APPENDIX D ROUTE POSITION INFORMATION

PROPOSED FILLING STATION

ON

THE FARM 751
REGISTRATION DIVISION I.Q.
PROVINCE OF GAUTENG

BOLENG (PTY) LTD

TRAFFIC AND ACCESS ASSESSMENT

JUNE 2021

K&T PROJECT REFERENCE: 8101

REVISION 0

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Details of this report

Client Name	Boleng (Pty) ltd
Document Title	Traffic & Access Assessment
K&T Project Reference	8101
File Name	8101_The Farm 751_TIA Revision 0
Prepared By	P Naidoo
Reviewed By	

Report Revision Record

Revision	Date	Description
0	June 2021	Draft

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For and on behalf of Kantey & Templer (Pty) Ltd

For and on behalf of

Kantey & Templer (Pty) Ltd

Approved by: ______________

Signed: ____________________________

Position: ______________

Date: _____________________

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THE FARM 751

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1. BACKGROUND

Kantey & Templer Consulting Engineers (K&T) were appointed by Boleng (Pty) Ltd (referred to herein as **"the client**") to obtain approval of the proposed access to a filling station which will be situated on The Farm 751 Registration Division I.Q, province of Gauteng.

The previous zoning of the site allowed for commercial and residential land-uses. In 2008, PD Naidoo & Associates (Pty) Ltd prepared a Traffic Impact Assessment (TIA) in support of a proposed warehouse development on Aeroton Extensions 32, 33 and the site. The TIA was approved by the Johannesburg Roads Agency (JRA) in 2010. A proposed full access off Southgate Road to the site was approved by the JRA. In 2013, Moyeni Professional Engineering (MPE) prepared an Addendum Traffic Impact Assessment which at the time addressed a residential development (worst-case trip generator) and a proposed additional access via the existing access point to SAB which is situated to the east of the site.

Since then, Shell SA has purchased the property to develop a filling station. FJC Consulting have been appointed as the Town Planners to undertake the proposed rezoning of the site which will permit rights for a filling station. Details of the proposed rezoning application was not available at the time of preparing this study since approval of the application was still pending.

2. PURPOSE

The purpose of this report is to obtain approval of the proposed accesses to the filling station development on The Farm 751 Registration Division I.Q, province of Gauteng, hereafter referred to as **"the site"**.

3. THE SITE

3.1 LOCALITY

The site falls within jurisdiction of the City of Johannesburg (COJ) Metropolitan Municipality and Johannesburg Roads Agency (JRA).

The locality and aerial plans of the site are shown on figures **8101 – TIA – FIG 1** and **8101 – TIA – FIG 2** in **Annexure A**.

The land use surrounding the site is a mix of Residential and Commercial. The site boundaries are described in **Table 1** below.

Table 1: Site Boundaries

Boundary	Boundary Description
North	N12 road reserve
East	Baragwanath Extension 1
South	Chris Hani Road (M68)
West	Aerodrome Road

Southgate Road passes through the site on the north. The site area for the filling station will therefore be approximately 12 885m^2 in extent.

Two (2) accesses are proposed to the site. A marginal (left-in and left-out only) access is proposed off Chris Hani Road (Access 1) and a full access is proposed of Southgate Road (Access 2).

3.2 PROPOSED DEVELOPMENT

The intention is to develop a filling station with a convenience store and fast food with a floor area limited to 30% of the total built floor area or 150m², whichever is the lesser as per COJ Land-Use Scheme (2018).

4. ROAD NETWORK

4.1 EXISTING ROAD NETWORK

The classification of the roads in the study area was obtained from the RISFSA Road Master Plan(2).

The filling station will be bound by Chris Hani Road to the south which is a class 2 road. The road is currently a dual carriageway with three lanes per direction and a posted speed limit of 70km/h.

Southgate Road will border the filling station to the north. Southgate Road is a class 5 road with a speed limit of 60km/h.

Aerodrome Road is a class 3 road with a posted speed limit of 60km/h which will border the filling station to the west.

The aforementioned roads fall within the jurisdiction of the JRA. The site is not affected by any future roads planning.

The aerial plan showing the existing road network is included in **Annexure A** as figure **8109 – TIA – FIG 2.**

5. LATENT DEVELOPMENTS

A meeting was held with Mr P Peska from the JRA on 3 June 2021 where the proposed conceptual access drawing was discussed. Future developments in the area were also discussed. The proposed road upgrades for Aeroton Extensions 53 to 56 at the intersections of Chris Hani Road with Aerodrome Road and Chris Hani Road with Southgate Road were obtained from Moyeni Professional Engineering (MPE). The latent road upgrades (as shown in **Annexure B**) were considered to be in place before the filling station is developed.

6. SITE ACCESSES

The filling station will have a marginal (left-in, left out only) access off Chris Hani Road and a full access off Southgate Road. The proposed accesses are indicated in the accompanying drawing **8101 – TIA – FIG 3** attached in **Annexure A** of this report.

6.1 DESIGN CRITERIA

The Guidelines for Access to Filling Stations in the Greater Pretoria Area(1) by ITS (March 2001) were followed in the conceptual design. It was confirmed in the meeting with JRA that the aforementioned guidelines are also used for designing filling station accesses off JRA roads as well.

6.2 CLASSIFICATION OF ROADS AND DESIGN SPEED

Chris Hani Road is a class 2 road with a posted speed limit of 70km/h and Southgate Road is class 5 road with a posted speed limit of 60km/h. The ITS guidelines uses a Level Of Access (LOA) classification when designing filling station accesses. Chris Hani Road will have a LOA of 2 and Southgate Road will have a LOA of 9. It also supported in guidelines that the posted speed limit should be used as the design speed of the filling station accesses.

6.3 MARGINAL ACCESS OFF CHRIS HANI ROAD (ACCESS 1)

A median barrier is recommended for roads with LOA 1,2,3,4 and 5. It should be noted that Chris Hani Road is a dual carriageway road which is already separated by a median barrier. According to the guidelines, the criteria for determining a filling station access downstream of an intersection is based on the deceleration length and shoulder sight distance. The marginal access will be located to east of the signalised Chris Hani Road / Aerodrome Road intersection.

6.3.3 SHOULDER SIGHT DISTANCE

According to Table 8.3 from the ITS Guidelines, the minimum shoulder sight distance required on a road with a design speed of 70km/h is 138m which is considered adequate in this case.

6.3.4 ACCELERATION & DECELERATION LANES

Provision of deceleration lanes at access points to reduce speed differential is an acceptable principle to reduce conflict A detailed survey for the relevant longitudinal section of Chris Hani Road was not available at the time of this study, therefore the typical standard was used for the design. Table 9.3 from the ITS guidelines was used to determine a taper length of 40m for the deceleration lane. It is however recommended in the guidelines that a 35m taper and 5m deceleration lane should be provided.

The detailed design of the filling access will address the impact of the gradient on the site access once the surveys have been obtained. The basic access distance requirements will be adjusted if necessary, according to Table 10.1 from the guidelines.

It should be noted that adjusting the deceleration lane distance will be possible, if necessary.

6.4 FULL ACCESS OFF SOUTHGATE ROAD (ACCESS 2)

As mentioned in Section 1, the full access off Southgate Road was previously approved. It is proposed that the access should be located 50m east from the Aerodrome Road / Southgate Road intersection. The queue length on Southgate Road was taken into consideration when determining the position of the access. This is discussed in detail in the following Section 10.

6.5 GEOMETRIC DESIGN

The design of the marginal access will conform to the requirements as shown on the typical drawings. The typical drawing **FIG: C3** contained in ITS[1] guidelines are included herewith in **Annexure C** of this report were used.

7. SITE LAYOUT

A Site Development Plan (SDP) was not available at the time of this study. A detailed SDP still needs to be prepared by an Architect and should be reviewed by the Traffic Engineer for compliance with the following requirements of the ITS Guidelines for access to filling station[1].

7.1 HEAVY VEHICLES

Sufficient manoeuvring and loading space should be provided to accommodate trucks at the entry and within the site. The entry radii as per the drawing **8101 – TIA – FIG 3** attached in **Annexure A** should be sufficient to accommodate heavy vehicles at the access. The SDP should be evaluated, using AutoTurn (or similar software) to ensure that truck turning movements can be accommodated on the proposed layout.

7.2 PARKING

Parking should be provided in terms of the relevant Town-Planning Scheme. Details of the parking requirements will be addressed as part of the Site Development Plan (SDP) submission.

8. STUDY AREA INVESTIGATED

The traffic engineer previously conducted a site visit on 11 March 2021 to investigate the road infrastructure and intersections. The relevant photographs of the study area are shown in **Annexure E**.

9. TRAFFIC VOLUMES

9.1 TRAFFIC DATA

Classified traffic count surveys were conducted by Unitraf on 13 April 2021 and 20 April 2021. 24 Hour traffic counts were conducted at the Chris Hani Road / Aerodrome Road intersection (Intersection 1). Weekday AM and PM peak period traffic counts were conducted at the Aerodrome Road / Southgate Road intersection (Intersection 2).

The filling station is proposed to have a marginal access off Chris Hani Road and a full access off Southgate Road.

2018 traffic count data for Chris Hani Road / Aerodrome Road intersection was made available to K&T. The historic data was escalated over 3 years at an annual growth rate of 3% to obtain the 2021 volumes. The 2021 traffic counts were compared for the intersection and it was found that the northbound traffic volumes from the Chris Hani Road / Aerodrome Road intersection towards Aerodrome Road / Southgate Road intersection was much higher.

After consultation with Mr P Peska from the JRA, it was decided that the historic data would be used for Chris Hani Road / Aerodrome Road intersection. The traffic counts at intersections 1 and 2 were increased proportionally to obtain a worst-case scenario.

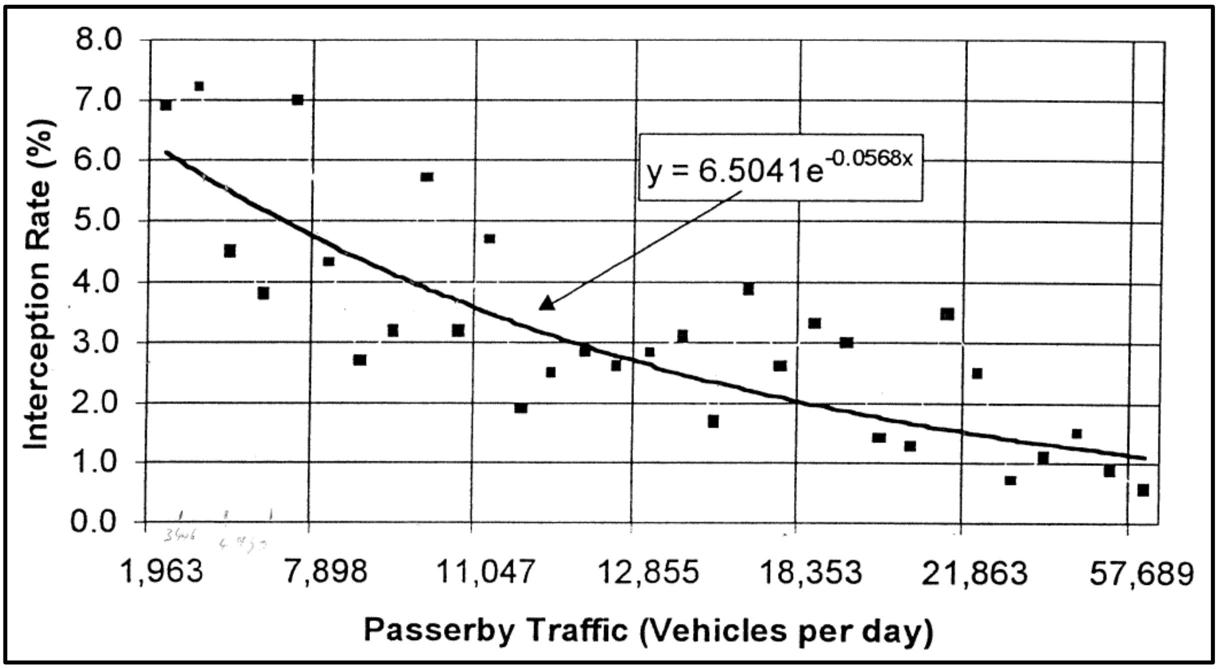
The link traffic volumes for the worst-case scenario are summarised in **Table 2** below.

Table 2: Surveyed Traffic Volumes

Road Name	Travel Direction	AM Peak Hour Volume (vehicles)	PM Peak Hour Volume (vehicles)
Chris Hani Road	Eastbound	678	1117
Aerodrome Road	Northbound	1232	623
	Southbound	538	927
Southgate Road	Eastbound	202	345
	Westbound	105	364

9.2 TRIP GENERATION

Filing stations in general do not generate new trips, but intercept the daily traffic from the adjacent road. Therefore, in terms of BB2[(1)], the traffic report is not required to consider the trip generation, distribution and assignment of trips. **Layout 1** shows the graph extracted from the ITS Guidelines for access to filling station was used to estimate the interception rate.



Layout 1: Interception Rate versus Passerby Traffic

The interception rates and design volumes are summarised in **Table 3**.

Table 3: Filling Station Trip Interception

Road Name	Travel Direction	AM Peak Interception Rate	AM Peak Volume	PM Peak Interception Rate	PM Peak Volume
Chris Hani Road	Eastbound	7.13	48	6.91	77
Aerodrome Road	Northbound	6.86	85	7.16	45
	Southbound	7.21	39	7.01	65
Southgate Road	Eastbound	7.38	15	7.31	25
	Westbound	7.43	8	7.30	27

10. TRAFFIC OPERATIONS

10.1 ANALYSIS SCENARIOS

The critical peak hours (weekday AM and PM) were considered in the SIDRA analysis. The following analysis scenarios were considered for each of the aforementioned peak hours:

- **Base Year:** 2021 AM and PM peak hour existing traffic demand (refer to **Diagrams A1** & **A2** in **Annexure C**);
- **Scenario 1:** 2026 AM and PM peak hour background traffic volumes (refer to **Diagrams B1** & **B2** in **Annexure C**);

10.2 SIDRA ANALYSIS

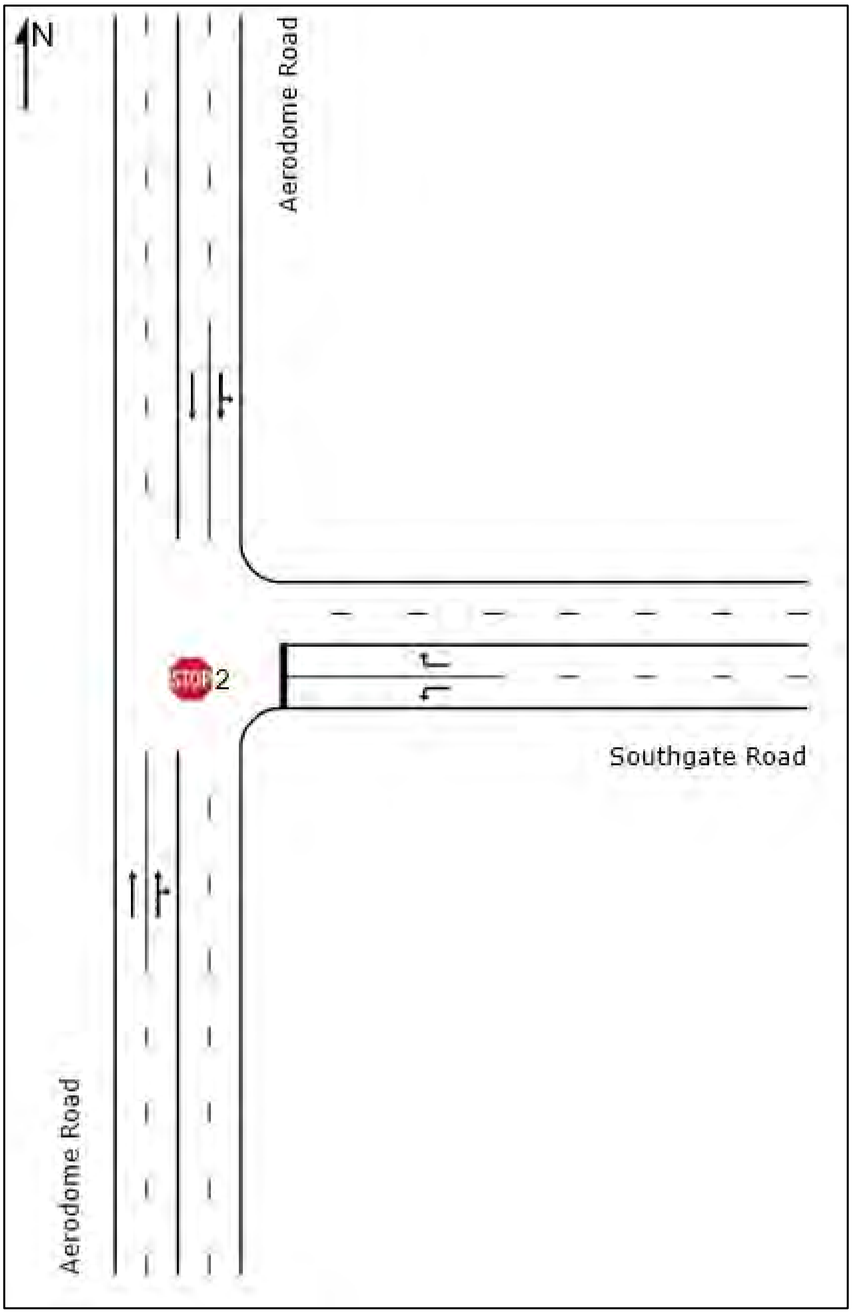
The traffic operations at the Chris Hani Road / Aerodrome Road intersection are not expected to affect the traffic operations at the marginal access (Access 1) therefore SIDRA analysis was done for the Aerodrome Road / Southgate Road intersection with the aforementioned scenarios to determine if there will be a significant queue along Southgate Road that could potentially affect the full access (Access 2).

10.2.1 Aerodrome Road / Southgate Road intersection

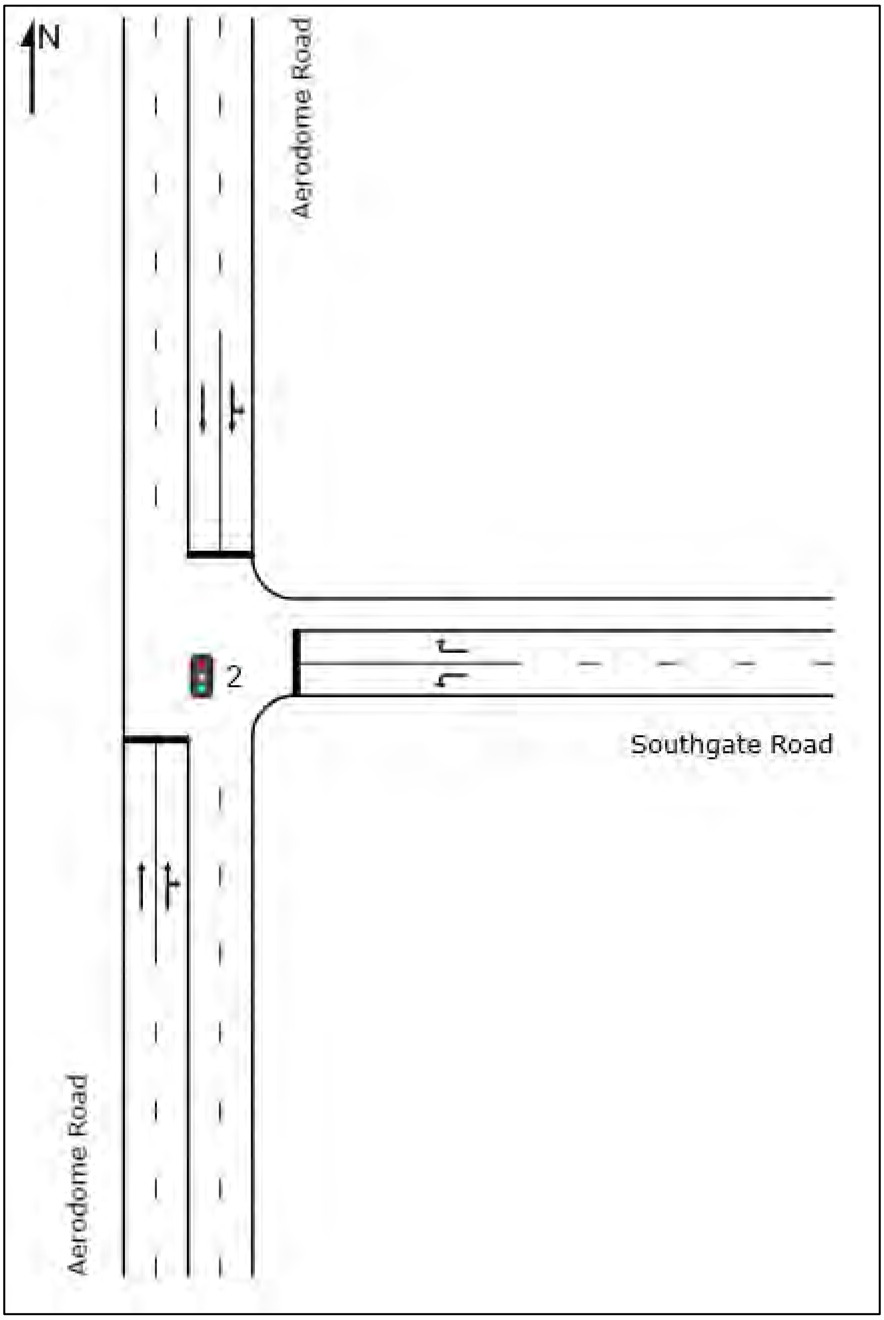
The Aerodrome Road / Southgate Road intersection is a T-junction with priority stop on the eastern approach. The intersection is proposed to be signalised by latent developments. The existing configuration (**Layout 2**) was analysed for the base year and the proposed latent upgrades (**Layout 3**) were analysed for scenario 1.

The capacity analyses indicates that the right-turn movement will operate at LOS F during both peak hours for the base year. The proposed signalisation by the latent developments will improve the LOS of the aforementioned movement to within acceptable ranges for Scenario 1. The 95th percentile queue length along Southgate Road is expected to be 42m in the PM peak hour (worse case). The proposed access will be located 50m from the eastern approach of Aerodrome Road / Southgate Road intersection which is considered sufficient in this case.

The SIDRA summaries are included **Annexure D**.



Layout 2: Aerodrome Road / Southgate Road Existing Configuration



Layout 3: Aerodrome Road / Southgate Road Latent Configuration

11. CONCLUSIONS & RECOMMENDATIONS

11.1 CONCLUSIONS

The following can be concluded from the report:

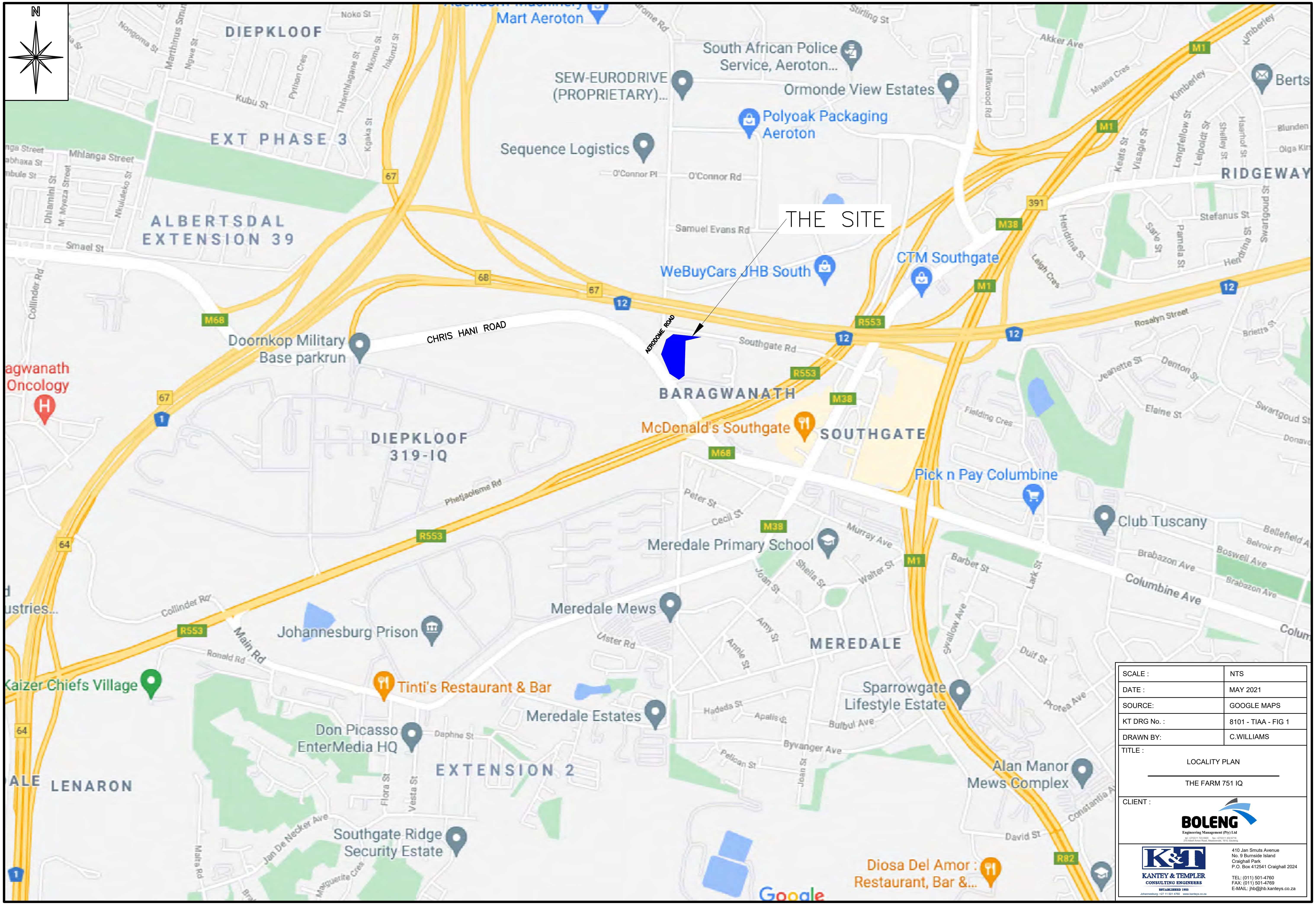
1. A filling station is proposed on The Farm 751 Registration Division I.Q, province of Gauteng.
2. A marginal access (Access 1) to the filling station is proposed off Chris Hani Road, which is a class 2 route and the access was designed in terms of ITS(1) guidelines. The access was designed in line with typical drawing **FIG No: C3** from ITS(1) guidelines. The proposed access point is sufficiently far away from the adjacent intersection and is not expected to have an impact on or be impacted by the operating conditions at the adjacent intersection.
3. A full access (Access 2) is proposed off Southgate Road which is a class 5 route. The access was previously approved. It is proposed that the access should be located at a minimum distance of 50m east measured from the edge of the bellmouth along Southgate Road. The SIDRA capacity analysis for Aerodrome Road / Southgate Road intersection indicates that there will not be a queue spillback past the proposed access position.

11.2 RECOMMENDATIONS

Taking the report and above conclusions into account, it is recommended that the proposed access layout as per figure **8101 - TIA - FIG 3** should be approved.

ANNEXURE A

FIGURES



SCALE :	NTS
DATE :	MAY 2021
SOURCE:	GOOGLE MAPS
KT DRG No. :	8101 - TIAA - FIG 1
DRAWN BY:	C.WILLIAMS

TITLE :

LOCALITY PLAN

THE FARM 751 IQ

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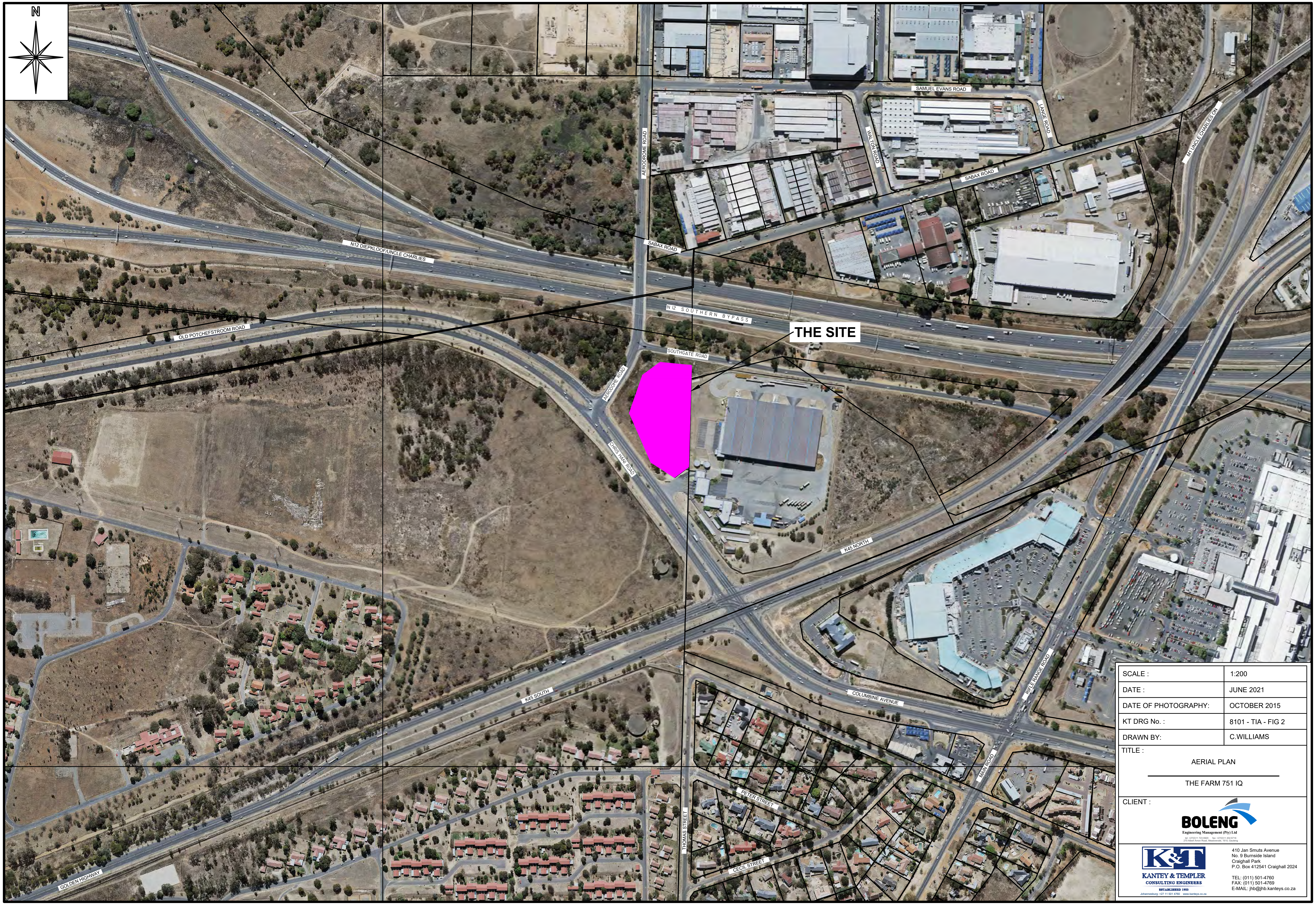

SCALE :	1:200
DATE :	JUNE 2021
DATE OF PHOTOGRAPHY:	OCTOBER 2015
KT DRG No. :	8101 - TIA - FIG 2
DRAWN BY:	C.WILLIAMS

TITLE :

AERIAL PLAN

THE FARM 751 IQ

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SCALE :	1 : 1000
DATE :	MAY 2021
DATE OF PHOTOGRAPHY :	OCTOBER 2015
KT DRG No. :	8101 - TIA - FIG 3
DRAWN BY:	C.WILLIAMS

TITLE :

ACCESS PLAN

THE FARM 751 IQ

CLIENT :

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ANNEXURE B

LATENT UPGRADES

mpe

Aeroton X53 - X56 TIA

Proposed 2021 Developer Upgrades of Aerodrome Rd and Chris Hani Rd

A9-3

SCALE 1:1000

mpe

Aeroton X53 - X56 TIA

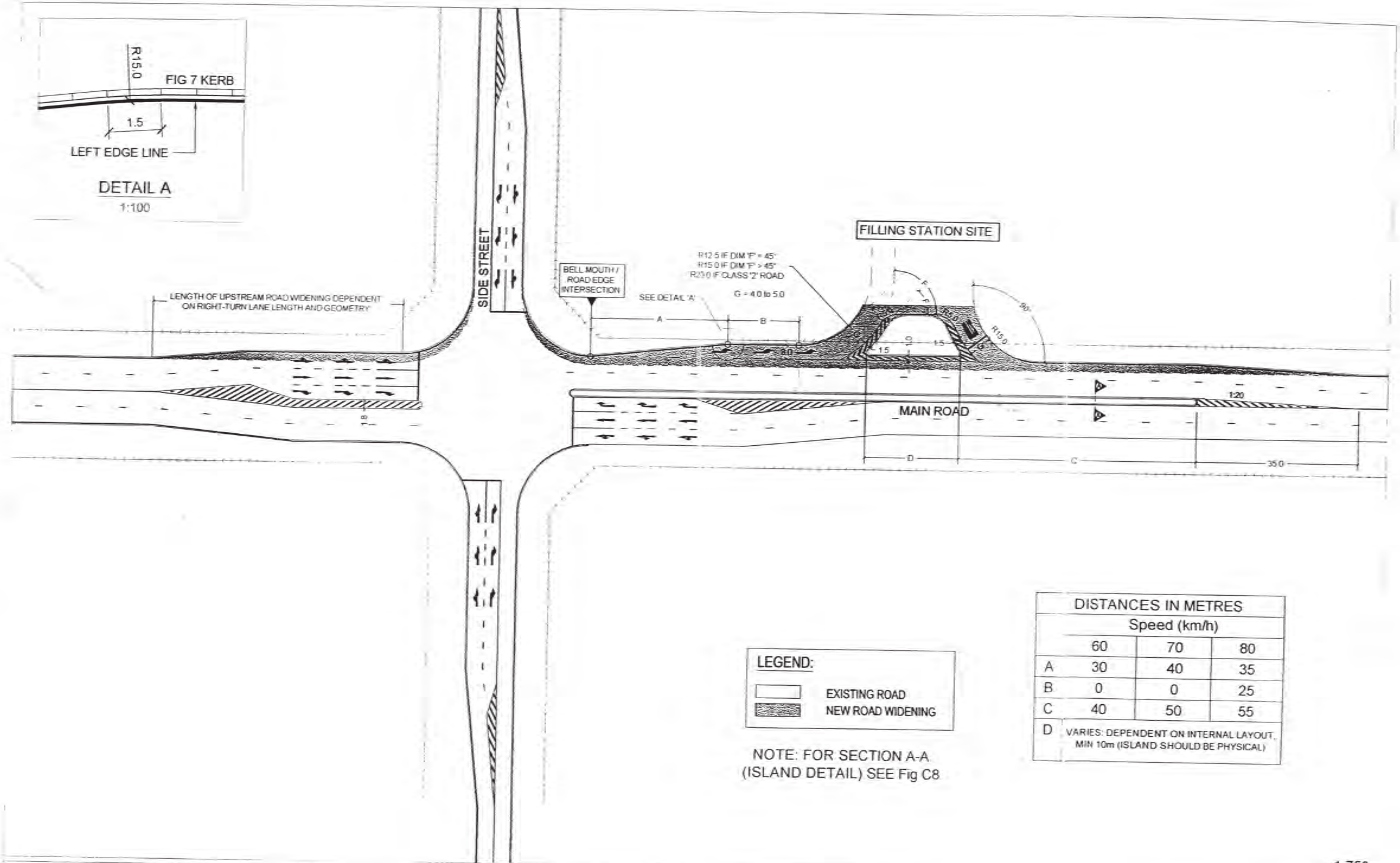
Proposed 2021 + Latent Rights Upgrades of Aerodrome Rd and Southgate Rd

A8-2

SCALE 1:1000

ANNEXURE C

DIAGRAMS



DISTANCES IN METRES			
	Speed (km/h)		
	60	70	80
A	30	40	35
B	0	0	25
C	40	50	55
D	VARIES: DEPENDENT ON INTERNAL LAYOUT, MIN 10m (ISLAND SHOULD BE PHYSICAL)		

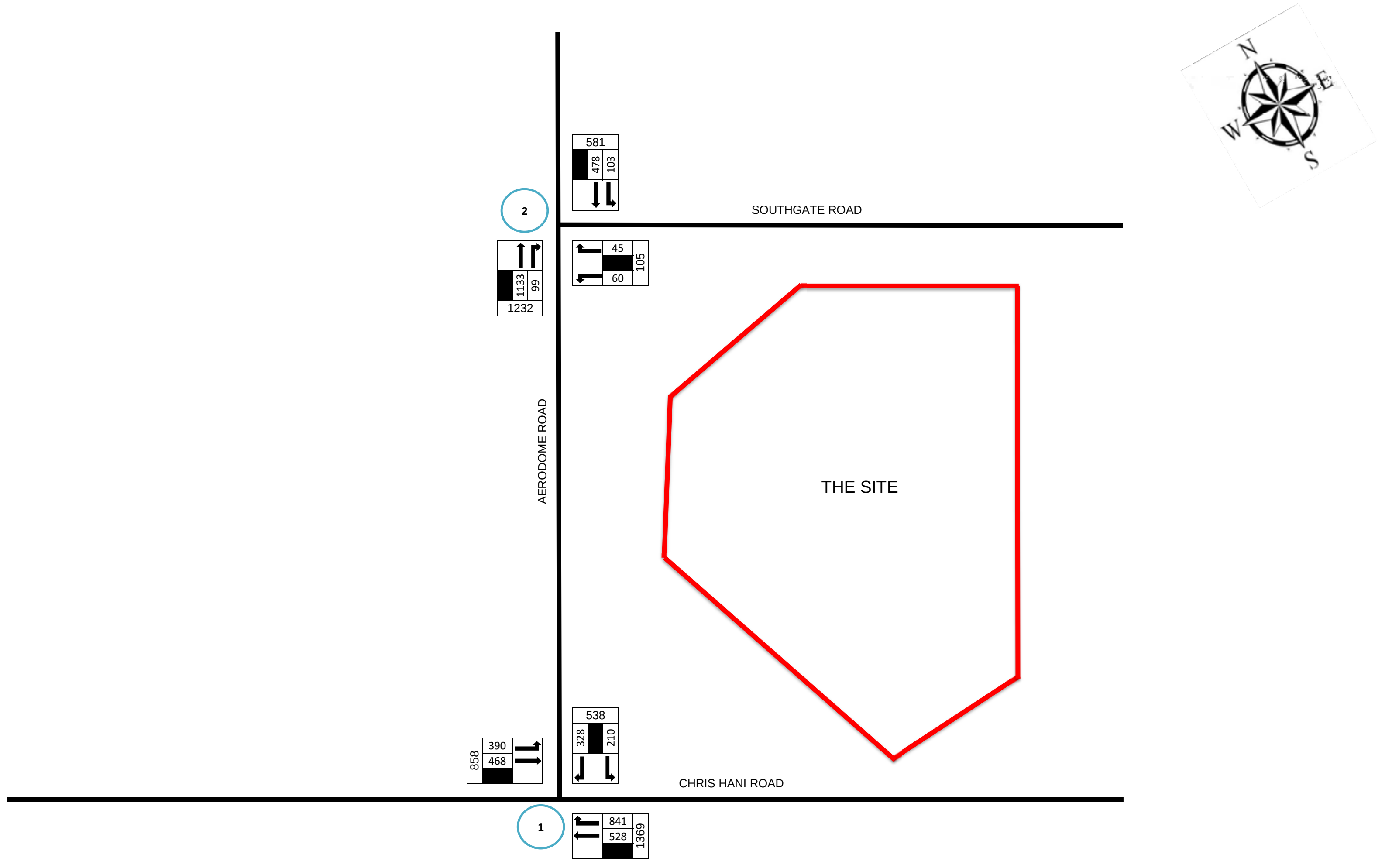
LEGEND:

- EXISTING ROAD
- NEW ROAD WIDENING

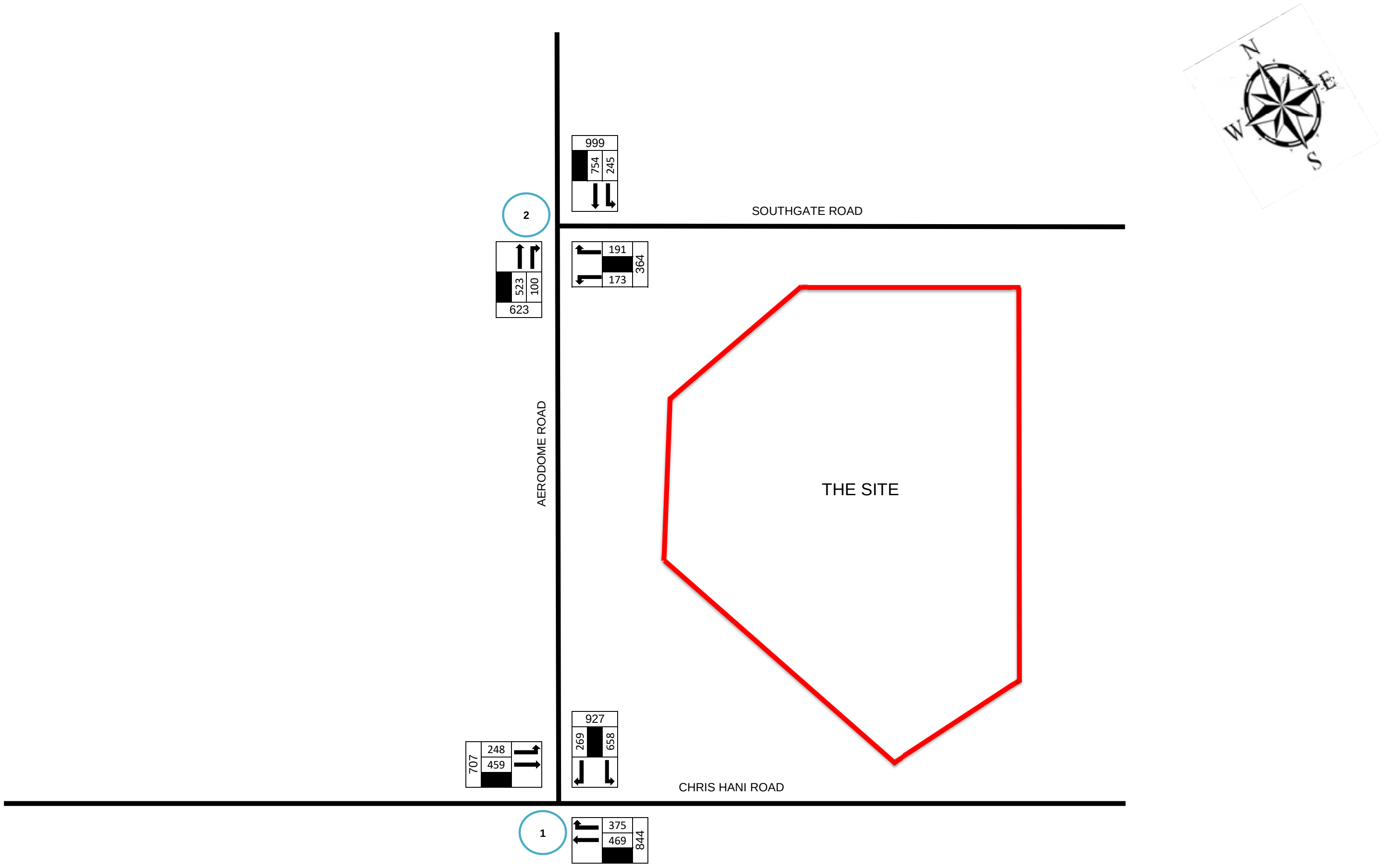
NOTE: FOR SECTION A-A (ISLAND DETAIL) SEE Fig C8

1:750

CITY COUNCIL OF PRETORIA	GUIDELINES FOR ACCESS TO FILLING STATIONS	DOWNSTREAM LEFT-IN LEFT-OUT ACCESS WITH MEDIAN	Fig C3

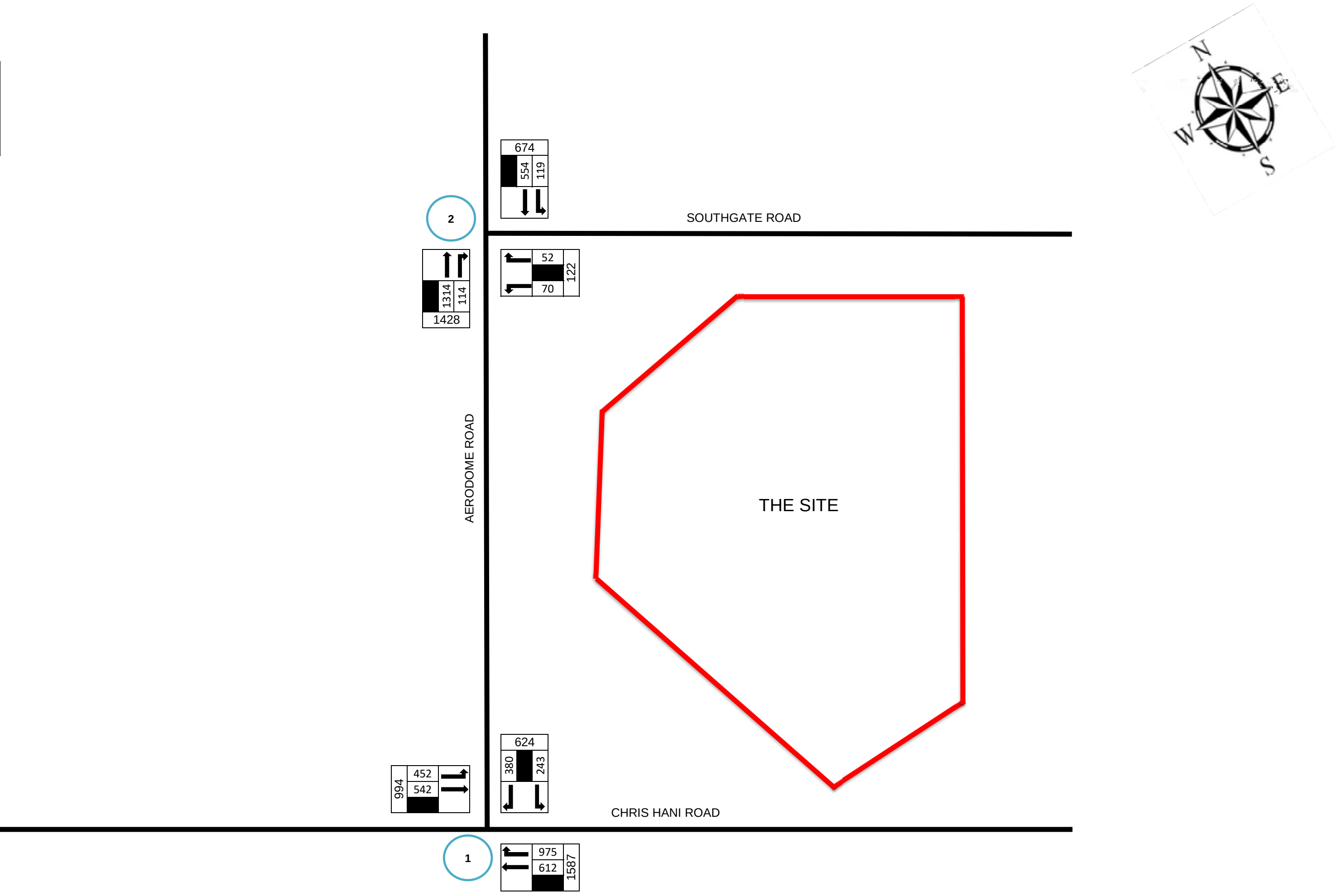


CONSULTANT:	CLIENT:	PROJECT:	PROJECT NO:
K&T KANTEY & TEMPLER CONSULTING ENGINEERS	BOLENG Engineering Management (Pty) Ltd	THE FARM 751-IQ	8101
		TITLE:	DIAGRAM:
		BASE YEAR 2021 AM TRAFFIC COUNTS	A1



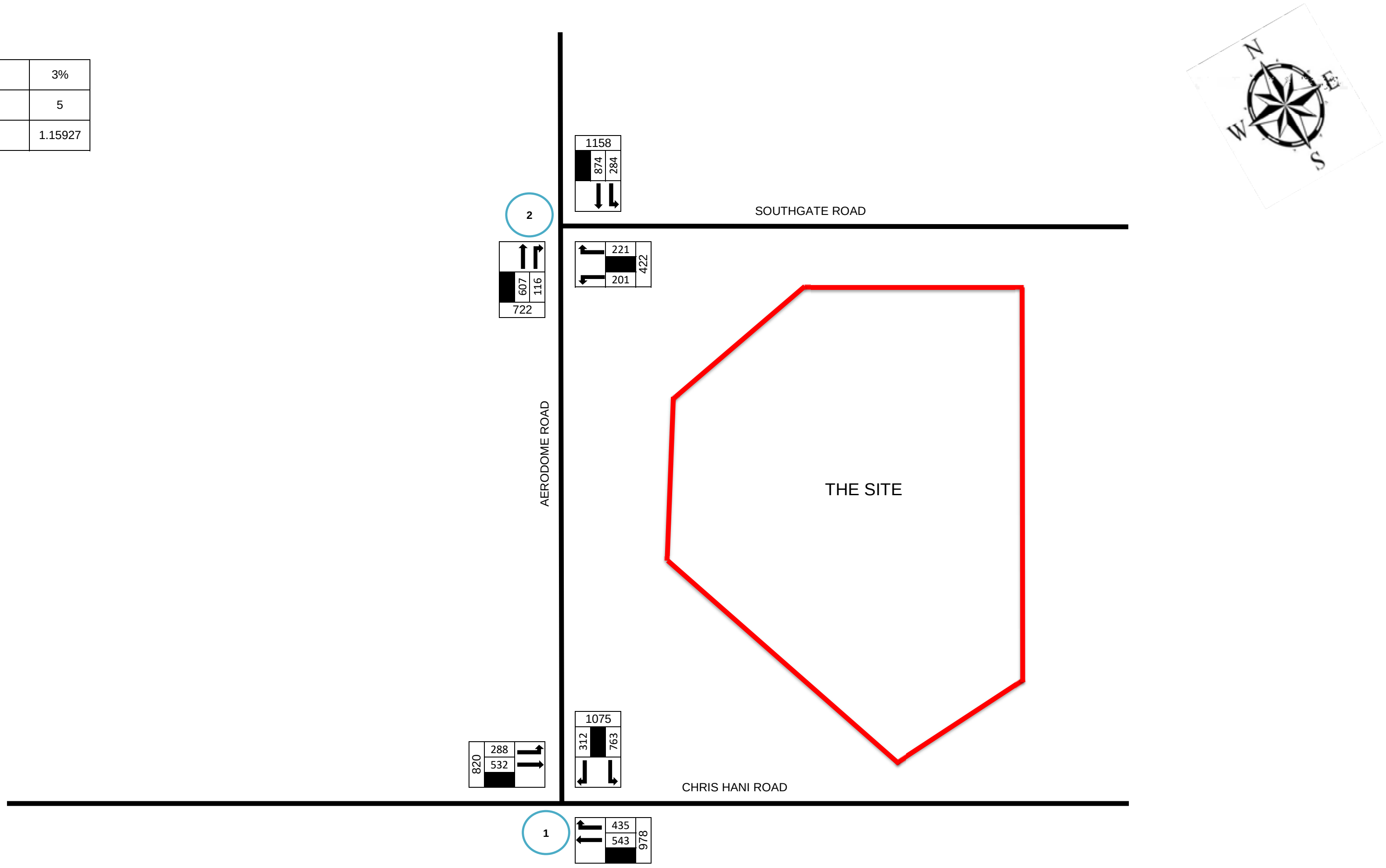
CONSULTANT:	CLIENT:	PROJECT:	PROJECT NO:
KANTEY & TEMPLER CONSULTING ENGINEERS	BOLENG Engineering Management (Pty) Ltd	**THE FARM 751-IQ**	**8101**
		TITLE:	DIAGRAM:
		BASE YEAR - 2021 PM TRAFFIC COUNTS	**A2**

ESCALATION RATIO	3%
YEAR(S)	5
ESCALATION FACTOR	1.15927



CONSULTANT: KANTEY & TEMPLER CONSULTING ENGINEERS	CLIENT: BOLENG Engineering Management (Pty) Ltd	PROJECT: THE FARM 751-IQ	PROJECT NO: 8101
		TITLE: SCENARIO 1 - 2026 AM BACKGROUND TRAFFIC	DIAGRAM: B1

ESCALATION RATIO	3%
YEAR(S)	5
ESCALATION FACTOR	1.15927



CONSULTANT: KANTEY & TEMPLER CONSULTING ENGINEERS	CLIENT: BOLENG Engineering Management (Pty) Ltd	PROJECT: **THE FARM 751-IQ**	PROJECT NO: **8101**
		TITLE: **SCENARIO 1 - 2026 PM BACKGROUND TRAFFIC**	DIAGRAM: **B2**

ANNEXURE D

SIDRA SUMMARIES

MOVEMENT SUMMARY

Site: 2 [Aerodome Road / Southgate Road - 2021 AM Base Year]

2021 AM Base Year
Existing Configuration
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Aerodome Road												
2	T1	1133	0.0	0.350	0.7	LOS A	1.9	13.4	0.13	0.05	0.15	55.1
3	R2	99	0.0	0.350	10.0	LOS A	1.9	13.4	0.33	0.14	0.40	52.7
Approach		1232	0.0	0.350	1.4	NA	1.9	13.4	0.14	0.06	0.17	54.7
East: Southgate Road												
4	L2	60	0.0	0.060	8.9	LOS A	0.2	1.5	0.29	0.88	0.29	46.2
6	R2	45	0.0	1.304	327.0	LOS F	7.6	53.0	1.00	1.33	2.50	6.0
Approach		105	0.0	1.304	145.2	LOS F	7.6	53.0	0.59	1.07	1.24	11.6
North: Aerodome Road												
7	L2	103	0.0	0.148	5.5	LOS A	0.0	0.0	0.00	0.22	0.00	54.8
8	T1	478	0.0	0.148	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	57.0
Approach		581	0.0	0.148	1.0	NA	0.0	0.0	0.00	0.11	0.00	56.1
All Vehicles		1918	0.0	1.304	9.2	NA	7.6	53.0	0.12	0.13	0.18	38.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
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.

MOVEMENT SUMMARY

Site: 2 [Aerodome Road / Southgate Road - 2021PM Base Year]

2021 PM Base Year
Existing Configuration
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Aerodome Road												
2	T1	523	0.0	0.237	0.8	LOS A	1.3	9.2	0.07	0.06	0.08	55.6
3	R2	100	0.0	0.237	13.9	LOS B	1.3	9.2	0.76	0.62	0.83	43.6
Approach		623	0.0	0.237	2.9	NA	1.3	9.2	0.18	0.15	0.20	51.0
East: Southgate Road												
4	L2	173	0.0	0.187	9.5	LOS A	0.7	5.2	0.38	0.90	0.38	45.8
6	R2	191	0.0	2.535	740.5	LOS F	44.5	311.4	1.00	2.33	6.76	2.9
Approach		364	0.0	2.535	393.1	LOS F	44.5	311.4	0.70	1.65	3.72	5.0
North: Aerodome Road												
7	L2	245	0.0	0.256	5.5	LOS A	0.0	0.0	0.00	0.30	0.00	53.7
8	T1	754	0.0	0.256	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	56.4
Approach		999	0.0	0.256	1.4	NA	0.0	0.0	0.00	0.14	0.00	55.2
All Vehicles		1986	0.0	2.535	73.6	NA	44.5	311.4	0.19	0.42	0.75	13.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Minor Road Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
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.

MOVEMENT SUMMARY

Site: 2 [Aerodome Road / Southgate Road - 2026 AM Scenario 1]

2026 AM Scenario 1
Latent Road Upgrades
Site Category: (None)
Signals - Fixed Time Isolated   Cycle Time = 80 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Aerodome Road												
2	T1	1314	0.0	0.527	3.7	LOS A	12.0	83.8	0.41	0.40	0.41	46.7
3	R2	114	0.0	0.527	9.2	LOS A	9.0	63.2	0.41	0.44	0.41	51.0
Approach		1428	0.0	0.527	4.1	LOS A	12.0	83.8	0.41	0.40	0.41	47.5
East: Southgate Road												
4	L2	70	0.0	0.516	47.1	LOS D	2.9	20.0	1.00	0.76	1.01	25.4
6	R2	52	0.0	0.383	46.4	LOS D	2.1	14.6	0.99	0.74	0.99	26.6
Approach		122	0.0	0.516	46.8	LOS D	2.9	20.0	1.00	0.75	1.00	25.9
North: Aerodome Road												
7	L2	119	0.0	0.219	8.1	LOS A	3.5	24.3	0.29	0.40	0.29	51.7
8	T1	554	0.0	0.219	2.6	LOS A	3.5	24.7	0.29	0.31	0.29	48.6
Approach		673	0.0	0.219	3.6	LOS A	3.5	24.7	0.29	0.33	0.29	49.7
All Vehicles		2223	0.0	0.527	6.3	LOS A	12.0	83.8	0.41	0.40	0.41	43.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
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.

Organisation: KANTEY & TEMPLER (PTY) LTD | Processed: Tuesday, 29 June 2021 10:26:08 AM
Project: Z:\8101 Baragwanath Ext. 5\TIA\SIDRA\Intersection 2-Southgate Road_Aerodome Road.sip8

MOVEMENT SUMMARY

Site: 2 [Aerodome Road / Southgate Road - 2026 PM Scenario 1]

2026 PM Scenario 1
Latent Road Upgrades
Site Category: (None)
Signals - Fixed Time Isolated   Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Aerodome Road												
2	T1	607	0.0	0.509	8.9	LOS A	10.3	72.4	0.66	0.59	0.66	36.6
3	R2	116	0.0	0.509	20.5	LOS C	3.4	23.8	0.78	0.76	0.78	38.0
Approach		723	0.0	0.509	10.7	LOS B	10.3	72.4	0.68	0.62	0.68	37.1
East: Southgate Road												
4	L2	201	0.0	0.476	27.8	LOS C	5.3	37.0	0.91	0.80	0.91	32.7
6	R2	221	0.0	0.523	28.0	LOS C	5.9	41.2	0.92	0.81	0.92	33.8
Approach		422	0.0	0.523	27.9	LOS C	5.9	41.2	0.92	0.80	0.92	33.3
North: Aerodome Road												
7	L2	284	0.0	0.517	14.2	LOS B	10.3	72.2	0.66	0.68	0.66	44.9
8	T1	874	0.0	0.517	8.6	LOS A	10.6	74.0	0.66	0.62	0.66	36.0
Approach		1158	0.0	0.517	10.0	LOS A	10.6	74.0	0.66	0.63	0.66	39.7
All Vehicles		2303	0.0	0.523	13.5	LOS B	10.6	74.0	0.71	0.66	0.71	36.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
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.

ANNEXURE E

PHOTOGRAPHS

Photograph 1: Aerodrome Road / Southgate Road Intersection – Northern leg

Photograph 2: Aerodrome Road / Southgate Road Intersection – Eastern leg

Photograph 3: Chris Hani Road / Aerodrome Road Intersection – Northern leg

Photograph 4: Chris Hani Road / Aerodrome Road Intersection – Eastern leg

Photograph 5: Chris Hani Road / Aerodrome Road Intersection – Western leg

Access Alternatives Explored: Scenario 2 being the most feasible one for the site

Scenarios	Access Description	Pros	Cons
Scenario 1 (Drawing 8101 – TIAA – FIG 1) As per SDP drawing	• Full access off Southgate Road • Full access off Chris Hani Road	Can intercept all streams of traffic from Chris Hani Road and Southgate Road.	The proposed full access off Chris Hani Road will be shared with SAB and this poses a safety concern.
Scenario 2 (Drawing 8101 – TIAA – FIG 2)	• Full Access off Southgate Road • Marginal Access off Chris Hani Road	Dedicated access to filling station off Chris Hani Road. Less conflict points which benefits safety. Cost saving as there is already a physical median along Chris Hani Road.	Can only intercept eastbound traffic from Chris Hani Road.
Scenario 3 (Drawing 8101 – TIAA – FIG 3)	• Marginal Access off Aerodome Road • Marginal Access off Chris Hani Road	Access off Aerodome Road could be possible.	Costly option as it would require a physical median barrier to be built along Aerodome Road. Can only intercept southbound traffic from Aerodome Road and eastbound traffic from Chris Hani Road.

LEGEND

- NEW KERB
- EXISTING KERB
- NEW ROAD MARKINGS
- CENTER LINE
- EXISTING PAVED ISLAND
- EXISTING PAINTED ISLAND
- NEW PAINTED ISLAND
- NEW ISLAND KERBED
- PROPOSED ROAD UPGRADES

SCALE :	1 : 1000
DATE :	MAY 2021
DATE OF PHOTOGRAPHY :	OCTOBER 2015
KT DRG No. :	8101 - TIA - FIG 1
DRAWN BY:	C.WILLIAMS

TITLE :

SITE ACCESS ALTERNATIVES - SCENARIO 1

BARAGWANATH EXT. 5

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LEGEND

- NEW KERB
- EXISTING KERB
- NEW ROAD MARKINGS
- CENTER LINE
- EXISTING PAVED ISLAND
- EXISTING PAINTED ISLAND
- NEW PAINTED ISLAND
- NEW ISLAND KERBED
- PROPOSED ROAD UPGRADES

SCALE :	1 : 1000
DATE :	MAY 2021
DATE OF PHOTOGRAPHY :	OCTOBER 2015
KT DRG No. :	8101 - TIA - FIG 2
DRAWN BY:	C.WILLIAMS

TITLE :

SITE ACCESS ALTERNATIVES - SCENARIO 2

BARAGWANATH EXT. 5

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LEGEND

- NEW KERB
- EXISTING KERB
- NEW ROAD MARKINGS
- CENTER LINE
- EXISTING PAVED ISLAND
- EXISTING PAINTED ISLAND
- NEW PAINTED ISLAND
- NEW ISLAND KERBED
- PROPOSED ROAD UPGRADES

SCALE :	1 : 1000
DATE :	MAY 2021
DATE OF PHOTOGRAPHY :	OCTOBER 2015
KT DRG No. :	8101 - TIA - FIG 3
DRAWN BY:	C.WILLIAMS

TITLE :

SITE ACCESS ALTERNATIVES - SCENARIO 3

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