

TRAFFIC IMPACT STATEMENT

June 2019

Erf 164232, Muizenberg

**Prepared For:
Astron Energy**

EFG Engineers (Pty) Ltd

Transport, Infrastructure, Municipal Services & Development

Reg. No. 2005/024246/07

3A Queen Street, Durbanville 7550

P O Box 3800, Durbanville 7551

Tel: 021-975 3880

Fax: 021-975 3850

e-mail: info@efgeng.co.za

web: www.efgeng.co.za



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Prepared For:	Astron Energy (c/o Sillito Environmental Consulting)		
Client Representative:	Adrian Sillito		
Email:	adrian@environmentalconsultants.co.za		
Tel:	021 712 5060		
Cell:	082 726 0757		
EFG Project Director:	David Faure		
EFG Project Manager:	David Faure		
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1. INTRODUCTION

The location of Erf 164232, Muizenberg is shown in **Figure 1**. It is proposed that the site be rezoned from Residential to General Business to permit the establishment of a service station.

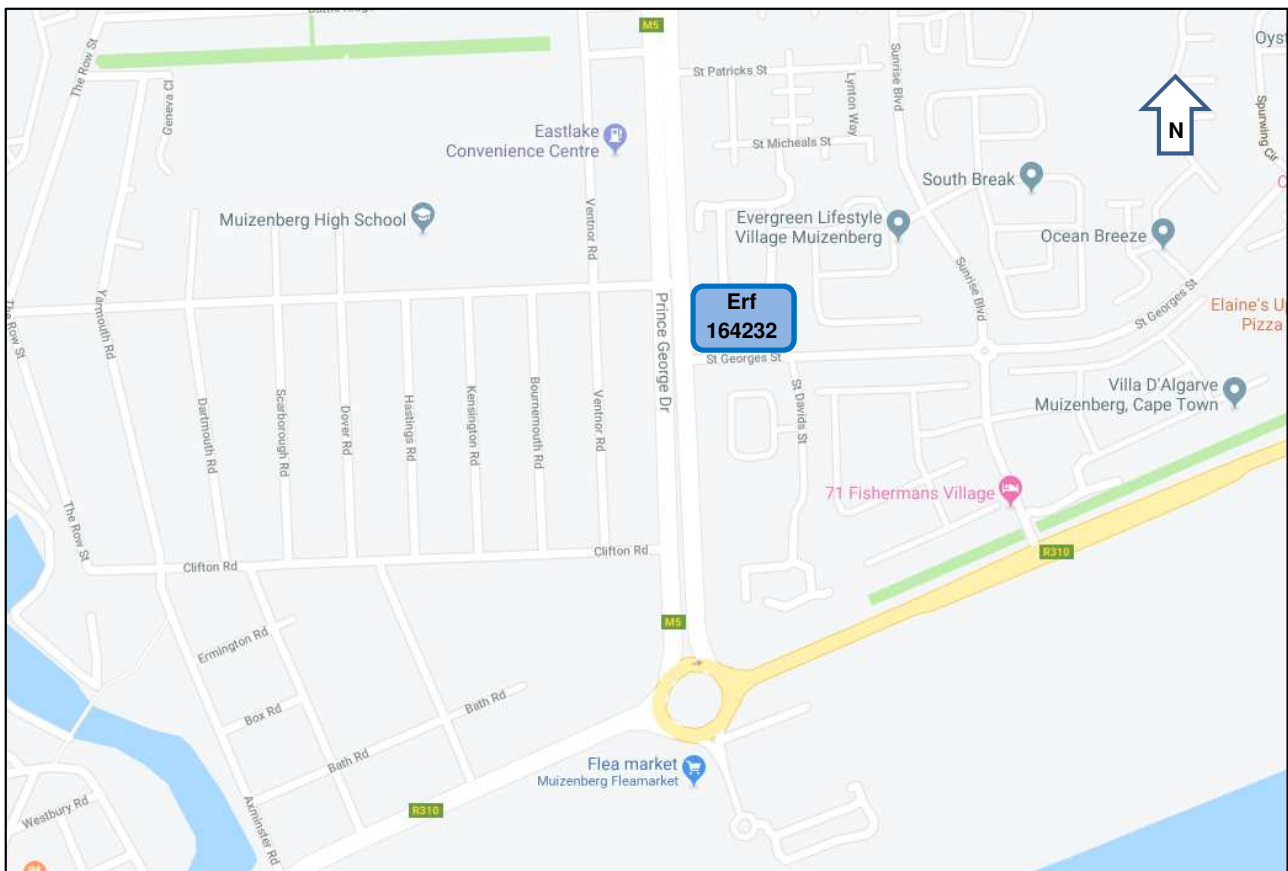


Figure 1: Locality Plan

The provisional SDP for the proposed Service Station development is shown in **Figure 2** and includes a car wash and 402 m² Retail Space (145 m² Convenience Shop and 257 m² Co-Brand retail space).

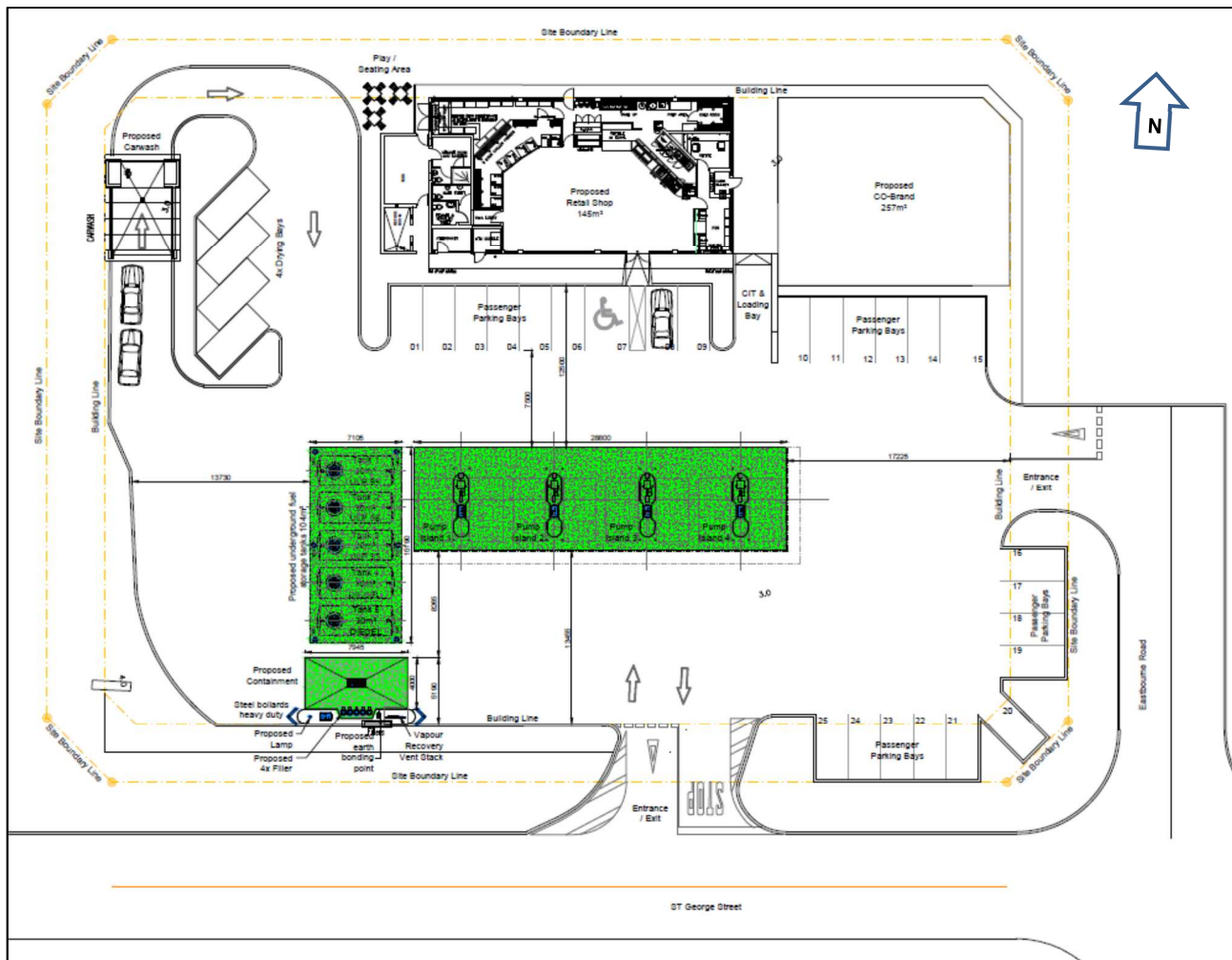


Figure 2: Provisional SDP for Service Station

In terms of traffic/transport the main aspects to consider are:

- Access,
- Background traffic,
- Trip generation,
- Traffic impact,
- Site circulation and Parking provision.

2. ACCESS

Access to the site is proposed from St Georges Street via:

- a left-in access approximately 58 m (measured kerb-to-kerb) from Prince George Drive, and
- a full access opposite St Davids Street located approximately 30 m (measured kerb-to-kerb) to the west of the proposed left-in access, along St Georges Street.

The SDP currently shows a full access rather than a left-in only as proposed (see above). This will allow traffic coming from Prince George Drive to conveniently turn left into the site and then exit via the full access.

The full access road falls within a Public Road Reserve (Eastbourne Road). Previously this access would have served additional erven to the north. However, with the recent expansion of the Evergreen Retirement Village westwards, this will no longer be the case and the road will now only serve this property. Access to Erf 164232 is approximately 26 m from St Georges Street (measured kerb-to-kerb).

The accesses are shown in **Figure 3** which shows the SDP overlaid on an aerial photomontage of the surrounding area.



Figure 3: Proposed Accesses

3. BACKGROUND TRAFFIC

Traffic counts were carried out on Tuesday 5 February 2019 at the following intersections:

- Prince George Drive / St Georges Street;
- Prince Georges Drive / Windermere; and
- St Georges Street / St Davids Street.

The results are shown in **Figure 4** (AM peak hour) and **Figure 5** (PM peak hour).

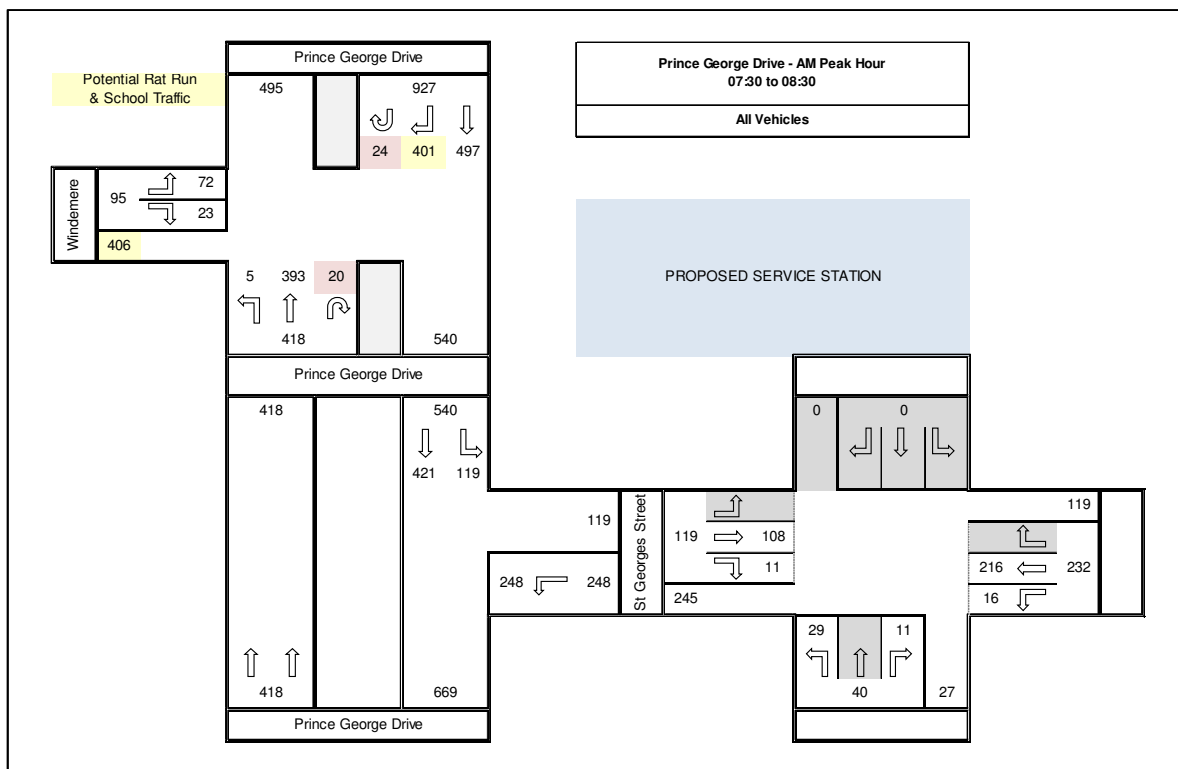


Figure 4: Existing Traffic AM peak hour (Feb 2019)

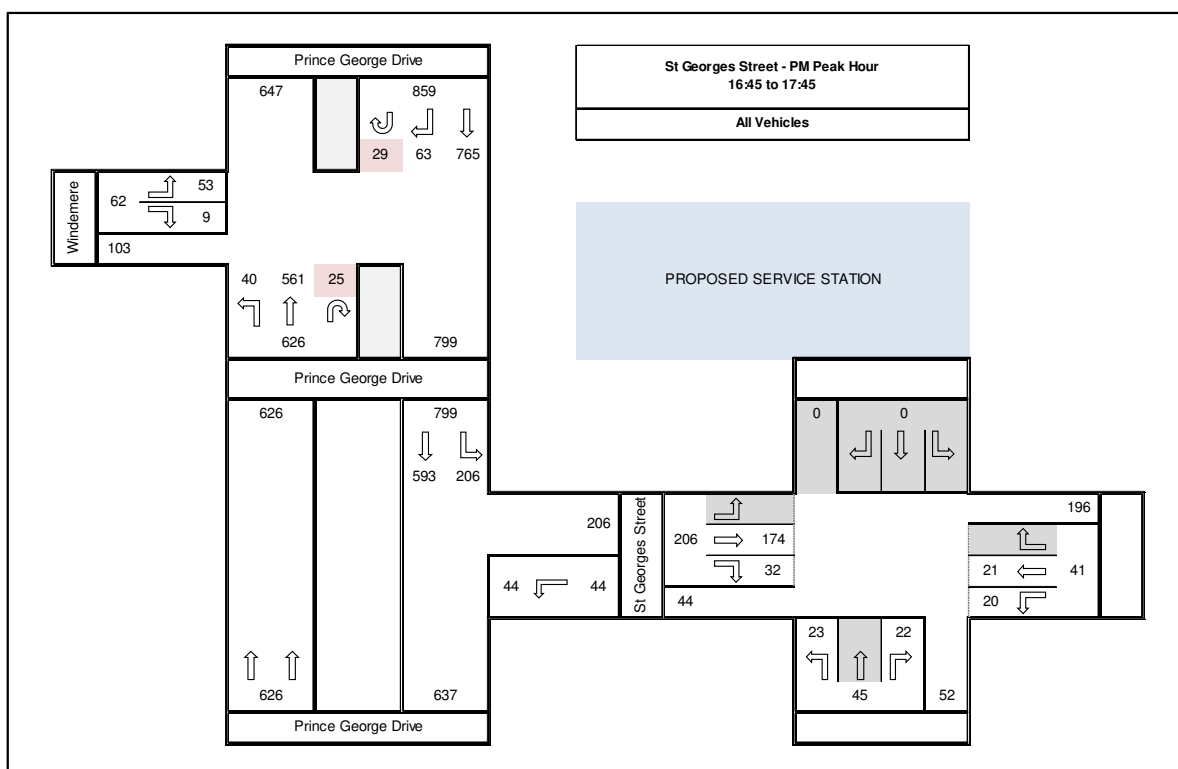


Figure 5: Existing Traffic PM peak hour (Feb 2019)

As shown in **Figures 4 and 5** there are some U-turns that occur in Prince George Drive at Windermere these typically vary between 20 and 30 vehicles for the northbound and southbound direction in the different peak hours.

The percentage taxis were less than 4%, the percentage buses were less than 1% and the percentage heavies were less than 3%.

4. TRIP GENERATION

Being a convenience service station most, if not all, of the trips to be generated can be anticipated from the passing traffic. Customers will visit the service station and or associated shops as they pass the site.

Prince George Drive has a median with no direct access for the northbound traffic. Customers do however have the option of going past the site and then doing a U-turn at the Prince George Drive intersection should they want to visit the service station. There is an existing Engen Service Station approximately 120 m north of Windermere Street that serves the northbound traffic on Prince George Drive. The demand for additional U-turns is therefore anticipated to be low.

Taking this into consideration the following assumptions are made with respect to the trip generation from the pass-by traffic:

- 1% from the northbound traffic on Prince George Drive;
- 5% from the southbound traffic on Prince George Drive; and
- 8% from the east and westbound traffic on St Georges Street.

Based on these pass-by assumptions the resulting trip generation rate for the service station (based on 400 m² Retail GLA) would be: 28 trips/100 m² in the AM peak hour, 29.5 trips/100 m² in the MD peak hour and 30 trips/100 m² in the PM peak hour. These trip generation rates are higher than the TMH17 rates for 400 m² Retail GLA for the PM peak hour which is 21.7 trips/100m². Of this rate only 33% would be new trips (i.e. 7.16 new trips/100 m²) with the remaining trips being pass-by and diverted trips.

As the proposed service station and retail component in particular, may have some local attraction, it is considered that there may be some new trips generated by the retail component. To be conservative a new trip generation rate of 7 trips/100 m² is added to the AM, MD and PM peak hour pass-by trips. It is assumed that 50% of these will be to/from Prince George Drive and 50% will be to/from the residential area to the east of the proposed service station.

The trip assignment based on the above assumptions is shown in **Figures 6 and 7**.

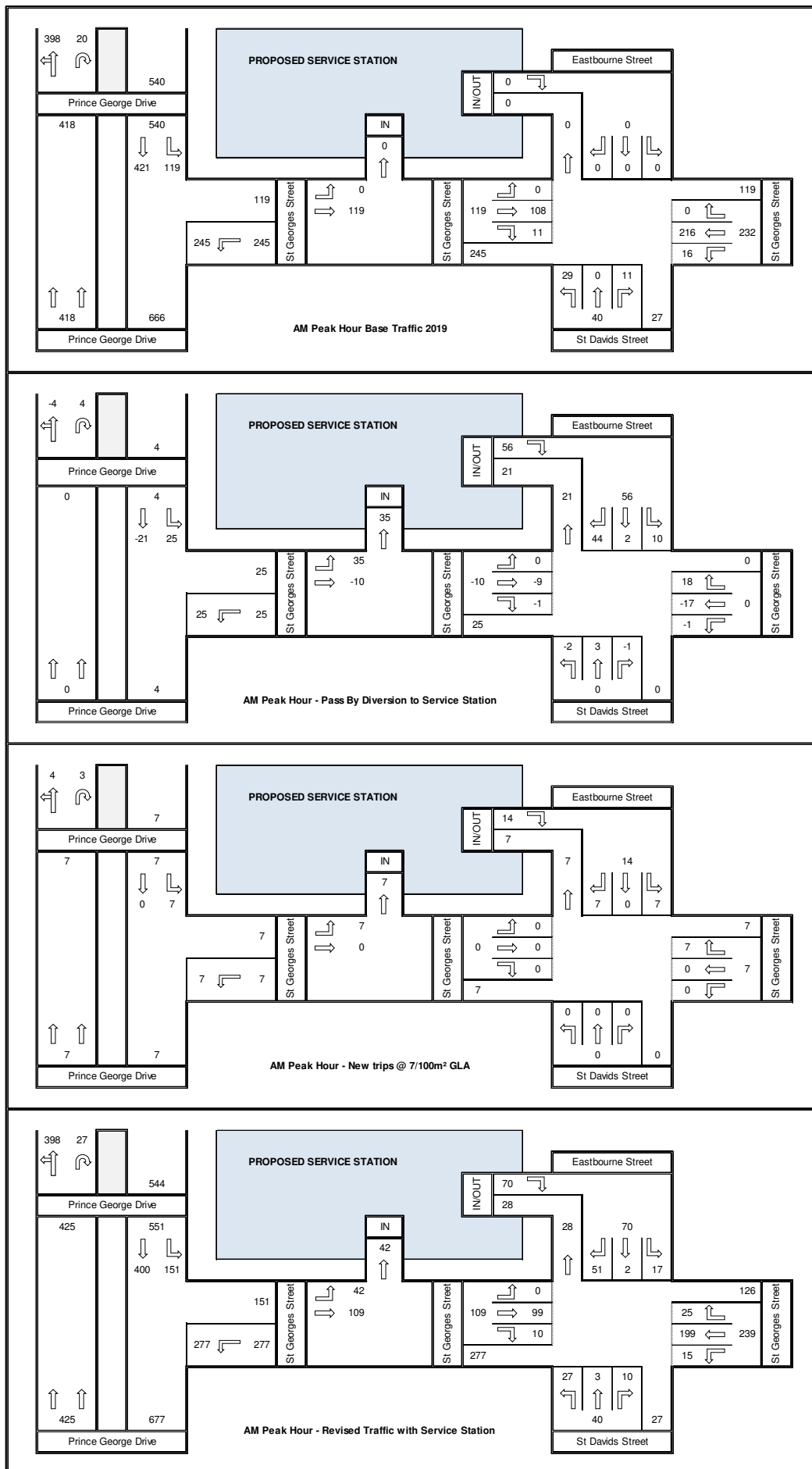


Figure 6: Proposed Service Station trip assignment in the AM peak hour

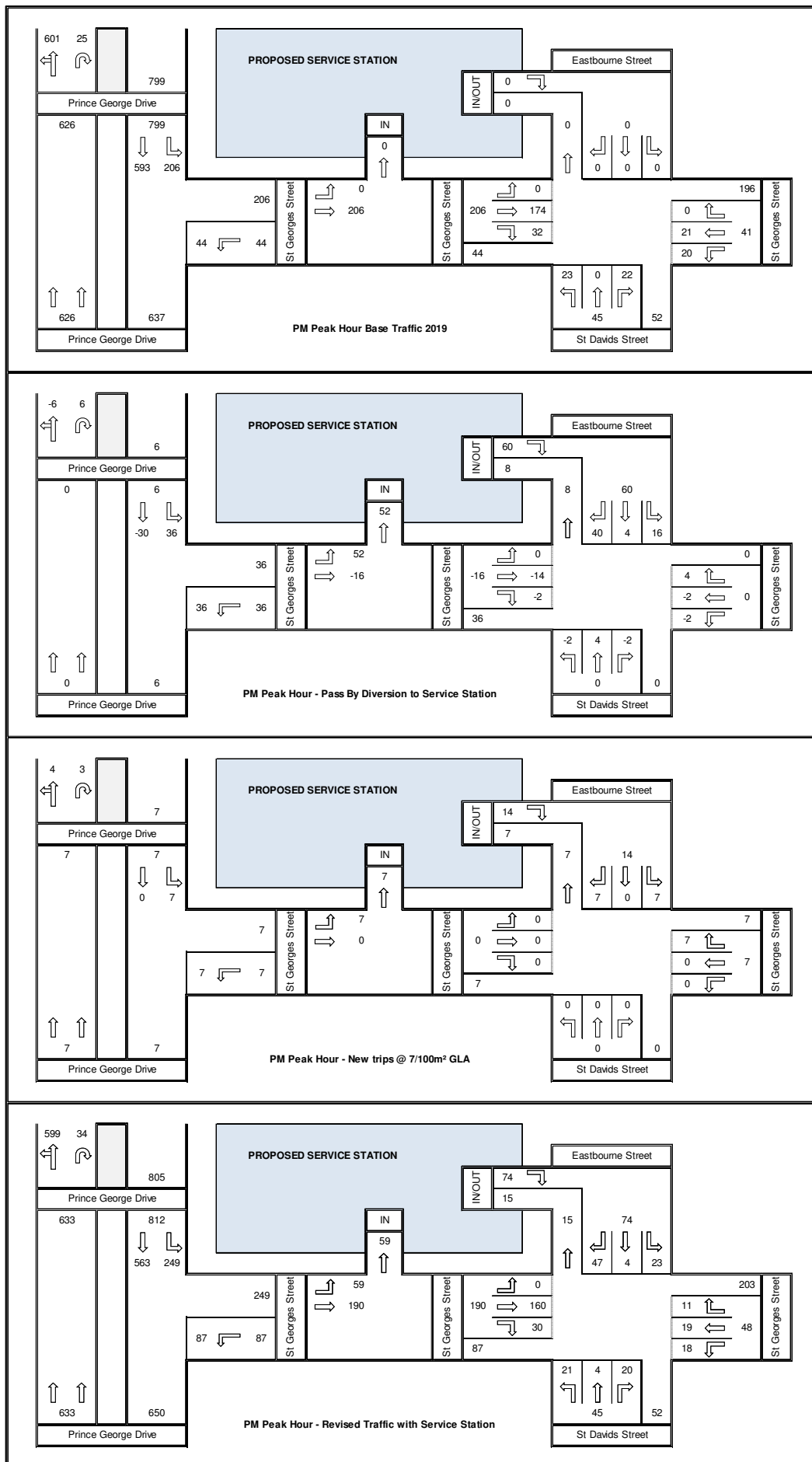


Figure 7: Proposed Service Station trip assignment in the PM peak hour

5. TRAFFIC IMPACT

The intersection of the St Georges Street Southbound carriageway with St Georges Street has two southbound lanes and a 35 m left turn lane. As the only stop condition is for the westbound traffic on St Georges Street the LOS of this intersection operates at LOS A in the AM and PM peak hour, even with the proposed service station traffic.

The left-in access to the service station also operates at LOS A in the AM and PM peak hours as there are no conflicting movements.

The SIDRA analysis of the St Georges / St Davids / Eastbourne intersection for the AM and PM peak hour with the development traffic is shown in Appendix A and is summarised in **Table 1**.

Table 1: SIDRA analysis summary for the St Georges / St Davids / Eastbourne intersection

Approach	AM Peak Hour			PM Peak Hour		
	Delay (sec)	LOS	95% Q (m)	Delay (sec)	LOS	95% Q (m)
South: St Davids						
Left Turn	9,1	A	1,2	8,1	A	1,3
Through	11,2	B	1,2	9,9	A	1,3
Right Turn	10,1	B	1,2	9,4	A	1,3
Approach	9,5	A	1,2	8,9	A	1,3
East: St George						
Left Turn	5,6	A	0,0	5,6	A	0,0
Through	0,0	A	0,0	0,0	A	0,0
Right Turn	5,7	A	0,5	5,9	A	0,2
Approach	1,0	NA	0,5	3,4	NA	0,2
North: Eastbourne						
Left Turn	8,6	A	2,4	8,9	A	3,1
Through	11,4	B	2,4	10,2	B	3,1
Right Turn	10,3	B	2,4	10,7	B	3,1
Approach	9,9	A	2,4	10,1	B	3,1
West: St George						
Left Turn	5,6	A	0,0	5,6	A	0,0
Through	0,0	A	0,0	0,0	A	0,0
Right Turn	6,1	A	0,2	5,6	A	0,6
Approach	0,6	NA	0,2	0,9	NA	0,6
All Vehicles	3,0	NA	2,4	4,2	NA	3,1

The SIDRA analysis shows that the LOS for Eastbourne Street (Service Station) operates at LOS B in the PM peak hour and LOS A in the AM peak hour. St Davids Street operates at LOS A in the AM and PM peak hour.

Taking this into account it can be concluded that no significant traffic impact is anticipated as a result of the proposed Service Station.

6. SITE CIRCULATION AND PARKING PROVISION

As discussed under Section 2 a left-in only access is proposed from St Georges Street between Prince George Drive and Eastbourne Street and a full access is proposed via Eastbourne Street.

The forecourt is well located allowing good traffic flow from both of the accesses.

The car wash is located to the west of the site and forecourt and ensures that any queues would not negatively impact on the flow through the forecourt.

Twenty five (25) parking bays are provided at a rate of approximately 6 bays/100m² GLA which is more than what is required in terms of the By-law for retail (4 bays/100m² for line shops).

The fuel delivery tanker route is shown in **Figure 10**. The tanker will enter using the left-in access, turn left and do deliveries and then exit via the full access at Eastbourne Street. This is considered to be acceptable.

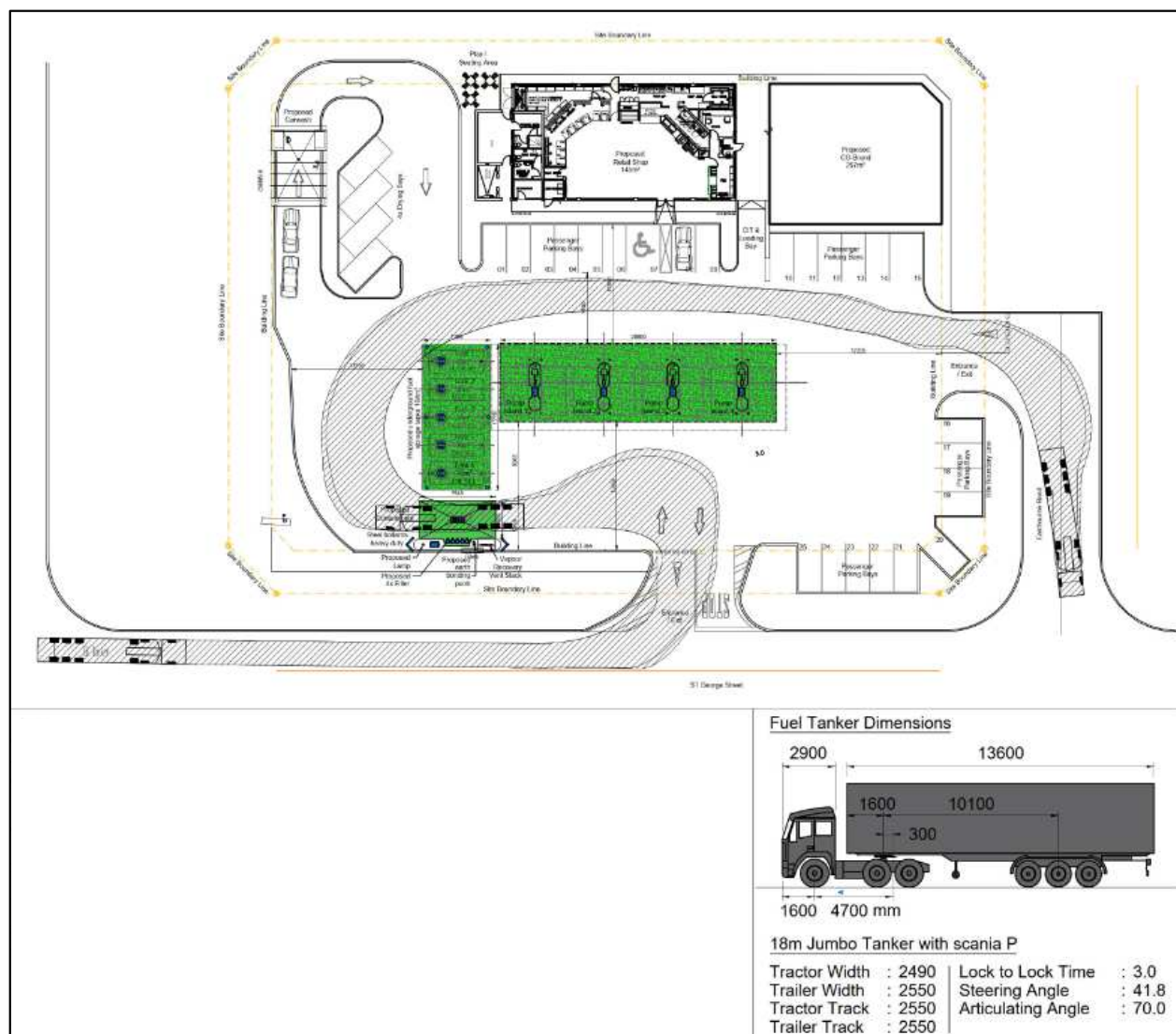


Figure 8: Fuel Tanker Delivery Route

7. CONCLUSIONS

The following conclusions are drawn:

- The site would have two accesses, a left-in access from St George Street and a full access at Eastbourne Street.
- No significant traffic impact is anticipated.
- No site circulation issues are anticipated.
- Adequate parking is provided in terms of the By-law requirements.
- Adequate provision is made for the fuel delivery tanker.

8. RECOMMENDATIONS

Taking the above traffic aspects into consideration it is recommended that:

- A left-in access approximately 58 m from Prince George Drive be approved as well as a full access via Eastbourne Street.
- The rezoning to permit a service station with 402 m² retail GLA and a car wash be supported.



David Faure (Pr Eng)

EFG Engineers (Pty) Ltd

APPENDIX A:
Movement Summaries



St George - St Davids - Eastbourne (AM PH with Service Station)

Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m				
South: St Davids												
1	L2	28	1,0	0,049	9,1	LOS A	0,2	1,2	0,34	0,88	0,34	51,2
2	T1	3	1,0	0,049	11,2	LOS B	0,2	1,2	0,34	0,88	0,34	51,1
3	R2	11	1,0	0,049	10,1	LOS B	0,2	1,2	0,34	0,88	0,34	51,0
Approach		42	1,0	0,049	9,5	LOS A	0,2	1,2	0,34	0,88	0,34	51,1
East: St George												
4	L2	16	1,0	0,112	5,6	LOS A	0,0	0,0	0,00	0,04	0,00	57,9
5	T1	200	1,0	0,112	0,0	LOS A	0,0	0,0	0,00	0,04	0,00	59,6
6	R2	26	1,0	0,016	5,7	LOS A	0,1	0,5	0,21	0,55	0,21	52,5
Approach		242	1,0	0,112	1,0	NA	0,1	0,5	0,02	0,10	0,02	58,6
North: Eastbourne												
7	L2	18	1,0	0,094	8,6	LOS A	0,3	2,4	0,34	0,91	0,34	50,9
8	T1	2	1,0	0,094	11,4	LOS B	0,3	2,4	0,34	0,91	0,34	50,8
9	R2	54	1,0	0,094	10,3	LOS B	0,3	2,4	0,34	0,91	0,34	50,7
Approach		74	1,0	0,094	9,9	LOS A	0,3	2,4	0,34	0,91	0,34	50,7
West: St George												
10	L2	1	1,0	0,055	5,6	LOS A	0,0	0,0	0,00	0,01	0,00	58,3
11	T1	104	1,0	0,055	0,0	LOS A	0,0	0,0	0,00	0,01	0,00	59,9
12	R2	11	1,0	0,007	6,1	LOS A	0,0	0,2	0,31	0,55	0,31	52,2
Approach		116	1,0	0,055	0,6	NA	0,0	0,2	0,03	0,06	0,03	59,1
All Vehicles		474	1,0	0,112	3,0	NA	0,3	2,4	0,10	0,28	0,10	56,6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



St George - St Davids - Eastbourne (PM PH with Service Station)

Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
		Total veh/h	HV %				Vehicles veh	Distance m				
South: St Davids												
1	L2	22	1,0	0,050	8,1	LOS A	0,2	1,3	0,08	0,96	0,08	51,2
2	T1	4	1,0	0,050	9,9	LOS A	0,2	1,3	0,08	0,96	0,08	51,1
3	R2	21	1,0	0,050	9,4	LOS A	0,2	1,3	0,08	0,96	0,08	51,0
Approach		47	1,0	0,050	8,9	LOS A	0,2	1,3	0,08	0,96	0,08	51,1
East: St George												
4	L2	19	1,0	0,021	5,6	LOS A	0,0	0,0	0,00	0,29	0,00	55,9
5	T1	20	1,0	0,021	0,0	LOS A	0,0	0,0	0,00	0,29	0,00	57,4
6	R2	12	1,0	0,008	5,9	LOS A	0,0	0,2	0,27	0,55	0,27	52,4
Approach		51	1,0	0,021	3,4	NA	0,0	0,2	0,06	0,35	0,06	55,6
North: Eastbourne												
7	L2	24	1,0	0,112	8,9	LOS A	0,4	3,1	0,39	0,89	0,39	50,8
8	T1	4	1,0	0,112	10,2	LOS B	0,4	3,1	0,39	0,89	0,39	50,7
9	R2	49	1,0	0,112	10,7	LOS B	0,4	3,1	0,39	0,89	0,39	50,6
Approach		78	1,0	0,112	10,1	LOS B	0,4	3,1	0,39	0,89	0,39	50,6
West: St George												
10	L2	1	1,0	0,088	5,6	LOS A	0,0	0,0	0,00	0,00	0,00	58,3
11	T1	168	1,0	0,088	0,0	LOS A	0,0	0,0	0,00	0,00	0,00	60,0
12	R2	32	1,0	0,018	5,6	LOS A	0,1	0,6	0,11	0,56	0,11	52,8
Approach		201	1,0	0,088	0,9	NA	0,1	0,6	0,02	0,09	0,02	58,7
All Vehicles		377	1,0	0,112	4,2	NA	0,4	3,1	0,11	0,40	0,11	55,4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.