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LANSERIA X79 ON SUNRELLA AGRICULTURAL HOLDINGS 5 & 6

TRAFFIC IMPACT ASSESSMENT

REPORT 2024-312-01 Rev 0

FEBRUARY 2025

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Report Information Sheet

Report number	:	2024-312-01 Rev 0
Development name	:	LANSERIA X79 WAREHOUSING & DISTRIBUTION ON AGRICULTURAL HOLDINGS 5 & 6, SUNRELLA

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Lanseria X79 Warehousing and Distribution on Holdings 5 & 6 Sunrella

TRAFFIC IMPACT ASSESSMENT

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1 INTRODUCTION AND BACKGROUND

EDS Engineering Design Services (Pty) Ltd was appointed by Growthpoint Properties (Pty) Ltd to undertake a Traffic Impact Assessment (TIA) as part of the township establishment application for the proposed Lanseria Extension 79 on Holdings 5 and 6 of Sunrella Agricultural Holdings for warehousing and distribution land-use rights during 2024.

The development site, Lanseria Extension (X)79 is situated on Sunrella Agricultural Holdings number 5 & 6 south of Lanseria International Airport. The development is adjacent to Preller Drive (northern boundary), Middel Road (eastern boundary) and the Lanseria International Airport (western boundary).

Regional accessibility to the development is via the N14 freeway, R552 & R512.

This study investigates the existing and future operating conditions at the key intersections within the study area, it estimates the expected development trip generation whilst taking cognisance of the type of development proposed, it determines the anticipated traffic impact on the surrounding road network and determines whether it is necessary to implement any road and/or intersection improvements to mitigate the anticipated traffic impact.

The study was undertaken considering the requirements and guidelines as set out in the *TMH 16 Volume 2 (South African Traffic Impact and Site Impact Assessment Standards and Requirements Manual), COTO, Version 1 dated August 2012*. Comments are also made in respect of the site access as well as the non-motorised & public transport in this study.

This report considers the traffic impact of the proposed warehousing and distribution developments.

1.1 Site Location

The development site is located +-4km north of R512 & N14 interchange and falls within the jurisdiction of the Johannesburg Metropolitan Municipality.

Location of the sites in relation to the surrounding road network is shown in **Figure** 1-1.

1.2 Methodology

The methodology of this TIA included the following:

- A site visit was undertaken to observe the current travel patterns, road geometry, and gain an understanding of the area;
- The relevant roads authority road network planning was considered;
- Traffic counts were obtained at relevant intersections within the study area;
- A trip generation, distribution, and assignment exercise was undertaken;

- The intersections capacity analysis for the AM and PM peak hours were undertaken where the background and development traffic demand was considered for the intersections included in the study;
- Alternatives to improve the road capacity were investigated where required;
- Applicable latent developments and latent road upgrades were taken into account during the study;
- A high-level conceptual layout indicating access requirements, site circulation of heavy vehicles and parking was prepared;
- Public transport and non-motorised facilities were considered based on available information.

All findings, conclusions, and recommendations are captured in this report.

1.3 Existing and Proposed Land-Uses

The proposed Lanseria X79 is located on *Holding 5 and Holding 6, Sunrella Agricultural Holdings.* The development site is currently zoned as "Agricultural Holding". The existing zoning certificate is attached in **Annexure A**.

The proposed rights for Lanseria X79 Holdings 5 & 6 Sunrella consist of "Industrial 3" zoning rights with the following property constraints as per **Table 1-1:**

Table 1-1: Proposed Rights – Holdings 5 & 6 Sunrella

SITE	ZONING	EXTENT (m²)	FAR	COVERAGE (%)	PERMISSIBLE GFA (m²)	ERF NUMBERS
X79 (Holding 5&6)	"Industrial 3"	38 786 m²	0,6	60%	23271,6 m²	976 - 977

The development controls are summarised as follows:

- Zoning: "Industrial 3"
- Coverage: 60% (F.A.R = 0,6 as per scheme)
- Permissible gross floor area: 23 272m²
    - Offices restricted to 2500m^2

The draft conditions of establishment of Lanseria X79 Holdings 5 & 6 Sunrella are included under **Annexure B**.

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TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

Site Locality Plan

Figure 1-1

2 DATA COLLECTION

The South African Trip Data Manual (TMH 17 – Volume 1 Dated September 2012) has been used to determine the extent of the traffic study. As a result of the proposed development operations, a full detailed Traffic Impact Assessment considering the base year as well as a five-year horizon year is required.

2.1 Study Area

The study area consists of the key intersections within a 2km radius from the development site as summarised in **Table 2-1**:

Manual traffic counts were undertaken at these key intersections for the weekday morning (AM) and afternoon (PM) peak periods on the 23rd of October 2024.

Table 2-1: Intersections included in TIA

No	Intersection	Control Type
1.	Pelindaba Road (R512) / 6th Road (also Elandsdrift Rd) (R552)	Stop controlled to be Signalised in near future
2.	6th Road (R552) / Middel Road	Stop controlled

Locations of these relevant intersections are depicted in **Figure 2-1**.

2.2 Latent Rights

JRA requested the following latent rights be considered for this study:

- Lanseria X35, X36 & X37 by WSP
- Lanseria X7 by Mariteng Consulting Engineers
- Lanseria X32 by Techworld Consulting Engineers
- Lanseria X11 & X12 by EDS Engineering Design Services

2.2.1 Lanseria X35, X36 & X37

After enquiries to WSP with regards to Lanseria X35, 36 & 37's latent development traffic it was concluded that the Traffic Impact Study was never approved by JRA or Gautrans and WSP and the project is currently indefinitely on hold. JRA confirmed that the latent rights for Lanseria X35, 36 & 37 can be disregarded as the TIA was never approved.

2.2.2 Lanseria X7

The proposed Township Lanseria Extension 7 will be established on the Remainder of Portion 9 and Remainder of Portion 69 of the Farm Bultfontein 533-JQ. The site is situated along Bultfontein Road and falls in jurisdiction of the City of Johannesburg. Location of the site in relation to the surrounding road network and application site is shown in **Figure 1-1**.

The development controls are summarised as follows:

Site 1 - Residential:

- Zoning: "Residential 3"
- Density: 60 units/ha
- 963 housing units (intent is inclusionary housing)

Site 2 - Industrial:

- Zoning: "Industrial 1"
- Size: 4.1718 ha
- F.A.R.: 2.1
- 87 608 m²

The proposed development will generate approximately 820 trips during the weekday morning and weekday afternoon peak hours and 424 trips during the Saturday peak hours.

2.2.3 Lanseria X32

The proposed township Lanseria Extension 32 (Lanseria Corporate Estate – North development) will comprise of zoning for "Special for industrial purposes" with critical land uses that include Offices, Showrooms, Manufacturing, and Warehousing and Distribution. The site is situated on the corner of Pelindaba Road (R512) and Ashenti Road and falls in jurisdiction of the City of Johannesburg.

The development controls are summarised as follows:

- Offices, ±19 120 m² GLA

- Showrooms, ±40 300 m² GLA
- Manufacturing, ±65 772 m² GLA
- Warehousing and Distribution, ±65 772 m² GLA
- Filling Station with a convenience store, ±100 m² GLA

The proposed development will generate approximately 1319 and 1520 trips during the weekday morning and weekday afternoon peak hours respectively.

2.2.4 Lanseria X11 and X12

The proposed Lanseria Extension 11 is located on Portion 32 (a Portion of Portion 1) and the Remaining extent of Portion 1 of the Farm Botesdal 529JQ; and Lanseria Extension 12 is located on Holding 1, Sunrella Agricultural Holdings and Portion 80 (a Portion of Portion 55) of the Farm Bultfontein 533JQ. Location of the sites in relation to the surrounding road network and application site is shown in **Figure 1-1**.

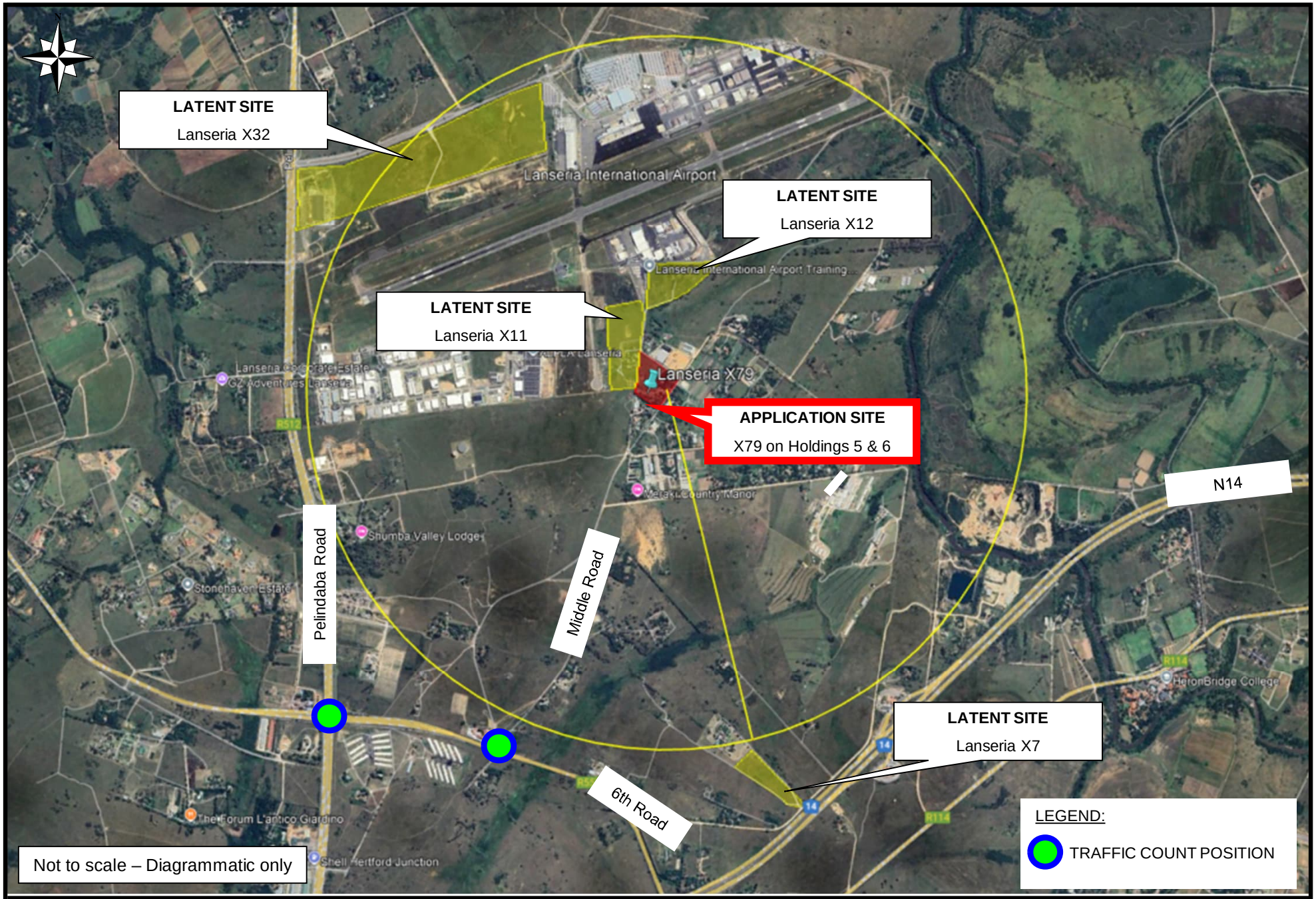
The development controls are summarised as follows:

Extension 11 – Industrial:
- Zoning: “Industrial 3”
- Extent: 84 806 m²
- F.A.R: 0.6
- Coverage: 60%
- Permissible GFA: 50 883,6 m²

Extension 12 - Industrial:
- Zoning: “Industrial 3”
- Extent: 64 569 m²
- F.A.R: 0.6
- Coverage: 60%
- Permissible GFA: 38 741,4 m²

The total permissible floor area for Lanseria X11 (50883,6m² floor area) will generate approximately 335 peak hour development trips in the AM and PM peak hours. The total permissible floor area for Lanseria X12 (38741,4m² floor area) will generate approximately 253 peak hour development trips in the AM and PM peak hours. A total of 588 peak hour development trips will be added to the external road network as a result of the proposed developments on Lanseria Extension 11 & 12.

Figure 2-2 and **Figure 2-3** shows the latent development trip distribution during the AM and PM peak periods for Lanseria X7, X32 and X11 & X12 combined.



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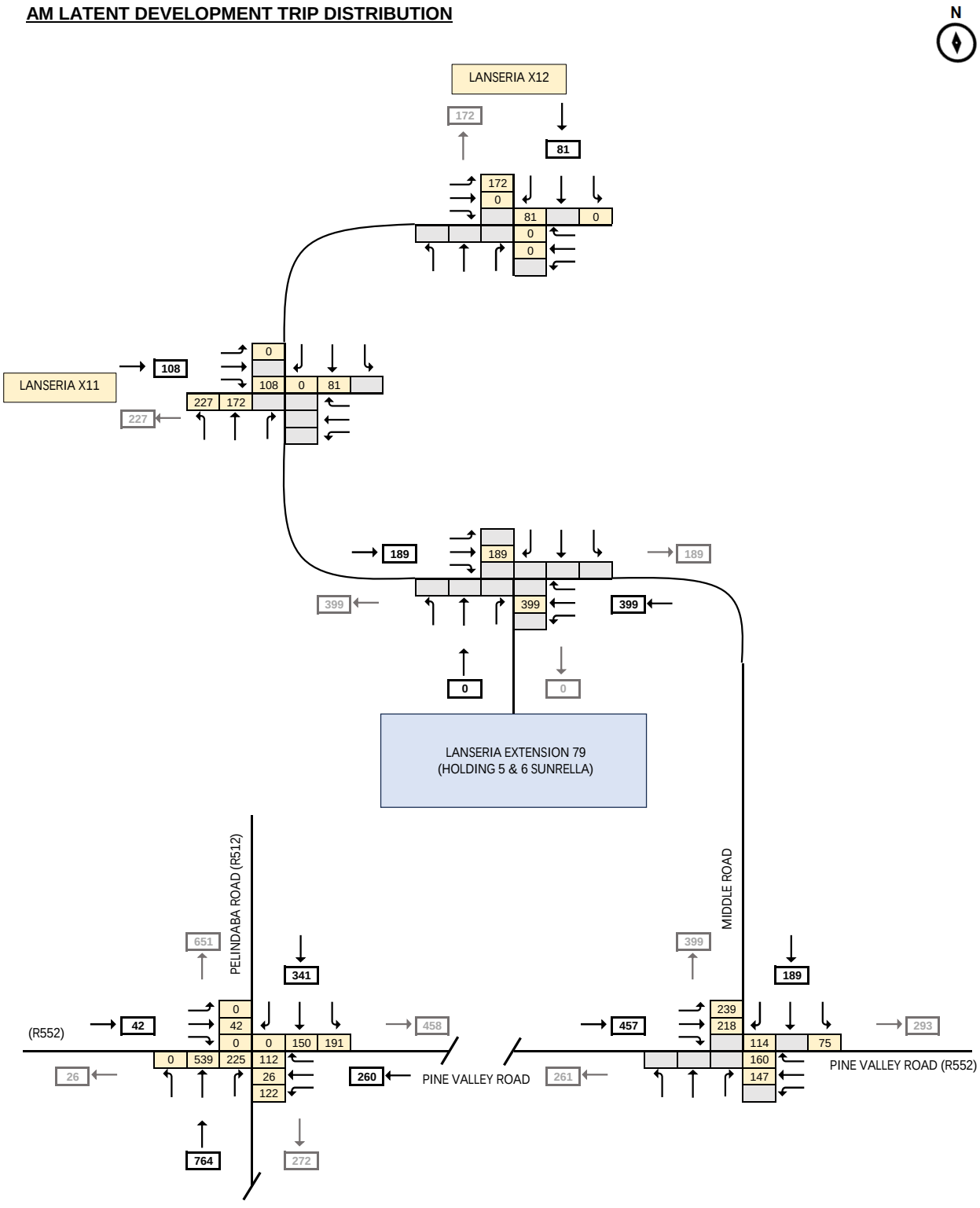
TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

Site Locality Plan – Counting Stations

Figure 2-1

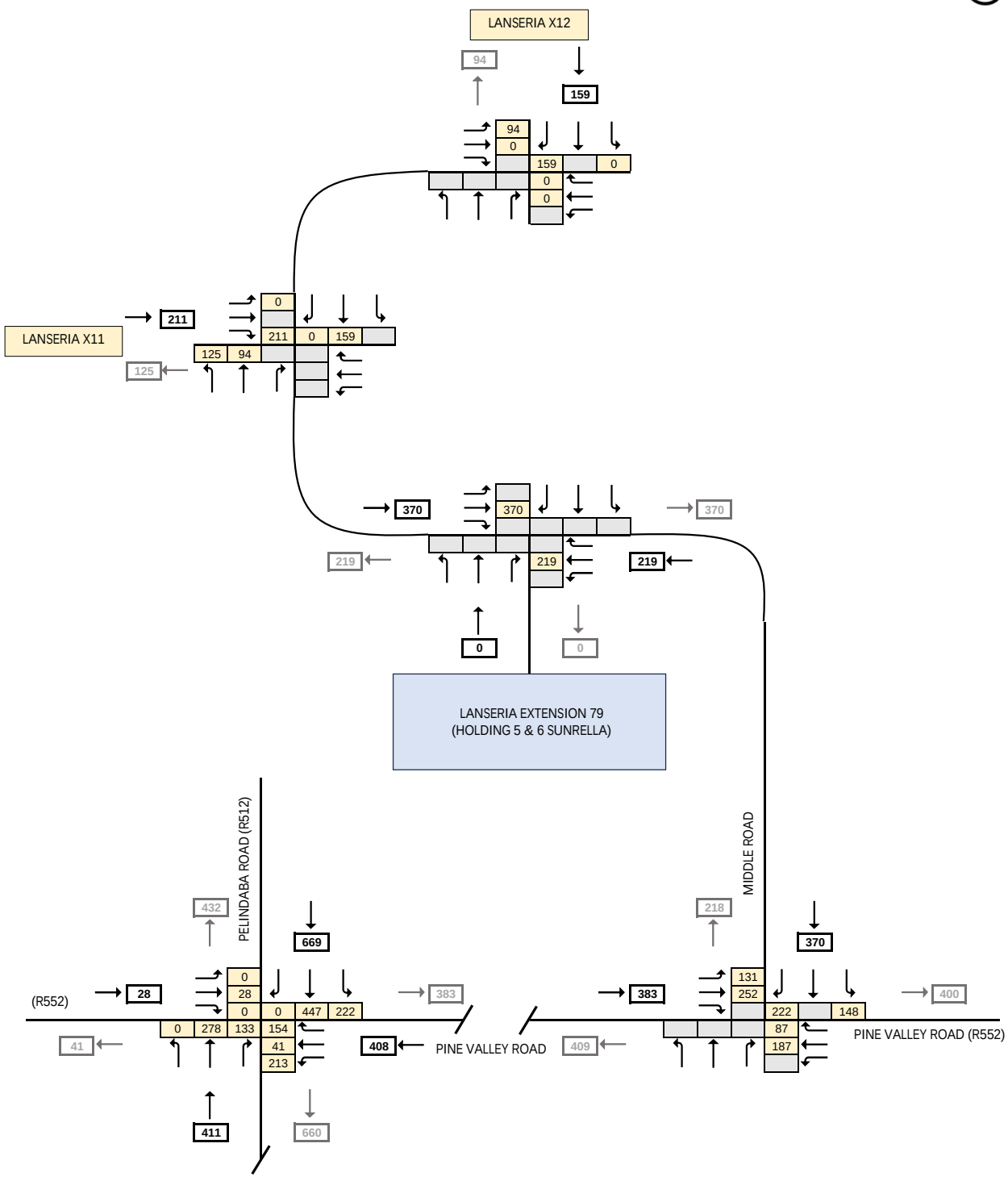
AM LATENT DEVELOPMENT TRIP DISTRIBUTION



TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6
Latent Development Trip Distribution AM

Figure 2.2

PM LATENT DEVELOPMENT TRIP DISTRIBUTION



TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6
Latent Development Trip Distribution PM

Figure 2.3

3 ACCESS AND ROAD NETWORK

3.1 Study Area

The proposed development, Holdings 5 & 6, is situated south of Lanseria International Airport. The northern border of Holding 5 is Preller Drive, with Middel Road the eastern border, Holding 6 the southern border and Lanseria Extension 11 (remaining extent of Portion 1 of the farm Botesdal 529-JQ) the western border.

Holding 6 is situated south of Holding 5 and north of Holding 7 with Middel Road also being the eastern border. The western border of Holding 6 is approximately 240m in length of which 208m is shared with Lanseria Extension 11 (northern part of the border) and the remaining 32m with Portion 72 of the farm Botesdal 529-JQ (southern part of the border).

The Holdings 5 & 6 development will obtain access from Preller Drive. The access will operate as side-road stop-controlled intersection.

3.2 Existing and Planned Road Network

The external road network in proximity to the development consist of the N14 freeway (Class 1 road) to the south, 6th Road (R552) (class 2 road) to the south-east and Pelindaba Road (R512) (Class 2 road) to the west.

Other roadways adjacent to the development include:

- Preller Drive
- Middel Road

Preller Drive (Class 5 Road) is a very low volume road primarily serving the southern buildings and hangers at the Lanseria International Airport. Middel Road (Class 5 Road) is also a low volume road terminating at the Preller Drive / Middel Road / Main Avenue intersection. Main Road (Class 5 Road) is currently a gravel road. These roads are under the jurisdiction of the Johannesburg Roads Agency (JRA). See **Figure 3-1** for the Johannesburg Road Network obtained from *Joburg GIS*.

Pelindaba Road (K29) and 6th Road/Elandsdrift Road (K33) on the external road network are both K-routes in Gauteng Department of Roads and Transport (Gautrans) road network planning. Middel Road will in future be replaced with the planned K215 that will extend from the K33 to the planned K31 running along the eastern boundary of Lanseria International Airport. The eastern boundary of the planned development will be adjacent to the current alignment of the future K215.

As the site is within 200m of the proposed K215 (for which the basic planning has not been undertaken), a Section 7 report will be prepared and submitted to Gautrans.

3.3 Lanseria Master Plan

The Greater Lanseria Masterplan (GLMP) was previously headed by the Gauteng Planning Division but currently falls under Gauteng Department of Cooperative Governance and Traditional Affairs (COGTA).

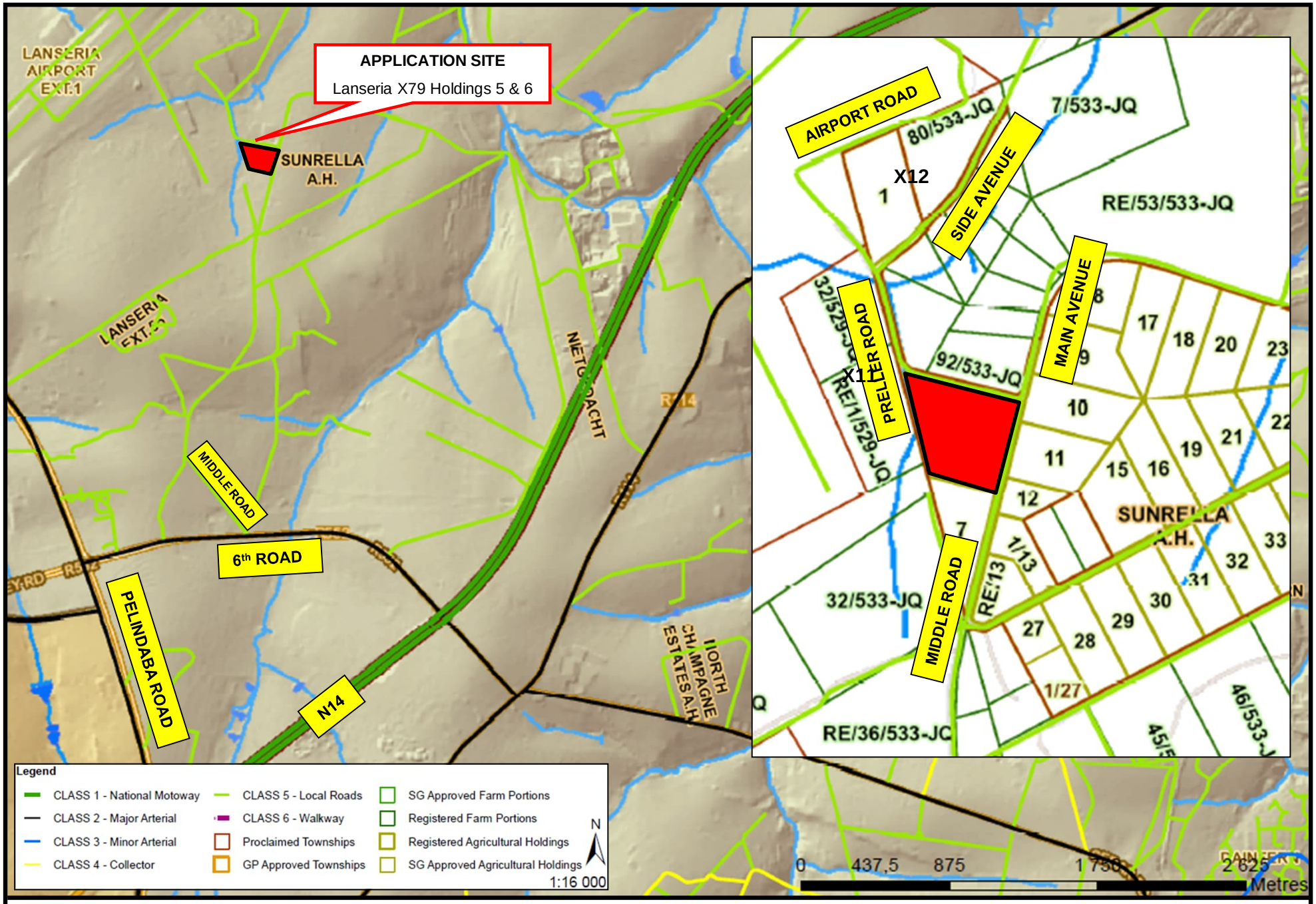
The GLMP is currently only a framework that consist of a grid road network that will interconnect properties and create a link between the new Central Business District (CBD) south and the airport to the north. By creating a resilient movement framework it will enable economic opportunities where properties can maximize their potential through direct access, similar to the Johannesburg CBD, Springs, Pretoria CBD, and others.

Significant commitment is still required from both provincial and local government authorities as well as the active involvement and input of the Real Estate Investment Trust (REIT). A detailed transport framework will need to be developed to safeguard the road reserves, ensuring that the secondary road network can be seamlessly integrated into the broader transport planning efforts. This collaborative approach underscores the need for coordinated efforts among various stakeholders to successfully implement the envisioned grid road network and its associated benefits for economic growth and accessibility.

The GLMP framework as it currently stands, indicates that the proposed Lanseria X79 will be able to obtain access from two separate locations **in future**:

- Via a new proposed road between Boeing Street and the extended Preller Road to the south-east connecting to the primary road network (Pelindaba Road R512)
- Via Preller Road and Middel Road north connecting to the secondary road network south of Lanseria Airport

GLMP road framework as well as the available access roads for the proposed Lanseria X79 is included under **Annexure C** of this report.



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TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

Joburg GIS

Figure 3-1

4 TRAFFIC DEMAND

4.1 Trip Generation

The proposed warehouses are within proximity to a number of informal and low-income residential areas that include Cosmo City, Diepsloot, the Krugersdorp townships, etc. **Table 4-1** below sets out the trip rates used to determine the trip generation for warehouse & office land-use rights of the proposed X79 warehouse developments:

Table 4-1: Trip Generation Factors

LAND-USE	PEAK HOUR TRIP RATE			DIRECTIONAL SPLIT					
				AM PEAK		PM PEAK		SAT PEAK	
	AM	PM	SAT	IN	OUT	IN	OUT	IN	OUT
Warehousing and Distribution	0,5	0,5	0,15	60	40	45	55	65	35
Offices	2,1	2,1	0,45	85	15	20	80	55	45

The peak hour trip generation for X79 is summarised in **Table 4-2** for the weekday AM and PM as well as the Saturday peak hours.

Table 4-2: Trip Generation for X79

LAND-USE	UNIT FACTOR	GLA (m²)	ADJUSTED PEAK HOUR TRIP RATE			TOTAL TRIPS GENERATED								
						AM PEAK			PM PEAK			SAT PEAK		
			AM	PM	SAT	IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT
Warehousing and Distribution	100	20774	0,50	0,50	0,15	62	42	104	47	57	104	21	11	32
Offices	100	2500	2,10	2,10	0,45	45	8	53	11	42	53	7	6	13
TOTAL TRIPS FOR H5&6 WAREHOUSE DEVELOPMENT						107	49	**156**	57	99	**156**	28	17	**45**

The total permissible floor area, as shown in **Table 1-1**, for Lanseria X79 will generate approximately 156 peak hour development trips in the AM and PM peak hours. Therefore, a total of 156 peak hour development trips will be added to the external road network as a result of the proposed developments on Lanseria Extension 79.

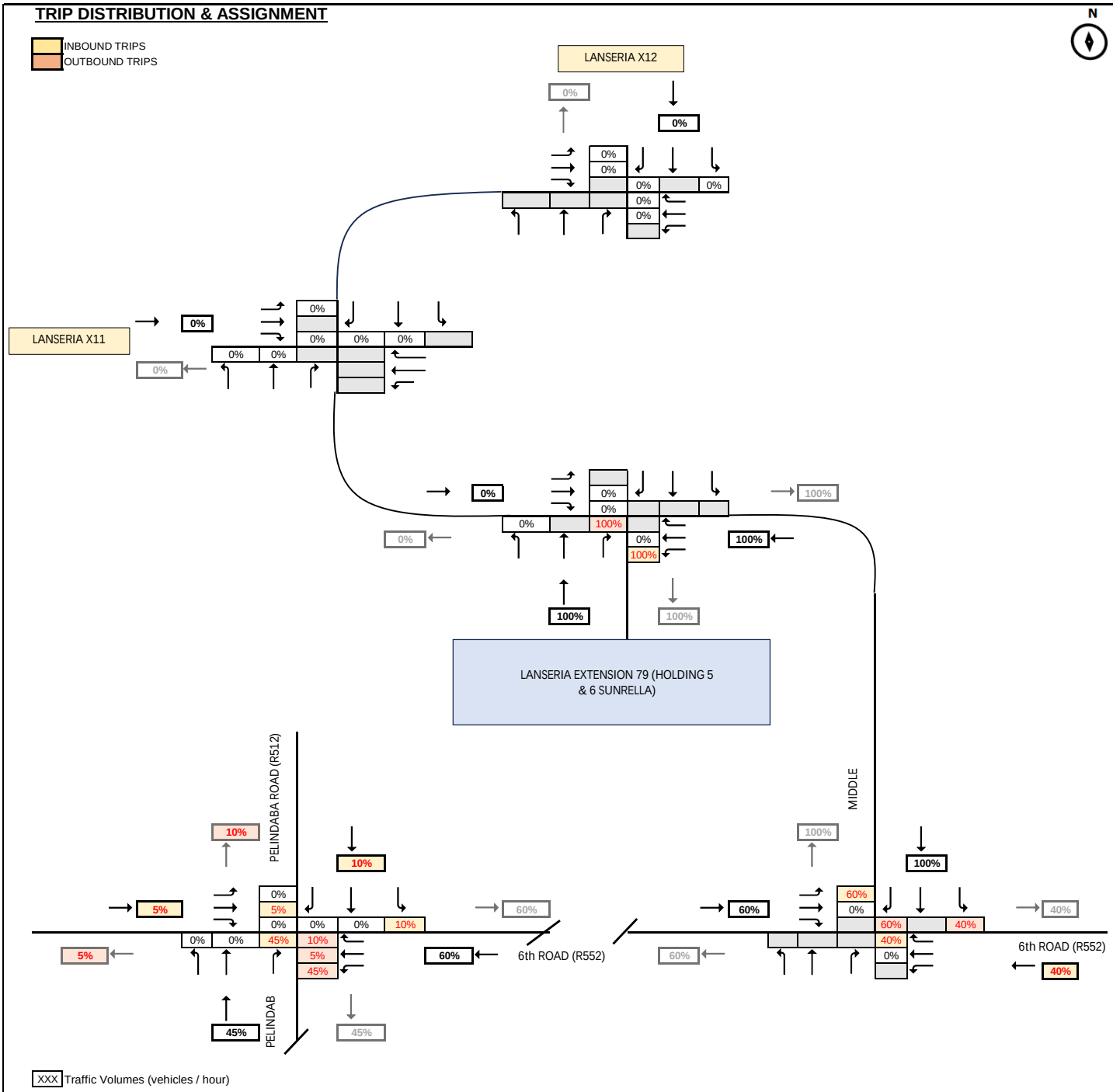
4.2 Trip Distribution

The proposed development would typically contribute to the weekday AM and PM peak hours. The development traffic assignment on the external road network is as follows:

- 5% to/from the West (informal settlements) via the R552
- 10% to/from the North (Blair Atholl area, informal settlements etc.) via Pelindaba Road (R512)
- 45% to/from the N14 freeway (east and west) and Pelindaba Road (R512) including Cosmo City, Krugersdorp and northern Johannesburg residential areas
- 40% to/from south-east areas that include Diepsloot; Steyn City, Fourways residential areas etc.

Figure 4-1 indicate the trip distribution patterns during the peak periods. The development trip distribution during the AM Peak period is shown on **Figure 4-2** and the PM peak period on **Figure 4-3**.

TRIP DISTRIBUTION & ASSIGNMENT

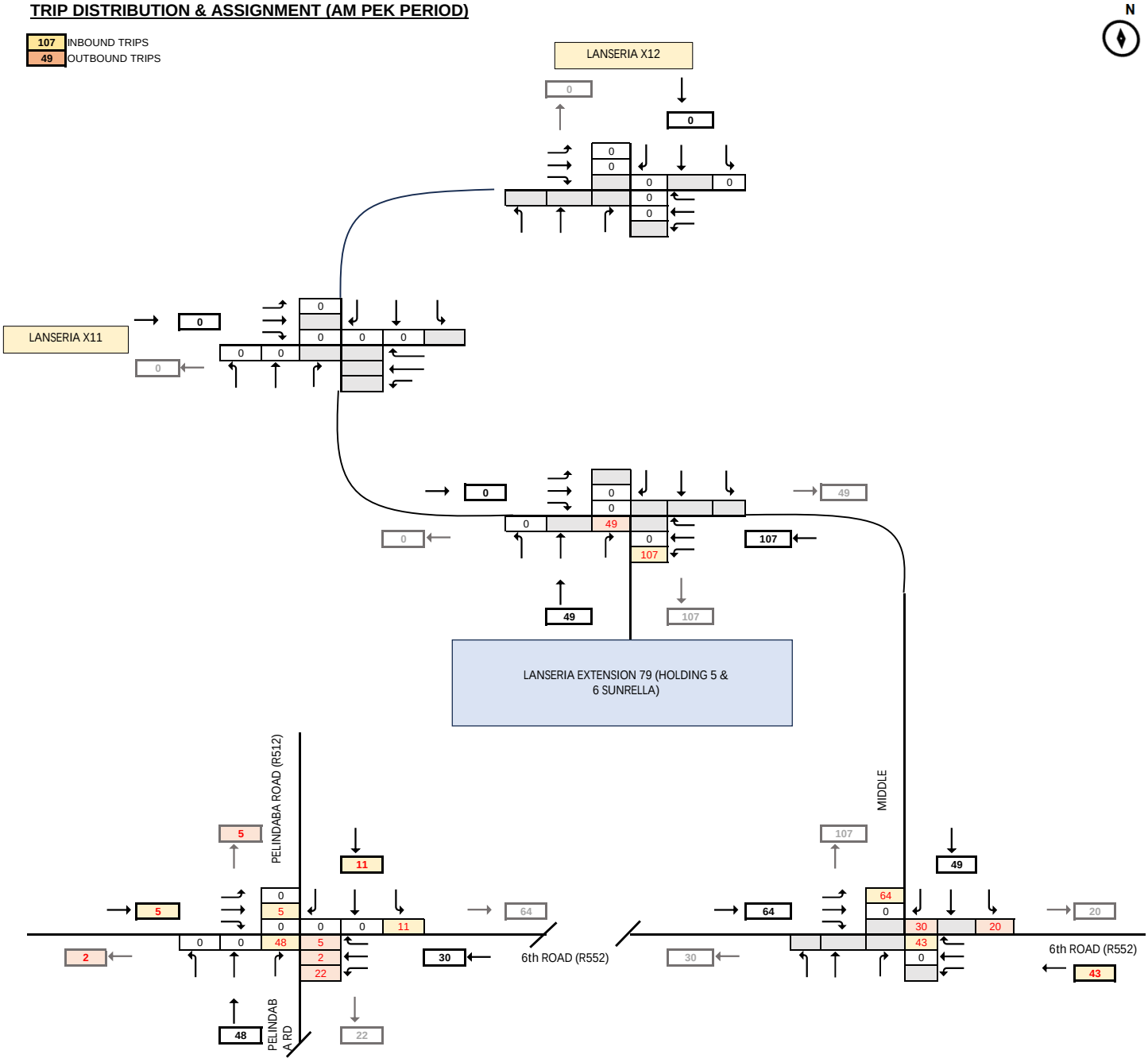


TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6
Trip Distribution Pattern

Figure 4-1

TRIP DISTRIBUTION & ASSIGNMENT (AM PEK PERIOD)

107 INBOUND TRIPS
49 OUTBOUND TRIPS



XXX Traffic Volumes (vehicles / hour)

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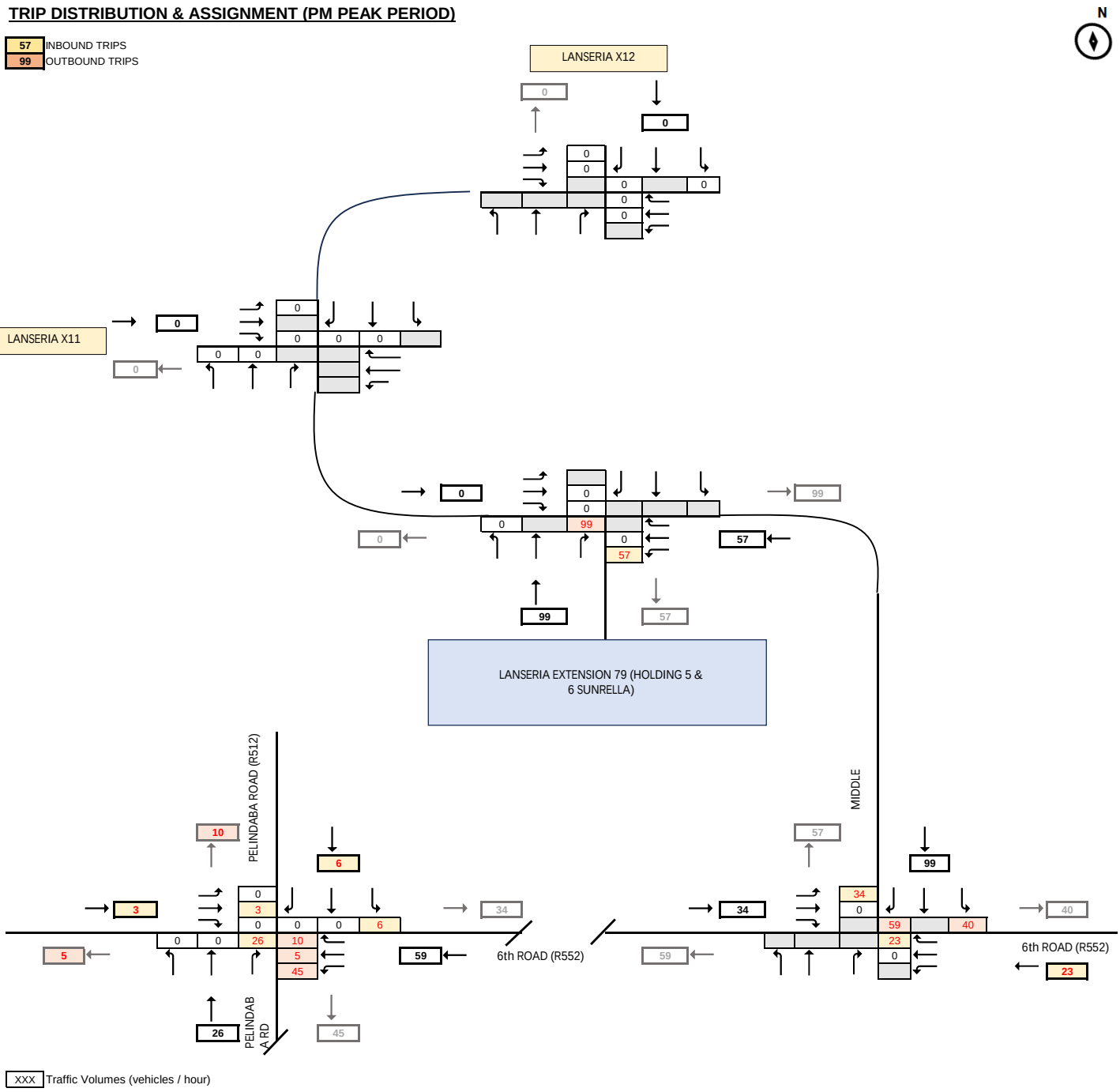
TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

Trip Development Distribution (AM Peak)

Figure 4-2

TRIP DISTRIBUTION & ASSIGNMENT (PM PEAK PERIOD)



5 DEVELOPMENT SITE ANALYSIS

5.1 Site Circulation

The design vehicles for this development are as follows:

- Heavy Vehicle: WB-15 & WB-20 (SA)
- Light Vehicle: Passenger car

Loading and offloading will take place on-site as indicated on the site layout plan included under **Annexure D**. Sufficient manoeuvring space is provided for all heavy vehicles to turn around on site in the yard.

5.2 Parking

5.2.1 Parking Requirements

The standard parking requirement for warehouses in accordance with the *City of Johannesburg Land Use Scheme, 2018* for the proposed development on Lanseria X79 (situated in a Parking Zone B) is outlined in **Table 5-1.**

Table 5-1: Required Parking

	LAND-USE	PARKING RATE PROPOSED	GFA (m²)*	REQUIREMENT
Extension 79	Warehouse	1 bays per 100m²	15988 m²	159,9 bays
	Office	2 bays per 100m²	1807 m²	36,1 bays
	Total		**17795 m²**	**196,0 bays**
*** as per site layout plan*				

A parking study conducted by EDS Engineering Design Services (Pty) Ltd for a similar development, Equites Jet Park, highlights that actual parking demand for warehouse and office developments is significantly lower than the prescribed municipal guidelines and town planning schemes. The study found the following effective parking ratios:

- **Warehouses**: 0.47 bays per 100 m² Total Building Floor Area (TBFA), compared to the typical requirement of 1 bay per 100 m² TBFA as per local guidelines.
- **Offices**: 1 bay per 100 m² TBFA, compared to the typical requirement of 2 bays per 100 m² TBFA as per local guidelines.

These findings support the use of reduced parking rates for similar developments, promoting efficient land use and cost savings while maintaining operational functionality. Based on these findings, it is recommended to:

- **Apply a reduced parking ratio of 0.5 bays per 100 m² TBFA** for warehouses, ensuring alignment with observed demand.

- **Apply a reduced parking ratio of 1 bay per 100 m² TBFA** for offices, ensuring alignment with observed demand.

Additionally, it is anticipated that warehouse developments in proximity to airports, such as Lanseria X79, may require even fewer parking bays, as many employees work directly for airport operations (e.g., ground handling services) rather than on the receiving or dispatching side of packages.

Accordingly, the reduced parking ratios were applied to calculate the total parking requirement for Lanseria X79, resulting in **98 parking bays**, as shown in **Table 5-2**. These parking bays are reflected on the site layout plan attached in **Annexure D**.

Table 5-2: Proposed Parking

SITE	LAND-USE	PARKING RATE PROPOSED	GFA (m²)*	REQUIREMENT
Extension 79	Warehouse	0,5 bays per 100m²	15988 m²	80 bays
	Office	1 bays per 100m²	1807 m²	18 bays
	Total		**17795 m²**	**98 bays**

The recommended parking ratios are specified accordingly in the Draft **Conditions of Establishment** (attached in **Annexure B**).

5.2.2 Loading Bays Requirements

The *CoJ LUMS* does not have specific loading bay requirements compared to for instance the *City of Ekurhuleni Land Use Scheme 2021*. The *CoJ LUMS* states that loading and off-loading facilities shall be provided to the satisfaction of the Council.

The proposed warehouse developments on Lanseria Extension 79 will primarily supply and obtain goods to and from Lanseria International Airport, thus resulting in approximately 50% reduction in loading vehicles on the external road network (as vehicles do not pick-up, store and distribute the same goods as a conventional warehouse distribution centre).

18 loading bays are proposed for the warehouse developments on Lanseria Extension 79. This is considered sufficient for the proposed warehouse developments located adjacent to the main supplier and distributer.

5.3 Access Control and Stacking Distance

The required stacking distance required at the access point development was calculated in accordance with the COTO's *TMH 16 South African Traffic Impact and Site Traffic Assessment Standards and Requirements Manual Volume 2*.

The maximum inbound trips, namely **107 during the AM Peak**, were obtained from the trip generation determination of the development (refer to **Table 4-1** and **Table 4-2** for trips generated). **Table 5-3** below summarises the inbound and outbound trips that should be catered for at the development access.

Table 5-3: Maximum Peak Hour Trips

SITE	PERMISSIBLE GFA (m^2)	AM PEAK IN	AM PEAK OUT	PM PEAK IN	PM PEAK OUT
X79 (Holding 5&6)	23271,6 m^2	107	49	57	99

The site layout plan for Lanseria X79 indicates an entrance and exit each with two lanes each. The warehouse yard areas will be closed-off during non-business hours (with large sliding gates) and the parking areas will be accessed with magnetic cards and boom systems. The gates and booms are located far into the property (> 60 meters), thus stacking distance on-site will not be an issue.

See the site layout plan included under **Annexure D** for detail pertaining to the accesses, which is side-road stop controlled and allows heavy vehicle movements.

6 INTERSECTION TRAFFIC ANALYSES

The following intersections were included in the traffic analysis:

1. Pelindaba Road (R512) / 6th Road (R552)
2. 6th Road (R552) / Middel Road

The following scenarios were analysed for the individual intersections and the proposed accesses:

- Scenario 1: 2024 Base Year Background Traffic Operating Conditions
- Scenario 2: 2029 Horizon Year Background Traffic Operating Conditions + Latent Traffic Operating Conditions
- Scenario 3: 2029 Horizon Year Background + Latent + Development Traffic Operating Conditions

The traffic volumes applied for each of the above analysis scenarios are captured in the following Figures presented in **Annexure E**:

- **Figure E-1:** 2024 Base Year – **AM** Background Traffic Counts
- **Figure E-2**: 2024 Base Year – **PM** Background Traffic Counts
- **Figure E-3**: 2029 Horizon Year – **AM** Background + Latent Traffic Volumes
- **Figure E-4**: 2029 Horizon Year – **PM** Background + Latent Traffic Volumes
- **Figure E-5**: 2029 Horizon Year – **AM** Background + Latent + Development Traffic Volumes
- **Figure E-6**: 2029 Horizon Year – **PM** Background + Latent + Development Traffic Volumes

The 2024 background weekday AM and PM peak-hour traffic volumes at the surveyed intersections were projected to 2029 using a 1% annual growth rate. This growth rate was derived as the average of the traffic volume growth observed from traffic counts undertaken in 2022 for Lanseria X11 and X12 TIA and the newly collected traffic counts data for the Holding 5 & 6 TIA.

A uniform heavy vehicle percentage of 5% was used for all traffic volumes in the analyses during the peak hours.

The traffic impact expected from the proposed development at the key intersections within the study area was determined using SIDRA Intersection 9, a traffic engineering software package. The SIDRA outputs are included under **Annexure F.**

6.1 Intersection 1: Pelindaba Road (R512) & 6th Road (R552)

The intersection of Pelindaba Road (R512) and 6th Road (R552) is currently a four-way stop-controlled intersection. In the Traffic Impact Assessment (TIA) conducted for the Lanseria X11 and X12 developments, both Gautrans and the Johannesburg Roads Agency (JRA) confirmed that the intersection will be upgraded to a signalised intersection, as per the Traffic Impact Study conditions of 10 October 2023 (approval letter provided in **Annexure G**). Therefore, it is assumed that the conversion from stop-control to traffic signals is already in place, and Scenario 1 for the base year background traffic operations reflects the operation of a signalised intersection. In this regard it should be noted that the services agreements for Lanseria X11 and X12 is currently in progress. The signal settings used in the analysis are based on the optimised timing plans generated by the SIDRA analysis software. The configuration of the signal-controlled intersection is as per **Figure 6-1**:

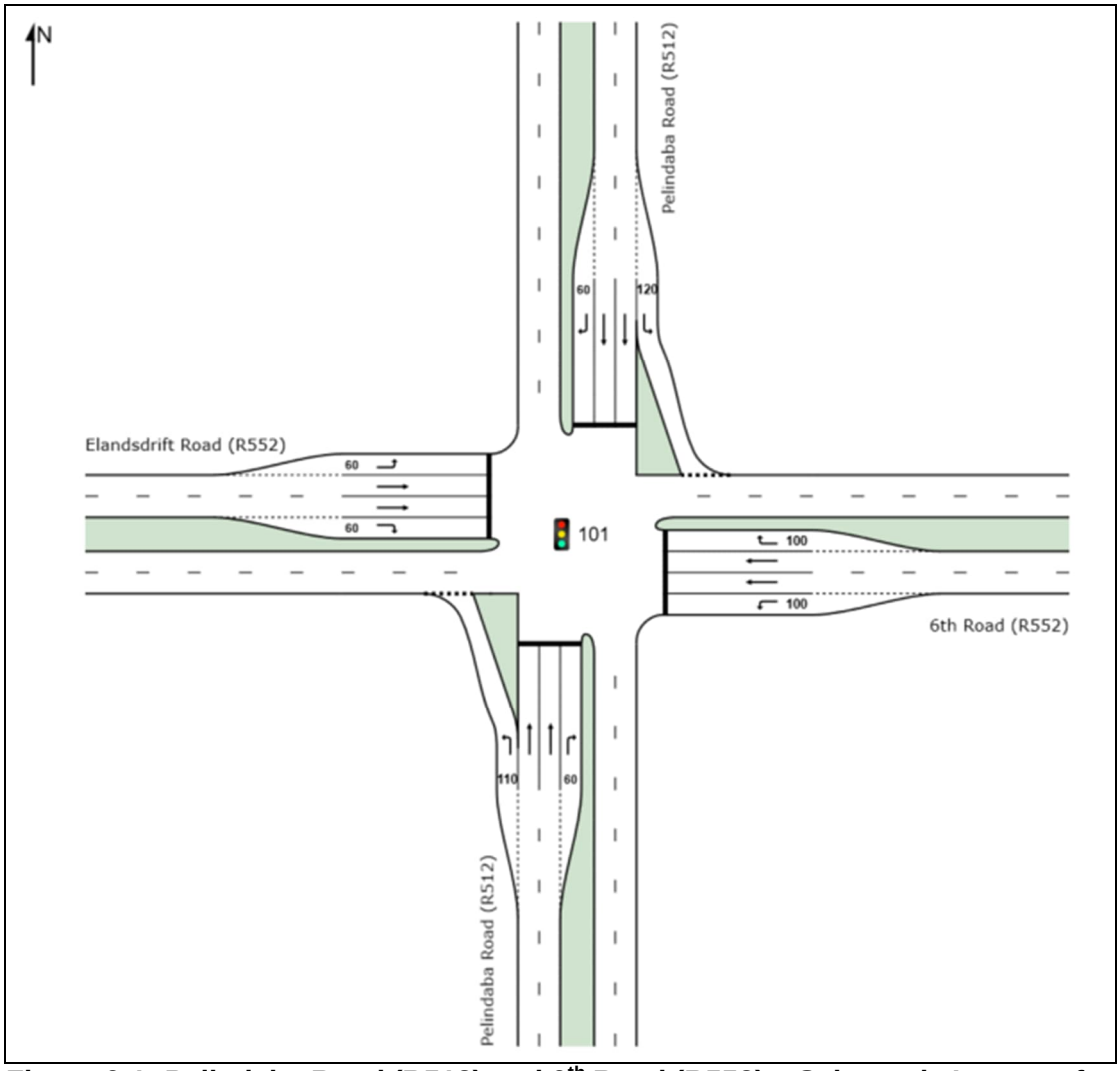


Figure 6-1: Pelindaba Road (R512) and 6th Road (R552) – Schematic Layout of Existing Intersection Geometry, Signalised.

6.1.1 2024 Base Year Background Traffic Operating Conditions

The 2024 existing base year traffic operating conditions for the intersection of Pelindaba Road (R512) & 6th Road (R552) are set out in **Table 6-1** and **Table 6-2,** taking into consideration the conversion of the four-way stop-controlled intersection to a traffic signal-controlled intersection:

Table 6-1: 2024 AM Base Year Background Traffic Operating Conditions – Existing Background Traffic (existing geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
South: Pelindaba Road (R512)	Left	0,008	7,3	LOS A
	Through	0,891	34	LOS C
	Right	0,535	17,3	LOS B
East: 6th Road (R552)	Left	0,47	35,4	LOS D
	Through	0,039	27,6	LOS C
	Right	0,708	28,4	LOS C
North: Pelindaba Road (R512)	Left	0,242	9,6	LOS A
	Through	0,467	21,3	LOS C
	Right	0,008	17	LOS B
West: Elandsdrift Road (R552)	Left	0,241	34,5	LOS C
	Through	0,139	28,3	LOS C
	Right	0,12	23,7	LOS C
Intersection		**0,891**	**26,1**	**LOS C**

Table 6-2: 2024 PM Base Year Background Operating Conditions – Existing Background Traffic (existing geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
South: Pelindaba Road (R512)	Left	0,051	7,4	LOS A
	Through	0,334	19	LOS B
	Right	0,224	19,2	LOS B
East: 6th Road (R552)	Left	0,572	33,5	LOS C
	Through	0,216	37,2	LOS D
	Right	0,615	29	LOS C
North: Pelindaba Road (R512)	Left	0,23	7,8	LOS A
	Through	0,595	21,3	LOS C
	Right	0,114	17,1	LOS B
West: Elandsdrift Road (R552)	Left	0,161	42,6	LOS D
	Through	0,111	36,5	LOS D
	Right	0,156	26,4	LOS C
Intersection		**0,615**	**21,9**	**LOS C**

Conclusion Scenario 1: The SIDRA capacity analyses indicate that the intersection will be able to accommodate the 2024 background traffic demand as traffic signal-controlled intersection. The SIDRA analyses outputs and optimised signal settings' phasing summaries are attached in **Annexure F.**

6.1.2 2029 Horizon Year Background + Latent Traffic Operating Conditions

No road upgrades were proposed at the intersection of Pelindaba Road (R512) & 6th Road (R552) by any of the latent developments other than the conversion of the intersection form a stop-controlled to a signalised intersection.

The 2029 horizon year background and latent traffic operating conditions are set out in **Table 6-3** and **Table 6-4** below taking into consideration the conversion of the four-way stop-controlled intersection to a traffic signal-controlled intersection:

Table 6-3: 2029 AM Horizon Year + Latent Traffic Operating Conditions – (existing geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
South: Pelindaba Road (R512)	Left	0,007	5,8	LOS A
	Through	0,814	18,9	LOS B
	Right	0,969	55	LOS D
East: 6th Road (R552)	Left	0,194	13,4	LOS B
	Through	0,033	20,8	LOS C
	Right	0,857	42,6	LOS D
North: Pelindaba Road (R512)	Left	0,562	20,9	LOS C
	Through	0,617	31,7	LOS C
	Right	0,011	38,6	LOS D
West: Elandsdrift Road (R552)	Left	0,379	52,3	LOS D
	Through	0,397	46,6	LOS D
	Right	0,304	51,6	LOS D
Intersection		**0,969**	**29,4**	**LOS C**

Table 6-4: 2029 PM Horizon Year + Latent Traffic Operating Conditions – (existing geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
South: Pelindaba Road (R512)	Left	0,048	6	LOS A
	Through	0,352	11,2	LOS B
	Right	0,735	31,8	LOS C
East: 6th Road (R552)	Left	0,522	21,9	LOS C
	Through	0,088	23	LOS C
	Right	0,944	58,5	LOS E
North: Pelindaba Road (R512)	Left	0,44	9,6	LOS A
	Through	0,939	49	LOS D
	Right	0,093	25,4	LOS C
West: Elandsdrift Road (R552)	Left	0,214	54,2	LOS D
	Through	0,274	48,8	LOS D
	Right	0,515	55,5	LOS E
Intersection		**0,944**	**32,4**	**LOS C**

Conclusion Scenario 2: The SIDRA capacity analyses indicate that the intersection will operate at acceptable level of services in the AM and PM peak periods with the installation of a traffic signal at the intersection of Pelindaba Road (R512) & 6th Road (R552) and therefore no additional road upgrades are required to accommodate the 2029 horizon year background + latent traffic demand, other than the installation of a

traffic signal. The SIDRA analyses outputs and optimised signal settings' phasing summaries are attached in **Annexure F.**

6.1.3 2029 Horizon Year Background + Latent + Development Traffic Demand

The estimated operating conditions for the 2029 Horizon Year Background + Latent + Development traffic scenario, taking into consideration the traffic signal required to accommodate the background traffic demand, are indicated in **Table 6-5** and **Table** 6-6 below:

Table 6-5: 2029 AM Horizon Year + Latent + Development Traffic Operating Conditions – (existing geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
South: Pelindaba Road (R512)	Left	0,007	6	LOS A
	Through	0,707	10,6	LOS B
	Right	0,838	29,5	LOS C
East: 6th Road (R552)	Left	0,304	13,6	LOS B
	Through	0,2	33,5	LOS C
	Right	0,881	50,5	LOS D
North: Pelindaba Road (R512)	Left	0,537	17,7	LOS B
	Through	0,881	41,8	LOS D
	Right	0,01	32,6	LOS C
West: Elandsdrift Road (R552)	Left	0,316	43,4	LOS D
	Through	0,348	37,8	LOS D
	Right	0,279	43,2	LOS D
Intersection		**0,881**	**24,7**	**LOS C**

Table 6-6: 2029 PM Horizon Year + Latent + Development Traffic Operating Conditions – (existing geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
South: Pelindaba Road (R512)	Left	0,049	6,1	LOS A
	Through	0,345	12,2	LOS B
	Right	0,866	48,2	LOS D
East: 6th Road (R552)	Left	0,614	28	LOS C
	Through	0,189	28,4	LOS C
	Right	0,52	39,1	LOS D
North: Pelindaba Road (R512)	Left	0,512	11,3	LOS B
	Through	0,907	44,7	LOS D
	Right	0,088	26,3	LOS C
West: Elandsdrift Road (R552)	Left	0,041	32,4	LOS C
	Through	0,054	26,9	LOS C
	Right	0,524	58,4	LOS E
Intersection		**0,907**	**30,7**	**LOS C**

Conclusion Scenario 3: The SIDRA capacity analyses indicate that the intersection will operate at acceptable level of services in the AM and PM peak periods with the installation of a traffic signal at the intersection of Pelindaba Road (R512) & 6th Road (R552). No additional road upgrades are required to accommodate the development

traffic demand. The SIDRA analyses outputs and optimised signal settings' phasing summaries are attached in **Annexure F.**

6.2 Intersection of Middel Road & 6th Road (R552)

The intersection of Middel Road and 6th Road (R552) is currently a three-way stop-controlled intersection as seen in **Figure 6-2**:

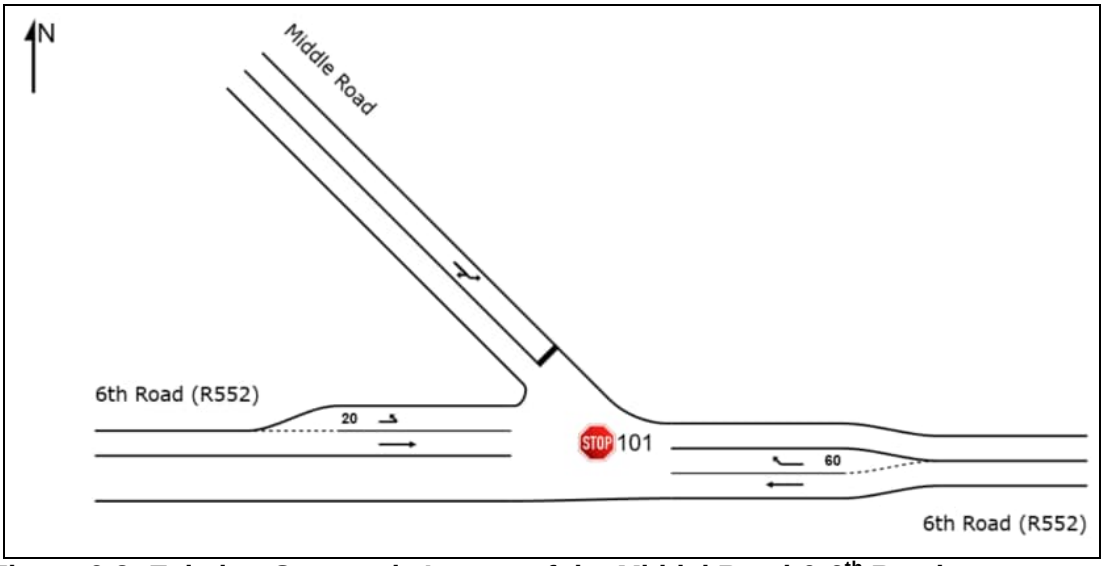


Figure 6-2: Existing Geometric Layout of the Middel Road & 6th Road Intersection

In the Traffic Impact Assessment (TIA) conducted for the Lanseria X11 and X12 developments, both Gautrans and the Johannesburg Roads Agency (JRA) confirmed that the intersection will be upgraded to a signalised intersection and additional geometric improvements will be incorporated, as per the Traffic Impact Study conditions of 10 October 2023 (as per TIA approval letter in **Annexure G**). Therefore, it is assumed that the conversion from stop-control to traffic signals including the additional geometric upgrades are already in place, and Scenario 1 for the base year background traffic operations reflects the operation of the signalised intersection with the upgraded geometry.

The signal settings used in the analysis are based on the optimised timing plans generated by the SIDRA analysis software.

The following geometric road upgrades were recommended at the intersection of Middel Road & 6th Road (R552) to accommodate left-and-right-turning vehicles' queues negatively effecting the main through movements along 6th Road (R552) that is a Class 2 Road:

- 6th Road (R552) western approach:
  - Extend the existing left-turn lane from 20m to 60m
- Middel Road north-western approach:
  - Additional left-turn lane 60m in extent

The configuration of the upgraded signal-controlled intersection is as per **Figure 6-3**:

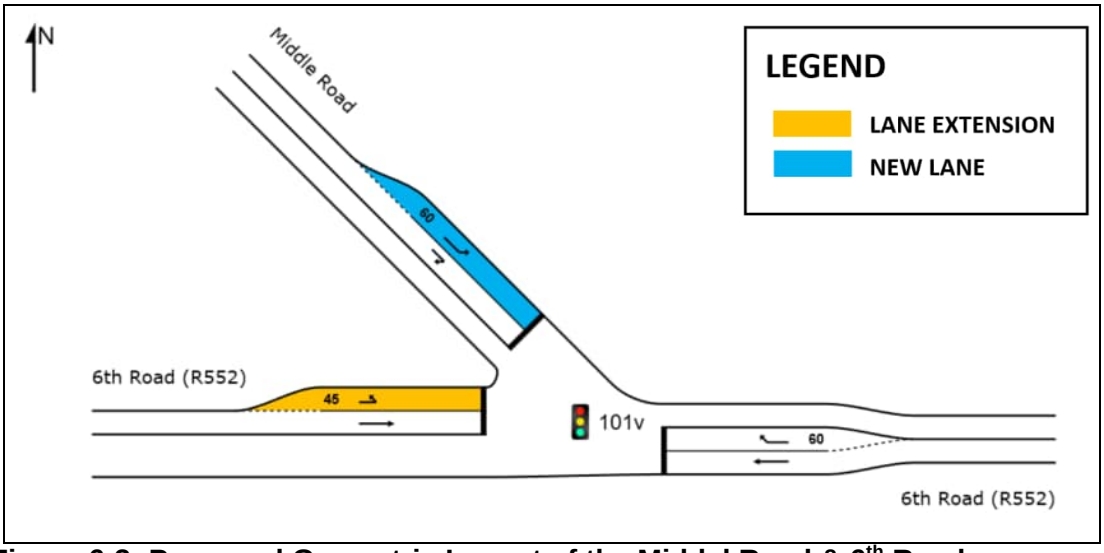


Figure 6-3: Proposed Geometric Layout of the Middel Road & 6th Road intersection (signalised)

6.2.1 2024 Base Year Background Traffic Operating Conditions

The 2024 existing base year traffic operating conditions for the intersection of Middel Road & 6th Road (R552) are set out in **Table 6-7** and **Table 6-8,** taking into consideration the conversion of the intersection to a traffic signal-controlled intersection with the inclusion of the geometric upgrades as indicated on **Figure 6-3**:

Table 6-7: 2024 AM Base Year Background Traffic Operating Conditions – Existing Background Traffic (upgraded geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
East: 6th Road (R552)	Through	0,236	3,2	LOS A
	Right	0,12	9,2	LOS A
NorthWest: Middle Road	Left	0,099	35,9	LOS D
	Right	0,312	38,7	LOS D
West: 6th Road (R552)	Left	0,119	9,4	LOS A
	Through	0,305	3,4	LOS A
Intersection		**0,312**	**6,7**	**LOS A**

Table 6-8: 2024 PM Base Year Background Traffic Operating Conditions – Existing Background Traffic (upgraded geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
East: 6th Road (R552)	Through	0,389	6,8	LOS A
	Right	0,049	12,3	LOS B
NorthWest: Middle Road	Left	0,077	26,6	LOS C
	Right	0,368	29,8	LOS C
West: 6th Road (R552)	Left	0,054	11,8	LOS B
	Through	0,306	6,3	LOS A
Intersection		**0,389**	**10,2**	**LOS B**

Conclusion Scenario 1: The SIDRA capacity analyses indicate that the intersection will be able to accommodate the 2024 background traffic demand as traffic signal-controlled intersection with additional geometric upgrades. The SIDRA analyses outputs and optimised signal settings' phasing summaries are attached in **Annexure F.**

6.2.2 2029 Horizon Year Background + Latent Traffic Operating Conditions

The 2029 horizon year background and latent traffic operating conditions are set out in **Table 6-9** and **Table 6-10** below taking into consideration the conversion of the upgrading and signalisation of the intersection:

Table 6-9: 2029 AM Horizon Year + Latent Traffic Operating Conditions – (upgraded geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
East: 6th Road (R552)	Through	0,392	4,9	LOS A
	Right	0,868	38,3	LOS D
NorthWest: Middle Road	Left	0,393	32,3	LOS C
	Right	0,798	39,4	LOS D
West: 6th Road (R552)	Left	0,376	11,4	LOS B
	Through	0,53	5,6	LOS A
Intersection		**0,868**	**14,3**	**LOS B**

Table 6-10: 2029 PM Horizon Year + Latent Traffic Operating Conditions – (upgraded geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
East: 6th Road (R552)	Through	0,749	14,2	LOS B
	Right	0,525	26,4	LOS C
NorthWest: Middle Road	Left	0,334	23,1	LOS C
	Right	0,754	30,2	LOS C
West: 6th Road (R552)	Left	0,242	15,8	LOS B
	Through	0,728	13,3	LOS B
Intersection		**0,754**	**18,2**	**LOS B**

Conclusion Scenario 2: The SIDRA capacity analyses indicate that the intersection will operate at acceptable level of services in the AM and PM peak periods with the installation of a traffic signal and additional geometric upgrades at the intersection of Middel Road & 6th Road (R552) and therefore no additional road upgrades are required to accommodate the 2029 horizon year background + latent traffic demand. The SIDRA analyses outputs and optimised signal settings' phasing summaries are attached in **Annexure F.**

6.2.3 2029 Horizon Year Background + Latent + Development Traffic Demand

The operating conditions for the 2029 Horizon Year Background + Latent + Development Traffic scenario are indicated in **Table 6-11** and **Table 6-12** below:

Table 6-11: 2029 AM Horizon Year + Latent + Development Traffic Operating Conditions – (upgraded geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
East: 6th Road (R552)	Through	0,379	4,9	LOS A
	Right	0,856	29,7	LOS C
NorthWest: Middle Road	Left	0,453	36,8	LOS D
	Right	0,897	50,8	LOS D
West: 6th Road (R552)	Left	0,566	19,1	LOS B
	Through	0,969	44,1	LOS D
Intersection		**0,969**	**28,6**	**LOS C**

Table 6-12: 2029 PM Horizon Year + Latent + Development Traffic Operating Conditions – (upgraded geometry with signalisation)

Approach	Movement	V/C	Delay (s)	LOS
East: 6th Road (R552)	Through	0,794	16,8	LOS B
	Right	0,71	29,5	LOS C
NorthWest: Middle Road	Left	0,385	19,7	LOS B
	Right	0,83	30	LOS C
West: 6th Road (R552)	Left	0,328	16,7	LOS B
	Through	0,822	18,2	LOS B
Intersection		**0,83**	**20,6**	**LOS C**

Conclusion Scenario 3: The SIDRA capacity analyses indicate that the intersection will operate at acceptable level of services in the AM and PM peak periods with the installation of a traffic signal and additional geometric upgrades at the intersection of Middel Road & 6th Road (R552) and therefore no additional road upgrades are required to accommodate the 2029 horizon year background + latent + development traffic demand. The SIDRA analyses outputs and optimised signal settings' phasing summaries are attached in **Annexure F.**

6.3 Intersection of Preller Drive & Extension 79 Access

A side-road stop-controlled access is proposed along Preller Drive for Lanseria Extension 79.

The proposed access is schematically shown on **Figure 6-4** below:

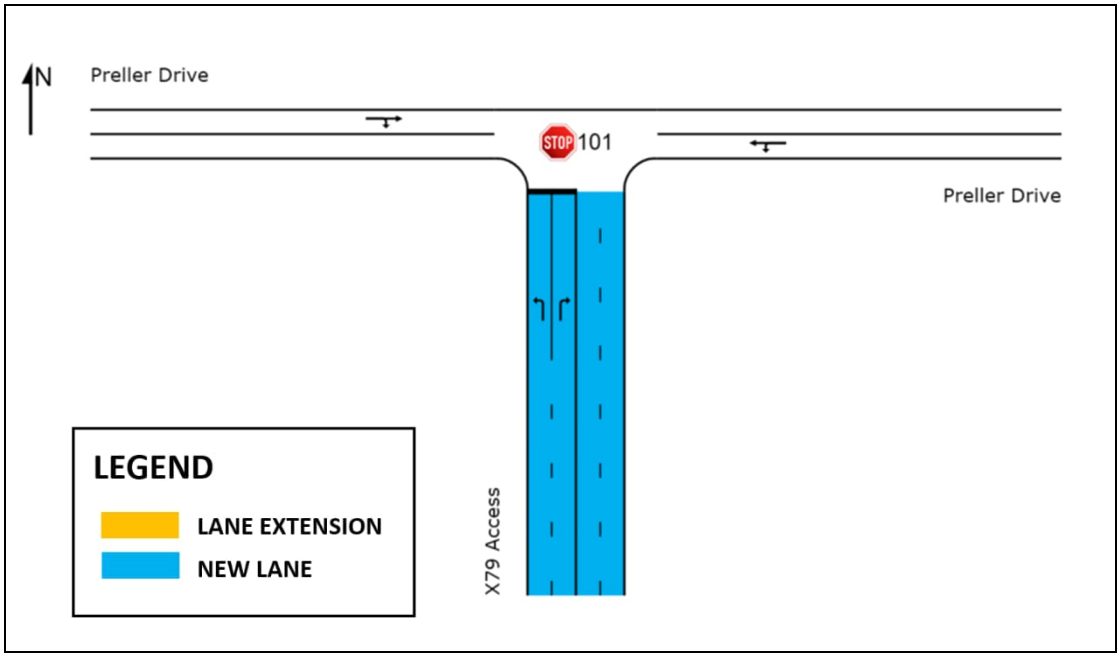


Figure 6-4: Proposed Geometric Access Intersection Layout

It is only required to analyse Scenario 3 for the access intersection as discussed in the following section:

6.3.1 2029 Horizon Year Background + Latent + Development Traffic Demand

The operating conditions for the 2029 Horizon Year Background + Latent + Development Traffic scenario for the proposed intersection of Preller Drive & Extension 79 Access are indicated in **Table 6-13** and **Table 6-14** below:

Table 6-13: 2029 AM Horizon Year + Latent + Development Traffic Operating Conditions – (proposed access)

Approach	Movement	V/C	Delay (s)	LOS
South: X79 Access	Left	0,001	9,9	LOS A
	Right	0,145	15	LOS C
East: Preller Drive	Left	0,361	5,6	LOS A
	Through	0,361	0	LOS A
West: Preller Drive	Through	0,141	0	LOS A
	Right	0,141	9,6	LOS A
Intersection		**0,361**	**1,5**	**NA**

Table 6-14: 2029 PM Horizon Year + Latent + Development Traffic Operating Conditions – (proposed access)

Approach	Movement	V/C	Delay (s)	LOS
South: X79 Access	Left	0,001	8	LOS A
	Right	0,274	15,5	LOS C
East: Preller Drive	Left	0,183	5,6	LOS A
	Through	0,183	0	LOS A
West: Preller Drive	Through	0,287	0	LOS A
	Right	0,287	7,4	LOS A
Intersection		**0,287**	**2**	**NA**

The SIDRA capacity analyses indicate that the intersection will operate at acceptable level of services in the AM and PM peak periods for the proposed intersection of Preller Drive & the Extension 79 Access. The SIDRA analyses outputs are attached in **Annexure F.**

7 NON-MOTORISED & PUBLIC TRANSPORT

7.1 Existing Public Transport Services

Public transport services are currently being provided by means of minibus taxis in the proximity to the development site. The service is provided along Pelindaba Road (R512) and 6th Road (R552). This is one of the most common forms of public transport in this area.

The surrounding area has a lack of lay-by facilities for public transport modes.

The external intersections' pedestrian facilities within the vicinity of the development site are as follows:

- Full pedestrianised intersections at:
    - 6th Road (R552) & Pelindaba Road (R512)
- Pedestrian across Middel Road at the Kwena Molapo High School on the corner of Middel Road and 6th Road (R552)

It is proposed that the applicants of Lanseria Holdings 5 & 6 Sunrella provide walkways along the site boundaries on Preller Drive as well as a taxi lay-by where possible where the service is required.

It is also proposed that taxi lay-by's be provided along 6th Road (R552) at locations where the service is required.

8 CONCLUSIONS

The following conclusions can be made from the Traffic Impact Study:

- This TIA forms part of township establishment application for the proposed Lanseria Extension 79 for “Industrial 3” zoning rights.
- The development site, Lanseria Extension (X) 79 is situated on Sunrella Agricultural Holdings no. 5 & 6. The proposed developments are situated south of Lanseria International Airport. The development is adjacent to Preller Drive (northern boundary), Middel Road (eastern boundary) and the Lanseria International Airport (western boundary).
- The development sites for Lanseria X79 is currently zoned agricultural with an extent of 38 790m².
- The township establishment application for Lanseria Extension 79 will allow for “Industrial 3” zoning rights. The permissible gross floor areas for Lanseria X79 will be 23 274m² floor area with subservient Office floor area restricted to 2500m².
- Latent developments of Lanseria X7, X11, X12 and Lanseria X32 were taken into account for this study.
- Lanseria X79 will obtain access from Preller Drive. The access will operate as a side-road stop-controlled intersection.
- The GLMP framework as it currently stands, indicates that the proposed Lanseria X79 be able to obtain access from two separate locations **in future**:
    - Via a new proposed road between Boeing Street and the extended Preller Road to the south-east connecting to the primary road network (Pelindaba Road R512)
    - Via Preller Road and Middel Road north connecting to the secondary road network south of Lanseria Airport
- A total of 156 AM peak hour and 156 PM peak hour development trips will be added to the external road network as a result of the proposed developments on Lanseria Extension 79.
- The parking provisions for Lanseria Extension 79 are as follows, with the application of a reduced parking ratio:

SITE	LAND-USE	PARKING RATE PROPOSED	GFA (m²)*	REQUIREMENT
Extension 79	Warehouse	0,5 bays per 100m²	15988 m²	80 bays
	Office	1 bays per 100m²	1807 m²	18 bays
	Total		**17795 m²**	**98 bays**

- 98 parking bays are provided for on the site layout plans (**Annexure D**) for Lanseria Extension 79. 18 loading bays are proposed for the warehouse developments on Lanseria Extension 79.
- Sufficient stacking distance is provided at the access of the proposed X79 development (>60m).
- The capacity analyses indicate:
    - Pelindaba Road (R512) / 6th Road (R552) intersection
        - The intersection will be converted to a traffic signal that can accommodate the 2024 background traffic demand

        - If the intersection is converted to a traffic signal-controlled intersection, the intersection will be able to accommodate the development traffic. No additional road upgrades are required as a result of the development traffic
    - 6th Road (R552) / Middel Road intersection
        - With the addition of the latent development traffic, road upgrades are required at this intersection to accommodate the latent development traffic demand.
        - By making changes to the intersection layout, signal settings as well as signal layout, the development traffic can be accommodated.
- The surrounding area has a lack of lay-by facilities for public transport modes.

9 RECOMMENDATIONS

It is recommended that the traffic impact study be approved with the following road improvements:

- The applicants provide lay-by's (drop-off facilities) along 6th Road (R552) where required.
- The applicants provide walkways along the boundary of the proposed development on Preller Drive (up to the development access).

It is proposed that after township establishment approval of Lanseria X79, the township layout plans as well as access positions will be shared with the project managers (Gapp Architects) of the GLMP framework to ensure that a road network be preserved for the townships in future.

The road upgrades *responsibilities* will be addressed in the roads and stormwater services reports and subsequently in the Service Level Agreements.

Yours sincerely

ANNERI MARITZ

PR. ENG. (202401861)

Annexure A: Existing Zoning Certificates

ZONING INFORMATION
CERTIFICATE PAD
FOR APPLICATION SUBMISSIONS

a world class African city

Date: 12/03/2024

Requested by:	Sandy Ngwenya
Town Planning Scheme:	City of Johannesburg Land Use Scheme 2018
Name of Applicant:	THE TOWN PLANNING HUB CC
Erf/Holding Name/Farm Portion:	Holdings 5 and 6
Township/Holding Name/Farm Name:	Sunrella A.H.
Street Name and No:	Main avenue
ZONING INFORMATION	
Use Zone:	Undetermined
Height Zone:	A (As per attached table 4)
Floor Area Ratio:	As per attached table 6
Coverage:	As per attached table 5
Density:	No Density
Building Line:	As per attached table 7
Parking:	As per scheme
AMENDMENT SCHEME APPLICABLE:	N/A
Served By:	Sandy Ngwenya

Terms and Conditions:
The Town Planning Scheme is open for inspection on the 8th Floor 158 Loveday Street Braamfontein between 8:00 and 15:30 weekdays. The applicant must verify the information contained herein by inspection of the scheme. Whilst the utmost is done to ensure accuracy the City of Johannesburg does not accept responsibility for any incorrect information given on this form. The applicant's attention is drawn to the general provisions of the Town Planning Scheme. It should be noted that the provisions of the Town Planning Scheme do not override any restrictive conditions that may be contained in the Title Deeds. PLEASE NOTE: No Information will be given telephonically due to the technical and interpretive complications.

Annexure B: Draft Conditions of Establishment

STATEMENT OF THE CONDITIONS UNDER WHICH THE APPLICATION MADE BY GROWTHPOINT PROPERTIES LIMITED (REGISTRATION NUMBER 1987/004988/06) (HEREINAFTER REFERRED TO AS THE TOWNSHIP OWNER) IN TERMS OF THE PROVISIONS OF PART 3 OF CHAPTER 5 OF THE CITY OF JOHANNESBURG MUNICIPAL PLANNING BY-LAW, 2016 (AS AMENDED 2023) (HEREINAFTER REFERRED TO AS THE BY-LAW), FOR PERMISSION TO ESTABLISH A TOWNSHIP ON HOLDINGS 5 AND 6, SUNRELLA AGRICULTURAL HOLDINGS, GAUTENG PROVINCE, HAS BEEN APPROVED.

1. CONDITIONS TO BE COMPLIED WITH PRIOR TO THE OPENING OF THE TOWNSHIP REGISTER AND THE DECLARATION OF THE TOWNSHIP AS AN APPROVED TOWNSHIP.

(1) CANCELLATION OF EXISTING CONDITIONS OF TITLE

The township owner shall at its own costs, cause the following restrictive conditions and/or servitudes to be cancelled or the township area to be freed there from:

T53698/2024 (Holding 5 Sunrella Agricultural Holdings)

A.(a); A.(b); A.(c); A.(c)(i); A.(c)(ii); A.(d); A.(d)(i); A.(d)(ii); A.(d)(iii); A.(d)(iv); A.(d)(v); A.(d)(vi); A.(e); A.(f); A.(g); A. (h); A.(i); A.(j); A.(j)(i); A.(j)(ii); A.(j)(iii); A.(j)(iv)

T27363/2024 (Holding 6, Sunrella Agricultural Holdings)

A.(a); A.(b); A.(c); A.(c)(i); A.(c)(ii); A.(d); A.(d)(i); A.(d)(ii); A.(d)(iii); A.(d)(iv); A.(d)(v); A.(d)(vi); A.(e); A.(f); A.(g); A.(h); A.(i); A.(j); A.(j(i); A.(j)(ii); A.(j)(iii); A.(j)(iv)

(2) GENERAL

(a) The township owner shall, prior to approval of the General Plan, make arrangements with Corporate Geo-Informatics (CGIS) for the allocation of a street name to the public road (or street names to the public roads) in the township (to be indicated on the layout plan so that it forms part of the General Plan).

(b) The local authority shall, after approval of the General Plan, make arrangements with Corporate Geo-Informatics (CGIS) for the allocation of street numbers to the newly created erven in the township.

(c) Excision in terms of section 69 of the By-law

The holding on which the township is being established has been excised and the description of the land has been submitted as being farmland.

(d) A satisfactory geo-technical report (in triplicate) shall be submitted to the local authority and the Amendment Scheme shall not be considered/approved by the local authority until such time as the comments on the said report, have been obtained and included in the mentioned Amendment Scheme.

(e) The township owner shall submit acceptable proof that all outline scheme reports have been submitted to the Municipal Entities (Johannesburg Water and Johannesburg Roads Agency).

(f) Authorisation/exemption to establish the township in terms of the National Environmental Management Act (No 107 of 1998) shall be obtained from the Department of Agriculture and Rural Development and shall be submitted to the local authority.

(g) The comments of the South African National Roads Agency Limited on the establishment of the township, shall be obtained and shall be submitted to the local authority.

(h) The comments of the Department: Mineral Resources on the establishment of the township, shall be obtained and shall be submitted to the local authority.

(i) The comments of the Department of Roads and Transport (Gauteng Provincial Government) on the establishment of the township, shall be obtained and shall be submitted to the local authority.

(j) The township owner shall obtain and submit a certificate from Eskom that electricity supply to the township, is available. Provided that if supply is not available and the township has been approved by the local authority 5 years or more than 5 years ago, a letter from Eskom shall be submitted confirming that supply is not available.

(k) The township owner shall, after approval of the General Plan of the township, submit the relevant Amendment Scheme to the local authority for approval, in order that it can be published simultaneously with the declaration of the township as an approved township.

(l) The township owner shall comply with the provisions of sections 28(5), (9), (10) and (11) of the By-Law.

2. CONDITIONS OF ESTABLISHMENT

(1) NAME

The name of the township is **Lanseria Extension 79**.

(2) DESIGN

The township consists of erven and roads as indicated on layout plan CPD/LSAX79/1.

(3) DESIGN AND PROVISION OF ENGINEERING SERVICES IN AND FOR THE TOWNSHIP

The township owner shall, to the satisfaction of the local authority, make the necessary arrangements for the design and provision of all engineering services of which the local authority is the supplier.

(4) ELECTRICITY

The local authority is not the bulk supplier of electricity to or in the township. The township owner shall in terms of Chapter 6 Part 1 of the By-law make the necessary arrangements with ESKOM, the licensed supplier of electricity for the provision of electricity.

(5) GAUTENG PROVINCIAL GOVERNMENT (DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT)

Should the development of the township not been commenced with before …….. the application to establish the township, shall be resubmitted to the Department of Agriculture and Rural Development for exemption/authorisation in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended.

(6) GAUTENG PROVINCIAL GOVERNMENT (DEPARTMENT OF ROADS AND TRANSPORT)

(a) Should the development of the township not be completed before ….. the application to establish the township, shall be resubmitted to the Department of Roads and Transport for reconsideration.

(b) If however, before the expiry date mentioned in (a) above, circumstances change in such a manner that roads and/or PWV routes under the control of the said Department are affected by the proposed layout of the township, the township owner shall resubmit the application for

the purpose of fulfilment of the requirements of the controlling authority in terms of the provisions of Section 48 of the Gauteng Transport Infrastructure Act, 2001 (Act 8 of 2001).

(c) The township owner shall comply with the conditions of the Department as set out in the Department's letter dated ……...

(7) NATIONAL GOVERNMENT (DEPARTMENT: MINERAL RESOURCES)

Should the development of the township not been completed before …….. the application to establish the township, shall be resubmitted to the Department: Mineral Resources for reconsideration.

(8) ACCESS

Access to or egress from the township shall be provided to the satisfaction of the local authority and/or Johannesburg Roads Agency (Pty) Ltd and/or the Department of Roads and Transport.

(9) ACCEPTANCE AND DISPOSAL OF STORMWATER DRAINAGE

The township owner shall arrange for the stormwater drainage of the township to fit in with that of the adjacent road/roads and all stormwater running off or being diverted from the road/roads shall be received and disposed of.

(10) REFUSE REMOVAL

The township owner shall provide sufficient refuse collection points in the township and shall make arrangements to the satisfaction of the local authority for the removal of all refuse.

(11) REMOVAL OR REPLACEMENT OF EXISTING SERVICES

If, by reason of the establishment of the township, it should be necessary to remove or replace any existing municipal, TELKOM and/or ESKOM services, the cost of such removal or replacement shall be borne by the township owner.

(12) DEMOLITION OF BUILDINGS AND STRUCTURES

The township owner shall at its own costs cause all existing buildings and structures situated within the building line reserves, side spaces or over common boundaries to be demolished to the satisfaction of the local authority, when requested thereto by the local authority.

(13) OBLIGATIONS WITH REGARD TO THE CONSTRUCTION AND INSTALLATION OF ENGINEERING SERVICES AND RESTRICTIONS REGARDING THE TRANSFER OF ERVEN

(a) The township owner shall, after compliance with clause 2.(3) above, at its own costs and to the satisfaction of the local authority, construct and install all engineering services including the internal roads and the stormwater reticulation, within the boundaries of the township. Erven and/or units in the township may not be transferred into the name of a purchaser, prior to the local authority certifying to the Registrar of Deeds that these engineering services had been constructed and installed.

(b) The township owner shall fulfil its obligations in respect of the installation of electricity, water and sanitary services as well as the construction of roads and stormwater drainage and the installation of systems therefor, as agreed between the township owner and the local authority in terms of clause 2.(3) above. Erven and/or units in the township, may not be transferred into the name of a purchaser, prior to the local authority certifying to the Registrar of Deeds that sufficient guarantees/cash contributions in respect of the engineering services have been submitted or paid to the said local authority.

(14) OBLIGATIONS WITH REGARD TO THE PROTECTION OF ENGINEERING SERVICES

The township owner shall, at its costs and to the satisfaction of the local authority, survey and register all servitudes required to protect the constructed/installed services. Erven and/or units in the township may not be or transferred into the name of a purchaser, prior to the local authority certifying to the Registrar of Deeds that these engineering services had been or will be protected to the satisfaction of the local authority.

(15) CONSOLIDATION OF ERVEN

The township owner shall, at its own costs, after proclamation of the township, submit an application for consent to consolidate Erven 976 and 977, to the local authority for approval.

3. DISPOSAL OF EXISTING CONDITIONS OF TITLE.

All erven shall be made subject to existing conditions and servitudes, if any:-

4. CONDITIONS OF TITLE

(A) Conditions of Title imposed by the local authority in terms of the provisions of Chapter 5 Part 3 of the By-Law

(1) ALL ERVEN

(a) Each erf is subject to a servitude, 2m wide, in favour of the local authority, for sewerage and other municipal purposes, along any two boundaries other than a street boundary and in the case of a panhandle erf, an additional servitude for municipal purposes 2m wide across the access portion of the erf, if and when required by the local authority: Provided that the local authority may dispense with any such servitude.

(b) No building or other structure shall be erected within the aforesaid servitude area and no large rooted trees shall be planted within the area of such servitude or within 2m thereof.

(c) The local authority shall be entitled to deposit temporarily on the land adjoining the aforesaid servitude such material as may be excavated by it during the process of the construction, maintenance or removal of such sewerage mains and other works as it, in its discretion may deem necessary and shall further be entitled to reasonable access to the said land for the aforesaid purpose subject to any damage done during the process of the construction, maintenance or removal of such sewerage mains and other works being made good by the local authority.

(2) ERVEN 976 AND 977

The erven are subject to a 3m wide servitude for stormwater services in favour of the local authority, along the western boundary as indicated on layout plan CPD/LSA X79/1.

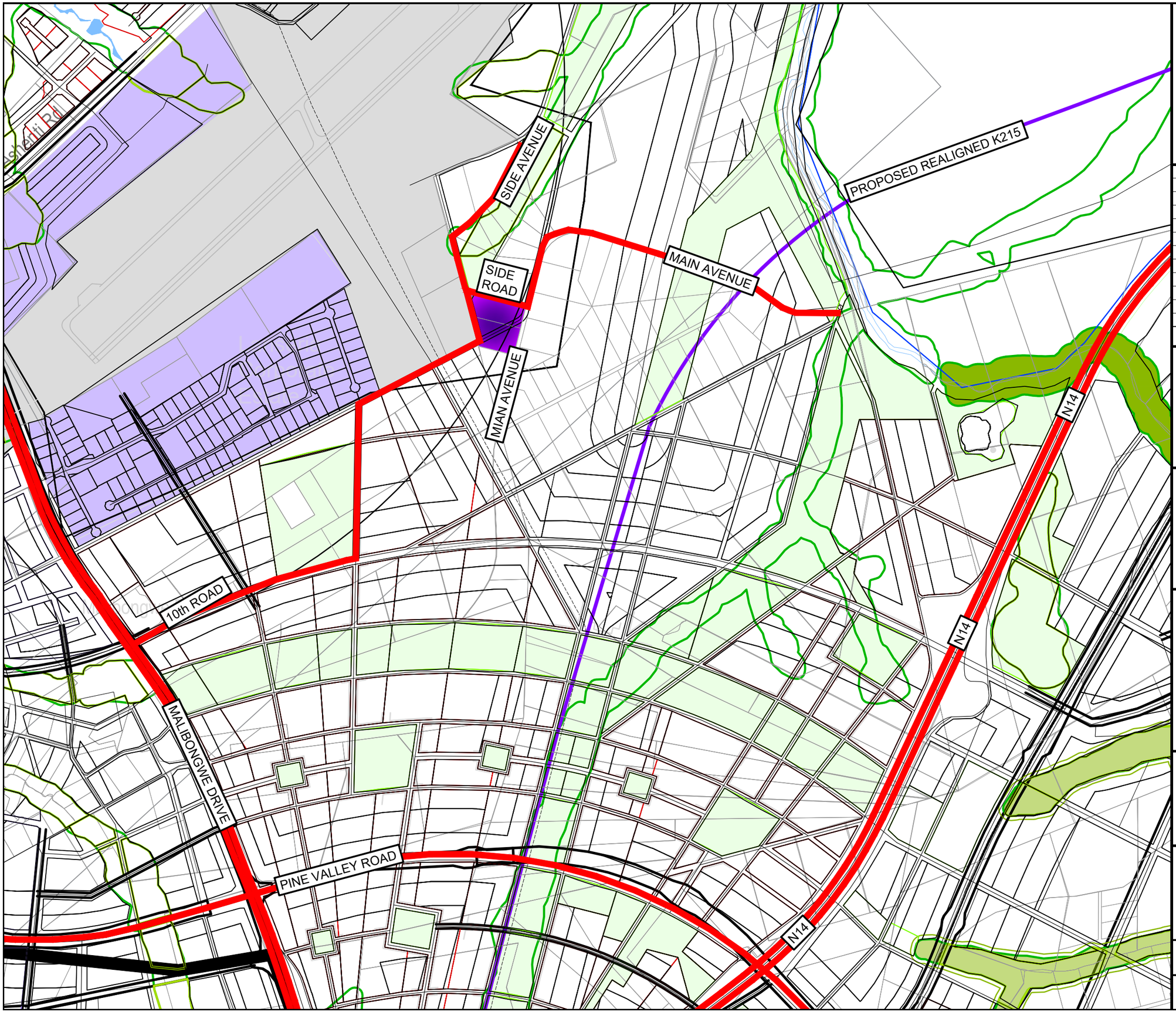
5. CONDITIONS TO BE INCORPORATED IN THE TOWN PLANNING SCHEME IN TERMS OF SECTION 54 OF THE BY-LAW, IN ADDITION TO THE PROVISIONS OF THE CITY OF JOHANNESBURG LAND USE SCHEME, 2018.

(1) ERVEN 976 AND 977

COLUMN 1:	USE ZONE "Industrial 3"
COLUMN 2:	DESCRIPTION OF PORTION OF LAND Erven 976 and 977, Lanseria Extension 79
COLUMN 3:	PRIMARY RIGHTS As per Scheme, Industrial purposes, commercial purposes, business purposes (excluding restaurants, motor showrooms, showrooms, medical consulting rooms, domestic service industries), builders yard, building material storage.
COLUMN 4:	USES WITH CONSENT (LAND USE TABLE 2) As per Scheme
COLUMN 5:	USES NOT PERMITTED (LAND USE TALBE 2) As per Scheme
COLUMN 6:	WIDTH OF SERVITUDE AREA 3m Stormwater Servitude along the western boundary
COLUMN 7:	STOREYS OR HEIGHT IN METERS 25m (3 storeys)
COLUMN 8:	COVERAGE As per Scheme, 60%
COLUMN 9:	F.A.R OR FLOOR AREA As per Scheme, 0.6 Offices restricted to 2500 m^2
COLUMN 10:	PARKING PROVISION As per Scheme, Adequate, paved parking spaces, together with the necessary manoeuvring area, shall be provided on the erf to the satisfaction of the Council, in the following ratios: Commercial: 0.5 bays per 100m^2 Offices: 1 bays per 100m^2
COLUMN 11:	DENSITY Not applicable

COLUMN 12:	BUILDING LINE PROVISION As per Scheme Street: 3m Main Road (K215): 16m (may be relaxed to 10m with approval)
COLUMN 13:	GENERAL PROVISIONS 1. A Site Development Plan to the satisfaction of the council, shall be submitted for evaluation and approval prior to the submission of building plans and/or the development of the erf.
COLUMN 14:	AMENDMENT SCHEME NUMBER

Annexure C: Greater Lanseria Masterplan – Access to Development Site



GENERAL NOTES:

1. REFER TO ALL RELEVANT DRAWINGS & SPECIFICATIONS, DO NOT SCALE ANY DIMENSIONS.
2. WHERE DISCREPANCIES OCCUR BETWEEN THE PROJECT DRAWINGS OR SPECIFICATIONS, THESE SHOULD BE REPORTED IMMEDIATELY TO THE PRINCIPAL AGENT.
3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ARCHITECTS DRAWING BEFORE CONSTRUCTION COMMENCES.
4. ALL WATERPROOFING AND EARTH POISONING DETAILS TO BE IN ACCORDANCE WITH THE ARCHITECT'S SPECIFICATION AND INSTRUCTIONS.

Rev. No:	Date:	Revision Details:	By:
A	02/12/'24	FOR INFORMATION	JDV

Client:

Architect:

e•d•s

Structural, Civil and Transportation Engineers

Sussex Office Park
473 Lynnwood Road
Lynnwood
Pretoria

Tel: 012 991 1205
Fax: 012 991 1373
e-mail: info@edseng.co.za

Project:

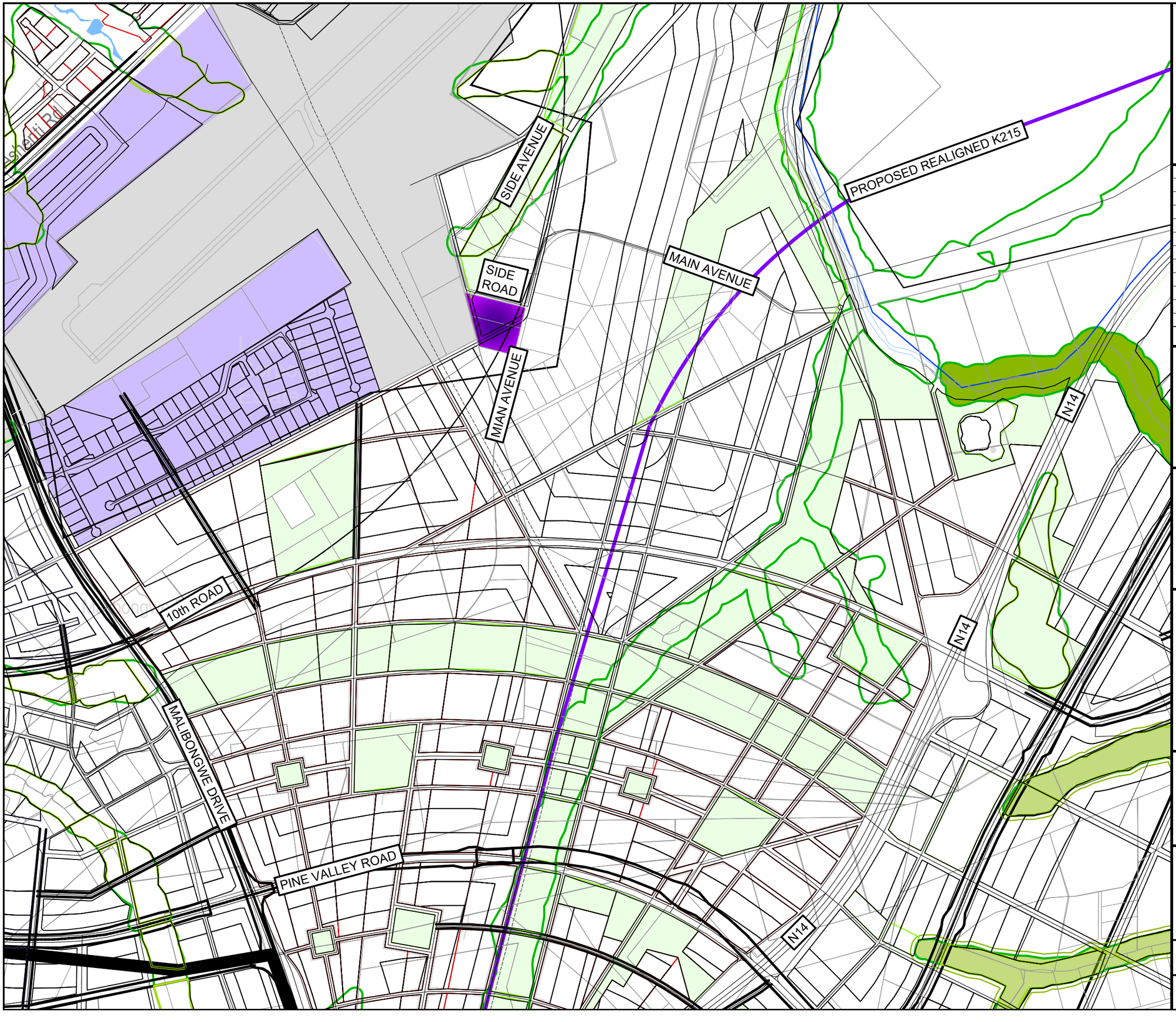
LANSERIA EXTENSION 79

Description:

GREATER LANSERIA MASTERPLAN 2

Paper size:	Drawn:	Checked:	Designed:
A3	JDHV	AM	AM

Scale:	Project Number:	Drawing Number:	Revision:
5000	2024-312	0022	A



GENERAL NOTES:

1. REFER TO ALL RELEVANT DRAWINGS & SPECIFICATIONS, DO NOT SCALE ANY DIMENSIONS.
2. WHERE DISCREPANCIES OCCUR BETWEEN THE PROJECT DRAWINGS OR SPECIFICATIONS, THESE SHOULD BE REPORTED IMMEDIATELY TO THE PRINCIPAL AGENT.
3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ARCHITECTS DRAWING BEFORE CONSTRUCTION COMMENCES.
4. ALL WATERPROOFING AND EARTH POISONING DETAILS TO BE IN ACCORDANCE WITH THE ARCHITECT'S SPECIFICATION AND INSTRUCTIONS.

Rev. No:	Date:	Revision Details:	By:
A	02/12/'24	FOR INFORMATION	JDV

Client:

Architect:

e•d•s

Structural, Civil and Transportation Engineers

Sussex Office Park
473 Lynnwood Road
Lynnwood
Pretoria

Tel: 012 991 1205
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e-mail: info@edseng.co.za

Project:

LANSERIA EXTENSION 79

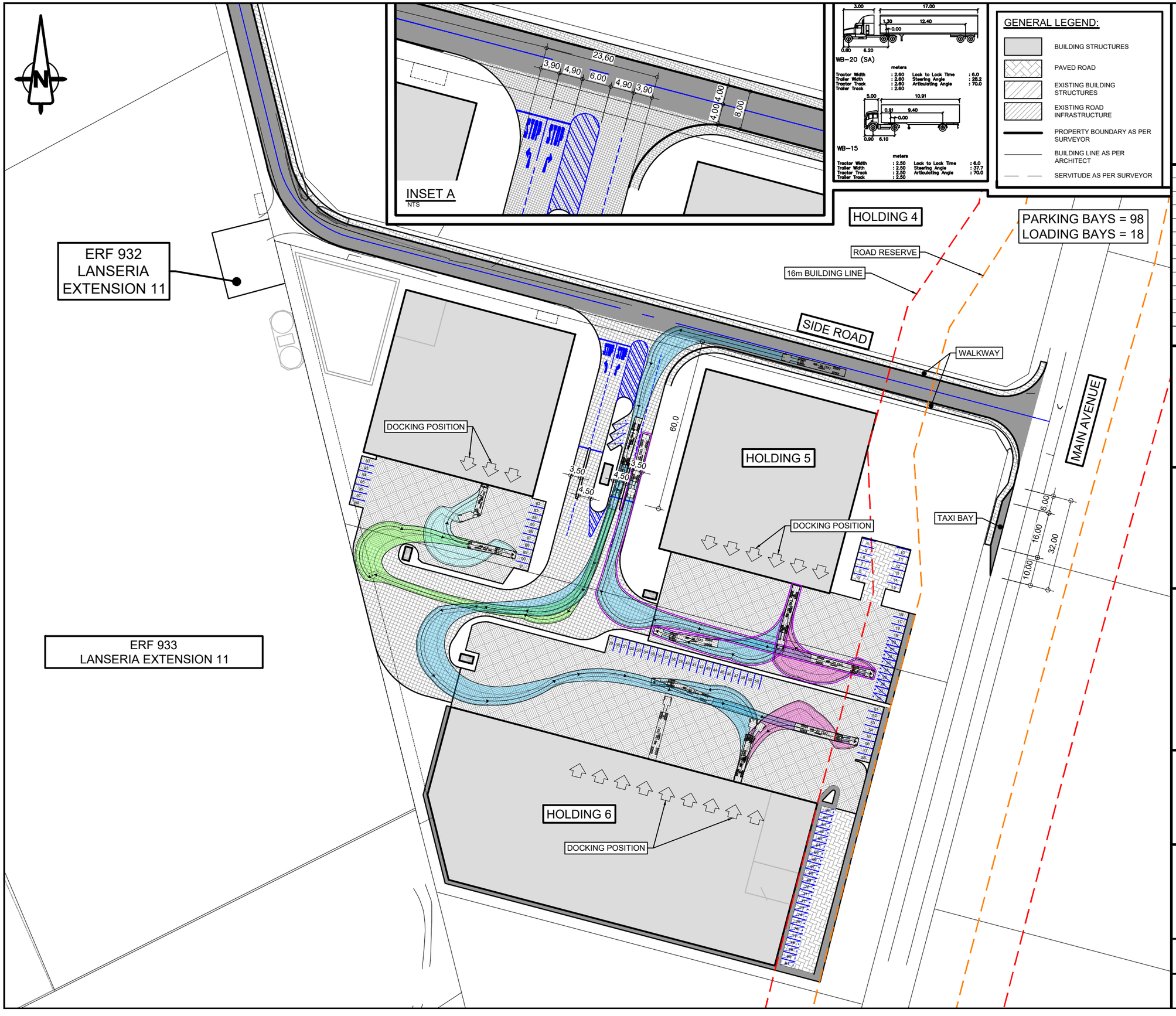
Description:

GREATER LANSERIA MASTERPLAN

Paper size:	Drawn:	Checked:	Designed:
A3	JDHV	AM	AM

Scale:	Project Number:	Drawing Number:	Revision:
5000	2024-312	0021	A

Annexure D: Site Layout Plan



GENERAL NOTES:

1. REFER TO ALL RELEVANT DRAWINGS & SPECIFICATIONS, DO NOT SCALE ANY DIMENSIONS.
2. WHERE DISCREPANCIES OCCUR BETWEEN THE PROJECT DRAWINGS OR SPECIFICATIONS, THESE SHOULD BE REPORTED IMMEDIATELY TO THE PRINCIPAL AGENT.
3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ARCHITECTS DRAWING BEFORE CONSTRUCTION COMMENCES.
4. ALL WATERPROOFING AND EARTH POISONING DETAILS TO BE IN ACCORDANCE WITH THE ARCHITECT'S SPECIFICATION AND INSTRUCTIONS.

Rev. No:	Date:	Revision Details:	By:
D	06/02/'25	FOR INFORMATION	JB
C	20/01/'25	FOR INFORMATION	JB
B	16/01/'25	FOR INFORMATION	JB
A	14/01/'25	FOR INFORMATION	JB

Client:

GROWTHPOINT PROPERTIES

Architect:

empowered spaces architects

e·d·s
Structural, Civil and Transportation Engineers
Sussex Office Park
473 Lynnwood Road
Lynnwood
Pretoria
Tel: 012 991 1205
Fax: 012 991 1373
e-mail: info@edseng.co.za

Project:

LANSERIA
EXTENSION 79

Description:

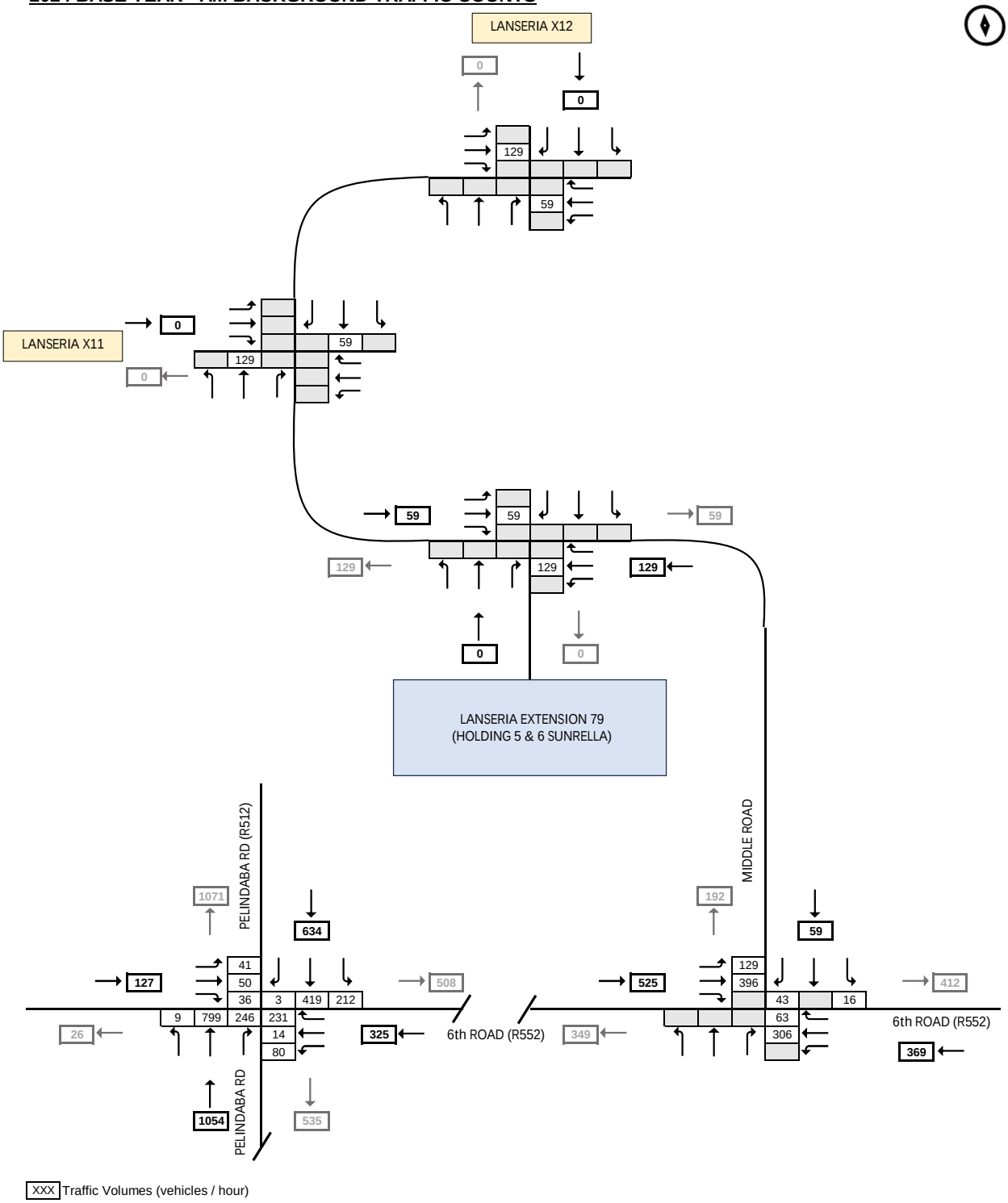
VEHICLE TRACKING, PARKING & ACCESS CONTROL (HOLDING 5 & 6)

Paper size:	Drawn:	Checked:	Designed:
A3	JB	PdL	DvdM

Scale:	Project Number:	Drawing Number:	Revision:
1250	2019-094	3073	D

Annexure E: Traffic Volumes for Analysis Scenarios

2024 BASE YEAR - AM BACKGROUND TRAFFIC COUNTS



XXX Traffic Volumes (vehicles / hour)

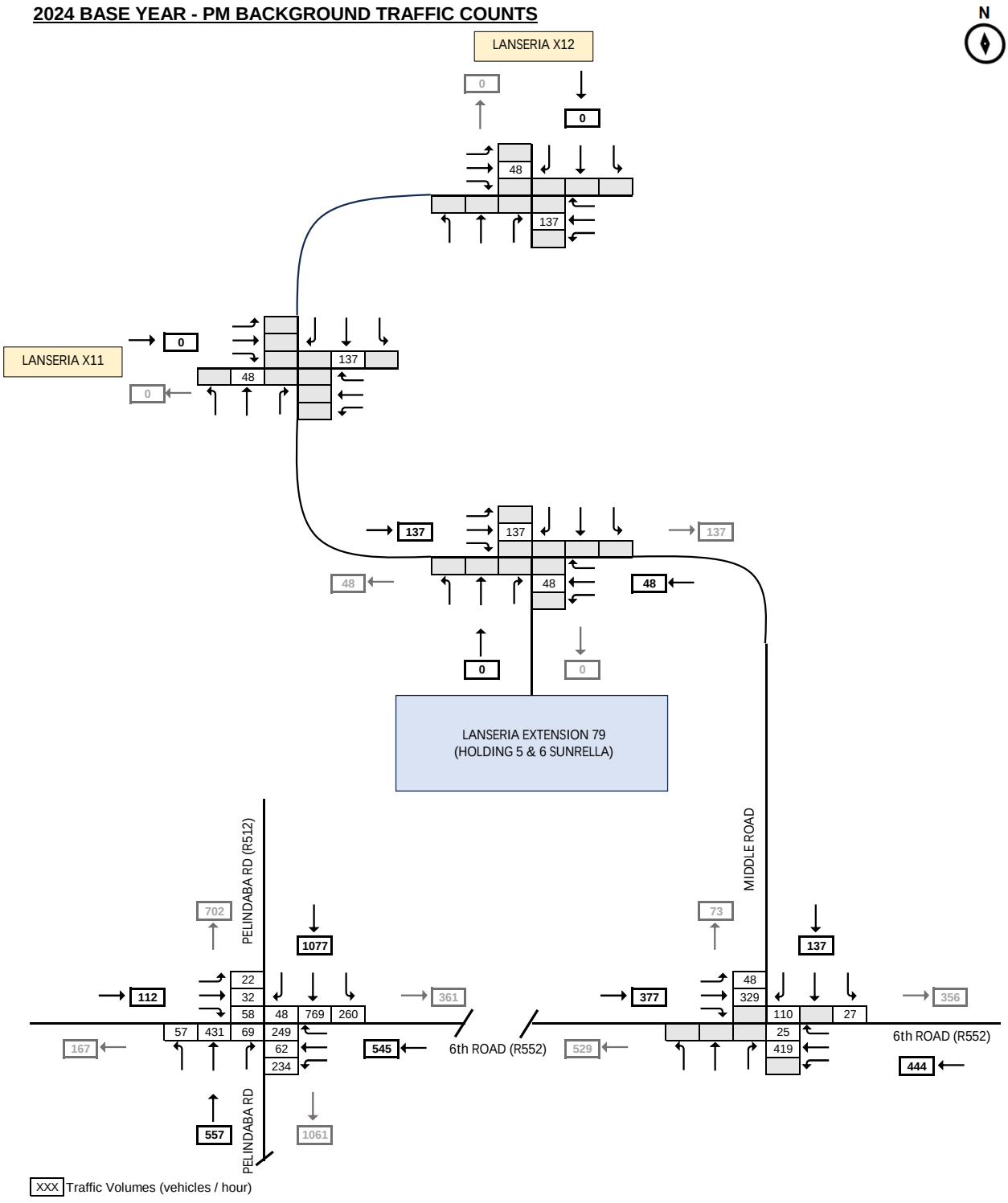
e•d•s Structural, Civil and Transportation Engineers

TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

2024 Base Year - AM Background Traffic Counts

Figure E-1

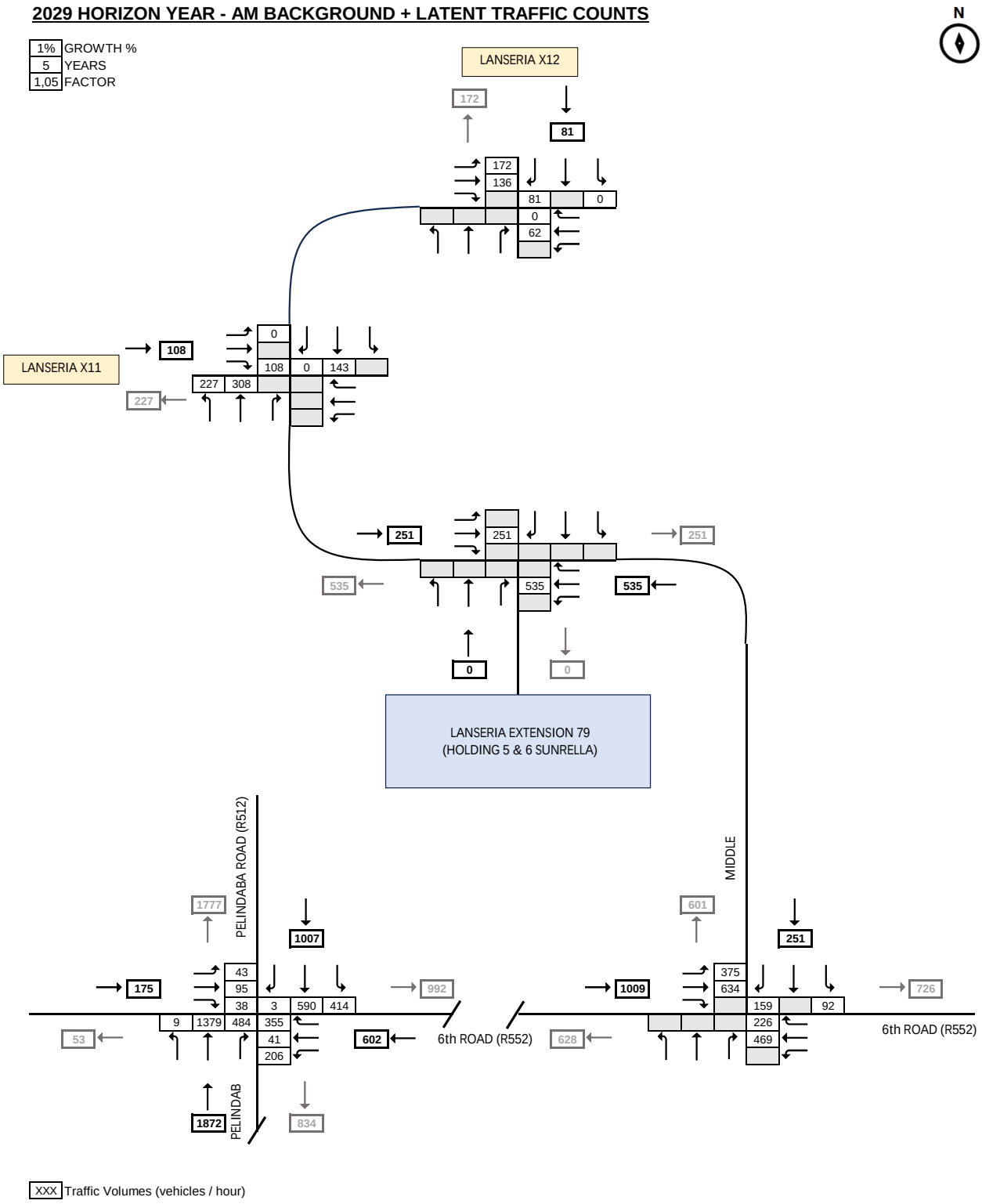
2024 BASE YEAR - PM BACKGROUND TRAFFIC COUNTS



TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6
2024 Base Year - PM Background Traffic Counts

Figure E-2

2029 HORIZON YEAR - AM BACKGROUND + LATENT TRAFFIC COUNTS

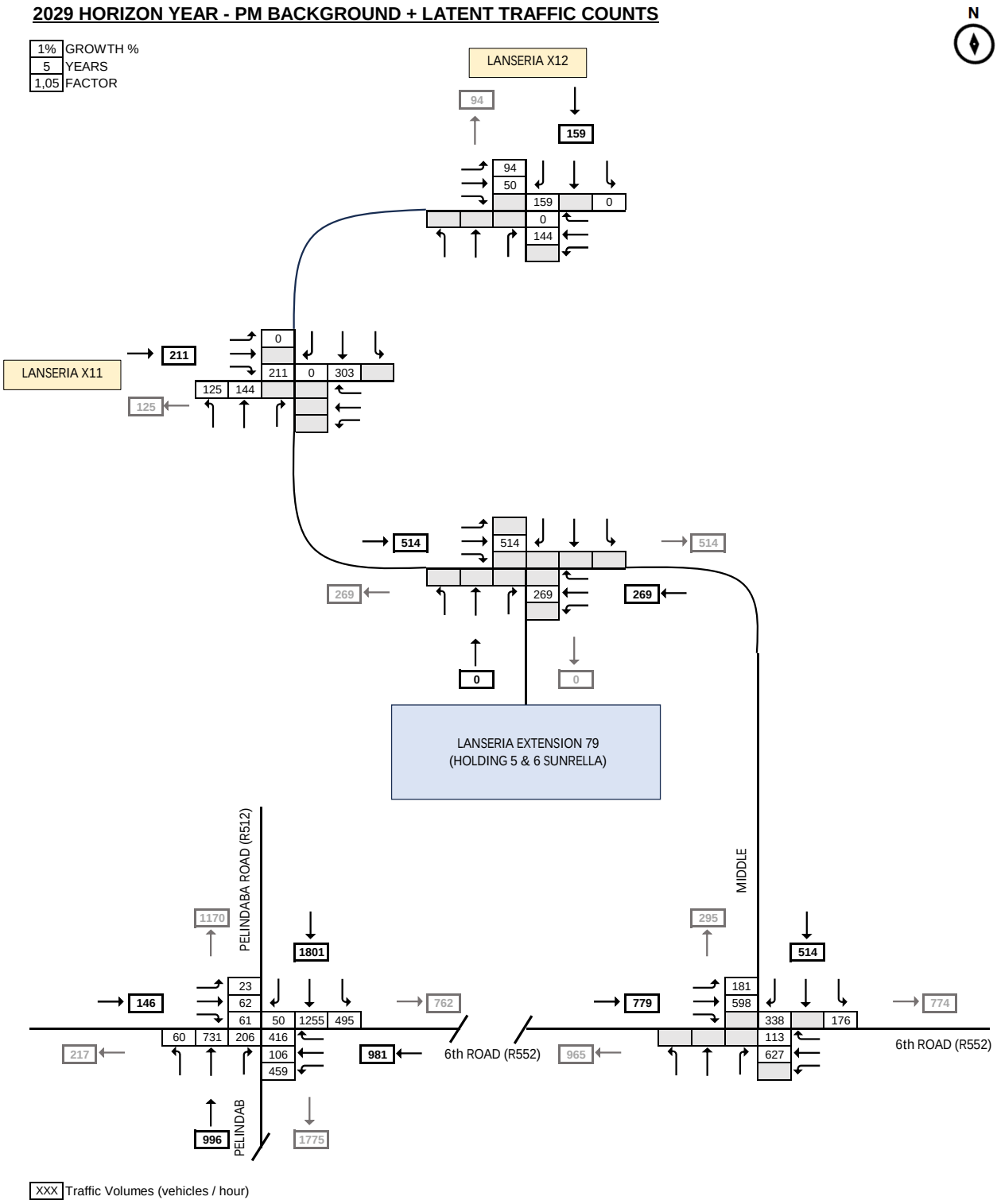


TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

2029 Horizon Year - AM Background + Latent Development Traffic Volumes

Figure E-3

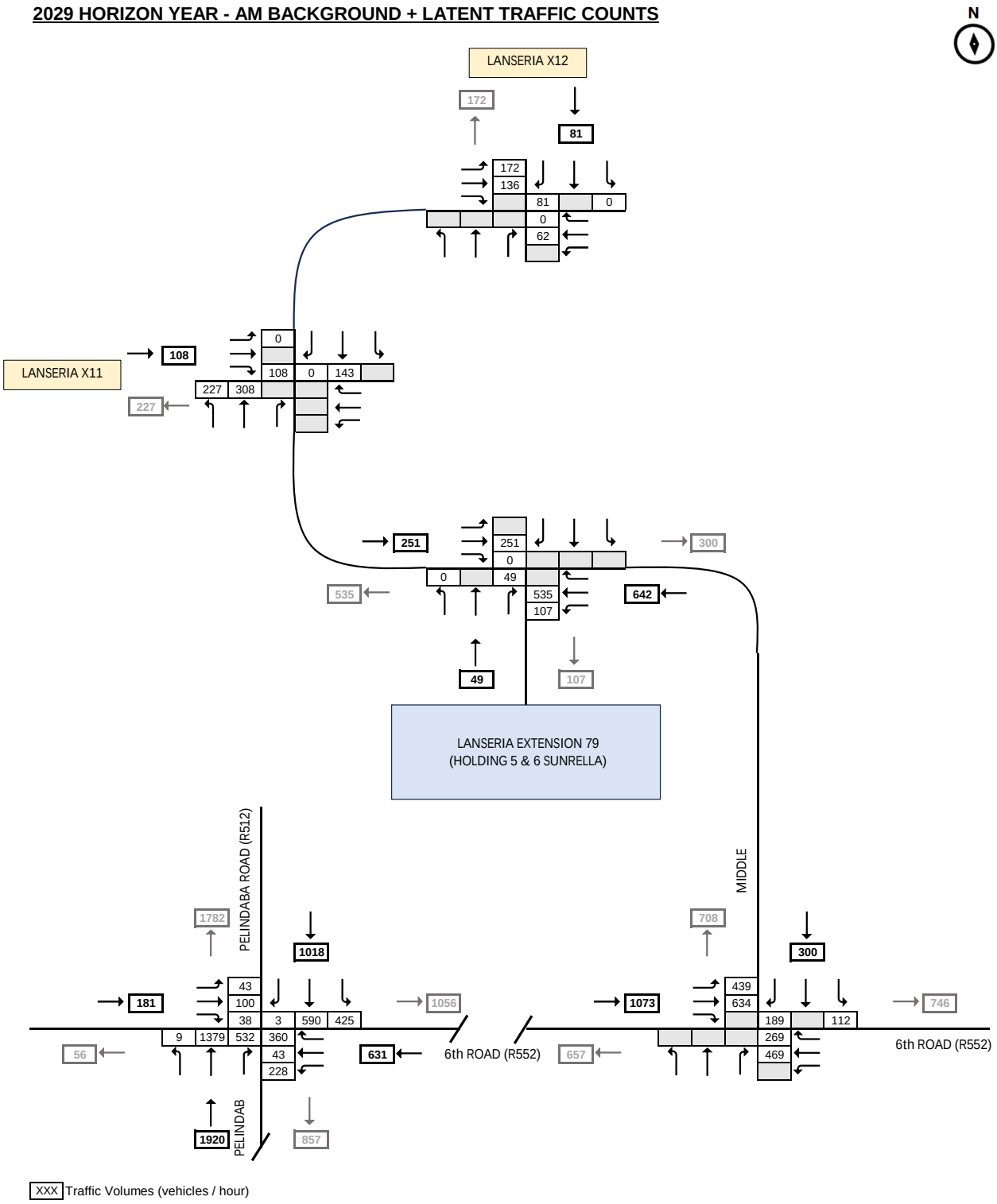
2029 HORIZON YEAR - PM BACKGROUND + LATENT TRAFFIC COUNTS



TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6
2029 Horizon Year - PM Background + Latent Development Traffic Volumes

Figure E-4

2029 HORIZON YEAR - AM BACKGROUND + LATENT TRAFFIC COUNTS



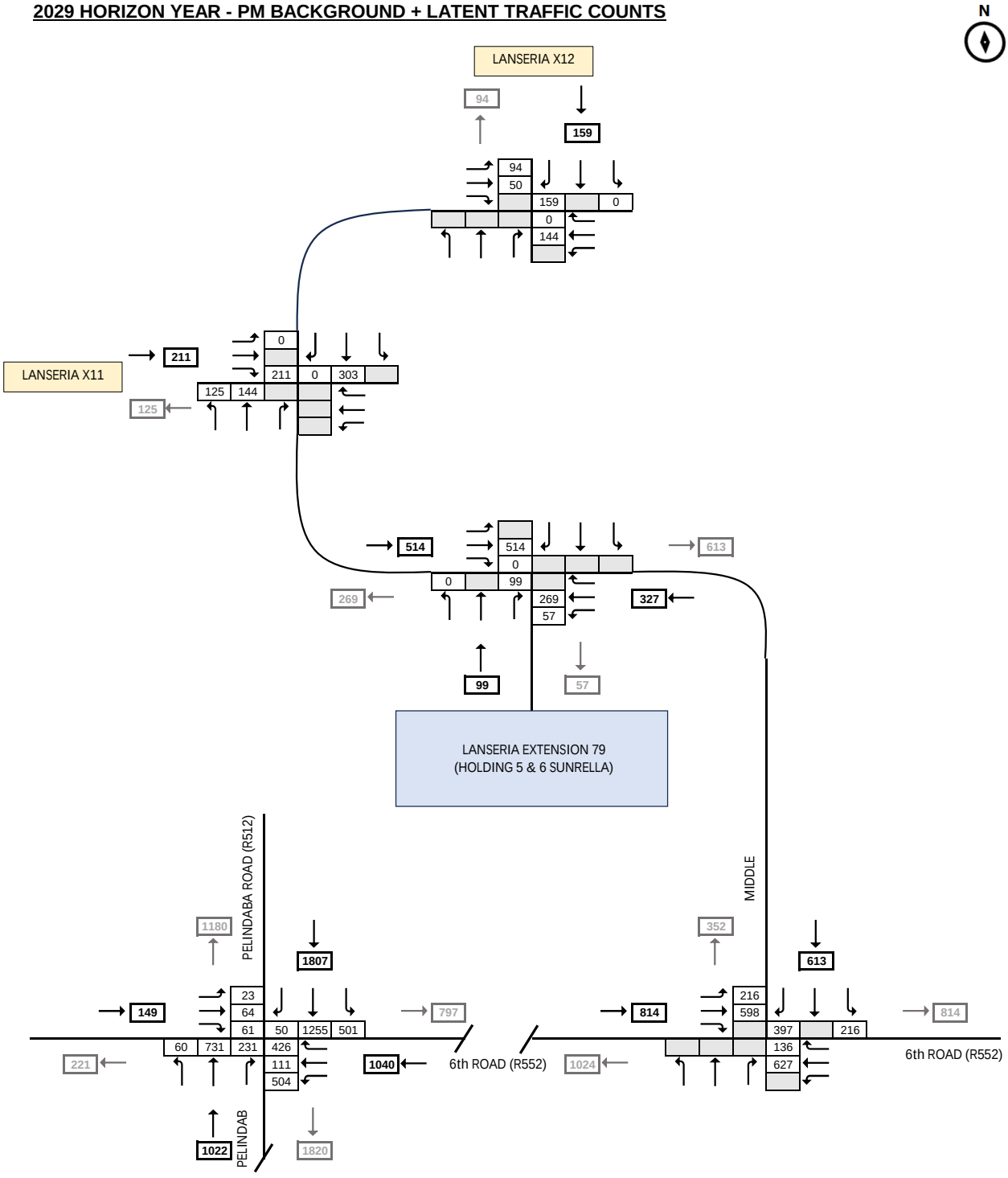
XXX Traffic Volumes (vehicles / hour)

TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

2029 Horizon Year - AM Background + Latent Development + Development Traffic Volumes

Figure E-5

2029 HORIZON YEAR - PM BACKGROUND + LATENT TRAFFIC COUNTS



XXX Traffic Volumes (vehicles / hour)

TRAFFIC IMPACT STUDY : LANSERIA HOLDINGS 5 & 6

2029 Horizon Year - PM Background + Latent Development + Development Traffic Volumes

Figure E-6

Annexure F: SIDRA Extracts of Intersection Analyses

1. Intersection of Pelindaba Road (R512) & 6th Road (R552)

MOVEMENT SUMMARY

Site: 101 [R552 & R512_2024 BY BACKGROUND (AM) (Signalised) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pelindaba Road (R512)														
1	L2	9	5,0	9	5,0	0,008	7,3	LOS A	0,1	0,4	0,31	0,59	0,31	52,7
2	T1	799	5,0	841	5,0	*0,891	34,0	LOS C	15,1	110,0	1,00	1,08	1,40	38,6
3	R2	246	5,0	259	5,0	*0,535	17,3	LOS B	4,8	34,7	0,86	0,79	0,86	46,1
Approach		1054	5,0	1109	5,0	0,891	29,9	LOS C	15,1	110,0	0,96	1,01	1,26	40,2
East: 6th Road (R552)														
4	L2	80	5,0	84	5,0	*0,470	35,4	LOS D	2,5	18,5	0,98	0,76	0,98	37,2
5	T1	14	5,0	15	5,0	0,039	27,6	LOS C	0,2	1,5	0,93	0,61	0,93	41,4
6	R2	231	5,0	243	5,0	*0,708	28,4	LOS C	6,6	47,9	0,99	0,88	1,12	40,4
Approach		325	5,0	342	5,0	0,708	30,1	LOS C	6,6	47,9	0,99	0,84	1,08	39,6
North: Pelindaba Road (R512)														
7	L2	212	5,0	223	5,0	0,242	9,6	LOS A	2,3	16,9	0,51	0,69	0,51	51,1
8	T1	419	5,0	441	5,0	0,467	21,3	LOS C	5,7	41,5	0,90	0,74	0,90	44,5
9	R2	3	5,0	3	5,0	0,008	17,0	LOS B	0,0	0,3	0,82	0,61	0,82	46,2
Approach		634	5,0	667	5,0	0,467	17,4	LOS B	5,7	41,5	0,77	0,72	0,77	46,5
West: Elandsdrift Road (R552)														
10	L2	41	5,0	43	5,0	0,241	34,5	LOS C	1,3	9,2	0,96	0,73	0,96	37,6
11	T1	50	5,0	53	5,0	0,139	28,3	LOS C	0,7	5,5	0,94	0,67	0,94	41,1
12	R2	36	5,0	38	5,0	0,120	23,7	LOS C	0,9	6,2	0,88	0,71	0,88	42,6
Approach		127	5,0	134	5,0	0,241	29,0	LOS C	1,3	9,2	0,93	0,70	0,93	40,3
All Vehicles		2140	5,0	2253	5,0	0,891	26,1	LOS C	15,1	110,0	0,91	0,88	1,07	41,8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Organisation: EDS ENGINEERING DESIGN SERVICES (PTY) LTD | Licence: PLUS / 1PC | Processed: Thursday, 28 November 2024 13:17:51
Project: Z:\01 - Projects\2024\2024-312 - Traffic Study - Lanseria (Holding 5 & 6 Sunrella AH)\01 - Design\3 - Traffic\6. SIDRA\SIDRA - V0.sip9

PHASING SUMMARY

Site: 101 [R552 & R512_2024 BY BACKGROUND (AM) (Signalised) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

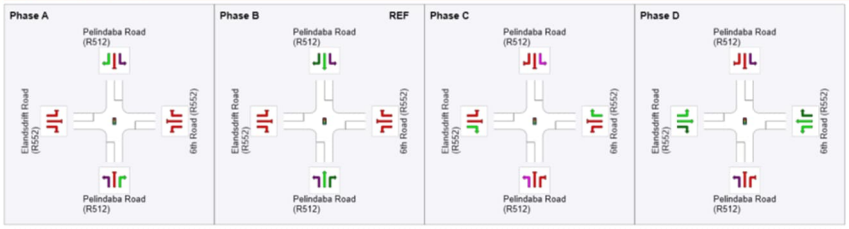
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	45	0	21	33
Green Time (sec)	9	15	6	6
Phase Time (sec)	15	21	12	12
Phase Split	25%	35%	20%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



MOVEMENT SUMMARY

Site: 101 [R552 & R512_2024 BY BACKGROUND (PM) (Signalised) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pelindaba Road (R512)														
1	L2	57	5,0	60	5,0	0,051	7,4	LOS A	0,4	3,2	0,29	0,61	0,29	52,6
2	T1	431	5,0	454	5,0	0,334	19,0	LOS B	6,1	44,5	0,77	0,64	0,77	45,8
3	R2	69	5,0	73	5,0	*0,224	19,2	LOS B	1,4	10,5	0,81	0,73	0,81	45,0
Approach		557	5,0	586	5,0	0,334	17,8	LOS B	6,1	44,5	0,73	0,65	0,73	46,3
East: 6th Road (R552)														
4	L2	234	5,0	246	5,0	0,572	33,5	LOS C	8,2	59,8	0,93	0,82	0,93	38,0
5	T1	62	5,0	65	5,0	*0,216	37,2	LOS D	1,2	8,7	0,97	0,70	0,97	37,4
6	R2	249	5,0	262	5,0	*0,615	29,0	LOS C	8,1	58,8	0,94	0,81	0,94	40,1
Approach		545	5,0	574	5,0	0,615	31,9	LOS C	8,2	59,8	0,94	0,80	0,94	38,8
North: Pelindaba Road (R512)														
7	L2	260	5,0	274	5,0	0,230	7,8	LOS A	2,3	17,1	0,35	0,65	0,35	52,3
8	T1	769	5,0	809	5,0	*0,595	21,3	LOS C	12,2	89,3	0,87	0,75	0,87	44,5
9	R2	48	5,0	51	5,0	0,114	17,1	LOS B	1,0	7,2	0,69	0,69	0,69	46,2
Approach		1077	5,0	1134	5,0	0,595	17,9	LOS B	12,2	89,3	0,74	0,72	0,74	46,3
West: Elandsdrift Road (R552)														
10	L2	22	5,0	23	5,0	0,161	42,6	LOS D	0,8	6,2	0,96	0,70	0,96	34,7
11	T1	32	5,0	34	5,0	0,111	36,5	LOS D	0,6	4,4	0,96	0,66	0,96	37,6
12	R2	58	5,0	61	5,0	0,156	26,4	LOS C	1,6	11,9	0,86	0,73	0,86	41,4
Approach		112	5,0	118	5,0	0,161	32,4	LOS C	1,6	11,9	0,91	0,71	0,91	38,8
All Vehicles		2291	5,0	2412	5,0	0,615	21,9	LOS C	12,2	89,3	0,79	0,72	0,79	43,9

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101 [R552 & R512_2024 BY BACKGROUND (PM) (Signalised) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

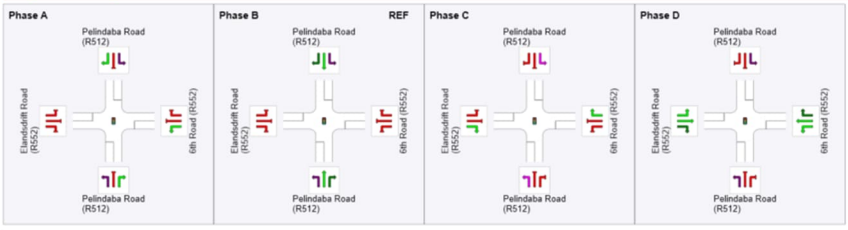
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	63	0	33	51
Green Time (sec)	6	27	12	6
Phase Time (sec)	12	33	18	12
Phase Split	16%	44%	24%	16%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101 [R552 & R512_2029 HY BACKGROUND + LATENT (AM)(Signalised) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pelindaba Road (R512)														
1	L2	9	5,0	9	5,0	0,007	5,8	LOS A	0,0	0,1	0,09	0,56	0,09	53,8
2	T1	1379	5,0	1452	5,0	0,814	18,9	LOS B	32,3	235,8	0,79	0,77	0,85	45,9
3	R2	484	5,0	509	5,0	*0,969	55,0	LOS D	24,6	179,4	1,00	1,09	1,45	31,3
Approach		1872	5,0	1971	5,0	0,969	28,2	LOS C	32,3	235,8	0,84	0,85	1,01	41,0
East: 6th Road (R552)														
4	L2	206	5,0	217	5,0	0,194	13,4	LOS B	4,0	29,5	0,46	0,70	0,46	48,0
5	T1	41	5,0	43	5,0	0,033	20,8	LOS C	0,6	4,5	0,69	0,50	0,69	44,8
6	R2	355	5,0	374	5,0	*0,857	42,6	LOS D	16,6	120,9	1,00	0,95	1,23	35,0
Approach		602	5,0	634	5,0	0,857	31,1	LOS C	16,6	120,9	0,79	0,83	0,93	39,2
North: Pelindaba Road (R512)														
7	L2	414	5,0	436	5,0	0,562	20,9	LOS C	9,0	66,0	0,78	0,85	0,78	44,2
8	T1	590	5,0	621	5,0	*0,617	31,7	LOS C	12,2	88,8	0,93	0,79	0,93	39,6
9	R2	3	5,0	3	5,0	0,011	38,6	LOS D	0,1	0,8	0,84	0,63	0,84	36,3
Approach		1007	5,0	1060	5,0	0,617	27,3	LOS C	12,2	88,8	0,87	0,81	0,87	41,3
West: Elandsdrift Road (R552)														
10	L2	43	5,0	45	5,0	0,379	52,3	LOS D	2,1	15,0	0,99	0,74	0,99	31,8
11	T1	95	5,0	100	5,0	*0,397	46,6	LOS D	2,3	16,5	1,00	0,74	1,00	34,1
12	R2	38	5,0	40	5,0	0,304	51,6	LOS D	1,8	13,0	0,99	0,73	0,99	32,2
Approach		176	5,0	185	5,0	0,397	49,1	LOS D	2,3	16,5	0,99	0,73	0,99	33,1
All Vehicles		3657	5,0	3849	5,0	0,969	29,4	LOS C	32,3	235,8	0,85	0,83	0,95	40,3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101 [R552 & R512_2029 HY BACKGROUND + LATENT (AM)(Signalised) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site User-Given Phase Times)

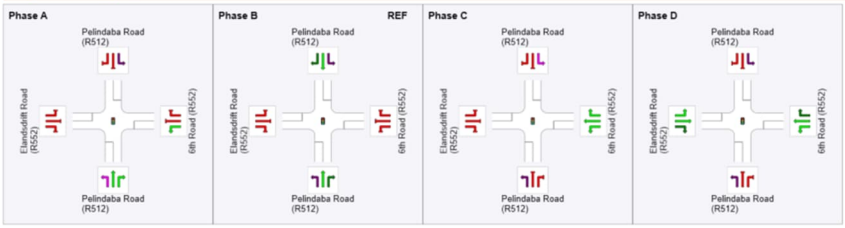
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	65	0	30	53
Green Time (sec)	19	24	17	6
Phase Time (sec)	25	30	23	12
Phase Split	28%	33%	26%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101 [R552 & R512_2029 HY BACKGROUND + LATENT (PM)(Signalised) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 95 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pelindaba Road (R512)														
1	L2	60	5,0	63	5,0	0,048	6,0	LOS A	0,2	1,4	0,13	0,58	0,13	53,6
2	T1	731	5,0	769	5,0	0,352	11,2	LOS B	9,3	68,0	0,57	0,50	0,57	50,7
3	R2	206	5,0	217	5,0	*0,735	31,8	LOS C	6,2	45,3	1,00	0,88	1,11	39,0
Approach		997	5,0	1049	5,0	0,735	15,2	LOS B	9,3	68,0	0,63	0,58	0,65	47,9
East: 6th Road (R552)														
4	L2	459	5,0	483	5,0	0,522	21,9	LOS C	14,8	107,8	0,71	0,80	0,71	43,1
5	T1	106	5,0	112	5,0	0,088	23,0	LOS C	1,8	12,8	0,71	0,55	0,71	43,6
6	R2	416	5,0	438	5,0	*0,944	58,5	LOS E	23,8	173,5	1,00	1,05	1,38	30,4
Approach		981	5,0	1033	5,0	0,944	37,5	LOS D	23,8	173,5	0,83	0,88	0,99	36,6
North: Pelindaba Road (R512)														
7	L2	495	5,0	521	5,0	0,440	9,6	LOS A	7,3	53,6	0,48	0,70	0,48	51,2
8	T1	1255	5,0	1321	5,0	*0,939	49,0	LOS D	37,6	274,8	1,00	1,13	1,30	33,4
9	R2	50	5,0	53	5,0	0,093	25,4	LOS C	1,5	11,3	0,66	0,70	0,66	41,8
Approach		1800	5,0	1895	5,0	0,939	37,5	LOS D	37,6	274,8	0,85	1,00	1,06	37,1
West: Elandsdrift Road (R552)														
10	L2	23	5,0	24	5,0	0,214	54,2	LOS D	1,1	8,3	0,98	0,71	0,98	31,2
11	T1	62	5,0	65	5,0	0,274	48,8	LOS D	1,5	11,2	0,99	0,71	0,99	33,4
12	R2	61	5,0	64	5,0	*0,515	55,5	LOS E	3,1	22,6	1,00	0,75	1,01	31,1
Approach		146	5,0	154	5,0	0,515	52,5	LOS D	3,1	22,6	0,99	0,73	0,99	32,1
All Vehicles		3924	5,0	4131	5,0	0,944	32,4	LOS C	37,6	274,8	0,79	0,85	0,94	39,0

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101 [R552 & R512_2029 HY BACKGROUND + LATENT (PM)(Signalised) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 95 seconds (Site User-Given Phase Times)

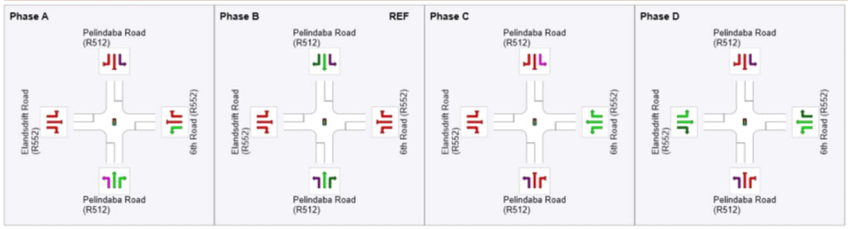
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	78	0	42	67
Green Time (sec)	11	37	19	6
Phase Time (sec)	16	43	24	12
Phase Split	17%	45%	25%	13%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101 [R552 & R512_AM - Conversion - Option 1 (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pelindaba Road (R512)														
1	L2	9	5,0	9	5,0	0,007	6,0	LOS A	0,0	0,2	0,12	0,57	0,12	53,6
2	T1	1379	5,0	1452	5,0	0,707	10,6	LOS B	20,4	148,6	0,71	0,64	0,71	51,2
3	R2	532	5,0	560	5,0	*0,838	29,5	LOS C	18,1	132,0	0,97	0,96	1,14	39,9
Approach		1920	5,0	2021	5,0	0,838	15,8	LOS B	20,4	148,6	0,78	0,73	0,83	47,5
East: 6th Road (R552)														
4	L2	228	5,0	240	5,0	0,304	13,6	LOS B	3,6	26,5	0,68	0,75	0,68	47,8
5	T1	43	5,0	45	5,0	0,200	33,5	LOS C	1,6	11,4	0,94	0,70	0,94	38,8
6	R2	360	5,0	379	5,0	*0,881	50,5	LOS D	8,2	59,8	1,00	1,01	1,44	32,5
Approach		631	5,0	664	5,0	0,881	36,0	LOS D	8,2	59,8	0,88	0,89	1,13	37,2
North: Pelindaba Road (R512)														
7	L2	425	5,0	447	5,0	0,537	17,7	LOS B	9,8	71,4	0,75	0,84	0,75	46,0
8	T1	590	5,0	621	5,0	*0,881	41,8	LOS D	13,3	97,1	1,00	1,03	1,36	35,7
9	R2	3	5,0	3	5,0	0,010	32,6	LOS C	0,1	0,7	0,83	0,63	0,83	38,6
Approach		1018	5,0	1072	5,0	0,881	31,8	LOS C	13,3	97,1	0,90	0,95	1,10	39,4
West: Elandsdrift Road (R552)														
10	L2	43	5,0	45	5,0	0,316	43,4	LOS D	1,7	12,3	0,98	0,73	0,98	34,4
11	T1	100	5,0	105	5,0	*0,348	37,8	LOS D	2,0	14,3	0,98	0,73	0,98	37,1
12	R2	38	5,0	40	5,0	0,279	43,2	LOS D	1,5	10,8	0,98	0,73	0,98	34,8
Approach		181	5,0	191	5,0	0,348	40,3	LOS D	2,0	14,3	0,98	0,73	0,98	35,9
All Vehicles		3750	5,0	3947	5,0	0,881	24,7	LOS C	20,4	148,6	0,84	0,82	0,96	42,5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101 [R552 & R512_AM - Conversion - Option 1 (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

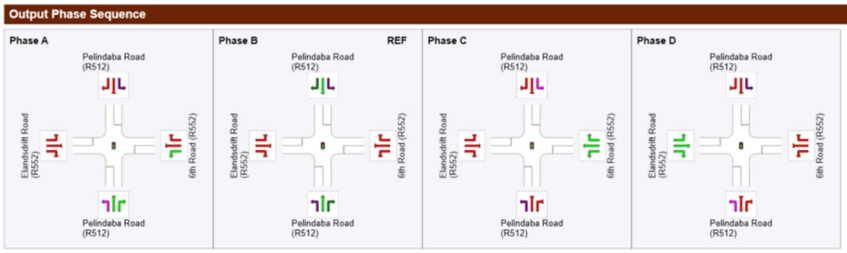
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	45	0	19	34
Green Time (sec)	24	14	9	6
Phase Time (sec)	29	20	14	12
Phase Split	39%	27%	19%	16%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101 [R552 & R512_PM - Conversion - Option 1 (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Pelindaba Road (R512)														
1	L2	60	5,0	63	5,0	0,049	6,1	LOS A	0,3	1,9	0,13	0,58	0,13	53,6
2	T1	731	5,0	769	5,0	0,345	12,2	LOS B	10,4	76,2	0,55	0,48	0,55	50,0
3	R2	231	5,0	243	5,0	*0,866	48,2	LOS D	10,3	75,3	1,00	0,99	1,27	33,2
Approach		1022	5,0	1076	5,0	0,866	20,0	LOS C	10,4	76,2	0,63	0,60	0,69	45,0
East: 6th Road (R552)														
4	L2	504	5,0	531	5,0	0,614	28,0	LOS C	20,8	151,9	0,79	0,83	0,79	40,2
5	T1	111	5,0	117	5,0	0,189	28,4	LOS C	4,5	32,6	0,76	0,61	0,76	41,0
6	R2	426	5,0	448	5,0	0,520	39,1	LOS D	10,0	72,8	0,87	0,81	0,87	36,2
Approach		1041	5,0	1096	5,0	0,614	32,6	LOS C	20,8	151,9	0,82	0,80	0,82	38,5
North: Pelindaba Road (R512)														
7	L2	501	5,0	527	5,0	0,512	11,3	LOS B	9,7	70,6	0,58	0,75	0,58	50,0
8	T1	1255	5,0	1321	5,0	*0,907	44,7	LOS D	39,5	288,3	0,97	1,02	1,16	34,7
9	R2	50	5,0	53	5,0	0,088	26,3	LOS C	1,7	12,4	0,63	0,70	0,63	41,4
Approach		1806	5,0	1901	5,0	0,907	34,9	LOS C	39,5	288,3	0,85	0,93	0,98	38,1
West: Elandsdrift Road (R552)														
10	L2	23	5,0	24	5,0	0,041	32,4	LOS C	0,9	6,4	0,71	0,69	0,71	38,4
11	T1	64	5,0	67	5,0	0,054	26,9	LOS C	1,2	8,9	0,71	0,53	0,71	41,7
12	R2	61	5,0	64	5,0	*0,524	58,4	LOS E	3,5	25,4	0,98	0,78	0,99	30,4
Approach		148	5,0	156	5,0	0,524	40,7	LOS D	3,5	25,4	0,82	0,66	0,83	35,8
All Vehicles		4017	5,0	4228	5,0	0,907	30,7	LOS C	39,5	288,3	0,78	0,80	0,86	39,7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101 [R552 & R512_PM - Conversion - Option 1 (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site User-Given Phase Times)

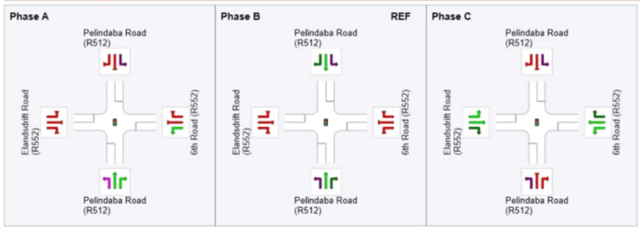
Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Leading Right Turn
Reference Phase: Phase B
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	93	0	51
Green Time (sec)	12	46	36
Phase Time (sec)	17	52	41
Phase Split	15%	47%	37%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

2. Intersection of Middel Road & 6th Road (R552)

MOVEMENT SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2024 BY BACKGROUND (AM) (Signalised - Upgraded) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: 6th Road (R552)														
5	T1	306	5,0	322	5,0	0,236	3,2	LOS A	3,4	24,7	0,36	0,31	0,36	57,0
6a	R1	63	5,0	66	5,0	0,120	9,2	LOS A	0,8	6,0	0,40	0,61	0,40	51,5
Approach		369	5,0	388	5,0	0,236	4,2	LOS A	3,4	24,7	0,36	0,36	0,36	56,0
NorthWest: Middle Road														
27a	L1	16	5,0	17	5,0	0,099	35,9	LOS D	0,5	3,8	0,94	0,69	0,94	36,8
29b	R3	43	5,0	45	5,0	*0,312	38,7	LOS D	1,5	10,7	0,97	0,74	0,97	36,0
Approach		59	5,0	62	5,0	0,312	38,0	LOS D	1,5	10,7	0,96	0,72	0,96	36,2
West: 6th Road (R552)														
10b	L3	129	5,0	136	5,0	0,119	9,4	LOS A	1,3	9,5	0,32	0,68	0,32	51,0
11	T1	396	5,0	417	5,0	*0,305	3,4	LOS A	4,7	34,1	0,38	0,33	0,38	56,8
Approach		525	5,0	553	5,0	0,305	4,9	LOS A	4,7	34,1	0,37	0,42	0,37	55,2
All Vehicles		953	5,0	1003	5,0	0,312	6,7	LOS A	4,7	34,1	0,40	0,41	0,40	53,7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2024 BY BACKGROUND (AM) (Signalised - Upgraded) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

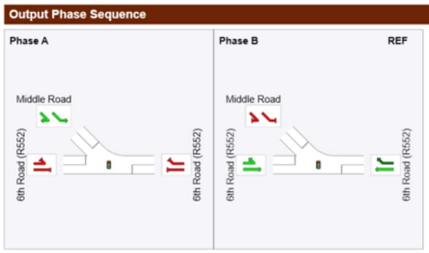
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	53	0
Green Time (sec)	6	47
Phase Time (sec)	12	53
Phase Split	18%	82%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2024 BY BACKGROUND (PM) (Signalised - Upgraded) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: 6th Road (R552)														
5	T1	419	5,0	441	5,0	*0,389	6,8	LOS A	6,8	49,3	0,56	0,49	0,56	54,0
6a	R1	25	5,0	26	5,0	0,049	12,3	LOS B	0,4	2,8	0,52	0,63	0,52	49,1
Approach		444	5,0	467	5,0	0,389	7,1	LOS A	6,8	49,3	0,56	0,50	0,56	53,7
NorthWest: Middle Road														
27a	L1	27	5,0	28	5,0	0,077	26,6	LOS C	0,7	5,1	0,84	0,70	0,84	40,6
29b	R3	110	5,0	116	5,0	*0,368	29,8	LOS C	3,1	22,5	0,91	0,78	0,91	39,3
Approach		137	5,0	144	5,0	0,368	29,2	LOS C	3,1	22,5	0,89	0,76	0,89	39,5
West: 6th Road (R552)														
10b	L3	48	5,0	51	5,0	0,054	11,8	LOS B	0,6	4,4	0,43	0,68	0,43	49,3
11	T1	329	5,0	346	5,0	0,306	6,3	LOS A	5,0	36,3	0,52	0,45	0,52	54,3
Approach		377	5,0	397	5,0	0,306	7,0	LOS A	5,0	36,3	0,51	0,48	0,51	53,6
All Vehicles		958	5,0	1008	5,0	0,389	10,2	LOS B	6,8	49,3	0,59	0,53	0,59	51,0

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2024 BY BACKGROUND (PM) (Signalised - Upgraded) (Site Folder: 2024 BASE YEAR BACKGROUND TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

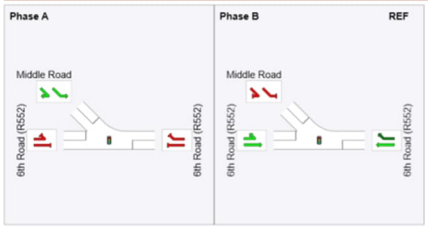
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	42	0
Green Time (sec)	12	36
Phase Time (sec)	18	42
Phase Split	30%	70%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2029 HY BACKGROUND + LATENT (AM)(Signalised - Upgraded) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: 6th Road (R552)														
5	T1	469	5,0	494	5,0	0,392	4,9	LOS A	6,5	47,6	0,48	0,43	0,48	55,5
6a	R1	226	5,0	238	5,0	*0,868	38,3	LOS D	9,4	69,0	0,94	1,10	1,48	36,5
Approach		695	5,0	732	5,0	0,868	15,7	LOS B	9,4	69,0	0,63	0,65	0,81	47,5
NorthWest: Middle Road														
27a	L1	92	5,0	97	5,0	0,393	32,3	LOS C	2,8	20,2	0,96	0,77	0,96	38,2
29b	R3	159	5,0	167	5,0	*0,798	39,4	LOS D	5,6	40,6	1,00	0,94	1,35	35,8
Approach		251	5,0	264	5,0	0,798	36,8	LOS D	5,6	40,6	0,98	0,87	1,20	36,6
West: 6th Road (R552)														
10b	L3	375	5,0	395	5,0	0,376	11,4	LOS B	5,2	37,8	0,48	0,74	0,48	49,7
11	T1	634	5,0	667	5,0	0,530	5,6	LOS A	10,1	73,7	0,56	0,50	0,56	55,0
Approach		1009	5,0	1062	5,0	0,530	7,7	LOS A	10,1	73,7	0,53	0,59	0,53	52,8
All Vehicles		1955	5,0	2058	5,0	0,868	14,3	LOS B	10,1	73,7	0,62	0,64	0,71	48,2

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2029 HY BACKGROUND + LATENT (AM)(Signalised - Upgraded) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

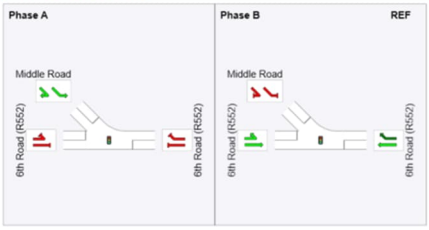
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	46	0
Green Time (sec)	8	40
Phase Time (sec)	14	46
Phase Split	23%	77%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2029 HY BACKGROUND + LATENT (PM)(Signalised - Upgraded) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: 6th Road (R552)														
5	T1	627	5,0	660	5,0	*0,749	14,2	LOS B	16,0	116,8	0,83	0,78	0,88	48,6
6a	R1	113	5,0	119	5,0	0,525	26,4	LOS C	3,2	23,6	0,90	0,79	0,90	41,3
Approach		740	5,0	779	5,0	0,749	16,1	LOS B	16,0	116,8	0,84	0,78	0,89	47,3
NorthWest: Middle Road														
27a	L1	176	5,0	185	5,0	0,334	23,1	LOS C	4,3	31,6	0,82	0,78	0,82	42,3
29b	R3	338	5,0	356	5,0	*0,754	30,2	LOS C	10,6	77,3	0,96	0,90	1,11	39,1
Approach		514	5,0	541	5,0	0,754	27,8	LOS C	10,6	77,3	0,91	0,86	1,01	40,1
West: 6th Road (R552)														
10b	L3	181	5,0	191	5,0	0,242	15,8	LOS B	3,2	23,4	0,60	0,75	0,60	46,8
11	T1	598	5,0	629	5,0	0,728	13,3	LOS B	14,6	106,6	0,81	0,74	0,84	49,2
Approach		779	5,0	820	5,0	0,728	13,9	LOS B	14,6	106,6	0,76	0,74	0,79	48,6
All Vehicles		2033	5,0	2140	5,0	0,754	18,2	LOS B	16,0	116,8	0,83	0,79	0,88	45,7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101v [R552 & MIDDLE ROAD_2029 HY BACKGROUND + LATENT (PM)(Signalised - Upgraded) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

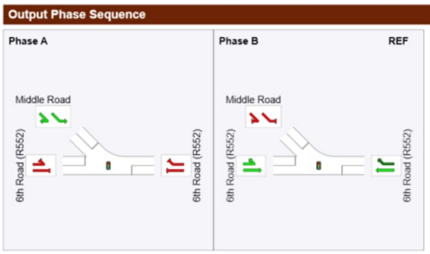
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Convert Function Default
Reference Phase: Phase B
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	36	0
Green Time (sec)	18	30
Phase Time (sec)	24	36
Phase Split	40%	60%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101v [R552 & MIDDLE ROAD_AM - Conversion - Upgraded (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 71 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: 6th Road (R552)														
5	T1	469	5,0	494	5,0	0,379	4,9	LOS A	7,1	52,0	0,45	0,40	0,45	55,5
6a	R1	269	5,0	283	5,0	*0,856	29,7	LOS C	8,8	64,1	1,00	1,00	1,37	39,8
Approach		738	5,0	777	5,0	0,856	14,0	LOS B	8,8	64,1	0,65	0,62	0,79	48,5
NorthWest: Middle Road														
27a	L1	112	5,0	118	5,0	0,453	36,8	LOS D	3,9	28,8	0,96	0,78	0,96	36,5
29b	R3	189	5,0	199	5,0	*0,897	50,8	LOS D	8,5	61,9	1,00	1,00	1,51	32,0
Approach		301	5,0	317	5,0	0,897	45,6	LOS D	8,5	61,9	0,99	0,92	1,30	33,5
West: 6th Road (R552)														
10b	L3	439	5,0	462	5,0	0,566	19,1	LOS B	11,0	80,1	0,73	0,81	0,73	45,0
11	T1	634	5,0	667	5,0	*0,969	44,1	LOS D	29,2	213,1	0,80	1,07	1,31	34,7
Approach		1073	5,0	1129	5,0	0,969	33,9	LOS C	29,2	213,1	0,77	0,96	1,07	38,3
All Vehicles		2112	5,0	2223	5,0	0,969	28,6	LOS C	29,2	213,1	0,76	0,84	1,00	40,5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101v [R552 & MIDDLE ROAD_AM - Conversion - Upgraded (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 71 seconds (Site Optimum Cycle Time - Minimum Delay)

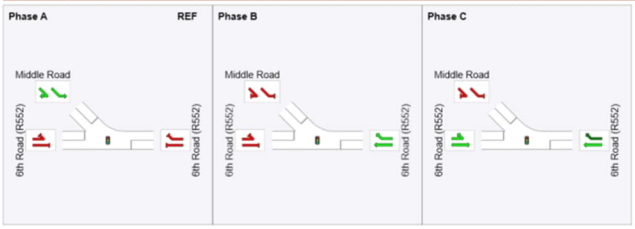
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	16	28
Green Time (sec)	10	6	37
Phase Time (sec)	16	12	43
Phase Split	23%	17%	61%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

MOVEMENT SUMMARY

Site: 101v [R552 & MIDDLE ROAD_PM - Conversion - Upgraded (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: 6th Road (R552)														
5	T1	627	5,0	660	5,0	0,794	16,8	LOS B	16,1	117,5	0,92	0,92	1,07	47,0
6a	R1	136	5,0	143	5,0	*0,710	29,5	LOS C	3,9	28,2	0,99	0,90	1,25	39,9
Approach		763	5,0	803	5,0	0,794	19,1	LOS B	16,1	117,5	0,93	0,91	1,10	45,5
NorthWest: Middle Road														
27a	L1	216	5,0	227	5,0	0,385	19,7	LOS B	4,4	32,5	0,82	0,78	0,82	44,0
29b	R3	397	5,0	418	5,0	*0,830	30,0	LOS C	11,7	85,3	0,99	0,97	1,29	39,2
Approach		613	5,0	645	5,0	0,830	26,3	LOS C	11,7	85,3	0,93	0,90	1,13	40,8
West: 6th Road (R552)														
10b	L3	216	5,0	227	5,0	0,328	16,7	LOS B	3,7	27,2	0,69	0,77	0,69	46,3
11	T1	598	5,0	629	5,0	0,822	18,2	LOS B	15,8	115,2	0,90	0,93	1,11	46,1
Approach		814	5,0	857	5,0	0,822	17,8	LOS B	15,8	115,2	0,85	0,89	1,00	46,2
All Vehicles		2190	5,0	2305	5,0	0,830	20,6	LOS C	16,1	117,5	0,90	0,90	1,07	44,3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

PHASING SUMMARY

Site: 101v [R552 & MIDDLE ROAD_PM - Conversion - Upgraded (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site Optimum Cycle Time - Minimum Delay)

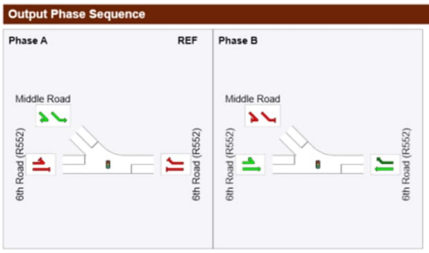
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Convert Function Default
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	22
Green Time (sec)	16	22
Phase Time (sec)	22	28
Phase Split	44%	56%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

3. Intersection of Preller Drive & Extension 79 Access

MOVEMENT SUMMARY

Site: 101 [PRELLER DRIVE & X79 ACCESS_2029 HY BACKGROUND + LATENT + DEV (AM) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: X79 Access														
1	L2	1	5,0	1	5,0	0,001	9,9	LOS A	0,0	0,0	0,53	0,80	0,53	28,7
3	R2	49	5,0	52	5,0	0,145	15,0	LOS C	0,5	3,3	0,72	1,00	0,72	23,2
Approach		50	5,0	53	5,0	0,145	14,9	LOS B	0,5	3,3	0,72	1,00	0,72	23,3
East: Preller Drive														
4	L2	107	5,0	113	5,0	0,361	5,6	LOS A	0,0	0,0	0,00	0,10	0,00	44,9
8	T1	535	5,0	563	5,0	0,361	0,0	LOS A	0,0	0,0	0,00	0,10	0,00	55,8
Approach		642	5,0	676	5,0	0,361	1,0	NA	0,0	0,0	0,00	0,10	0,00	54,0
West: Preller Drive														
2	T1	251	5,0	264	5,0	0,141	0,0	LOS A	0,0	0,1	0,01	0,00	0,01	59,7
12	R2	1	5,0	1	5,0	0,141	9,6	LOS A	0,0	0,1	0,01	0,00	0,01	47,4
Approach		252	5,0	265	5,0	0,141	0,1	NA	0,0	0,1	0,01	0,00	0,01	59,6
All Vehicles		944	5,0	994	5,0	0,361	1,5	NA	0,5	3,3	0,04	0,12	0,04	52,3

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PRELLER DRIVE & X79 ACCESS_2029 HY BACKGROUND + LATENT + DEV (PM) (Site Folder: 2029 HORIZON YEAR BACKGROUND + LATENT + DEVELOPMENT TRAFFIC)]

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: X79 Access														
1	L2	1	5,0	1	5,0	0,001	8,0	LOS A	0,0	0,0	0,37	0,80	0,37	31,0
3	R2	99	5,0	104	5,0	0,274	15,5	LOS C	1,0	7,1	0,73	1,03	0,84	22,9
Approach		100	5,0	105	5,0	0,274	15,4	LOS C	1,0	7,1	0,73	1,03	0,84	22,9
East: Preller Drive														
4	L2	57	5,0	60	5,0	0,183	5,6	LOS A	0,0	0,0	0,00	0,10	0,00	44,8
8	T1	269	5,0	283	5,0	0,183	0,0	LOS A	0,0	0,0	0,00	0,10	0,00	55,8
Approach		326	5,0	343	5,0	0,183	1,0	NA	0,0	0,0	0,00	0,10	0,00	53,8
West: Preller Drive														
2	T1	514	5,0	541	5,0	0,287	0,0	LOS A	0,0	0,1	0,00	0,00	0,00	59,9
12	R2	1	5,0	1	5,0	0,287	7,4	LOS A	0,0	0,1	0,00	0,00	0,00	47,5
Approach		515	5,0	542	5,0	0,287	0,0	NA	0,0	0,1	0,00	0,00	0,00	59,9
All Vehicles		941	5,0	991	5,0	0,287	2,0	NA	1,0	7,1	0,08	0,15	0,09	50,7

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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Annexure G: JRA TIA Approval for Lanseria X11 and X12

a world class African city

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Johannesburg Roads Agency

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Ref: 14/3/2/1/1/L35-11 AND 12
S. Kgetsi

EDS Engineering Design Services (Pty) Ltd
PO Box 34878
Glenstantia
0010

Date: 10 October 2023

Email: info@edseng.co.za

Sir, Madam,

SUBJECT **TRAFFIC IMPACT ASSESSMENT ADDENDUM: PROPOSED TOWNSHIP ESTABLISHMENT TO ALLOW "WAREHOUSING AND DISTRIBUTION" DEVELOPMENT SITUATED ON PORTION 32 (A PORTION OF PORTION 1) AND THE REMAINING EXTENT OF PORTION 1 OF THE FARM BOTESDAL 529JQ & HOLDING 1, SUNRELLA AGRICULTURAL HOLDINGS AND PORTION 80 (A PORTION OF PORTION 55) OF THE FARM BULTFONTEIN 533JQ LANSERIA EXTENSION 11 & 12**

Reference is made to the Traffic Impact Assessment Addendum submitted by EDS Engineering Design Services (Pty) Ltd on the 28 September August 2023 in response to comments issued by this department on the 28 August 2023. The report was assessed by the Traffic Engineering Department and the following comments are offered:

- The report was undertaken for the proposed township establishment to allow "warehousing and distribution" development situated on **PORTION 32 (A PORTION OF PORTION 1) AND THE REMAINING EXTENT OF PORTION 1 OF THE FARM BOTESDAL 529JQ & HOLDING 1, SUNRELLA AGRICULTURAL HOLDINGS AND PORTION 80 (A PORTION OF PORTION 55) OF THE FARM BULTFONTEIN 533JQ LANSERIA EXTENSION 11 & 12.**
- The development sites are currently zoned **"Agricultural"** with extents of 84 806m² and 64 569m² respectively.
- The proposed developments are earmarked for township establishment to allow **"Industrial 3"** with Extents of 84 806m² and 64 569m²; FAR of 0,6; Coverage of 60%; Permissible GFA of 50 883,6m² and 38 741,4m² and Office land-use rights are limited to 5050m² and 3716 m² floor area respectively.
- A conceptual Site Development Plan of the area have been included in the report in **Annexure C.**
- Several latent land use rights (Lanseria Extension 7 and Extension 32) were identified within the study area, that could have an impact in the vicinity of the applicant site.
- The proposed development will generate an additional 335 and 253 trips, during the weekday morning and weekday afternoon peak hours respectively.
- The applicant site is affected by Mogale City road planning, Gautrans provincial roads and the future GLMP framework comments have been included in the report.
- Gautrans requested a **Section 7 report** as the sites are within 200m of the proposed K215 for which the basic planning and) indicating that the proposed Lanseria Extension 11 and Extension 12 is not

affected by the future K215. The Gautrans approval letter dated February 2023 is included under **Annexure F** of this report.

- The development will be undertaken in a single phase, and it is anticipated that the full development will be completed within the next five (5) years.

The development is supported from a traffic point of view subject to the following conditions.

- Access to the proposed Lanseria Extension 11 is located west of Preller Drive and Lanseria Extension 12 is located between Airport Road (north) and Side Avenue (south) and access arrangements are proposed as follows:
  - Lanseria Extension 11
    - Access will operate as side-road stop-controlled intersections
    - Two inbound lanes with a minimum width of 4,5
    - Two outbound lanes with a minimum width of 4.5m
    - Access set back at a minimum of 25m.
    - Access control (booms) plus guardhouse provided at the entrance/exit.
    - Booms system with magnetic cards and will closed-off during non-business hours
    - Provide a large sliding gates
    - Provide minimum bellmouth of 12,5m
    - No overhead structures that could affected the flow to and from the site. However, should the need arise during the detail planning phase then provision should be made for a minimum vertical clearance of 5.2m.
  - Lanseria Extension 12
    - Access will operate as side-road stop-controlled intersections
    - One inbound lane with a minimum width of 4,5
    - One outbound lane with a minimum width of 4.5m
    - Access set back at a minimum of 25m.
    - Access control (booms) plus guardhouse provided at the entrance/exit.
    - Booms system with magnetic cards and will closed-off during non-business hours
    - Provide a large sliding gate
    - Provide minimum bellmouth of 12,5m
    - No overhead structures that could affected the flow to and from the site. However, should the need arise during the detail planning phase then provision should be made for a minimum vertical clearance of 5.2m.
- Access based on the GLMP framework for the proposed Lanseria Extension 11 and Extension 12 will be able to obtain access from two separate locations and are detailed as follows:
  - **Lanseria Extension 11**
    - Via a new proposed road between Boeing Street and the extended Preller Road to the south-east connecting to the primary road network (Pelindaba Road R512) and
  - **Lanseria Extension 12**
    - Via Preller Road and Middle Road north connecting to the secondary road network south of Lanseria Airport
- It is proposed that after township establishment approval of Lanseria Extension 11 and Extension 12, the township layout plans as well as access positions we shared with the project managers (Gapp Architects) of the GLMP framework to ensure that a road network be preserved for the townships in future.
- External road upgrades required to accommodate the proposed development traffic are as follows:
  - **Due to the developer**
    - **Intersection - Pelindaba Road (R512) / Pine Valley Road (R552)**
      - Converted to a traffic signal-controlled intersection

- **Intersection - Pine Valley Road (R552) / Middle Road**
  - Converted to a traffic signal-controlled intersection
  - Provide pedestrian facilities across Middle Road and Pine Valley Road at the intersection
- Developer of Lanseria Extension 12 to construct Side Avenue as part of boundary roads from Preller Road along the boundary of the township up to the development access (length and width of road to be indicated on SDP)
- **Due to the background traffic**
  - **Intersection - Middle Road and Pine Valley Road**
  - Extend the existing left-turn lane from 20m to 60m western approach Pine Valley Road (R552)
  - Additional left-turn lane 60m in extent north-western approach Middle Road

- Signal installation/change of settings shall be carried out with written consent from the appropriate road authorities (JRA) after submission of the traffic signal plans by the developer. The developer will be responsible for the signal revision and the implementation cost with regards to any hardware changes.
- This Department agrees that some of the upgrades identified (**Section: 12.3**) are required and that the developer cannot be held totally accountable. Road authorities however have the responsibility of ensuring a road infrastructure that can safely and efficient to cope with existing background traffic as well as growth in traffic volumes in the long term. It is clear form the report that the development cannot function without the upgrading.
- Detailed design drawings by a Professional Engineer must be submitted to JRA for assessment prior to the start of construction work and other relevant authority (if applicable)
- Separate pedestrian gates shall be provided.
- A 2.0m paved sidewalk to be provided along the full frontage of the proposed site and reinstate any damaged pave walkways along the site on both Extension 11 and 12
- The area is well served by frequent public transport throughout the day. Developer to provide lay-by's (drop-off facilities) along Pine Valley Road (R552) downstream of the Middle Road intersection.
- 558 and 342 parking bays are provided for on the site layout plans **(Annexure C)** for Lanseria Extension 11 and Extension 12 respectively with 37 and 49 loading bays are proposed for the warehouse developments on Lanseria Extension 11 and 12.
- The aspects of access configuration, internal circulation; refuse removal, parking provision, emergency vehicle accommodation etc are required to be addressed prior to the finalization of the Site Development Plan (SDP) stage.

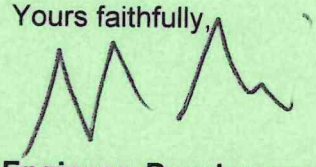
- ***The development can be supported from a traffic engineering perspective, provided that the abovementioned requirements / recommendations are implemented.***
- ***These comments only pertain to traffic engineering aspects. The issues of Land Use, the Site Layout and the SDP must be confirmed by CoJ LUM and Development Planning and Control.***
- ***All road upgrades to be undertaken by the developer or his representatives, the cost thereof, will not be refunded back to the developer by the Johannesburg Roads Agency (JRA) or the City of Johannesburg (CoJ) unless these upgrades were discussed and agreed upon in writing by both parties upfront, before any construction commences. The mere fact that the detail design drawings or Traffic Impact Studies have been approved, does not bind the JRA or the CoJ to any agreement. It is the responsibility of the developer or his representative to always stay up to date with the latest guidelines and Standards. This is especially applicable to Universal Design (UD) principals. JRA Development Control references the following national and municipal standards for minimum compliance, and will require developments conform to them in planning, design and construction, whether included in the original approved drawings or not. These are:***
  - ✓ ***Minimum requirements for the preparation of integrated transport plans: 29July 2016 (CoJ CITP) Published under the NLTA. Act No.5 of 2009. Requires the application of minimum standards on UD to transport and public space.***
  - ✓ ***Building Regulations and Building Standards Act 1977, as amended 2008***
  - ✓ ***SANS 10400 Part S: 2011 - Facilities for Persons with Disabilities***
  - ✓ ***National Technical Requirements 1 (NTR1) – Pedestrian Crossings, 2016 (Specification of Tactiles SANS 784: 2008)***

- ✓ *JRA standard book of Drawings – 2015 including 2017 UA Update*

- *Failing to eliminate obstacles that unfairly limit or restrict persons with disabilities from enjoying equal opportunities or failing to take steps to accommodate the needs of such persons can result in litigation.*
- *It should also be noted that if any upgrades are undertaken by the developer to any roads or storm-water on behalf of CoJ or the JRA, the developer will be entitled to an off-set against their external engineering services contributions as per section 49(4) of SPLUMA, provided these services are required to be upgraded to resolve background capacity problems, and not as a result of his/her impact of the development. These upgrades are to be discussed with the officials of the JRA and agreement in writing is to be obtained from the JRA to the off-set of such contributions, before any construction commences on site.*
- *If the amount for the upgrade/construction exceeds the contributions payable, the balance thereof will not be refunded to the developer and the construction is then carried out at the developers own cost.*
- *These comments are only valid for 5 years as per COTO TMH 16 Vol 1.*

Please note the your Site Traffic Assessment was independently assessed by the JRA, Traffic Engineering and Analysis Department and for any related queries contact Ms. Andiswa at (011) 491-5776 or adubula@jra.org.za.

Yours faithfully,



Engineer: Development Control
sk/jn