,71 | 0,71 | 0,08 | 0,08 | 0,08 | 0,29 | 0,29 | 0,29 | 0,00 | 0,00 | 0,00 |
| 95th-Percentile Queue Length [m/ln] | 5,39 | 5,39 | 5,39 | 0,59 | 0,59 | 0,59 | 2,22 | 2,22 | 2,22 | 0,00 | 0,00 | 0,00 |
| d_A, Approach Delay [s/veh] | 10,52 | | | 16,65 | | | 2,86 | | | 0,00 | | |
| Approach LOS | B | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4,18 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

Note:

The intersection and the individual movements on each approach to the intersection operate at acceptable levels of service during both peak hours.

### 9.2.2 Scenario 2

The intersection layout remains the same.

#### 9.2.2.1 Scenario 2 a.m.

| Name | Golf | | | Golf | | | Main | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 184 | 0 | 36 | 1 | 0 | 4 | 1 | 179 | 177 | 2 | 182 | 0 |
| V/C, Movement V/C Ratio | 0,20 | 0,00 | 0,10 | 0,00 | 0,00 | 0,02 | 0,00 | 0,00 | 0,12 | 0,00 | 0,00 | 0,00 |
| d_M, Delay for Movement [s/veh] | 11,45 | 18,44 | 18,31 | 9,38 | 16,40 | 21,00 | 0,00 | 0,00 | 7,92 | 0,00 | 0,00 | 7,56 |
| Movement LOS | B | C | C | A | C | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 1,31 | 1,31 | 1,31 | 0,06 | 0,06 | 0,06 | 0,41 | 0,41 | 0,41 | 0,00 | 0,00 | 0,00 |
| 95th-Percentile Queue Length [m/ln] | 9,99 | 9,99 | 9,99 | 0,43 | 0,43 | 0,43 | 3,11 | 3,11 | 3,11 | 0,00 | 0,00 | 0,00 |
| d_A, Approach Delay [s/veh] | 12,56 | | | 18,68 | | | 3,92 | | | 0,00 | | |
| Approach LOS | B | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 5,56 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

#### 9.2.2.2 Scenario 2 p.m.

| Name | Golf | | | Golf | | | Main | | | Main | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Total Analysis Volume [veh/h] | 192 | 1 | 22 | 1 | 1 | 7 | 4 | 257 | 157 | 14 | 171 | 0 |
| V/C, Movement V/C Ratio | 0,21 | 0,00 | 0,07 | 0,00 | 0,00 | 0,03 | 0,00 | 0,00 | 0,11 | 0,00 | 0,00 | 0,00 |
| d_M, Delay for Movement [s/veh] | 11,00 | 18,41 | 18,40 | 10,11 | 17,16 | 22,27 | 0,00 | 0,00 | 7,87 | 0,00 | 0,00 | 7,73 |
| Movement LOS | B | C | C | B | C | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 1,15 | 1,15 | 1,15 | 0,12 | 0,12 | 0,12 | 0,36 | 0,36 | 0,36 | 0,00 | 0,00 | 0,00 |
| 95th-Percentile Queue Length [m/ln] | 8,77 | 8,77 | 8,77 | 0,88 | 0,88 | 0,88 | 2,72 | 2,72 | 2,72 | 0,00 | 0,00 | 0,00 |
| d_A, Approach Delay [s/veh] | 11,80 | | | 20,35 | | | 2,96 | | | 0,00 | | |
| Approach LOS | B | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4,79 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

Note:

The intersection and the individual movements on each approach to the intersection continue to operate at acceptable levels of service during both peak hours.

## 10. PUBLIC TRANSPORT

The public transport facilities along Main Street remain unchanged. The access design indicates a yellow block to clear the bus-stop and entrance to the filling station.

## 11. ROAD UPGRADES

The swept path for the fuel filler truck (WB20), depicted in Figure 6 shows that the turning radius at the intersection of Main Street and Golf Street needs widening. The swept path is also indicated for the truck entering from Golf Street's side. The truck can enter the site and turn on site and exit on Golf Street's side.

The access on Golf Street also needs widening as depicted in Figure 6.

The swept path for the fuel filler truck, semi-trailer the most used truck (19m long) is depicted in Figure 7. The swept path is also indicated for the truck entering from Golf Street. The truck can enter the site and turn on site and exit on Golf Street.

The swept path for the fuel filler truck, single unit truck and trailer (19m long) is depicted in Figure 8. The truck can be accommodated entering from Main Road and exiting via Golf Street. The swept path is also indicated when the truck needs to enter from Golf Street's side. The truck cannot turn around on-site and will have to exit via Main Road.

## 12. CONCLUSION AND RECOMMENDATION

This updated Traffic Impact Assessment was requested by the local municipality as part of the approval of the access designs for the proposed filling station on Erf 11221 George. The original Traffic Impact Study and accesses was approved by George Local Municipality in 2012. The proposed filling station is located on the corner of Nelson Mandela Boulevard and Main Street.

The access design used in this report was done by Element Consulting Engineers as depicted in Plan No P190254/C/100. The bus stops along Main Street did not exist at the time the original traffic impact study was conducted and are accommodated in the access design.

Access off Main Street is limited to entrance only, exit cannot be allowed and a full access is proposed off Golf Street.

The South African Trip Data Manual[2] does not consider a filling station as peak hour trip generator. The document also states that related uses such as a car wash and convenience shop are also not regarded as trip generators; the primary business is fuelling of motor vehicles.

The South African Trip Generation Rates (1995)[3] made recommendations for trip generation rates for filling stations; in urban areas a trip attraction rate of 4% with a 50:50 directional split. The filling station industry currently uses rates of between 2% and 4.5% depending on the approach.

The market study only used the outbound traffic flow along Nelson Mandela Boulevard and the traffic flow along Main Street for the feasibility study of the filling station. In line with this the same was done for trip generation purposes. An attraction rate of 3% was applied on the Nelson Mandela Boulevard outbound approach resulting in the expected number of peak hour trips for the filling station as depicted in Table 3.

| Peak hour | Peak hour Traffic volume | Attraction rate | Directional split (in/out) | Total number of peak hour trips | New trips in | New trips out |
|---|---|---|---|---|---|---|
| **Nelson Mandela Boulevard approach** | | | | | | |
| Weekday (a.m.) | 645 | 3% | 50:50 | 20 | 10 | 10 |
| Weekday (p.m.) | 828 | 3% | 50:50 | 24 | 12 | 12 |
| **Main Street approach** | | | | | | |
| Inbound (a.m.) | 312 | 4% | 50:50 | 12 | 6 | 6 |
| Outbound (a.m.) | 305 | 4% | 50:50 | 12 | 6 | 6 |
| Inbound (p.m.) | 350 | 4% | 50:50 | 14 | 7 | 7 |
| Outbound (p.m.) | 285 | 4% | 50:50 | 11 | 6 | 5 |

**Table 3: Expected weekday morning and afternoon peak hour trip generation**

In terms of COTO TMH 16 Volume 1[2], *"A Traffic Impact Assessment shall be undertaken and submitted when an application is made for a change in land use and when the highest total additional hourly vehicular trip generation as a result of the application exceeds 50 trips per hour".*

The results of the capacity analysis indicate that both the intersections analysed operate at acceptable levels of service during both peak hours and for both design scenarios. It must be noted that a traffic survey was conducted in 2018 and heavy congestion was observed on the outbound direction along Nelson Mandela Boulevard during the afternoon peak period. The same occurred during the afternoon peak hour in October 2020 as depicted in the photos below.

The filling station is supported from a traffic flow point of view. It is further recommended that:

12.1 Access to the filling station is obtained as depicted in Figure 6:

- Entrance only from Main Street
- Full access on Golf Street.

## 13. REFERENCES


(1) Vela VKE Consulting Engineers, Traffic Impact Study for Parkdene Filling Station, Erf 11221, George, March 2012.

(2) COTO, TMH 17, South African Trip Data Manual, Committee Draft 2.0, May 2018.

(3) COTO, South African Trip Data Manual Version 1, 1995.
(4) COTO, TMH 16, Volume 1, South African Traffic Impact and Site Traffic Assessment Manual, Committee Draft 2.0, May 2018.
(5) PTV Group, PTV Vistro 2020- 6, PTV AG. Haid-und-Neu-Str. 15, D-76131 Karlsruhe, Deutschland.

# ANNEXURE

G E O R G E

MUNISIPALITEIT Wes Kaap | UMASIPALA WASE Intshona - Koloni | MUNICIPALITY Western Cape

Posbus / P.O. Box 19 George 6530 Tel: 044 8019111 Fax: 044 8733776

*VERW/REF:* *Erf 11221, George*

*NAVRAE:* **RICUS FIVAZ**
*ENQUIRIES:*

*TEL:* **(044) 801 9380**

26 November 2012

Mr H. Maart
Vela VKE Consulting Engineers
P.O. Box 10633
GEORGE
6530

Dear Sir

**TRAFFIC IMPACT STUDY FOR FILLING STATION DEVELOPMENT ON ERF 11221, GEORGE**

1. With reference to your letter dated 29 August 2012 and the letter from WCG dated 6 July 2012;

2. George Municipality accepts the recommendations of your report VKE11/54.01.Rev00.

3. George Municipality will shortly apply to the WCG to deproclaim Main Street (Minor Road 6886).

We trust the above information to be sufficient. Please do not hesitate to contact us if any additional information is required.

Yours faithfully,

JM Fivaz

HAROLD BASSON
**SENIOR MANAGER: CIVIL ENGINEERING SERVICES**

GENERAL NOTES:

1. This drawing is to be read in conjunction with all relevant architects, engineers drawings and the specifications.
2. All dimensions and levels to be checked on site prior to installation. Discrepencies to be referred to engineer.
3. All dimensions and levels to be checked on site before commencement of any work. Any discrepancies to be reported to engineer.
4. All dimensions and levels to be checked on site before commencement of any work. Any discrepancies to be reported to engineer.
5. Contractor shall verify all dimensions, and a workshop drawing shall be submitted to the engineer for approval.

NOTE: All building work and to comply with N.B.R, local municipal bylaws and SANS standards.

| AREAS: (m²) | | |
|---|---|---|
| ERF AREA | = | 4995 m² |
| BUILDING | = | 309.92 m² |
| CONOPY | = | 452.18 m² |
| TOTAL COVERED AREA | = | 762.10 m² |
| COVERAGE | = | 15 % |
| PARKING AREAS: | 32 BAYS + 1 DISABLED BAY | |

N
W E
S

COORDINATE SYSTEM
WGS 84/21

| Rev. | Date | Description | Rev. by |
|---|---|---|---|
| A | 30/6/2020 | FOR DISCUSSION PURPOSES | HLG |


ELEMENT Consulting Engineers
A FIFTH DIMENSION TO ENGINEERING

82 Victoria Street,
George, 6530

P O Box 9962,
George, 6529

Tel: +27 44 884 1138
Fax: +27 44 884 1185
E-Mail: info@eceng.co.za


Client/Employer

MR ARTHUR CRONK

P.O. Box 701, CRESTA, 2118
Cell : 083-6290520
Email: arthurcronk@gmail.com

Project

SANDKRAAL FILLING STATION

Plan Description

DESIGN VEHICLE MANEUVERS
OPTION 5

| | Name | Signature |
|---|---|---|
| Designed | HLG | |
| Drawn | HLG | |
| Checked | HL | |
| Approved | HL | |
| Pr. No. | | |

Scale 1:250

ORIGINAL SIZE A1

Contract No. P190254

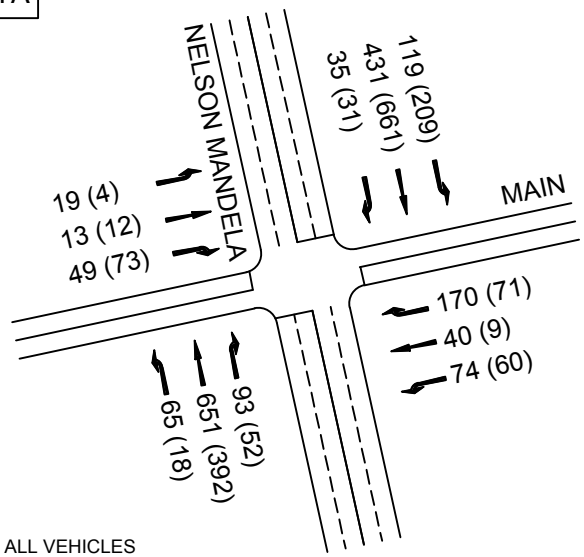
Drawing No. P190254/C/100

Revision A



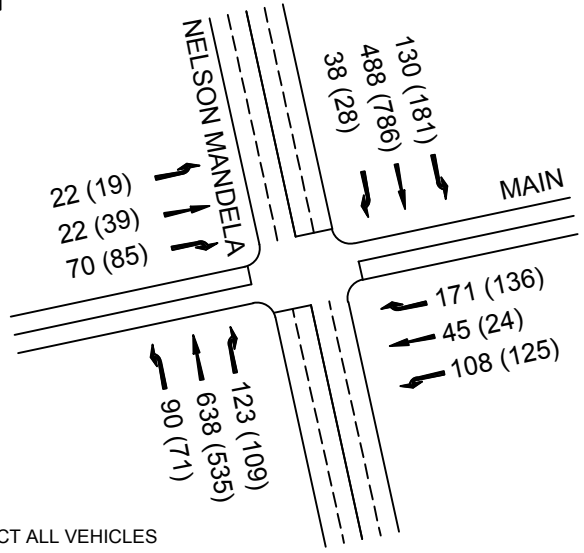
P:\Marketing And Speculative Projects\2019\P190254 (GEO19911 - Sandkraal Filling Station\D - Drawings\08 - Working Drawings\Civil\P190254-C-Site Development Plan_Option 5 - 30June2020.dwg

## 2011 DATA



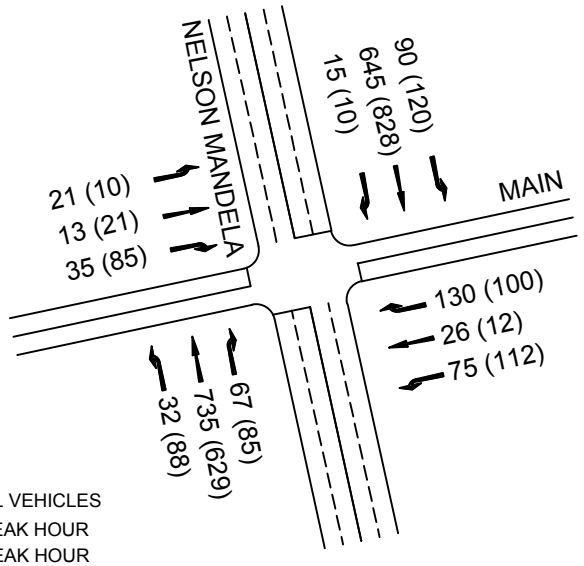

7 (10)
FIGURES DEPICT ALL VEHICLES
7 - WEEKDAY AM PEAK HOUR
(10) - WEEKDAY PM PEAK HOUR

## 2018 DATA



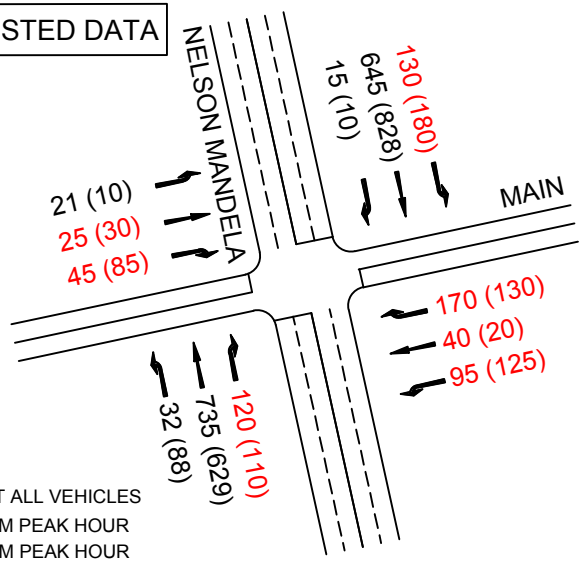

7 (10)
FIGURES DEPICT ALL VEHICLES
7 - WEEKDAY AM PEAK HOUR
(10) - WEEKDAY PM PEAK HOUR

## 2020 DATA




7 (10)
FIGURES DEPICT ALL VEHICLES
7 - WEEKDAY AM PEAK HOUR
(10) - WEEKDAY PM PEAK HOUR

## 2020 ADJUSTED DATA




7 (10)
FIGURES DEPICT ALL VEHICLES
7 - WEEKDAY AM PEAK HOUR
(10) - WEEKDAY PM PEAK HOUR

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CC HARDEWARE AND CYCLE (PTY) LTD

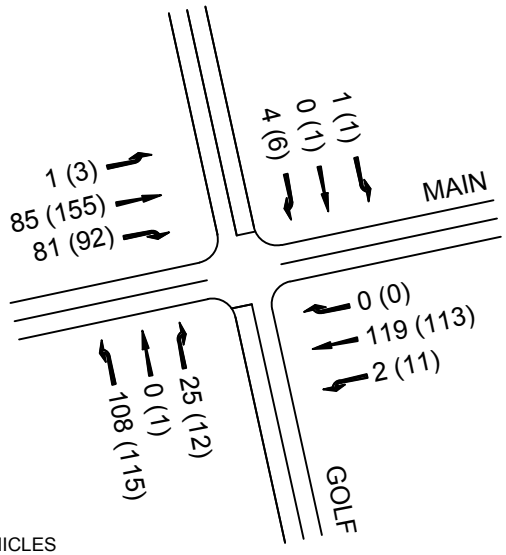
TRAFFIC IMPACT STUDY
SANDKRAAL FILLING STATION
ERF 11221 GEORGE

PEAK HOUR TURNING MOVEMENT COUNTS
INTERSECTION: MAIN STREET AND NELSON MANDELA BOULEVARD

SCALE: NA

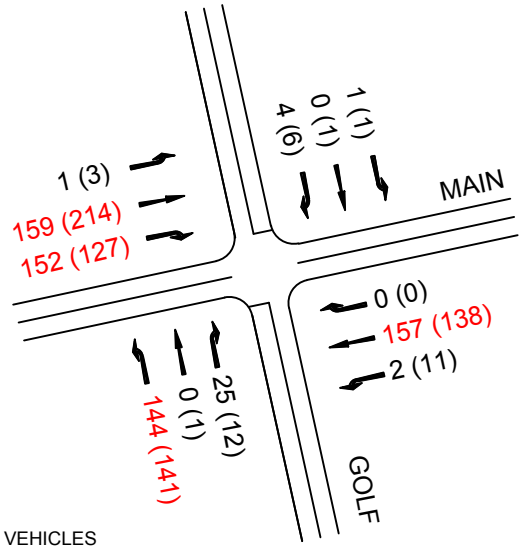
FIGURE: 1

## 2020 DATA




7 (10)
FIGURES DEPICT ALL VEHICLES
7 - WEEKDAY AM PEAK HOUR
(10) - WEEKDAY PM PEAK HOUR

## 2020 ADJUSTED DATA




7 (10)
FIGURES DEPICT ALL VEHICLES
7 - WEEKDAY AM PEAK HOUR
(10) - WEEKDAY PM PEAK HOUR

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TRAFFIC IMPACT STUDY
SANDKRAAL FILLING STATION
ERF 11221 GEORGE

PEAK HOUR TURNING MOVEMENT COUNTS
INTERSECTION: MAIN AND GOLF STREETS

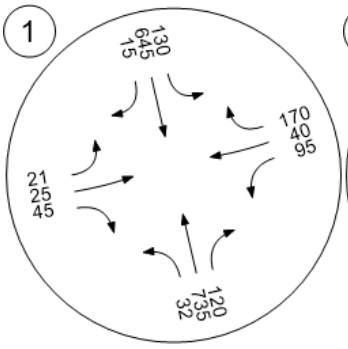
SCALE: NA

FIGURE: 2

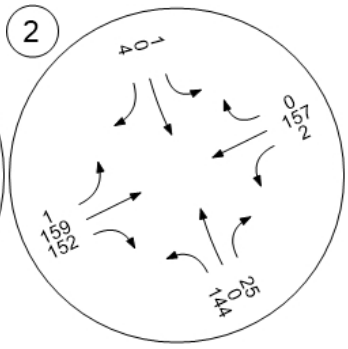
Existing Weekday Peak Hour Traffic Demand - Scenario 1


**Scenario 1 - A.m.**

Nelson Mandela Blv & Vuyani Ncamazana/Main St

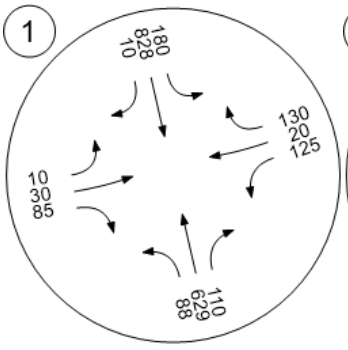



Main St & Golf St

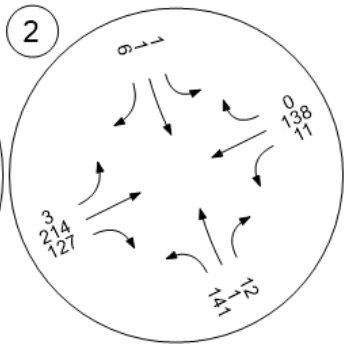



**Scenario 1 - P.m.**

Nelson Mandela Blv & Vuyani Ncamazana/Main St

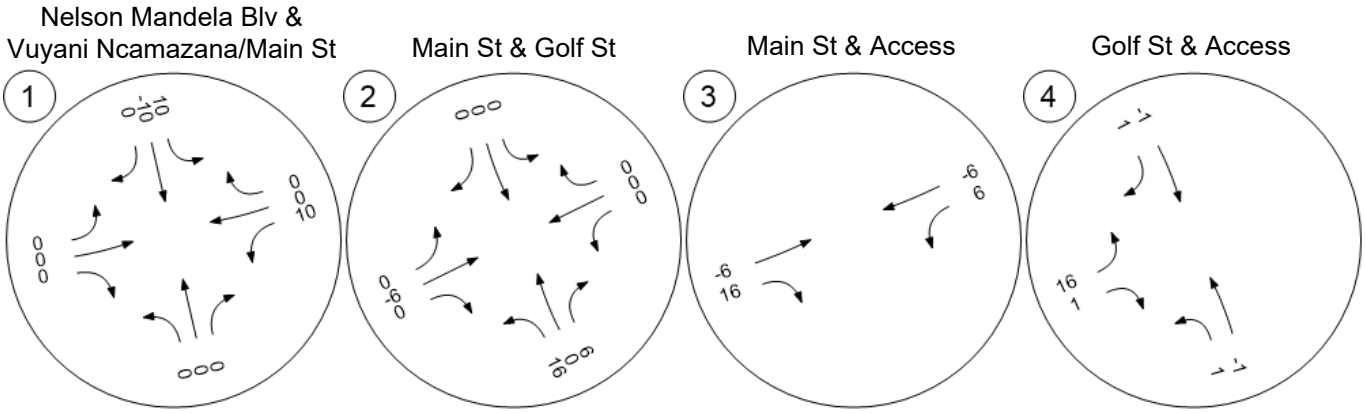



Main St & Golf St

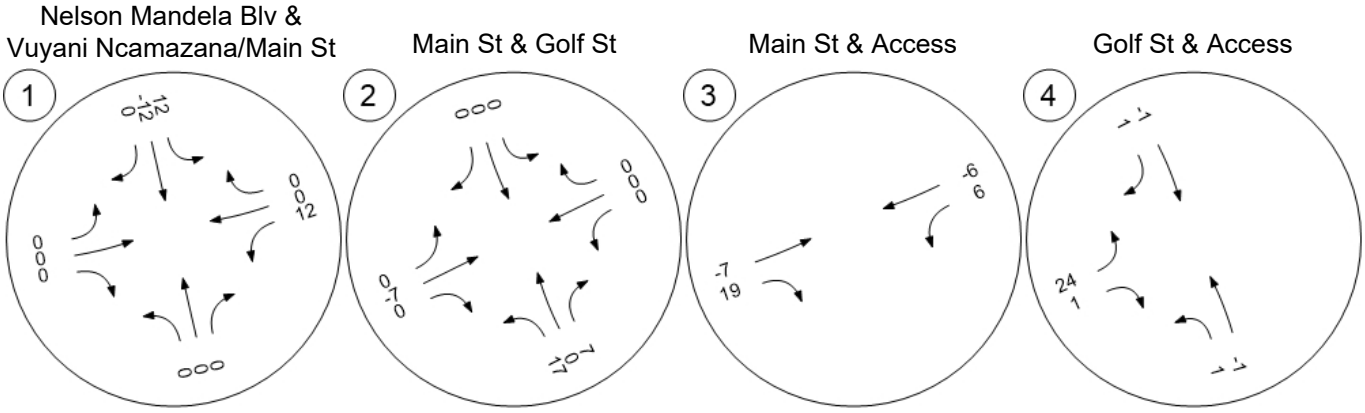


Expected Weekday Peak Hour Trip Assignment


**Trip Assignment - A.m.**



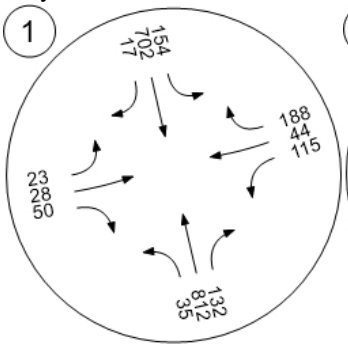

**Trip Assignment - P.m.**



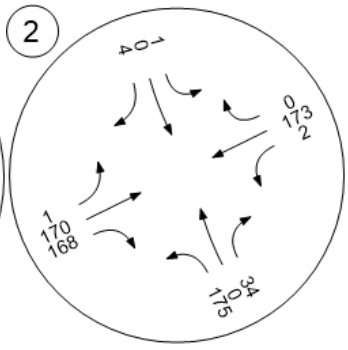
Expected Weekday Peak Hour Traffic Demand - Scenario 2


**Scenario 2 - A.m.**

Nelson Mandela Blv & Vuyani Ncamazana/Main St

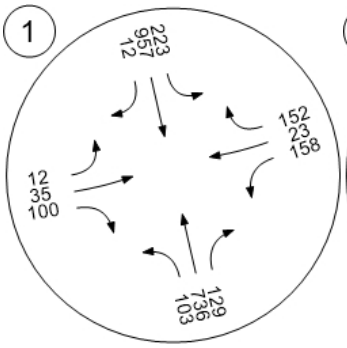



Main St & Golf St

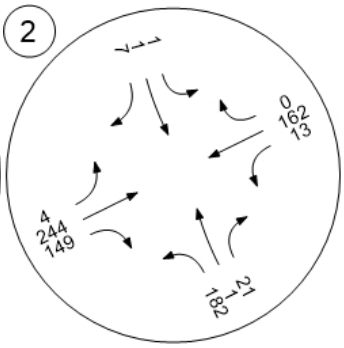


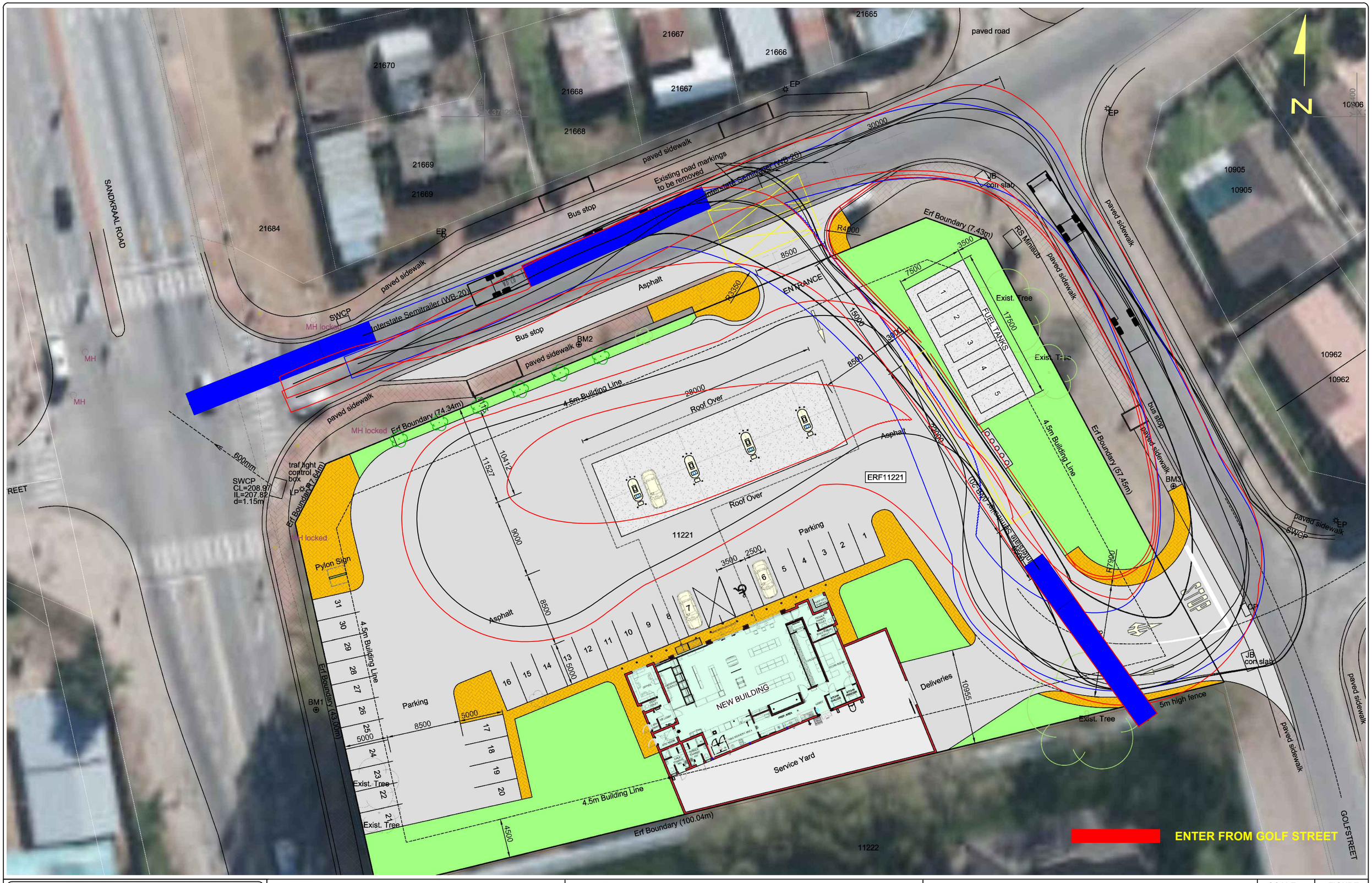

**Scenario 2 - P.m.**

Nelson Mandela Blv & Vuyani Ncamazana/Main St

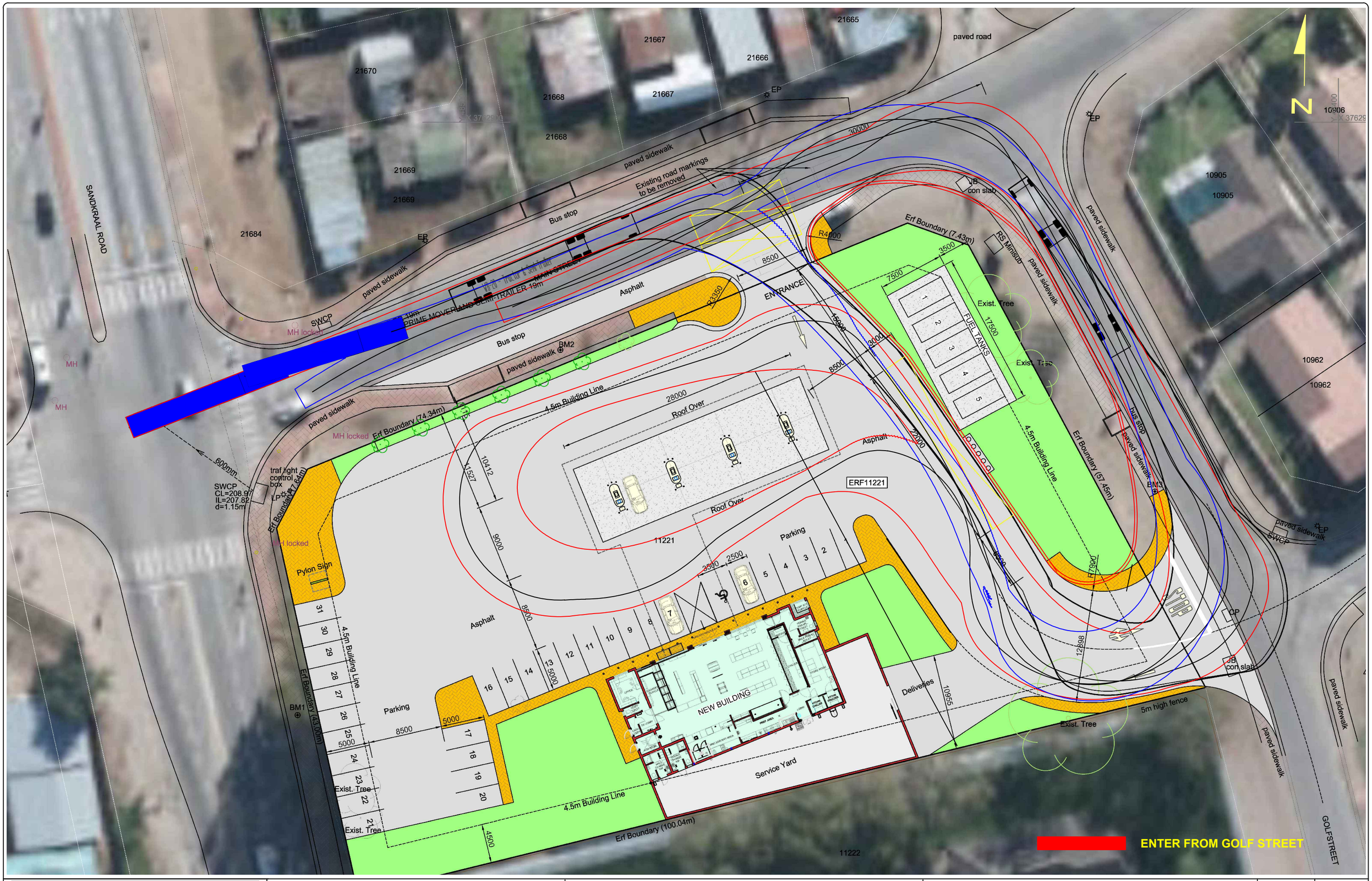



Main St & Golf St






| | | | | |
|---|---|---|---|---|
| CORLI HAVENGA TRANSPORTATION ENGINEERS<br>PO BOX 133<br>SERENGETI ESTATES<br>1642<br>TEL: (011) 552 7271<br>CELL: 083 458 0066<br>EMAIL: chavenga@serengeti.co.za | **CLIENT:**<br>CC HARDWARE AND CYCLE (PTY) LTD | **PROJECT:**<br>UPDATED TRAFFIC IMPACT ASSESSMENT<br>SANDKRAAL FILLING STATION<br>ERF 11221 GEORGE | **TITLE:**<br>CONCEPTUAL ACCESS LAYOUT<br>(SWEPT PATH SEMI-TRAILER WB20) | **SCALE**<br>NA<br>**FIGURE**<br>6 |

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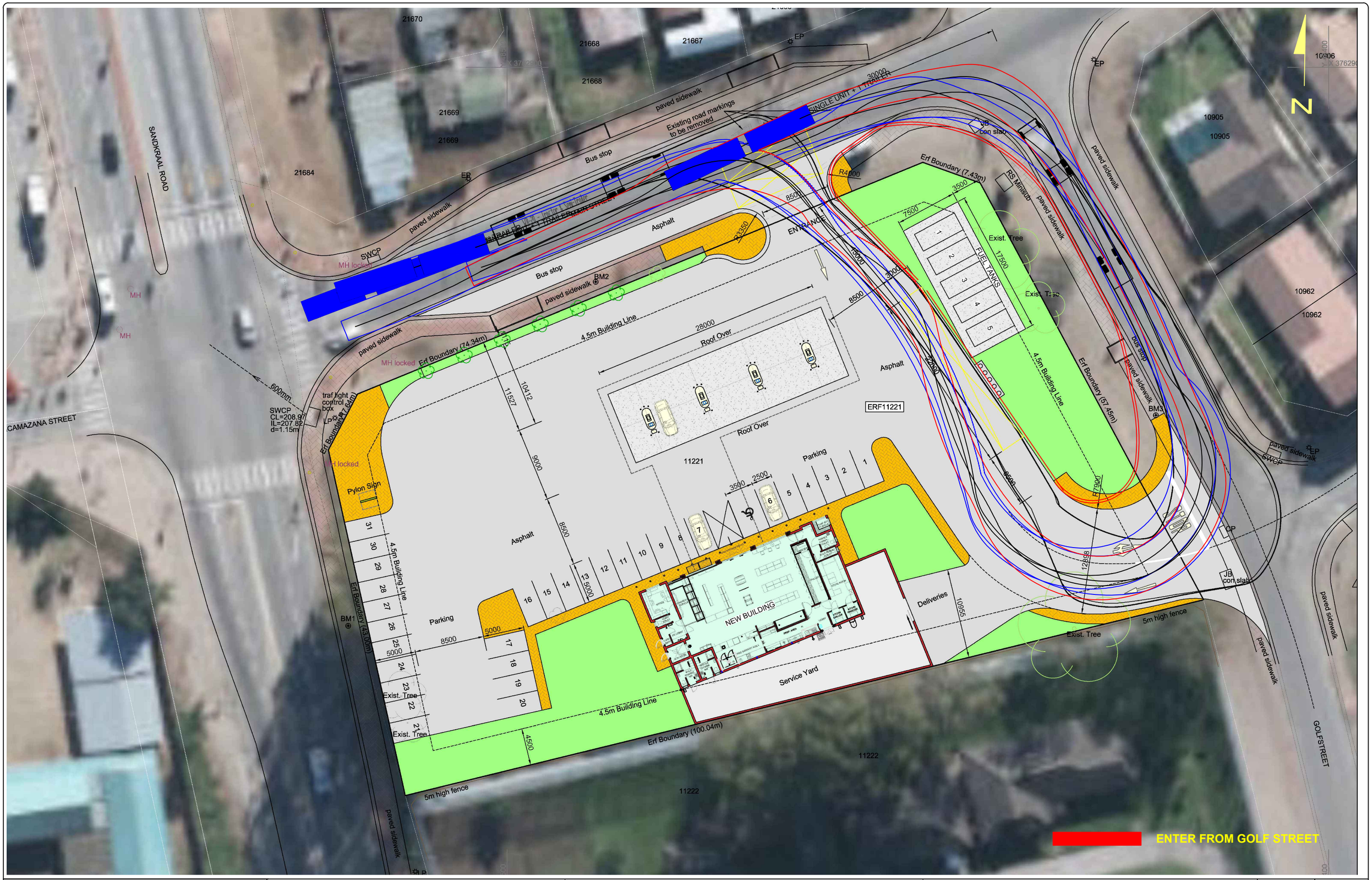
|---|---|---|---|---|
| CORLI HAVENGA TRANSPORTATION ENGINEERS<br>PO BOX 133<br>SERENGETI ESTATES<br>1642<br>TEL: (011) 552 7271<br>CELL: 083 458 0066<br>EMAIL: chavenga@serengeti.co.za | CLIENT:<br>CC HARDWARE AND CYCLE (PTY) LTD | PROJECT:<br>UPDATED TRAFFIC IMPACT ASSESSMENT<br>SANDKRAAL FILLING STATION<br>ERF 11221 GEORGE | TITLE:<br>CONCEPTUAL ACCESS LAYOUT<br>(SWEPT PATH SEMI-TRAILER 19M) | SCALE: NA<br>FIGURE: 7 |

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|---|---|---|---|---|
| CORLI HAVENGA TRANSPORTATION ENGINEERS<br>PO BOX 133<br>SERENGETI ESTATES<br>1642<br>TEL: (011) 552 7271<br>CELL: 083 458 0066<br>EMAIL: chavenga@serengeti.co.za | **CLIENT:**<br>CC HARDWARE AND CYCLE (PTY) LTD | **PROJECT:**<br>UPDATED TRAFFIC IMPACT ASSESSMENT<br>SANDKRAAL FILLING STATION<br>ERF 11221 GEORGE | **TITLE:**<br>CONCEPTUAL ACCESS LAYOUT<br>(SWEPT PATH SU +TRAILER 19M) | **SCALE**<br>NA<br>**FIGURE**<br>8 |

L Daniels
Acting Director: Civil Engineering Services
E-mail: rwesso@george.gov.za
Tel: +27 (0)44 801 9278

**Reference number:** **Erf 11221, George**
**Date:** **29/06/2021**

**Enquiries:** **Ricus Fivaz**
**Tel:** **044 801 9350**

**CORLI HAVENGA TRANSPORTATION ENGINEER**
**PO BOX 133**
**Serengeti Estate**
**CAPE TOWN**
**8000**

**ATTENTION: MR. C Havenga**

**TRAFFIC IMPACT ASSESMENT: PROPOSED FILLING STATION DEVELOPMENT: ERF 11221, GEORGE**

Herewith confirmation of receipt and approval of the Traffic Impact Assessment, titled *"Updated Traffic Impact Assessment – Proposed Parkdene filling station erf 11221, George – 29 April 2021",* submitted for the proposed filling station on erf 11221, George.

In accordance with section 2.4.9 of COTO THM 16, the original TIA submitted and approved in 2012 exceeded the maximum five (5) years validity, and subsequently a new TIA was requested. The developer appointed yourself, Corli Havenga Transportation Engineer, to conduct the required TIA. (Attached as annexure "A")

With regard to the attached TIA, the following comments and recommendations:

1. **Property Access**
   With reference to S4 Plan no P190254/C/100 indicates 2 main access. (One access off Golf Street and a second access off Main Street). No direct access onto Nelson Mandela Boulevard (NMB) will be permitted.

2. **Trip Generation**
   With reference to S 5 – S9: due to the state of emergency and the Regulations issued in terms of the Disaster Management Act a normal traffic count could not be conducted to produce credible traffic counts, and pre-Covid traffic counts were projected based on sound engineering principles as outlined in the TIA, and with reference to the 2016 Access Management Guidelines.

3. **Public Transportation**
   Since the lapsed TIA approved in March 2012 and the new TIA submitted in April 2021 the George Municipality introduced an integrated public transport service, namely the Go-George public bus transport service. Phases 1,2,3, & 4B have been implemented and it is anticipated that phase 4A will commence in 2022. For the

functionality of phase 4B several transfer locations were identified. The bus stops bordering on erf 11221, George, form part of the NMB/Main/ Ncamazana intersection, is seen as a significant transfer location. As previously highlighted and discussed with the consultant, the developer is to take note of the bus services service and the effect of standing buses within the allocated bus stops that may have an impact on the proposed Main Street access. To this effect, Element Consulting was requested to updated Plan no P190254/C/100, to show the position of the existing bus stop bays and submit the updated plan as part of the TIA. The TIA however did not elaborate on the public transport service in detail which is seen as a shorting coming in the TIA report submitted.

**4. Pedestrian activity/ Universal Accessible**

With the introduction of a public bus transport system it is predicted that there will be significant increase of pedestrian movement (some 1300 persons/hr) through this area. Sufficient Universally Accessible (UA) sidewalks will have to be provided. The TIA did not elaborate on this aspect which this is seen as a shorting coming in the report submitted.

**5. Parking**

Sufficient parking, in terms of The George Integrated Zoning scheme 2017 (GIZS 2017), must be provided on site.

**6. Geometric design**

The TIA does not refer to the geometric design, and this aspect must be addressed with the submission of a dimensioned site development plan as part of the Building Plan approval process.

**7. Safety and security**

As a general comment the developer is to note that similar developments within NMB have needed to incorporate adequate preventive and control measures to address safety and security issues.

**8. Conclusion**

The TIA is herewith approved subject to the following:

I. Property access is restricted to two accesses only - access in Golf Street and Main Street.

II. Trip generation is accepted as it is based on sound engineering principles;

III. The developer is to note potential access delays due to the operations of the Public Transport system, and the necessary use of Main/Golf Streets intersection as an alternate access;

IV. The location of the existing Public Transport bus stops must be indicated on Plan no P190254/C/100;

V. The geometric design of the accesses must be submitted for approval, as part of the Building plan approval process;

VI. All plans submitted must address Universal Accessibility;

VII. The Developer is to note the safety and security concerns;

Yours faithfully

**L Daniels**
**Acting Director: Civil Engineering Services**

**Attachments**
Attachment “A” - Updated Traffic Impact Assessment – Proposed Parkdene filling station Erf 11221, George – 29 April 2021

CORLI HAVENGA
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14 September 2022

For attention: Louise-Mari van Zyl

**UPDATED TRAFFIC IMPACT ASSESSMENT**
**PROPOSED PARKDENE FILLING STATION ON ERF 11221 GEORGE**

The original Traffic Impact Study was conducted by Vela VKE Consulting Engineer in March 2012 and approved by George Local Municipality, letter dated 12 December 2012. A new Go-George bus stop was subsequently constructed along Main Street next to the proposed filling station affecting the access to the filling station.

The access design was amended by Element Consulting Engineers as depicted in Plan No P190254/C/100. The bus stops along Main Street are accommodated in the access design of the filling station. Access off Main Street is limited to entrance only, exit cannot be allowed. The full access is located along Golf Street.

The Updated Traffic Impact Assessment for the proposed filling station on Erf 11221 George was requested by George Local Municipality and conducted by Corli Havenga Transportation Engineers, report dated 29 April 2021. The access layout of Element Consulting Engineers, as depicted in Plan No P190254/C/100, was used for the Traffic Impact Study. The report was approved by George Local Municipality, letter dated 29 June 2021.

In terms of COTO, TMH 16, Volume 1, South African Traffic Impact and Site Traffic Assessment Manual, Committee Draft 2.0, May 2018, the approval is valid for a period of five years.

Two concerns were raised about the comments from the George Local Municipality and will be addressed as follows:

**Point 3:**

> *"The TIA however did not elaborate on the public transport service in detail which is seen as a short~~ing~~ coming in the TIA report submitted."*
>
> From an access design point of view the access was designed and agreed with the George Local Municipality prior to Corli Havenga Transportation Engineers conducting the Traffic Impact Study. The bus stops along Main Street in proximity of the site are depicted in the photo below.

**Existing bus-stops next to site (along Main Road)**

The bus stop right next to the site is depicted in the photo below.

**Existing bus-stop next to site (along Main Road)**

The access design of the filling station was amended from a full access as originally proposed and approved in 2012 to an entrance only to accommodate the Go-George bus stop. The additional turning lane proposed at the access on Main Street was also omitted in the new design. Two accesses were proposed in the new design:

- Entrance off Main Street; and
- Full access off Golf Street

The Traffic impact Study therefore made no allowance for customers to make use of the entrance of Main Street and all the trips were assigned to the full access of Golf Street. The Go-George bus service and operations are therefore not affected by trips through the existing bus stop along Main Street.

To accommodate the swept-path of the design trucks the full access along Golf Street must be widened and the tuning radius at the intersection of Golf Street and Main Street must be increased as depicted in Figures 6, 7 and 8 of the Traffic Impact Study. The standard design vehicle for a filling station is the 19m Semi-truck and trailer (19m long), with the increased width and turning radius this truck can also enter and exit along Golf Street. This has no impact on the Go-George bus stop or operations.

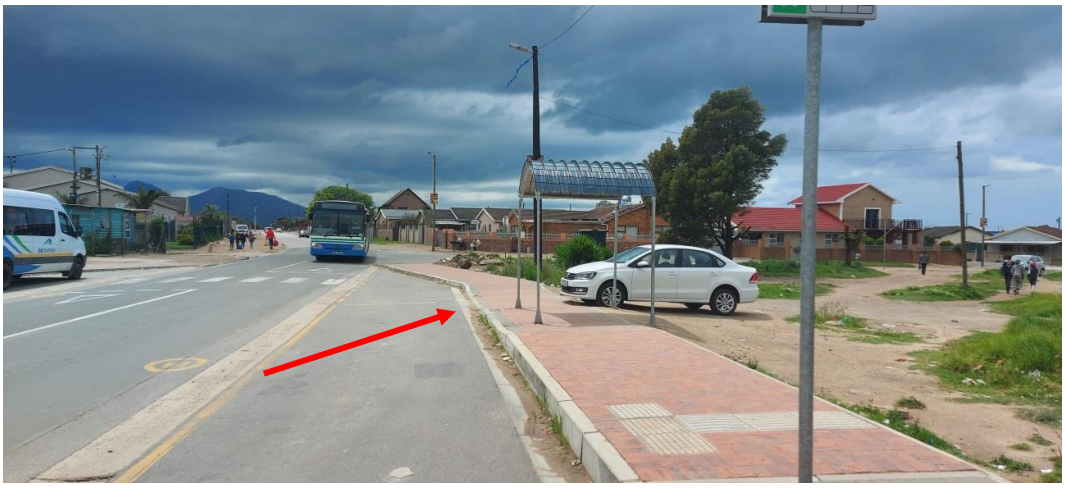
Go-George busses standing in the bus stop will not affect access to the filling station, if this do occur the main access on Golf Street can be used.

**Point 4:**

*"With the introduction of a public bus transport system it is predicted that there will be significant increase of pedestrian movement (some 1300 persons/hr) through this area. Sufficient Universal Accessible (UA) sidewalks will have to be provided. The TIA did not elaborate on this aspect which this is seen as a short~~ing~~ coming in the report submitted."*

There are existing sidewalks along both sides of Main Street and Golf Street as well as a pedestrian crossing on Main Street as depicted in the photos below.

**Existing sidewalks along Golf Street**



**Existing sidewalk along Main Street**

The access design of Element Consulting Engineers indicates how the sidewalks from the access of the filling station are linked to the existing sidewalks along Main Street and Golf Street. Figure 6 in the Traffic Impact Study indicates the road widenings but did not clearly indicate the sidewalks, the sidewalks are now clearly indicated in the attached Figure 6.

The kerbing of the bus stop (indicated with red arrow above) is already lowered in the position where the entrance to the filling station is proposed along Main Street.

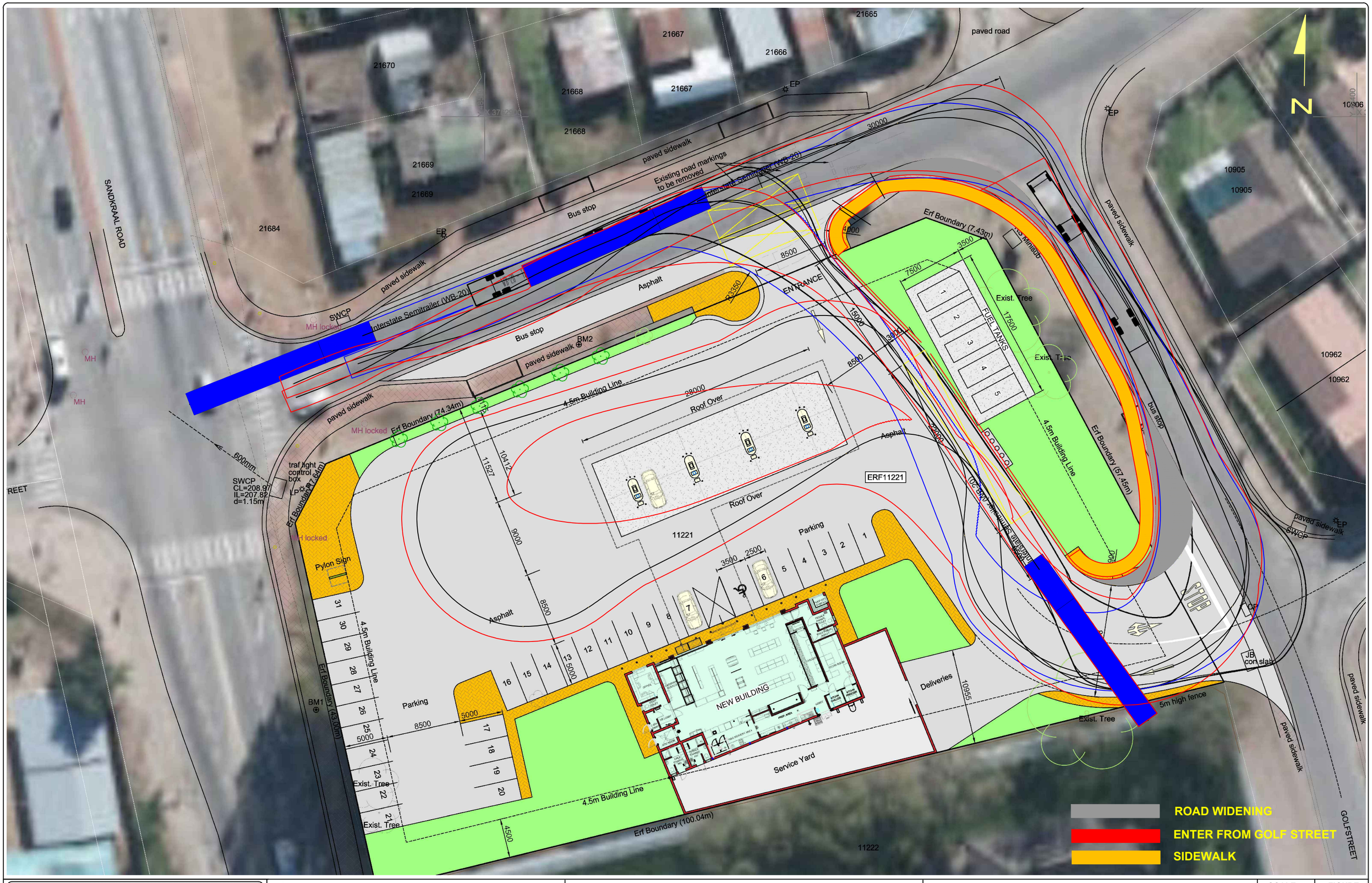
**Additional query:**

*What will the impact of the upgrading of Nelson Mandela Drive to four lanes from the Main Street intersection towards the N2 as well as the bridge upgrade on the N2 be on the Nelson Mandela Drive/Main Street intersection?*

This was discussed with the George Local Municipality when the updated Traffic impact Study was done and the upgrade was incorporated in Design Scenario 2 for the Nelson Mandela Drive/Main Street intersection.

We trust that this will address the concerns raised.

Cobus Havenga Pr. Eng.

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23 November 2022

For attention: Sian Holderl

**UPDATED TRAFFIC IMPACT ASSESSMENT**
**PROPOSED PARKDENE FILLING STATION ON ERF 11221 GEORGE**

The original Traffic Impact Study was conducted by Vela VKE Consulting Engineer in March 2012 and approved by George Local Municipality; letter dated 12 December 2012.

The filling station's access comprises of two full accesses, one on Main Road and the other on Golf Street. Both these were analysed in the report and recommendations for upgrades were made which included the following:

- A turning lane with a 12m storage length to be constructed on Main Street;
- A stop line and sign should be placed at the access junction with Main and Golf Street; and
- An additional phase should be implemented within the Sandkraal Road/Main Street signalised intersection, to prevent the future right turning saturation problem.

The development however did not proceed to the implementation stage till early 2019 when the applicant appointed Element Consulting Engineers for the implementation. The Updated Traffic Impact Assessment for the proposed filling station on Erf 11221 George was requested by George Local Municipality due to changes that occurred along Main Street and the report was older than five years. Corli Havenga Transportation Engineers subsequently conducted the study, report dated 29 April 2021. The access layout of Element Consulting Engineers, as depicted in Plan No P190254/C/100, was used for the Traffic Impact Study. The report was approved by George Local Municipality, letter dated 29 June 2021.

The Report compiled by Corli Havenga Transportation Engineers recommended two accesses for the filling station:

- Entrance only from Main Street; and
- Full access on Golf Street.

In comparing the recommendations of the report compiled in 2012 and the report done in 2021 the differences are as follows:

The Go-George bus service with its infrastructure was constructed along Main Street next to the proposed filling station affecting the access to the filling station. The bus stops and sidewalks are depicted in the photos below.

**Existing bus-stops next to site (along Main Road)**

As result of the Go-George facilities in the road reserve the road reserve width became inadequate to accommodate an additional turning lane. The access as proposed in the 2012 report needs to move closer to the intersection with Golf Street and is now located only ±22m from Golf Street. Corli Havenga Transportation Engineers was not involved in the design of the access and had discussions with Council Engineers when the study was done, the access spacing, Go-George facilities and road reserve width was contributing factors to omit the right-turn lane.

The intersection of Main Street and Golf Street was not analysed in the 2012 report but included in the 2021 report. This is a 4-way intersection with significantly more turning movement than the filling station access which is limited to an entrance only, the 95-percentile queue length on Main Street on both approaches to the intersection is ±3.2m, not even the equivalent of one car length.

**The upgrade proposed to the traffic signal (Intersection Sandkraal Road & Main Street) in the 2012 report:**

The upgrade of Sandkraal Road to a dual-carriage-way road from Main Street to the N2 was taken into account in the 2021 report. The additional through-lane on Sandkraal Road through the intersection resulted in the signal upgrade no longer required.

There were geometric issues with the access on Golf Street and the intersection with Main Street to accommodate the swept path for the fuel delivery trucks. Upgrades were proposed and incorporated in the site plan, none of these were required in the 2012 report. The stop-line at the access junction on Golf Street is still part of the access, but not required at the entrance on Main Street.

We trust that this will clarify the differences between the recommendations of the two studies.

Yours faithfully

*Cobus Havenga* Pr. Eng.