

MOTIVATING MEMORANDUM

V A A L A E R O T R O P O L I S

APPLICATION FOR TOWNSHIP ESTABLISHMENT
IN TERMS OF SECTION 44 OF THE EMFULENI LOCAL MUNICIPALITY
SPATIAL PLANNING AND LAND USE MANAGEMENT BY-LAWS, 2018

30 SEPTEMBER 2026



SUBMITTED FOR:



GAUTENG
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

SUBMITTED BY:



MUNICIPALITY:



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EXECUTIVE SUMMARY

Urban Dynamics Gauteng Inc. was appointed by Vaal Aerozone (Pty) Ltd and the Gauteng Provincial Government to prepare and submit this Motivation Memorandum in support of an application for the Township Establishment of Vaal Aerotropolis, situated on 13 farm portions of the farms Klipkop 530 IQ, Rietkuil 554 IQ and Vlakplaats 555 IQ, extending over $\pm$ 3544 ha within the Emfuleni Local Municipality. The application is made in terms of Section 44 of the Emfuleni Local Municipal Planning By-Law, 2018, for the establishment of a township comprising 29 erven zoned Aerodrome, Business 1, Public Services & Utilities, Agricultural, Private Open Space and Public & Private Street.

The Vaal Aerotropolis is anchored by Citibank's R1,37 billion Equity Equivalent Investment Programme (EEIP), approved by the DTIC, which directs seed capital toward the Vaal River City and the Vaal Aerotropolis, including a new international cargo and passenger airport, and toward a R200 million Black Industrialists Economic Fund established with the IDC to support black-owned industrial enterprises within the Vaal Special Economic Zone. The proposed development is fully aligned with, and identified as a catalytic project in, the National Ministry of Transport's Revised Strategic Plan, Gauteng's Growing Gauteng Together Through Smart Mobility 2030, and the Emfuleni and Sedibeng Spatial Development Frameworks, Integrated Development Plans and District Development Model One Plan, all of which recognise the need for a dedicated cargo airport and a third international airport for Gauteng.

The report canvasses the legal, physical, environmental, market, geotechnical, engineering and design considerations relevant to the application, drawing on specialist studies undertaken by Prism EMS (environmental), Demacon (market and economic assessment), WSP Group (geotechnical and bulk engineering services) and the project team, each summarised below and supported in full as annexures to this memorandum.

Legal and physical particulars - the subject properties are held by two owners, RSA and Vaal Aerozone (Pty) Ltd, and are free of legal or technical impediments that would prevent development, subject to the standard registration and cancellation of existing servitudes and conditions as set out in this report. The site lies approximately 9 km west of the N1 and is currently used for commercial agriculture, accessed via the R54 and K176 provincial roads.

Environmental investigations - a comprehensive Environmental Impact Assessment, undertaken in parallel with this application, confirms that the site's cultivated fields and grassland are traversed by the Leeuspruit and Klein-Rietspruit watercourses and associated wetlands and floodlines. These sensitivities, together with identified heritage features, have informed the layout plan and orientation of the development, and Phase 1 of the airport has been designed to avoid all farm buildings and potential heritage sites.

Market and economic assessment - Demacon's Market Demand Assessment confirms a clear socio-economic case for the development, driven by capacity constraints at OR Tambo and Lanseria and Gauteng's stated need for a dedicated cargo airport and third international airport. The Economic Cost Benefit Analysis shows that Phase 1 of the Vaal Aerotropolis yields an Economic Rate of Return of 11,1%, exceeding the National Treasury's 10% Economic Cost of Capital rate, confirming its viability and net benefit to society. The development is projected to generate approximately 118 000 construction-related jobs and 19 800 sustained operational jobs annually, with over 70% of new formal small businesses expected to be black-owned, alongside material reductions in travel time, cost and carbon emissions for the surrounding communities of Sebokeng and Vanderbijlpark.

Geotechnical and engineering services - WSP Group's preliminary geotechnical investigation confirms the site as non-dolomitic and, subject to further detailed investigation, suitable for the proposed development. Bulk water, sewer, roads, stormwater, electrical and waste management infrastructure have each been assessed and are addressed through a phased servicing strategy aligned with the three-phase development programme, commencing with a 4,2 km runway and supporting Trade Zones and Agrizone infrastructure targeted for completion by January 2033, and expanding over an envisaged 60-year horizon to a full-capacity airport handling 45 million passengers per annum.

Layout, need and desirability - the proposed layout gives effect to Vaal Aerozone's vision of a premier trade and logistics gateway for Southern Africa, structured around an Air Platform, an integrated road and public transport network, and a land use framework that balances aviation, trade, agricultural and commercial precincts with open space and environmental protection. The need for the development is demonstrated with reference to the reindustrialisation of the Sedibeng region, employment creation, relief of infrastructural constraints at existing Gauteng airports, and the spatial justice, sustainability, efficiency and resilience principles of SPLUMA. Its desirability is confirmed by its alignment with the Emfuleni and Sedibeng Spatial Development Frameworks, the Vaal-River Regional Spatial Development Framework, the Rietkuil Agri-Hub Precinct Plan and the proclaimed Vaal Aerotropolis LSDF 2025. Its desirability is further enhanced by the Aerodrome Licence of Intent issued to Vaal Aerozone by the South African Civil Aviation Authority on 11 September 2026.

On the basis of the information and specialist investigations set out in this Motivation Memorandum, it is concluded that the proposed Township Establishment of **Vaal Aerotropolis** is needed, desirable, economically viable and consistent with the development principles of SPLUMA and with prevailing national, provincial, district and local policies. There are no legal or technical impediments to the proposed development, and its approval is recommended in terms of the Emfuleni Local Municipal Planning By-Law, 2018.

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1. BACKGROUND

The Citibank Equity Equivalent Investment Programme (EEIP) is a landmark R1,37 billion (\$71,3 million) initiative approved by the Department of Trade, Industry and Competition (the DTIC) to support South Africa's socio-economic transformation.

As a multinational financial institution whose global corporate policy prevents local equity ownership transfers, Citibank leverages the EEIP framework to fulfil its Broad-based Black Economic Empowerment (B-BBEE) ownership scorecard requirements by injecting capital directly into critical local infrastructure and business funding. The strategic goal is to accelerate job creation, boost industrial localisation and build regional infrastructure. Two Memorandum of Agreements have been signed in 2023 and 2024 between DTIC and IDC with Citibank reflecting the two Primary Investment Pillars as described below.

- **Vaal Mega City River Development**
 - Citibank is directing a major portion of the R1.37 billion seed capital toward developing a new mixed-use metropolitan region in Gauteng.
 - The funding anchors the development of the **Vaal River City** and the **Vaal Aerotropolis** which includes plans for a new international cargo and passenger airport.
- **Black Industrialists Economic Fund**
 - Citibank partnered with the Industrial Development Corporation (IDC) to establish a dedicated R200 million fund.
 - This fund provides specialised financial grants, loans, and concessional financing to support new and existing black-owned industrial enterprises operating within the Vaal Special Economic Zone.

The planning and development of international airports in South Africa are guided by the National Ministry of Transport. Its Revised Strategic Plan 2020-2025 defines the manner in which future international airports within South Africa are to be developed. In terms of the principles of aerotropolis development, economic hubs and SEZ's are also not only supported by the National Department of Transport, but they are encouraged and promoted. The report states the following under Aviation Infrastructure:

"An integrated airport network system has the potential to support the NDP's objective by contributing to growing the economy of the country and ensure that potential investments are utilised effectively and efficiently through economic initiatives such as the aerotropolis concept, airport cities, Special Economic Zones (SEZ's) linked to international airports aimed at promoting economic growth, trade and tourism and job creation. It could further facilitate the expansion of tourism, including sport and adventure tourism. However, such initiatives must be sustainable to ensure economic growth within the country."

Gauteng Province publishes its transport vision in 2020 in the form of the "Growing Gauteng Together Through Smart Mobility, 2030" transport policy and under the section World Class Air Transport states that:

- a dedicated cargo airport is required in Gauteng Province.
- more airports must be designated with international status, and
- an additional international airport i.e. a third one, must be designated in Gauteng as an international port of entry point into South Africa.

These two policies are applicable to the proposed Vaal Aerotropolis and support the vision of this proposed development.

The development of the Vaal Aerotropolis in Emfuleni is an initiative set to promote economic development within the Emfuleni municipality and Sedibeng District. It is intended to spur economic growth, generate employment opportunities in Emfuleni and to reduce the need



for residents in the southern parts of Gauteng to migrate or commute over long distances in order to access economic opportunities in other parts of Gauteng.

The Emfuleni Local Municipality envisages an aerotropolis that will encompass an International Airport, Logistics Hub and an Agricultural Hub. By its very nature, an international airport is a powerful engine for local economic growth which can attract many aviation-linked businesses. Economic studies and projections have shown that the proposed Vaal Aerotropolis will, in time, develop to form clusters and corridors of airport-linked commercial, high-tech, and advanced manufacturing or industrial clusters as well as logistics facilities complemented by retail, entertainment, hotels, conferences, and exhibition centres.

The aim of the proposed airport as part of the Aerotropolis is to supplement the proposed Logistics Hub and to relieve the OR Tambo and Lanseria International airports from the growth constraints they are currently experiencing. Estimates show that the OR Tambo International, Lanseria Airports and Rand Airport are experiencing cargo and passenger growth rates that are unlikely to be satisfied by the future expansion plans of these airports. These expansion plans cannot be amended due to land and infrastructural constraints surrounding these airports. These physical constraints present an opportunity for the development of an international airport in Emfuleni to capture some of the growth potential experienced by the abovementioned airports.

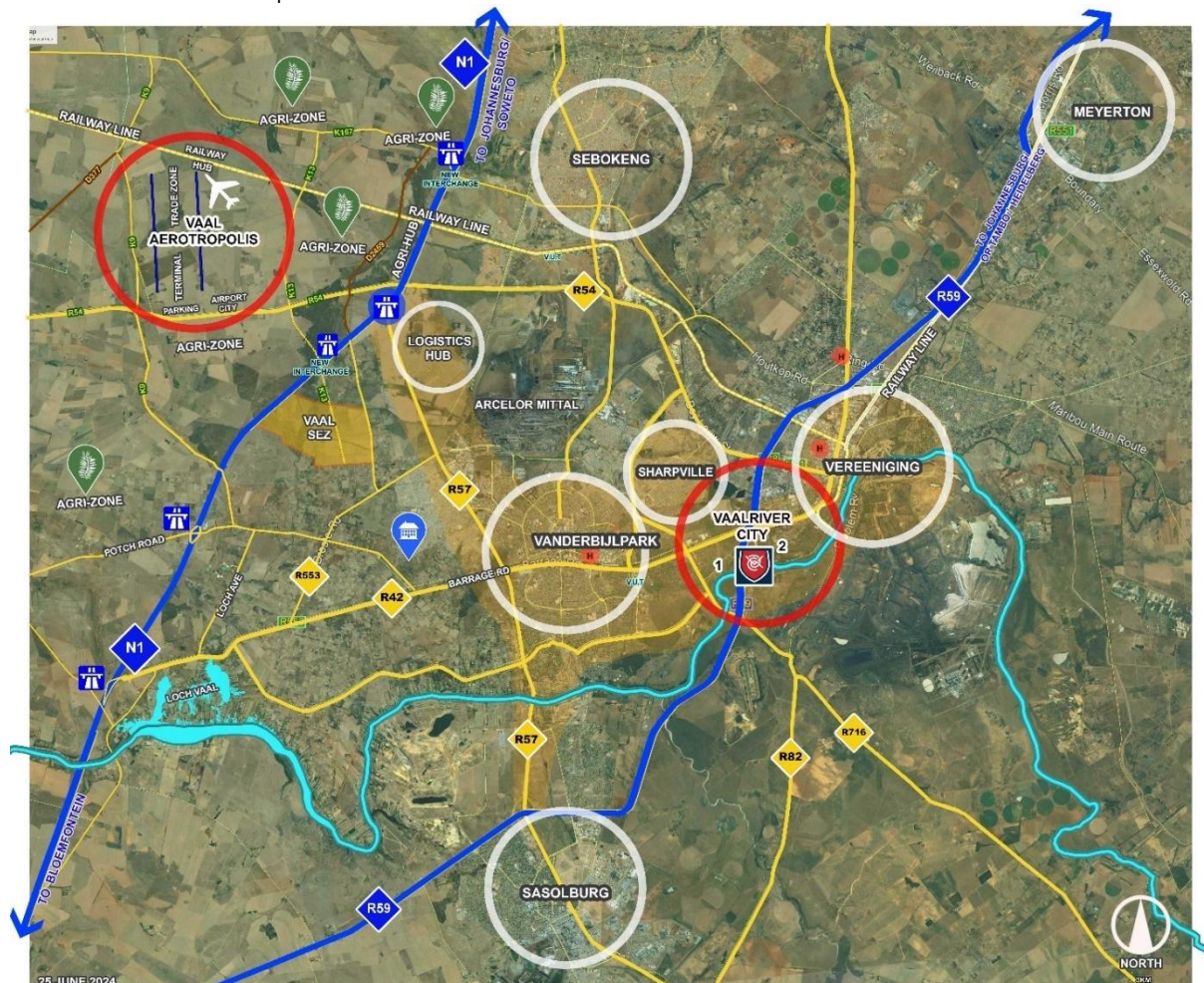


Figure 1: Regional Locality Plan

The Vaal Aerotropolis project is a bold and exciting private sector initiative that will contribute greatly to the reindustrialization of the Sedibeng region. The project has been incorporated into all local, district and provincial town planning policies. The Sedibeng District Municipality and Emfuleni Local Municipality have promoted the Vaal Aerotropolis as a catalytic project



for the Sedibeng Region as reflected in their Integrated Development Plans and Spatial Development Frameworks. The Vaal Aerotropolis catalytic project has also been included in the recently adopted Vaal-River Region Spatial Development Framework and in the Sedibeng DDM One Plan.

2. INTRODUCTION

Urban Dynamics Gauteng Inc. was appointed by Vaal Aerozone (Pty) Ltd and the Gauteng Provincial Government to compile and submit an application to obtain the necessary approval from the Emfuleni Local Municipality for the following:

Township Establishment of the proposed **Vaal Aerotropolis** township situated on the following farm portions:

- Part of the Remainder of the Farm Klipkop 530, IQ
- Part of Portion 47 Klipkop 530 IQ
- Remainder of Portion 9 (a Portion of Portion 3) of the Farm Rietkuil 554 IQ
- Portion 26 of the Farm Rietkuil 554 IQ
- Remaining Extent Portion 3 of the Farm Rietkuil 554 IQ
- Remainder of Portion 6 of the Farm Vlakplaats 555 IQ
- Portion 18 (a portion of portion 6) of the Farm Vlakplaats 555 IQ
- Portion 7 of the Farm Vlakplaats 555 IQ
- Portion 51 of the Farm Vlakplaats 555 IQ
- Portion 20 of the Farm Vlakplaats 555 IQ
- Remaining Extent of Portion 17 of the Farm Vlakplaats 555 IQ
- Portion 52 of the Farm Vlakplaats 555 IQ
- Portion 5 of the Farm Vlakplaats 555 IQ

In this Motivation Memorandum, the applicant details information on the site and its surrounds and details policies in support of the development. The various specialist and technical studies undertaken, including environmental investigations, engineering service reports and a traffic impact assessment will also be discussed.

A motivation is provided to establish the merit of the proposed development in accordance with the development principles as set out in the Spatial Planning and Land Use Management Act, 2013 (SPLUMA) in terms of need, reasonableness, desirability and public interest and coordinated and harmonious development.

3. THE APPLICATION

Application is hereby made for the establishment of **Vaal Aerotropolis** township situated in terms of Section 44 of the Emfuleni Local Municipal Planning By-Law, 2018 (hereinafter referred to as "The By-Law").

The proposed Vaal Aerotropolis Township will contain 29 erven which consist of the following:

- 9 erven zoned "Aerodrome"
- 1 Erf zoned "Public Services & Utilities"
- 1 Erf zoned "Business 1"
- 11 erven zoned "Agricultural: for Agri Zone and related land uses"
- 6 erven zoned "Private Open Space"
- 1 Erf zoned "Private Street"

A more detailed description of the Development Controls, according to the Emfuleni Land Use Scheme, 2018 for each zoning can be found under Section 9.6 of this Motivation Memorandum.



4. PARTICULARS OF THE APPLICATION

4.1. Introduction

This section of the Motivating Memorandum, relating to the establishment of **Vaal Aerotropolis**, contains information on all pertinent issues regarding the application and the land in question. Throughout this section, and in compliance with the requirements of the By-Law, reference will be made to supportive documentation. The supportive documents are attached as annexures to this report:

Annexure A	: Locality Plan
Annexure B	: Layout Plan
Annexure C	: Conveyancers Certificate
Annexure D	: Title Deeds
Annexure E	: Land Survey Certificate
Annexure F	: Land Survey Diagram
Annexure G	: Power of Attorneys
Annexure H	: Draft SG Diagrams Portions 49 & 50 Klipkop
Annexure I	: Land Use and Heritage Plan
Annexure J	: EIA Scoping Report
Annexure K	: Geotechnical Report
Annexure L	: Bulk Water & Sewer Reports
Annexure M	: Transportation Impact Assessment
Annexure N	: Stormwater Management Assessment
Annexure O	: N1 Interchange Fatal Flaw Report & N1 Interchange Application
Annexure P	: Bulk Electricity Report
Annexure Q	: Integrated Waste Management Plan
Annexure R	: Market Demand Assessment Report

The objective of this section of the memorandum is to summarise and assimilate supplied information. This is done to create a better understanding of the relevant issues at hand that have been taken into consideration in the extensive planning phases of the proposed township.

This section of the Motivating Memorandum is divided into three main categories relating to:

- Legal information
- Physical information, and
- Site context

4.2. Legal Information

4.2.1. Property Description, Ownership and Size

The proposed Vaal Aerotropolis township establishment is on a total of 13 farm portions and extends over ± 4750Ha. Ownership vests with 2 landowners:



Table 1: Properties & Ownership

KEY	PROPERTY DESCRIPTION	TITLE DEEDS	SG DIAGRAMS	OWNERSHIP	SIZE
A	Part of the Remainder of the Farm Klipkop 530, IQ (Proposed Portion 50 Klipkop 530 IQ)	T46824/2007	Re 472/1896	RSA	276,6127
B	Part of Portion 47 Klipkop 530 IQ (Proposed Portion 49 Klipkop 530 IQ)	T5973/2007	Ptn 47 6897/2002 Ptn 48 11937/2007	RSA	957,9450
1	Remainder of Portion 9 (a Portion of Portion 3) of the Farm Rietkuil 554 IQ	T68017/2023	A1058/1929	Vaal Aerozone Pty Ltd (Previously Poconamix Pty Ltd)	189,7478
2	Portion 26 of the Farm Rietkuil 554 IQ		A6671/1956		85,6532
3	Remaining Extent Portion 3 of the Farm Rietkuil 554 IQ		A886/1916		85,6532
4	Remainder of Portion 6 of the Farm Vlakplaats 555 IQ	T68016/2023	A455/1921		85,6532
5	Portion 18 (a portion of portion 6) of the Farm Vlakplaats 555 IQ		A4717/1926		79,6403
6	Portion 7 of the Farm Vlakplaats 555 IQ		A456/1921		255,2465
7	Portion 51 of the Farm Vlakplaats 555 IQ	T68017/2023	3490/2003		801,9251
8	Portion 20 of the Farm Vlakplaats 555 IQ		A13/1940		6,8523
9	Remaining Extent of Portion 17 of the Farm Vlakplaats 555 IQ		A4543/1925		169,2090
10	Portion 52 of the Farm Vlakplaats 555 IQ		3491/2003		374,3061
11	Portion 5 of the Farm Vlakplaats 555 IQ	T68018/2023	A454/1921		101,4648

The **Title Deeds** are attached as **Annexure D** and a land surveyor diagram is attached hereto as **Annexure F**. The following sketch plan represents a simplified key plan to illustrate the list of properties in Table 1 (above) and the numbering corresponds to that of each property:

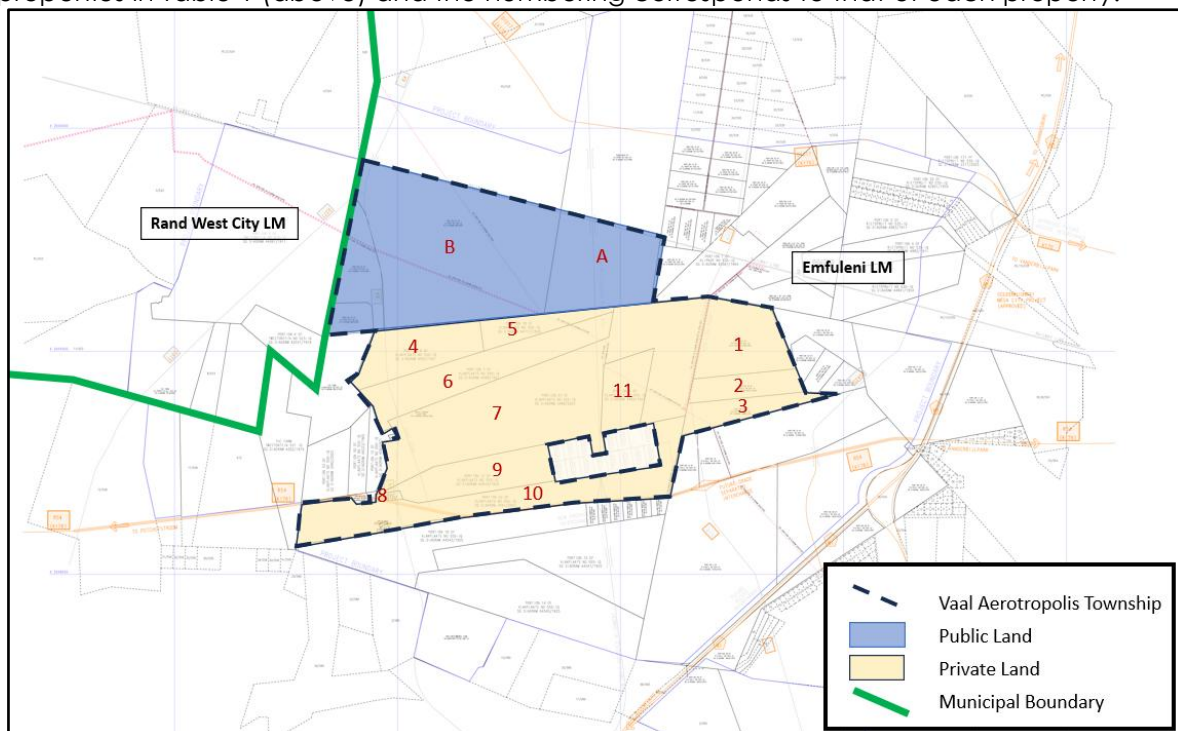


Figure 2: Property Key Plan



4.2.2. Town Planning and Legal Status

The proposed Vaal Aerotropolis is situated on farmland and by default, is incorporated in the Emfuleni Land Use Scheme, 2018 under an “Agricultural” zoning.

The following status is noted:

❖ Town Planning Status

The land represents farmland with an “Agricultural” zoning under the Emfuleni Land Use Scheme, 2018.

❖ Environmental Status

The Vaal Aerotropolis land does not fall within any proclaimed or approved protected conservation areas, nor has it been designated as land forming part of any formal conservation-related urban, rural, archaeological or natural area. It is recorded that Prism EMS was appointed to conduct an Environmental Impact Assessment (EIA) for the proposed Vaal Aerotropolis development. An Environmental Impact Assessment (EIA) Application will be submitted parallel to this application to the Gauteng Department of Environment (GDEnv). The application was registered with GDEnv, with reference number GAUT002/23-24/I0038.

It is noted that the specialist assessments were completed to inform the Vaal Aerotropolis Local Spatial Development Framework (VLSDF) and master planning. All aspects will be assessed during the EIA process, inclusive of Ecological Support Areas (ESA's) and Important Areas as indicated in the Gauteng Conservation Plan and South African Protected Areas.

Also noteworthy is that there is a private nature reserve registered on the adjoining Portion 2 and 4 of the farm Tweefontein 523 IQ. These portions of land are situated to the West of the proposed airport. Portion 2 is owned by the Government (RSA) and Portion 4 by Vaal Aerozone (Pty) Ltd and are outside the township area. It is however part of the greater development area earmarked for the development of a solar farm. Since its proclamation as a Private Nature Reserve on 17 August 1955, this land has reportedly never been developed, nor did it ever operate as a private nature reserve. It is for the reason that application was made in September 2026 for the Withdrawal of Declaration of this private nature reserve.

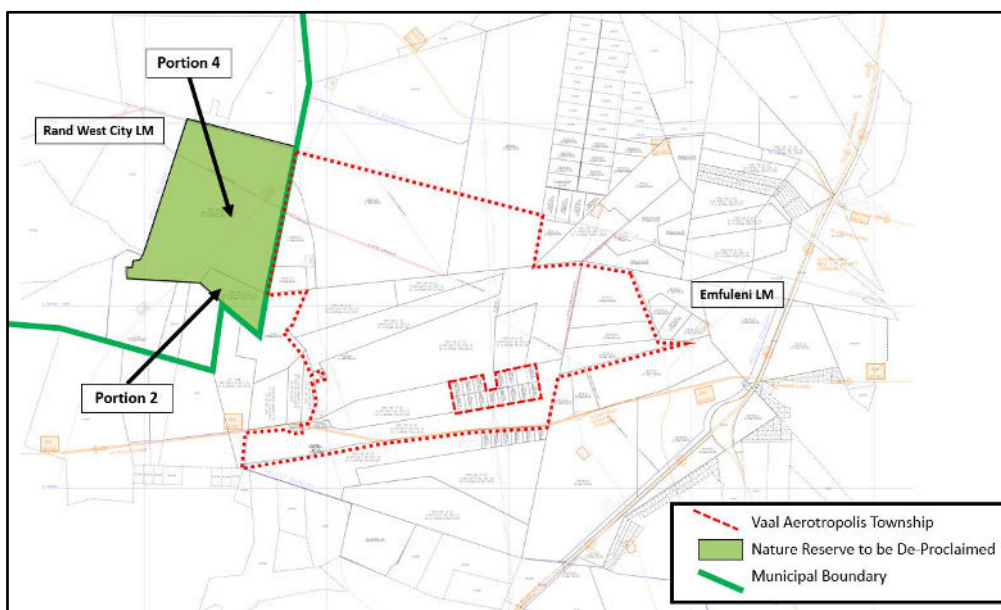


Figure 3: Private Nature Reserve to be Deproclaimed



❖ Legal Status

The land is registered on freehold title (Title Deed T38495/2019) in favour of the developer (Vaal Aerozone (Pty) Ltd) and the Republic of South Africa – refer to Table 1: Properties & Ownership. This was confirmed by a Conveyancer's Certificate (refer to **Annexure C**), there are no legal matters adversely restricting the proposed township establishment and development of the land.

4.2.3. Mineral Rights and Related Issues

There are no mining activities on the Vaal Aerotropolis site, and the land is not subject to any mining or prospecting rights. Under the provisions of the Mineral and Petroleum Resources Development Act, 2002, all mineral rights now vest with the State.

4.2.4. Mortgage Bonds

There is no mortgage bonds registered against the property title deeds. Consent from mortgage lenders will therefore not be required to process and approve this application for township establishment.

4.2.5. Restrictive Title Conditions and Servitudes

The properties in question are subject to a number of title conditions and servitudes. The **Conveyancers Certificate** and **Land Survey Certificate** attached hereto as **Annexures C** and **E** respectively. The following title conditions and servitudes are contained in the title deed which will be dealt with (registered or disposed of) as described below.

Public Land

	Property	Size (Ha)	Incorporation in Township layout	Title Deed	Ownership	Conditions	How Conditions are to be dealt with
A	Part of the Remainder of the Farm Klipkop 530, IQ	276,6127 of 1031.8770	Part	T46824/2007	RSA	1. Two ROW servitudes 2. Deed of Cession 3. Dept of Transport transfer 4. Mineral Rights	1. Does not impact due to location. 2. To be carried forward to all erven 3. To be carried forward to all erven 4. To be omitted.
B	Part of Portion 47 Klipkop 530 IQ (Includes Portion 48 surveyed but not registered)	957,9450 of 1365.8921	Part	T5973/2007	RSA	1. Eskom Servitude 286/1945S 2. Eskom Servitude 396/1971S 3. Expropriation T217/1963	1. To be registered against specific erven in the township 2. To be registered against specific erven in the township 3. To be carried forward to all erven

Table 2: Public Land

Private Land

	Property	Size	Size in Township	Title Deed	Ownership	Conditions	How Conditions are to be dealt with
1	Remainder of Portion 9 (a Portion of Portion 3) of the Farm Rietkuil 554 IQ	189,7478	Entire	T68017/2023	Vaal Aerozone (Pty) Ltd	Crown Land condition Eskom Servitude K1141/1971S	Crown Grant must be cancelled by application to the NDPW Eskom servitude is a general right (i.e. no diagram)
2	Portion 26 of the Farm Rietkuil 554 IQ	85,6532	Entire			Crown Land condition	Crown Grant must be cancelled by application to the NDPW



						Eskom Servitude K1141/1971S	To be registered against specific erven in the township
3	Remaining Extent Portion 3 of the Farm Rietkuil 554 IQ	85,6532	Entire			Crown Land condition Eskom Servitude Deed 1382/958	To be registered against specific erven in the township
4	Remainder of Portion 6 of the Farm Vlakplaats 555 IQ	85,6532	Entire	T68016/2023		Water Right Eskom Servitude Deed 140/53S Eskom Servitude in Deed K3160/74	Do not affect due to locality Do not affect due to locality
5	Portion 18 (a portion of portion 6) of the Farm Vlakplaats 555 IQ	79,6403	Entire			3 Water Rights Eskom Servitude 140/1953S	Water rights do not affect due to locality Eskom servitude to be registered against specific erven in the township
6	Portion 7 of the Farm Vlakplaats 555 IQ	255,2465	Entire			3 Water Rights Eskom Servitude 140/1953S	Water rights do not affect due to locality Eskom servitude to be registered against specific erven in the township
7	Portion 51 of the Farm Vlakplaats 555 IQ	801,9251	Partially	T68017/2023		Various Servitudes and entitlements	Numerous conditions A. affect specific erven B. affect specific erven C1. Entitlement not to be passed on due to locality C1. 2 nd affect specific erven C2. affect specific erven D. Entitlement not to be passed on due to locality D2. affect specific erven E. affect specific erven F1. Servitude not to be passed on F2. Entitlement not to be passed on due to locality G1. Entitlement not to be C H. servitude affects specific erven I. servitude affects specific erven
8	Portion 20 of the Farm Vlakplaats 555 IQ	6,8523	Partly			Water Right	Does not affect due to location
9	Remaining Extent of Portion 17 of the Farm Vlakplaats 555 IQ	169,2090	Entire			ROW for access	Does not affect due to location
10	Portion 52 of the Farm Vlakplaats 555 IQ	374,3061	Entire			ROW for access ROW Servitude T29608/1945 Public ROW Diagrams 2491/2003 & 3491/2003	Does not affect due to location Not to be passed on C to be brought to all erven in Township Condition against specific erven in township
11	Portion 5 of the Farm Vlakplaats 555 IQ	101,4648	Entire	T68018/2023		Eskom Servitude K140/1953S	Does not affect due to location

Table 3: Private Land

4.2.6. Existing Zoning



The Vaal Aerotropolis is situated on farmland and is zoned “Agricultural” in the Emfuleni Land Use Scheme, 2018.

A regional scale **Zoning Plan** is attached hereto as **Annexure H**.

4.2.7. Special Power of Attorney

There are 2 sets of power of attorneys applicable to this application to establish the township to be known as **Vaal Aerotropolis**. The first is for the private land and the other the publicly owned land – refer to Tables 3 and 4, above.

The applicant for this application for township establishment is **Urban Dynamics Gauteng Inc.**

Vaal Aerozone (Pty) Ltd issued a Power of Attorney for the private land.

The **Republic of South Africa** issued a Power of Attorney for the relevant parts of the 2 portions of public land to be included in the township. These properties are registered as the Remainder of the Farm Klipkop 530 IQ and Portion 47 Klipkop 530 IQ and will be subdivided to create Portions 49 and 50 of the farm Klipkop 530 IQ (refer to the draft SG Diagrams in **Annexure F**). The portions included in the proposed township are parts of the northern section of the future airport, trade zones and runways. It will be incorporated as proposed Erven 6 to 9 in the Vaal Aerotropolis township and will never be sold but will be subject to lease agreements within the township development.

Copies of the **Power of Attorneys** are attached hereto as **Annexure G**.

4.3. Physical Information and Site Context

The proposed Vaal Aerotropolis township is located approximately 9 km west of the N1 highway within the municipal boundaries of the Emfuleni Local Municipality. The site is located in a predominantly agricultural environment, and the land is subject to farming activities.

The total project area (identified as the potential SEZ area) is approximately 12 000 ha in extent. The Vaal Aerotropolis township takes up approximately 4750 ha thereof.

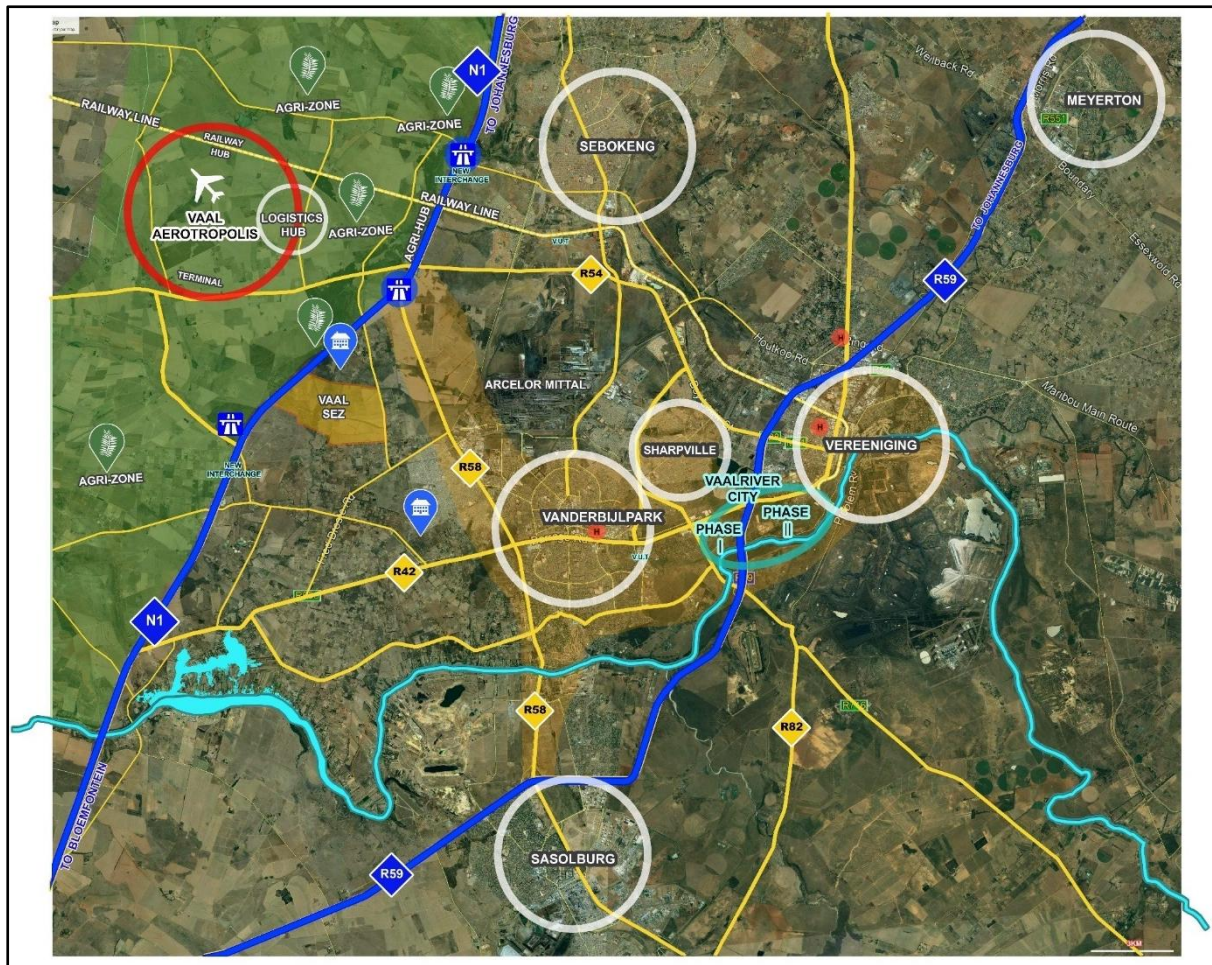


Figure 4: Regional Locality of the Vaal Aerotropolis

A **Locality Plan** is attached hereto as **Annexure A**.



5. ENVIRONMENTAL INVESTIGATIONS

5.1. Introduction

This section of the report deals with the receiving environment and the impact that the proposed airport and supportive land uses may have on it. A comprehensive Environmental Impact Assessment has been undertaken and will be public participated in parallel to this township establishment application with reference number GAUT002/23-24/10038. This section of the motivating memorandum is not intended to be anything other than a summary of the broad issues and interpretation thereof from a town planning perspective in compliance with the development objectives of the Spatial Planning and Land Use Management Act (SPLUMA). For details regarding the identified environmental elements and potential impacts, please refer to the EIA submitted by Prism EMS. The EIA Scoping Report is attached to this motivation as **Annexure J**.

5.2. Topography

The site is located within the Vaal Catchment area with two perennial water courses namely the Leeuspruit, located along the northeastern portion, and the Klein-Rietspruit, a tributary to the Rietspruit River, along the southwestern portion of the project area. The confluence of the Leeuspruit and the Rietspruit is located to the east of the study area and outside the proposed Vaal Aerotropolis township. The topography of the study is ideal for the development of an international airport as the land is relatively flat. The land undulates with heights above sea level ranging from 1500 masl. in the northwest to 1450 masl. The predominant slope of the study area is between 2% to 6%. In the southeast. The undulating terrain of the study area provides for the design and development of an interconnected airport platform which will easily connect to the proposed Aero City and Agri Zones.

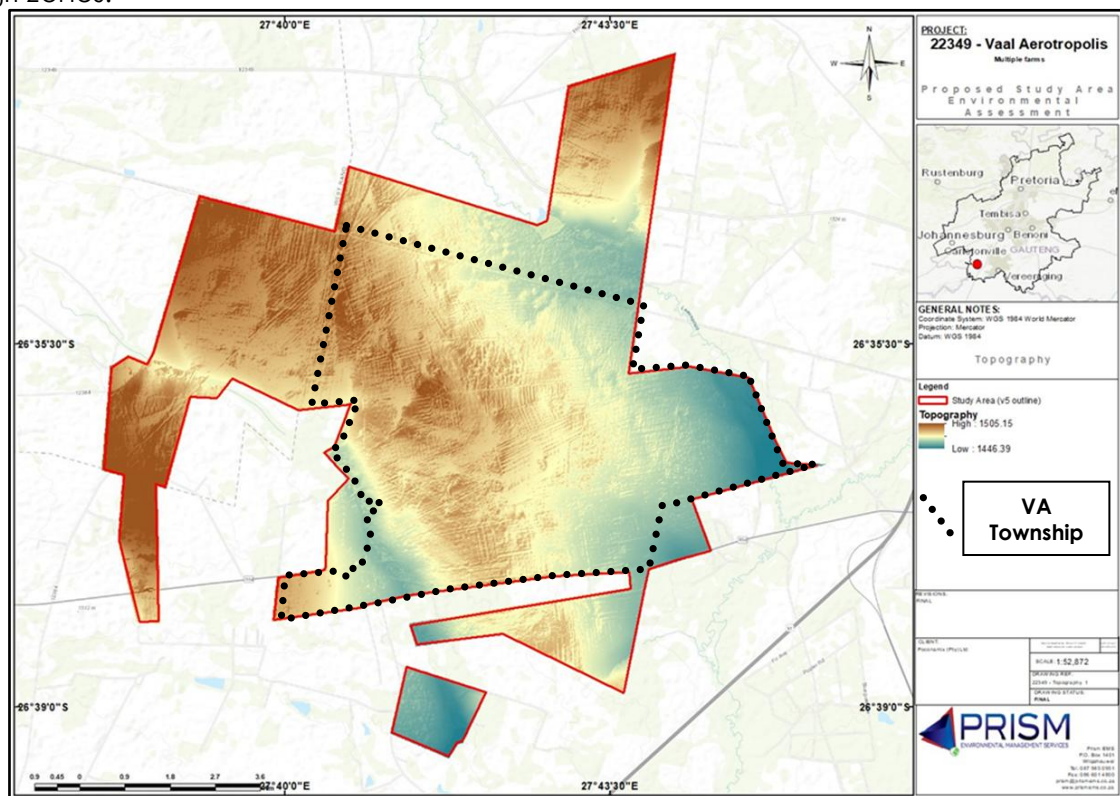


Figure 5: Topography



5.3. Ecology

The receiving landscape of the proposed Vaal Aerotropolis consists mostly of cultivated fields with a few patches of open grassland vegetation in between and intersected by natural freshwater systems. Environmental screening and site verification assessments have been undertaken to identify environmental sensitivities. Studies undertaken as part of the Environmental Impact Assessment (EIA) for the aerotropolis have identified various sensitivities in terms of fauna, flora, aquatics and wetland systems.

The study area is situated within the Soweto Highveld Grassland vegetation type which forms part of the Mesic Highveld Grassland Bioregion and Grassland Biome (Mucina and Rutherford, 2006). The Soweto Highveld Grassland is endemic to South Africa and consists of undulating landscapes on the Highveld plateau supporting short to medium-high, dense, tufted grassland. The grassland is dominated with *Themeda Triandra* and a variety of other species such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus*, and *Tristachya leucothrix*.

Small wetlands, narrow streams, pans and occasional ridges or rocky outcrops occur in the continuous grassland cover (Mucina and Rutherford, 2006). The Soweto Highveld Grassland vegetation type is classified as vulnerable with approximately 61% transformed by agriculture, urban development and mining (Mucina and Rutherford, 2006; SANBI, 2021; DFFE, 2022). The study area occurs within an extensive agricultural landscape where farming has taken place since the early 1900's and very little of the original natural vegetation type is still present on the site.

The Gauteng Biodiversity Conservation Plan, also known as the C-Plan (version 3.3), indicates that Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and Irreplaceable Areas are located within the study area. These conservation areas are mostly associated with the natural freshwater systems of the Leeuspruit (north-eastern section of site), Rietspruit (southeast of site) and Klein Rietspruit (western and southern portions of site) as well as tracts of natural grassland surrounding them.

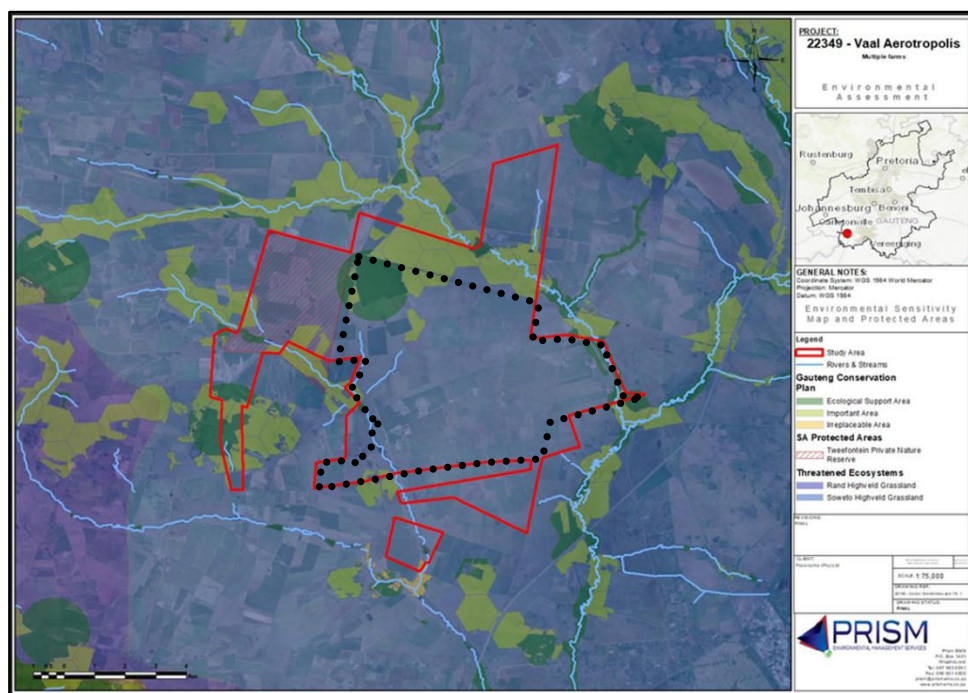


Figure 6: Environmental sensitivities in terms of the Gauteng Biodiversity Conservation Plan

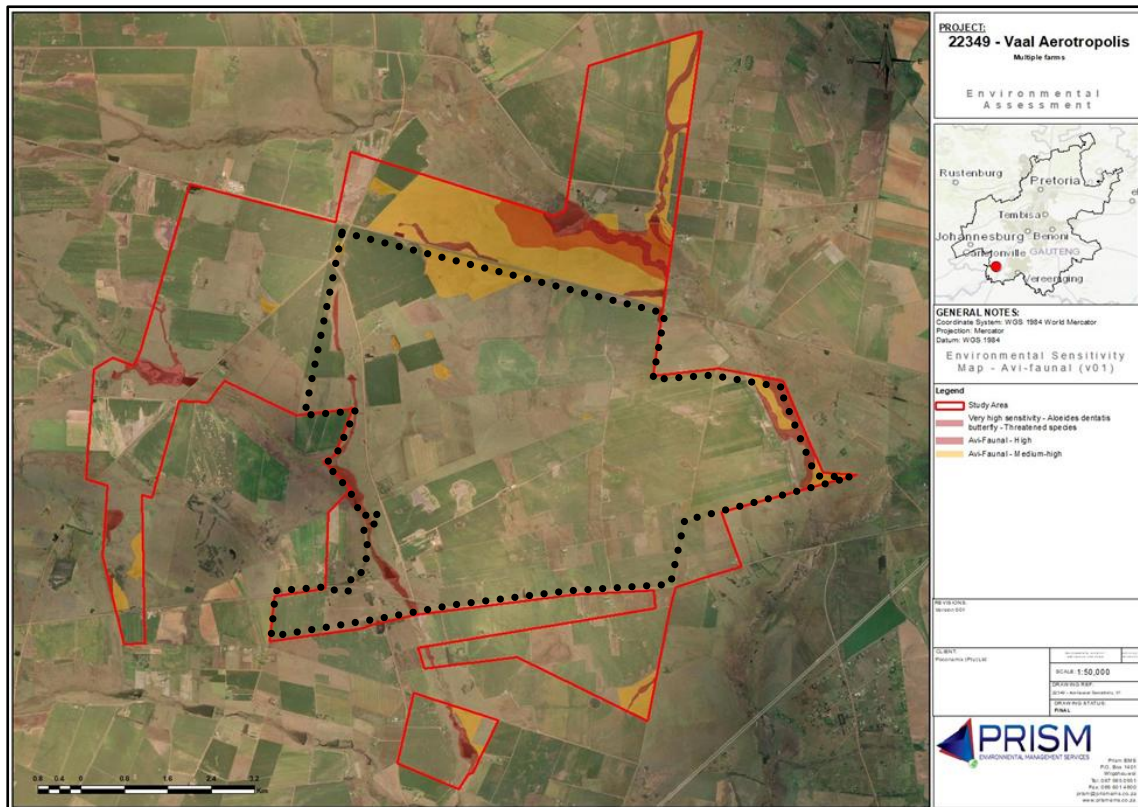


Figure 7: Faunal sensitivity with reference to Avi-faunal sensitivities and areas identified with threatened species

5.4. Wetlands

The proposed Vaal Aerotropolis township development is located within the quaternary catchment C22J of the Vaal Water Management Area. Along with the Leeuspruit and Klein Rietspruit four (4) wetland groups were identified by the Wetland Assessment undertaken for the EIA as indicated below:

- Channelled valley-bottom wetland
- Unchanneled valley-bottom wetland
- Artificial wetlands; and
- Seepage wetland.

All the wetlands identified are encapsulated within a system of natural, transformed, and agricultural vegetation/land cover units that exist on the site.

The valley systems associated vegetation and wetland groups represents an opportunity to link the ecological assets of the site to the principle ecological corridors of the Rietspruit, Klein-Rietspruit and Leeuspruit which ultimately discharge into the Vaal River. This will enable the possible establishment of an amalgamated and strong on-site open space system that will add value to the proposed development. As mentioned previously, all sensitivities have been taken into consideration during the planning phase to inform the location and orientation of the proposed development.

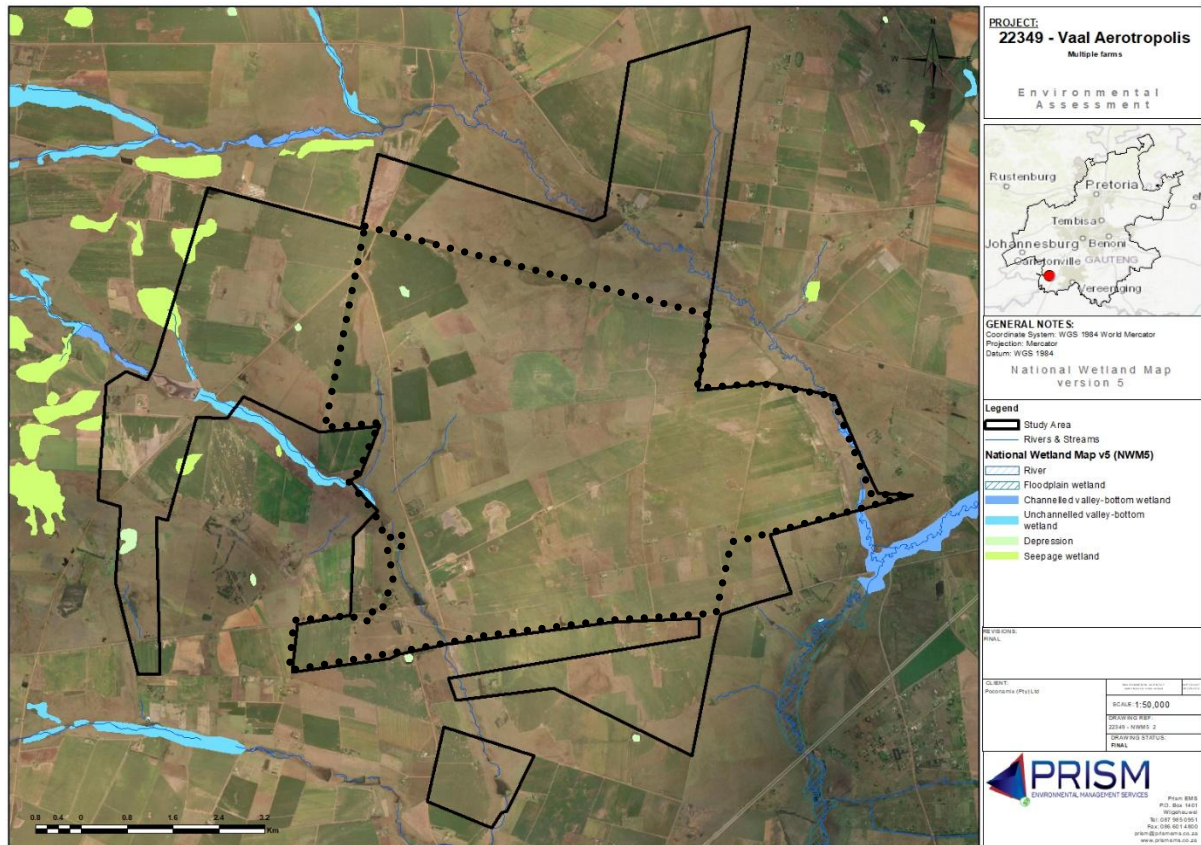


Figure 8: National Wetland Map (Version 5)

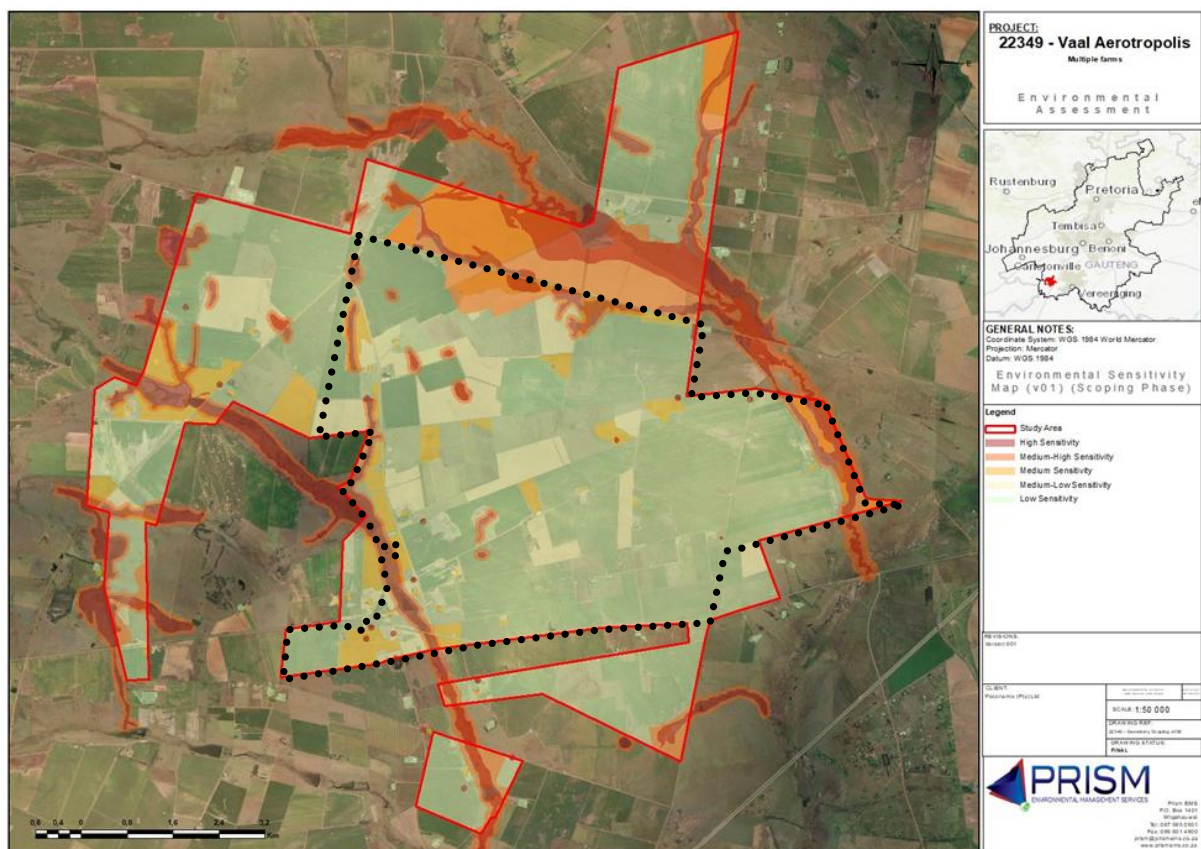


Figure 9: Combined Environmental Sensitivity Map



5.5. Floodlines

The project Civil Engineers - WSP - completed an Engineering Service Report and Prims EMS conducted the necessary ecological and wetland assessment studies. The reports concluded there are 1:50 and 1:100 year floodlines, wetlands and wetland buffers associated with the Leeuspruit, located along the north-eastern portion, and the Klein Rietspruit, a tributary of the Rietspruit River, along the southwestern portion of the study area which impact the site. The floodlines have been indicated and certified on the layout plan (refer to **Annexure B**).

5.6. Existing Land Use & Heritage

For reference purposes, the project team prepared a heritage and sensitivity plan which indicates the existing cultivated fields, limited patches of open grassland vegetation and river systems. The plan also depicts the results of the heritage impact assessment which identified and classified existing farmhouses (with outbuildings) and grave sites. It should be noted that Phase 1 of the proposed airport is not affected by any farm buildings or grave sites.

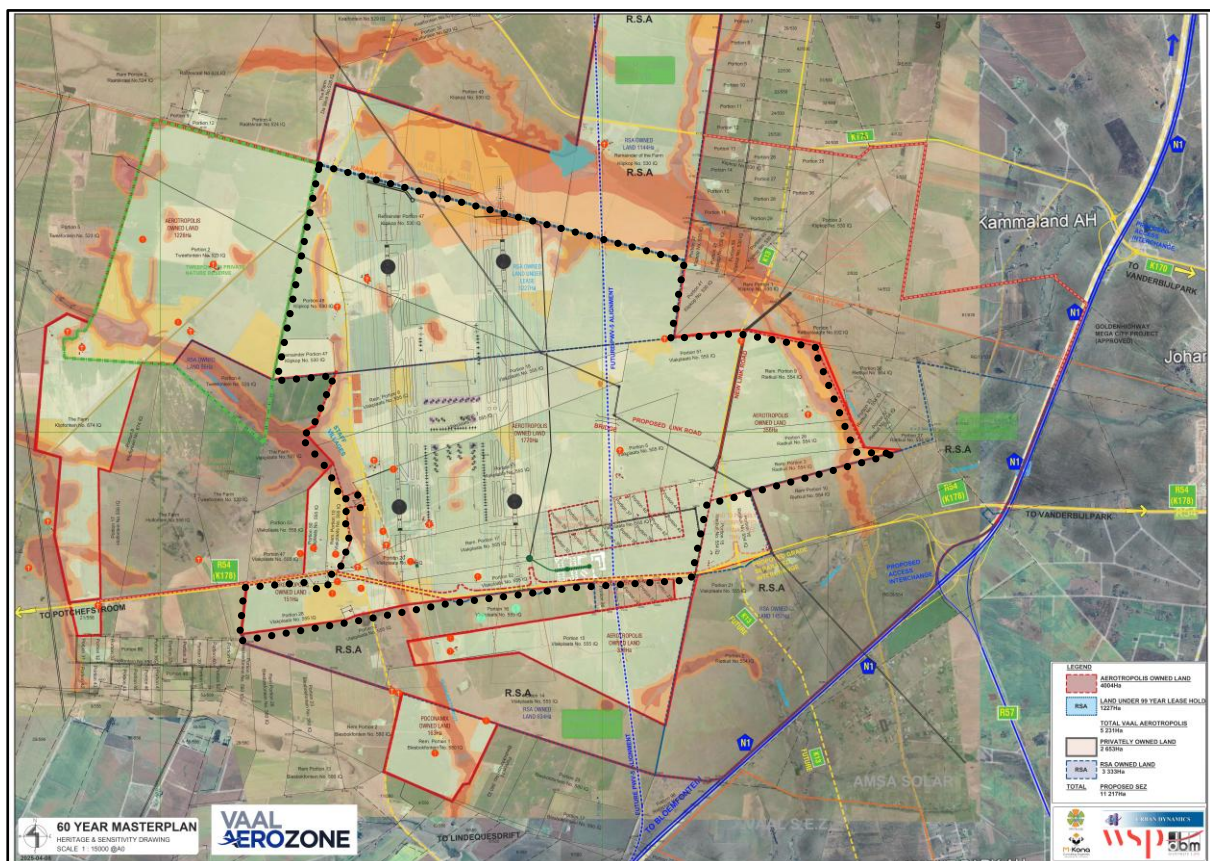


Figure 10: Existing Land Use & Heritage

A bigger format version of the above **Land Use & Heritage Plan** (Figure 10) depicting the agrarian nature of this location is attached hereto as **Annexure I**. Being in an agrarian, peri-urban part of Emfuleni, the Vaal Aerotropolis site is currently only accessible from existing provincial and district roads. These are:

- the R54 Potchefstroom Road (K178) providing the main access to the site from Sebokeng & Vanderbijlpark in the West
- The K176 Fochville Road providing access from Johandeo and Sebokeng in the West, and
- Various dirt roads linking these roads and giving access to farms.



6. MARKET ASSESSMENT STUDY

6.1. Introduction

Demacon completed a comprehensive Market Demand Assessment Report for the Vaal Aerotropolis project in January 2025. The purpose of this assessment was to research and analyse the economic growth and employment generating potential for the local and provincial economy by investing into the development of a new international airport in Emfuleni.

This socio-economic analysis, market analysis and a cost-benefit analysis was considered an essential investigation for the Vaal Aerotropolis development and included consideration of an international airport, trade zones, logistics, manufacturing and agri-hubs zones. In the context of the above, the market study assessed the viability and optimum composition of a potential development concept in terms of:

- site location,
- market/ industry identification and forecasts,
- demand projections and user projections,
- policy analysis and stakeholder mapping, and
- economic impact projections.

Details of their research methodology, data sources and findings can be found in **Annexure R**. The research report included an economic analysis, cluster analysis, Carvalho & Industrial targeting, socio-economic profile, analysis of locational characteristics and attributes, a high level demand assessment and a comprehensive market analysis. A high-level summary of the findings of this comprehensive research report follows.

6.2. SOCIO ECONOMIC ASSESSMENT AND PROFILING FOR THE PROPOSED VAAL AEROTROPOLIS DEVELOPMENT.

6.2.1. Demand Assessment for an Airport in the Vaal Region

A high-level demand assessment for an airport development at the Vaal Aerotropolis site's initial findings indicates that an airport could potentially generate demand upwards of 4.5 million annual passengers and 15 167 tons of cargo after 5 years of becoming operational.

		OR Tambo International Airport	Cape Town International Airport	King Shaka International Airport	Vaal Aerotropolis Trade Area	
					Low Scenario	High Scenario
Socio-Economic Profile	Population 2024	11 034 194	5 211 503	4 115 006	4 090 852	
	Population growth rate	1.66%	2.17%	1.59%	1.8%	
	Households	4 128 907	1 619 666	1 111 825	1 346 059	
	Households growth rate	2.75%	2.85%	1.24%	2.0%	
	SEM 4-5	30.10%	34.2%	24.20%	19.9%	
	SEM 4-5 population	3 321 292	1 779 955	995 831	814 080	
Passengers	International	7 054 616	2 754 405	274 882	1 252 066	1 407 439
	Regional	707 178	169 961	2 514	109 222	122 776
	Domestic	10 005 667	7 093 292	4 706 511	2 707 473	3 043 451
	Unscheduled	85 108	16 694	3 754	13 106	14 733
	Total	17 852 569	10 034 352	4 987 661	4 081 867	4 588 399
	Ratio Passengers per SEM 4-5	5.38	5.64	5.02		
Cargo	Import (tonne)	3 072 697	14 882	2 995	11 331	3 035 725
	Export (tonne)	71 342	36 129	2 800	404	108 314
	Total (tonne)	3 144 039	51 011	5 795	11 735	3 144 039

Table 4: Airport Demand (Demacon, 2025)

This would be subject to marketing, management, and related considerations, as well as the ability to secure critical contracts. It is worthy to note that Lanseria (with 9.5 million people within a 50km radius) commenced with commercial flights in 2006. Following various restructuring of flights, destinations and service providers, the airport currently accommodates



±2.5 million passengers per annum. From the above, the proposed Vaal Airport would have a strong business case for cargo, provided key international trade anchors are procured.

6.2.2. Airport Land Use Profile.

Traditionally, property in the immediate vicinity of airports accommodated aeronautic activities in direct support of airport aviation. As economies evolve, land around airports became increasingly vital locations for commercial and industrial activities. As economies and cities grew more complex and dynamic, so has the demand and land use profiles of property near airports. Land uses typically associated with airports in a modern-day context include:

- Industrial including light manufacturing, warehousing and logistics,
- commercial land uses,
- hotels,
- entertainment, and
- conferencing and convention centres.

Such a diverse mix of activities is driven by the need for international and local businesses to be in an environment that offers convenience, accessible office space, and necessary complementary facilities and activities, including accommodation and entertainment.

Airports are set to become the new centres of future development in the form of aerotropolis. Aerotropolis is a new city layout in response to the needs of 21st century business. Generally, an aerotropolis refers to the fusion of airport and metropolitan uses where a city has at its centre, an airport development, just like the traditional CBD's of cities. This layout encourages the moving of goods and people with minimum inconvenience and optimum efficiency. For businesses that rely on time-sensitive air freighting, operate as distribution centres, require warehousing or that have executives who travel frequently or having commercial premises close to an airport, it is a necessity.

6.2.3. Changing Demand

In recent years, industrial space around airports have transitioned from a selective and single function space to incorporate a greater variety of space options. In particular, the demand for larger warehousing space, often referred to as maxi-units, has emerged as a new driving force for industrial space demand around airports. This demand for large warehousing space is driven primarily by the needs of logistics companies, in turn supported by downstream retail and trade activities.

The South African economy has transformed in such a way that the moving of raw material is no longer the only driving force behind major logistic activities. There is now a greater demand for the distribution of manufactured goods (intermediate and final goods) which results in the increased demand for warehousing and logistics space.

In addition, imports have come to play a greater role in the South African economy, accounting for 30% of GDP from 2008 to 2017, from 24% in 1996/1997. This has contributed to a growing demand for logistics and warehousing which continues to expand.

The growth of imports to the country and SADEC Region and demand for warehousing space are underpinned by the transportation of perishables (food and beverages, specialised agricultural produce, flowers etc) that requires warehousing space near airports and major transport routes. In addition, the popularity of online retailing also contributes significantly to the increased demand for warehouse space in such strategic locations.



6.2.4. Warehousing and Distribution Space.

Key design considerations for warehousing and distribution space include:

- Ease of access to major road networks and airports
- Exposure / high frontage associated with major transportation routes
- Large warehouse space (maxi-units) especially for distribution and logistics use
- Modern space and finishing
- Energy efficient such as reduce water wastage, optimise the use of natural light, energy efficient lighting (Solar and LED installations)
- Hyper flat, hyper hard floors
- Internet connectivity, preferably fibre
- High ceilings to enable better cubic metre usage
- Covered loading areas
- Good security
- Larger yards with manoeuvring space for interlink
- Highway frontage allowing for outdoor marketing
- Small office component as part of the warehouse, typically a warehouse will accommodate an office component of 10% to 20% of total space
- High tech cold-storage facilities including frozen and super frozen storage offering long term and short-term storage.

6.2.5. Appeal of the Development Site for Industrial/Warehousing Development.

The demands associated with the logistics sector has resulted in a high demand for well-located warehousing space with key influencing factors including the following:

- Proximity to major consumption centres
- Access to global and local trade
- Changing demographics and increasing levels of value-added services enhanced by the importance of proximity to all spheres of the labour market, skilled and unskilled.
- Transport infrastructure
- Total cost to value as investors and tenants is increasingly considering total supply chain costs.

6.2.6. Industrial Location Factors.

Industrial location factors consider the location of industrial activity based on several factors that allow industrial activity to exist, operate and sustain itself. The industrial location factors are important in the sense that the proposed development will hinge on manufacturing. The environment enabling such a developmental activity should be conducive to industrial related manufacturing or logistics.

6.2.7. Agricultural Produce Cargo Export

Agricultural produce cargo exports from South Africa increased by 4.0% per annum over the last ten years, indicating high growth. Even though a seemingly negative long-term trend can be observed at airports, it is worthy to note that the post-2020 annual growth exceeded 15% (17.3%). This resonates with an international trend in terms of which exponential increase in e-commerce post COVID 19 is being observed. O.R. Tambo Int Airport experienced a long-term growth rate of 4.5% in agricultural produce cargo, outperforming national trends over the corresponding period. Given the above trends, agricultural produce cargo is set to increase with approximately 454 129 ton per annum. Agricultural produce cargo exports from O.R. Tambo are set to increase with approximately 1 654 ton per annum.



The potential Vaal Aerotropolis cargo volume will be a combination of new growth as well as a share of existing exports, resulting in potential exports of between 11 000 and 15 000 tons in 2032 (potential operational date), increasing to between 25 000 and 30 000 ton over the long term.

Vaal Aerotropolis export potential for years 2032, 2037, 2042, are for Cargo Exports of 11 000 to 15 000 ton, 15 000 to 20 000 ton and 25 000 to 30 000 ton respectively. The Vaal Aerotropolis location is ideally suited to provide sufficient space for holding areas for various animals, adhering to veterinary and quarantine requirements and creating a more humane livestock transportation option.

6.2.8. Introduction to Airport Economics

Airports are a valuable economic commodity that generates a variety of economic and social benefits. Airport Cities develop over longer periods of time and require pro-active planning to ensure sustainable and optimal airport centric development. As such, it is vital to understand which land uses and economic clusters are deemed most suitable and beneficial given the role and function of an airport. The term “*airport economics*” essentially refers to the economic dynamics and benefits associated with the presence of an airport on its hosting economy and community. The associated Chapter 1 of the Demacon Market Demand Assessment Report provides insight into the key dynamics associated with airports to ultimately understand which land use activities are most compatible and contribute to the highest economic impact.

6.2.9. Airport Land Uses and Economics Clusters.

Airports and their immediate environs typically accommodate a mix of activities either directly related to aviation, activities reliant on the airport and activities that fulfil a complementary function to the aviation industry. To understand the land use profile and related dynamics associated with airports, they are typically divided into four functional areas:

- The core airport area includes runways, airside operations and passenger terminals
- The airport crossover area includes land still on airport property although not necessarily directly related to the operations of the aircraft and flights
- Areas adjacent to the airport referred to as the off-airport area which typically accommodates activities serving the airport or activities that are reliant to easy access to the airport.
- Airport surrounds include areas still within proximity to the airport but not on airport property and further from the core airport area itself.

Airports are typically associated with various economic clusters. The presence of these economic clusters is determined by the size, function and maturity of the airport and the combination of clusters may vary for different airports. Airports and their surrounds are typically integrated with a variety of economic clusters. The presence of these economic clusters will depend on the function of the airport, its location within the greater context, the size of the airports as well as its age and the maturity of the urban fabric. The land use profile of airports and their surrounds are mixed-use in nature and fulfil different functions.

Activities within the core airport area are usually dominated by uses that are directly related to aviation and the core function of the airport. This includes the runways, airside activities and passenger terminals.

Activities just beyond the core of the airport typically include uses that are reliant on the aviation industry and consist largely of transportation related functions, food preparation and cargo handling. Areas adjacent to the core airport area and crossover area, typically boasts activities that still rely on access to the aviation industry although direct runway access is not



essential. Surrounding environment typically accommodate activities that still benefit from being within proximity to an airport.

6.2.10. Benefits and Economic Impacts Associated with Airports.

Airports offer a great variety of major economic and social impacts to its host community and economy. The greater airport environment hosts a vibrant mix of land use activities which offer a multitude of opportunities. Airports and their operations have the ability to:

- Attract significant investment
- Enhance tourism
- Diversify the economy
- Create employment opportunities direct, indirect and induced
- Create a sustainable tax base
- Aviation boasts high occupancy rates, more than road and rail transport
- Improved efficiency of supply chains
- Catalyst for innovation
- Facilitate world trade
- Ability to serve a large market
- Encourage densification and intensification.

6.2.11. Airports and Logistics

Airports hold a direct benefit for distribution companies as it facilitates greater regional and global reach of products. A significant proportion of activity on airport grounds and its surrounds are dedicated to cargo and freight operations which includes logistics, transportation and warehousing. This sector has also experienced exceptional growth in recent years given the rise of e-commerce. Although the demand for air freight is limited by cost, which is typically 4 to 5 times that of road transport and 12 to 16 times that of sea transport, the commodities shipped by air are those that have high value per unit density. Air freight constitutes 35 per cent of world trade by value. Airports are therefore valuable importers and exporters of goods, and the immediate influence area is therefore invaluable for the distribution and logistics sector. Airports fulfil an invaluable role in the logistics field and offer strategic opportunities for warehousing and distribution companies.

Aviation's speed and reliability have contributed to the market for same-day and next day delivery services and transportation of urgent or time-sensitive goods, giving it an advantage over other modes of transport. Global e-commerce sales amounted to USD 25,3 trillion in 2015. Active e-commerce development has a significant impact on air transport demand as e-commerce transactions depend fundamentally on the speed of air transport which connects manufacturers and retailers to the world's cities and regions.

Around 90 per cent of business to consumer (B2C) e-commerce parcels are currently carried by air. Given the cost of air cargo services, this shipping method is typically reserved for higher value goods. These include:

- Perishable goods, fresh produce, cut flowers, fresh fish, pharmaceuticals
- High-value goods, electronics, precision manufactured goods, pharmaceuticals (not sensitive to temperature), medical devices, jewellery, diamonds etc.
- Time sensitive goods, commodities involved in just-in-time manufacturing processes, replacement parts and other goods with urgent customer requirements.

Typical logistics sector activities found in airport environments include:

- Fast-cycle logistics
- Cargo handling



- Freight forwarding
- Courier companies
- Import and export agents
- Warehousing.

6.2.12. Socio- Economic Conclusion

The International Air Transport Association (IATA) has urged South Africa's new Government of National Unity to continue prioritizing the development of its aviation sector as a critical driver for economic growth and job creation.

"South Africa's aviation industry is poised for significant growth over the next 20 years, adding 345 million additional passenger journeys by 2043. With aviation generating \$6 in economic activity for every \$1 spent, this expansion will inject billions into South Africa's GDP and create thousands of new jobs. It is important for the new government to keep this as a strategic focus. The economic and social benefits of aviation will be maximized with a sharp policy focus on keeping costs low, providing sufficient capacity to grow, monitoring the cost-effectiveness of regulations, and achieving net zero carbon emissions by 2050," said Kamil Alawadhi, IATA's Regional Vice President for Africa and the Middle East in a press statement on 2 July 2024.

6.3. Financial Analysis and Sensitivity

The Economic Costs Benefits Analysis (ECBA) undertaken, weighed the costs and benefits of two alternative development scenarios:

- the base case scenario (Scenario 1) that considers the proposed development location within its current state (the property is primarily used for commercial agriculture), and
- and project implementation scenario (Scenario 2) that considers the medium- to long-term development of Phase 1 of the Vaal Aerotropolis.

The implementation of Phase 1 of the Vaal Aerotropolis development is not without its costs. This development will require capital investment to unlock the potential of the development site as an integrated Aerotropolis development that supports logistics, industry, tourism, trade, service industry and agriculture.

As investors take up available land uses, operational expenses will be necessary to operate businesses and unlock the economic value of the Aerotropolis. Once the Aerotropolis is fully developed and has reached operational maturity (over the medium to long term), the full extent of its economic and social value will be realised.

Capital costs and operational expenditure are necessary to create value from the development and its operational components. However, aside from capital and operational expenses, additional costs will arise. The environmental attributes once provided by commercial agricultural activities will to some extent be lost. Moreover, the creation of employment opportunities will likely attract job seekers to the area, imposing a cost burden on the community through increased labour pools, skills mismatches, and a higher potential for crime.

Additionally, the establishment of logistics and warehousing operations will increase heavier vehicle activity in the area, consequently influencing travel patterns. Lastly, the Aerotropolis will generate additional carbon emissions from passenger and cargo travel facilitated by the airport. Taking into consideration a range of identified, defined, and quantified costs and benefits per ECBA scenario, the following highlights the key results obtained from the analysis:



- A Positive NPV indicates an overall social benefit to the community affected Economic Rate of Return (ERR),
- An ERR greater than the Social Discount Rate (SDR) (10%) offers a sizeable community benefit.
- An ERR equal to the SDR shows that the costs and benefits are in equilibrium with each other, whilst an ERR less than the SDR indicates a marginal social cost to the community.
- A Benefit-Cost Ratio (BCR) greater than 1 indicates that a positive relationship exists between the present value of costs and benefits. BCR's are effective tools in ranking and selecting the most socially advantageous project option for a community.

The ECBA analyses identify that the base case scenario (Scenario 1) represents an efficient use of community and economic resources. The current commercial agricultural (Scenario 1) use of the properties that make up the Vaal Aerotropolis development site provides economic value to society because of the inherent environmental value that the development site possesses as opposed to the operational costs associated with commercial agriculture and the increased crime activity associated with the theft of crops and livestock.

The project implementation scenario (Scenario 2), in contrast, identifies that the opportunity cost of implementing Phase 1 of the Vaal Aerotropolis project represents a benefit to society and the economy. The ECBA analysis reveals that utilising the development location for the establishment of an integrated Aerotropolis development would, through the logistics-based development in support of national and regional economic growth initiatives, create considerable economic and social benefits. This efficient use of societal and economic resources would enhance the community and the economy. In essence, the introduction of productive land uses that can expand economic activity would compound the benefits derived from the proposed development location, creating long-term value in highly valued economic sectors such as logistics, industry and agriculture.

The project implementation scenario would, therefore, afford society (including those who find employment at the Aerotropolis), potential passengers and logistics operators the greatest benefit. These benefits include increased savings on travel costs, travel time, and travel safety, reduced carbon footprints, upskilling the labour force and economy and an overall lower impact on the environment for people employed at the proposed development and their households.

The comparative analysis of the outcomes of the ECBA for the base case and project implementation scenario shows that the base case scenario has an ERR of 0.0%, which is less than the 10% Economic Cost of Capital Rate (ECC) prescribed by National Treasury.

The ECC rate represents the minimum rate of return that National Treasury requires for a project or capital investment to be considered economically viable and beneficial to communities, as it will make use of scarce community resources.

The project implementation scenario, the preferred scenario, alternatively, has an ERR of 11.1% which is higher than the ECC rate of 10.0%. This indicates that the implementation of Phase 1 of the Vaal Aerotropolis over the medium- to long-term would provide an overall benefit to society and the economy because the project has the potential to generate economic returns. Therefore, the implementation of the project (Scenario 2) offers the potential to generate social and economic value beyond the expected rates of return over the medium- to long-term implementation and operational periods.

Furthermore, the base case scenario has a benefit to cost ratio (BCR) of 1.81, which is greater than the 1.07 BCR of the project implementation scenario. Even though the BCR suggests that the base case scenario is more beneficial to society, the BCR should be reviewed alongside the NPV and ERR to mitigate against bias. The NPV and ERR of the project implementation scenario exceed those of the base case scenario.



Moreover, the project implementation scenario's ERR surpasses the National Treasury ECC rate of 10%, indicating its potential to drive economic and community resource development.

6.4. Market Analysis

6.4.1. Construction Phase

Impacts generated during the construction phase of the project are once-off and are sustained for as long as construction occurs. These impacts dwindle as construction activity comes to an end and the development becomes operational, then operational impacts which are created and sustained annually, are activated.

The total CAPEX (Capital Investment) of the project could temporarily add approximately:

- R82.18 billion in additional business sales,
- R36.07 billion in additional GDP (contributes +1.73% to the provincial economy)
- Approximately 118 498 once-off jobs (formal and informal) throughout the Gauteng provincial economy.

An estimated 347 additional formal small, medium and micro-enterprise opportunities could be created. Black-owned SMMEs would potentially represent 72.91% of new formal SMME opportunities, given the prevailing legislative environment.

Formal employment during the construction phase represents 92 746 jobs (total direct, indirect and induced).

Approximately 22.92% of formal employment opportunities are expected to be filled by skilled labourers compared to 58.53% semi-skilled labourers and 18.55% low-skilled labourers. Additional compensation paid to employees during the construction phase is estimated to be approximately R13.33 billion.

It is estimated that approximately R9.98 billion in additional taxes could be generated during the construction phase. The largest contributor to new taxes is because of personal income tax, contributing 33.45% to all taxes collected economy wide.

6.4.2. Operational Phase

Impacts are generated when the productive-land uses of the development commence with operations. Impacts created during the operational phase are "sustained" impacts. "Sustained impacts" are impacts that are continuously generated (i.e. created and then sustained annually) as soon as the full operation of the project commences (long-term impacts).

The total annualised OPEX (operational revenue) of the project could annually add approximately R19.68 billion in additional business sales, R9.28 billion in additional GDP (contributes +0.44% to the provincial economy). It will also create:

- Approximately 19 838 sustained jobs (formal and informal) throughout the Gauteng provincial economy.
- An estimated 91 additional formal small, medium and micro-enterprise opportunities could be created. Black-owned SMMEs would potentially represent 70.33% of new formal SMME opportunities, given the prevailing legislative environment.
- Formal employment opportunities created throughout the lifetime of the project represents 16 175 jobs (total direct, indirect and induced).



- Approximately 28.18% of formal employment opportunities are expected to be filled by skilled labourers compared to 49.03% semi-skilled labourers and 22.79% low-skilled labourers.
- Additional annual compensation paid to employees during the operational phase is estimated to be approximately R3.1 billion.

It is estimated that approximately R2.29 billion in additional taxes could be generated during the operational phase. The largest contributor to new taxes is because of personal income tax, contributing 37.34% to all taxes collected economywide.

6.5. Overall Economic Outcome

The construction and operational phase of the project would have a measurable positive effect on the Gauteng provincial economy, generating sizeable GDP over the short- to long-term, high additional business sales and new business formation and a considerable number of new employment opportunities across all skill levels. Additional taxes can contribute to national and local treasuries and households across the province can increase their livelihoods. The increased demand for social amenities will influence the fiscus and operation of public sector entities. The increased pressure on the fiscus is offset by the addition of productive rateable assets through the envisaged capital investment in the project.

Consequently, the analysis suggests that the project implementation scenario has the potential to offer the greatest social and economic benefits, considering the prudent allocation of limited community resources. Overall, the benefits associated with the implementation of Phase 1 of the Vaal Aerotropolis represent:

- On-site employment generated by the Vaal Aerotropolis, including businesses establishing operations within its Aerotropolis and SEZ, offers numerous societal benefits due to the proximity of job opportunities to communities in areas like greater Sebokeng and Vanderbijlpark
- Increased earnings compared to average household incomes of local communities
- Relative boost to employment upskilling in the Gauteng economy because of technology integrated employment opportunities provided by the Aerotropolis.
- Reduced travel time to Aerotropolis employment opportunities compared to the average travel time of persons employed in the local economy
- Reduced travel cost to Aerotropolis employment opportunities compared to the average travel cost of persons employed in the local economy
- Reduced carbon emissions from reduced travel time and distance
- Reduce propensity to be involved in a serious vehicle accident because of reduced travel time and distance
- Passengers closer to the Vaal Aerotropolis no longer must travel considerable distances to access air travel at ORTIA, LIA or WNA.
- Reduced travel time because of passenger proximity to the Vaal Aerotropolis
- Reduced travel cost because of passenger proximity to the Vaal Aerotropolis
- Reduced carbon emissions from reduced travel time and distance
- Reduced propensity to be involved in a serious vehicle accident because of reduced travel time and distance
- The cargo and logistics function of the Vaal Aerotropolis, notably its dedicated live animal export capability, can provide dedicated export and import locations in Gauteng and neighbouring Provinces with a logistics (road freight orientated) efficiency benefit via shorter routes to an alternative air cargo hub than ORTIA:
 - Reduced accidents
 - Reduced congestion
 - Reduced emissions
 - Reduced land way
 - Reduced noise



- Reduced policing
- Improved Road freight efficiency
- Reduced travel time for logistics operators
- Alternative uses such as health care (clinic/hospital) included as part of the Aerotropolis can assist with improving access to healthcare facilities in the Emfuleni region and assist with reducing the burden of disease of the district
- The implementation of Phase 1 of the Vaal Aerotropolis could assist with further diversifying the regional economy by introducing a variety of industries (e.g., logistics, retail, trade, agriculture, manufacturing, etc) over and above the established businesses in the region.
- The potential to development linkages with a variety of established industries which would enable greater collaboration and resource flow and logistical efficiency
- The potential to establish additional international resource flow connections could further enhance access to global markets and establish new industries
- The Vaal Aerotropolis offers an opportunity to attract additional foreign and domestic investment into the local economy
- The Aerotropolis can be used as a key informant to strategic planning in the Gauteng and regional strategic planning sphere
- The development of the Aerotropolis could lead to further investment into bulk services and infrastructure in surrounding communities and economic nodes.

7. GEOTECHNICAL INVESTIGATION

7.1. Introduction

The geotechnical report prepared by WSP Group provides an overview of the preliminary geotechnical investigation conducted for the proposed Vaal Aerotropolis development. A preliminary shallow soil investigation was conducted to establish if the land is suitable for the proposed development and for township establishment application purposes. The investigation, limited to trial pit excavations and a desktop study, provided a preliminary understanding of the site's geotechnical characteristics and outlines the constraints and considerations for future detailed investigations.

Details can be found in **Annexure K**.

7.2. Regional and Site-Specific Geology

The site was underlain by rocks of the Pretoria Group, including shale, quartzite, and conglomerate, covered by transported and residual soils. A cropped section of the regional geology is depicted in the following figure:

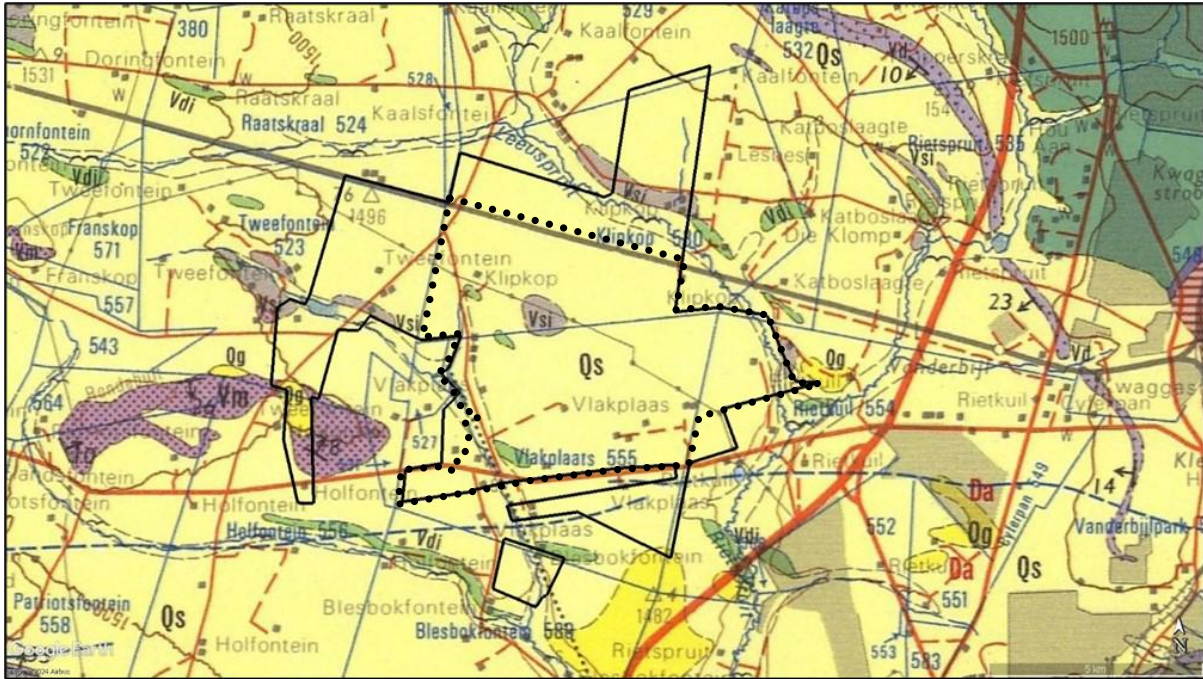


Figure 11: Regional Geological sheet (cropped 1:250 000 scale of 2626 West Rand)

Based on the geological data, the site contained a prominent west-east striking structure, likely a diabase dyke, situated in its southern portion. The region featured numerous diabase dykes, while no other significant linear features such as faults or shears were identified near the site. The geological maps and accompanying explanations confirmed the absence of specific mineral deposits and water-soluble rocks like dolomite or limestone. Consequently, the site was classified as “non-dolomitic land,” posing no risk of sinkholes or subsidence caused by soluble rock formations.

7.3. Geotechnical Investigation

The preliminary level geotechnical investigation was carried out between in August 2024 and comprised of 25 excavated test pits using a CASE 570T tractor loader backhoe (TLB) and profiling by an engineering geologist. No laboratory tests were conducted on the material excavated from the test pits.

Based on the limited excavated test pit soil profiles and readily available information, the regional area is generally covered with an upper topsoil with localised fill material towards existing infrastructures. The topsoil horizon is generally underlain by colluvial and alluvial transported materials with the alluvium materials situated near low-lying drainage areas. A pebble marker horizon or paedogenic formation underlies the abovementioned transported horizons and separates the transported material from the in-situ residual soils. The typical residual material encountered are residual shale, residual quartzite, and localised residual diabase of which the diabase and quartzites are the lessor. The residual horizons generally transition to the respective parent rock type's weathered state which were general gradual with occasional sudden transitions.

Ferricrete were also encountered in the test pits and were recorded as well developed nodular, honeycomb and localised hardpan ferricrete. The locality of the excavated test pit positions is illustrated in the following figure:

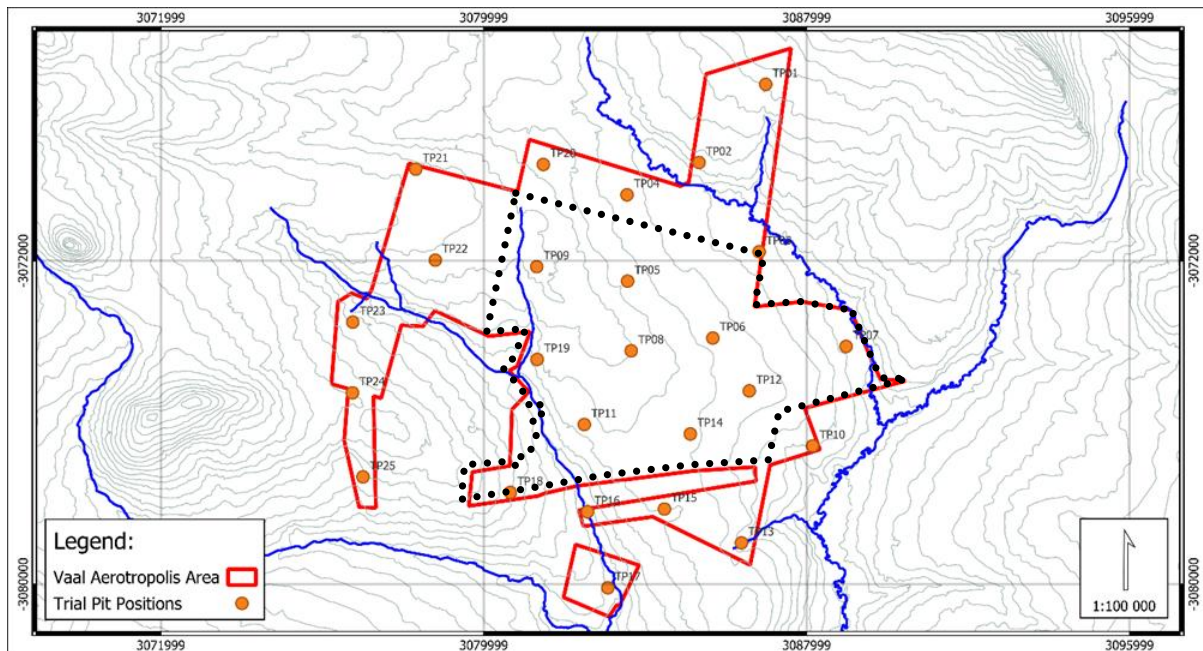


Figure 12: Excavated Limited Test Pit Positions and Preliminary FACET Zones

The general simplified soil profiles and rock profiles encountered in the trial pits is described as follows:

- A topsoil horizon generally has an open structure and loose consistency. The horizon was encountered to a depth of 0.20 to 0.40 mbgl;
- A loose to occasionally medium dense colluvium horizon with a voided to open structure was encountered to a depth of 0.50 to 1.00 mbgl. Locally slightly ferruginised colluvium was encountered to a depth of 1.90 mbgl in trial pit TP01.
- Alluvium material was encountered from a depth of 0.20 mbgl to varying depth between 0.90 to 3.20 mbgl. The typical alluvium material transitions from a stiff sandy clay to a firm clayey sand in the upper profiles to a sandy clayey silt or clayey sandy silt in the deeper profiles.
- Generally, a pebble marker horizon was encountered at the base of the transported horizons. The pebble marker was generally encountered at shallow depths at approximately 1.00 mbgl but locally down at termination depths of the test pits at approximately 3.00 mbgl (test pit TP15 and TP16). This layer is usually described as medium dense to firm, open in structure, and contains a mix of sub-rounded and occasionally angular gravels. It is often associated with a slight ferruginous.
- Pedogenic formations (honeycomb to nodular ferricrete) were also encountered at the base of the transported material with a medium dense to firm in-situ consistency.
- Residual shale was generally encountered below the pebble marker and/or pedogenic formations down to depth. The material was generally described as yellowish-brown to firm, characterized by fissures and occasional shattered or pinholed textures, indicative of its weathered and fragmented state. The material is composed of a mix of clayey, sandy, and gravelly silt, with weakly to moderately cemented nodules of iron and manganese oxides contributing to its slightly ferruginised nature. Residual shale may also contain sub-angular gravel-sized shale fragments, and while it is relatively stable, variations in its density and moisture content can be encountered depending on its depth and degree of weathering.
- Weathered shale was locally encountered below the residual shale in test pits. The weathered shale was in a completely to highly weathered state and profiled as extremely weak to very weak rock. The weathered shale is highly fractured and very intensely laminated.
- Locally residual quartzite was encountered at test pit TP18 from 0.9 to 1.50 mbgl. The horizon was described as slightly moist, red, blotched orange, mottled black, medium



dense to dense, voided, clayey gravelly silty sand with sub-angular quartzite boulder to the base of the zone.

- Residual diabase with cobble size core stones were also identified at an existing borrow pit located near TP21.

7.4. Expected Material Utilisation

Based on the information retrieved during the desktop study and local knowledge of the area, the preferred material to target for construction materials is the ferricrete and quartzite. The information herein is sourced from regional reports on similar materials. Laboratory test would however be required to confirm the following:

- **Ferricrete** is expected to be usable as a construction aggregate when its well-developed and well-cemented. Nodular, honeycomb and hardpan ferricrete can provide G5 to G7 when the material is moderately to strongly cemented. Weakly to very weakly cemented ferricrete will breakdown into fines when wetted and placed under a dynamic load, such as compaction from a vibrating roller, but can provide a G8 to G9 material. The typical constraint of ferricrete is the variability in thickness and degree of cementation.
- **Shales** from the Silverton Formation are expected to classify as G6 to >G9 material in the unweathered to completely weathered state.
- **Pebble Marker** zone is expected to classify as A-2 to A-4, SC/SM to GC and G7 to G8 depending on the grading.
- The **diabase rock** in the region generally weathers to a sandy silt with minor amounts of sand and gravel. The upper and lower diabase residuum materials are expected to classify as "CL to ML", "SC" or "GC" according to the Unified Soil Classification System. The residual diabase is expected to classify as G8 to >G9 material.

7.5. Conclusion: Geotechnical Conditions

The preliminary investigation acknowledges that geological and geotechnical conditions can vary significantly across a site. Localised variations in subsurface conditions that were not identified during this phase may exist. Therefore, the engineering recommendations provided are provisional and should be confirmed through further investigations and testing before any definitive conclusions or designs are finalised.

Over time, site conditions may evolve due to natural processes or human activities, and modifications to the proposed development may influence these conditions. If a significant time lapse occurs between the issuance of this report and the commencement of work, or if changes take place on or near the site, WSP advises revisiting the findings of the preliminary investigation to ensure the continued accuracy and applicability of its recommendations.

During the preliminary investigation, efforts were made to identify different geological materials, perched water tables, hydrogeological conditions, and areas with poor drainage. However, isolated zones with significantly different conditions may not have been identified. The primary purpose of this investigation is to highlight the most critical geotechnical concerns that could affect the proposed development, providing the client with early-stage guidance.

The **Geotechnical Report** is attached hereto as **Annexure K**.



8. ENGINEERING SERVICES

8.1. Introduction

This section contains information about the investigations completed for the proposed Vaal Aerotropolis development in respect of bulk services, technical requirements and infrastructure upgrading proposed to implement this catalytic international airport development. The engineering reports were prepared by WSP Group and include:

- **Annexure L** - Bulk Water & Sewer Reports
- **Annexure M** - Transportation Impact Assessment
- **Annexure N** - Stormwater Management Plan
- **Annexure O** - Transportation Impact Assessment & N1 Interchange Fatal Flaw Report
- **Annexure P** - Bulk Electrical Report
- **Annexure Q** - Integrated Waste Management Plan

Please refer to each of these reports for detailed information and plans. For ease of reference, summarized information was extracted from these reports and follows below. Note that the engineering reports are based on the broad phasing of the project into 3 distinct phases. The rate of development will be guided by the growth of the economy; however, it is envisaged that it could take up to 60 years to fully develop the Vaal Aerotropolis.

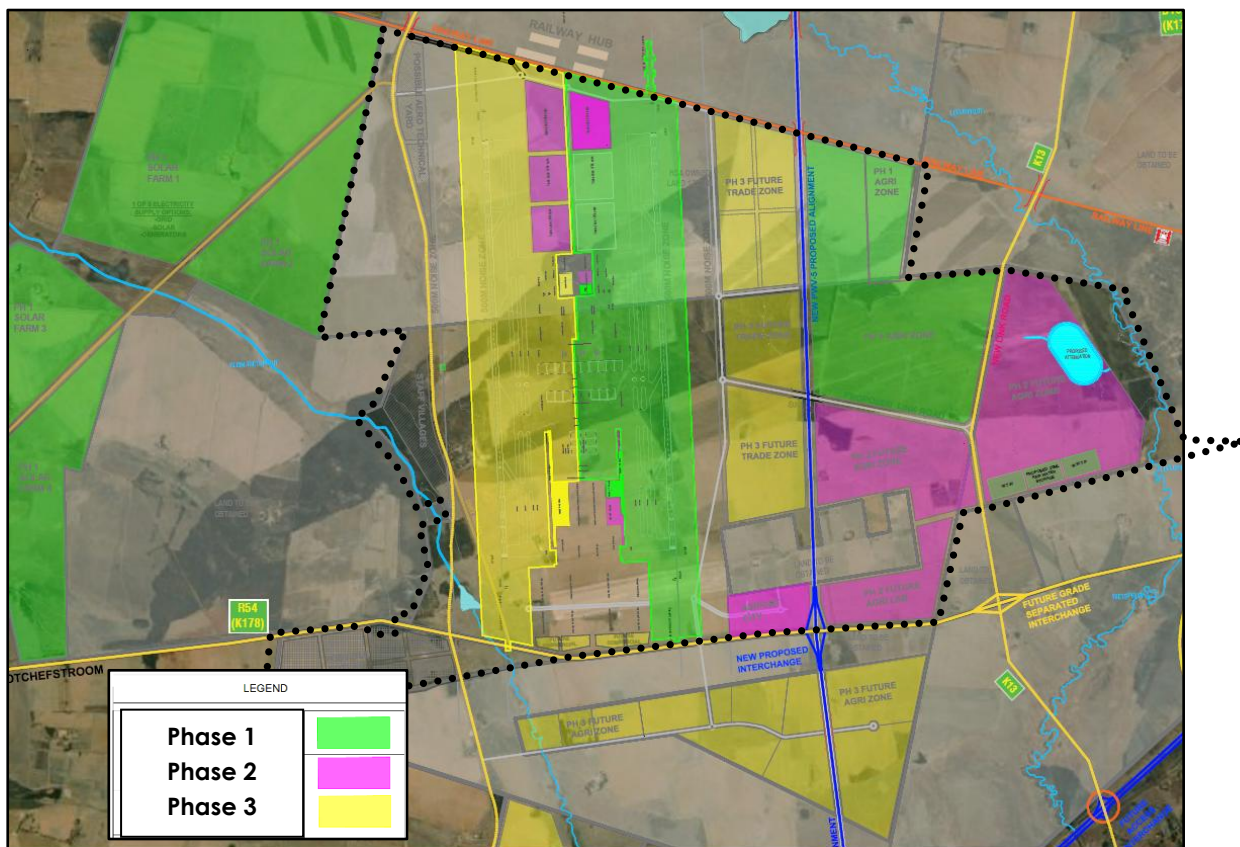


Figure 13: Phasing

Phase 1 - The first phase focuses on constructing the Vaal International Airport with a 4.2 km runway, supporting 7.2 million passengers per annum and 150,000 tons of cargo annually. It also includes the creation of the Agrizone, proposed to be Africa's largest high-tech agricultural cluster, and a Trade Zone for logistics and warehousing. The Airport City zone will include the development of supportive offices, retail, and hospitality spaces. Phase 1 construction and opening is targeted in January 2033.



Phase 2 - In Phase 2, the airport's capacity will grow to handle 25 million passengers per annum and expanded cargo volumes. Infrastructure will also be upgraded, including passenger facilities and parking. The Agri-Zone and Trade Zone will be expanded to accommodate increased agricultural and logistical operations. The estimated time for the construction of Phase 2 to commence is 2048.

Phase 3 - The final phase, focuses on reaching full airport capacity, including a second runway and terminal expansion to handle 45 million passengers per annum. The completion of Airport City with additional commercial, residential, and leisure spaces will occur, alongside the full operationalization of the Special Economic Zone (SEZ) to attract investments and drive industrial growth. Construction of this phase is estimated to commence in 2068.

8.2. Bulk Water & Sewer

There are no bulk water or sewer infrastructure in the nearby areas and long-term plans are in place at the Rietspruit WWTP. Therefore, alternative measures are required to service the Development.

8.2.1. Bulk Water

The Bulk Water Services Report, attached in **Annexure L**, defines the proposed bulk water service provision for the Vaal Aerotropolis development. It assesses the availability, capacity, and suitability of water supply solutions required to support the full development lifecycle, while establishing appropriate design criteria and water infrastructure strategies for implementation.

The existing municipal infrastructure within Emfuleni Local Municipality is currently constrained due to limited storage capacity, aging systems, operational inefficiencies, and an inability to extend services to new developments. These constraints make it unfeasible for the Vaal Aerotropolis to rely on municipal bulk water supply, particularly during the initial phases of development.

In response, a phased and self-sustaining water supply strategy is proposed. During the initial phases of development, potable water supply will be secured primarily through groundwater abstraction from strategically located boreholes within or near the site; treated via a dedicated Vaal Aerotropolis Water Treatment Works (WTW). A high-level borehole assessment, together with a 72-hour stress testing of 5 boreholes and a geohydrological study indicated that it is anticipated that the boreholes will be capable of meeting the Phase 1 demand requirements.

As the development progresses, the ultimate long-term solution envisages integration with a regional bulk water supply system via a dedicated pipeline connection to Rand Water. This infrastructure will be implemented to provide a secure, high-capacity supply capable of supporting full development demand while improving system resilience and redundancy.

This approach allows the development to proceed independently in the short to medium term while ensuring future integration with a regional bulk water system. The immediate solution focuses on groundwater abstraction through boreholes, while the long-term plan involves connecting to the Rand Water network via a dedicated pipeline.

The Bulk Water report includes details the projected potable peak hour water demands for the Vaal Aerotropolis development have been estimated at approximately 3.5 ML/day for Phase 1, increasing to 5.8 ML/day in Phase 2 and 11.4 ML/day in Phase 3 as the precinct develops. The initial sizing of the WTW has been based on accommodating the Phase 1 peak water demand requirements. Hence, the size of the WTW is proposed to be 3.5 ML/day.



The report further deals with water supply during construction, provides information regarding the proposed groundwater abstraction, provides details regarding water treatment and storage and discusses the bulk water distribution system and concept WTW process design.

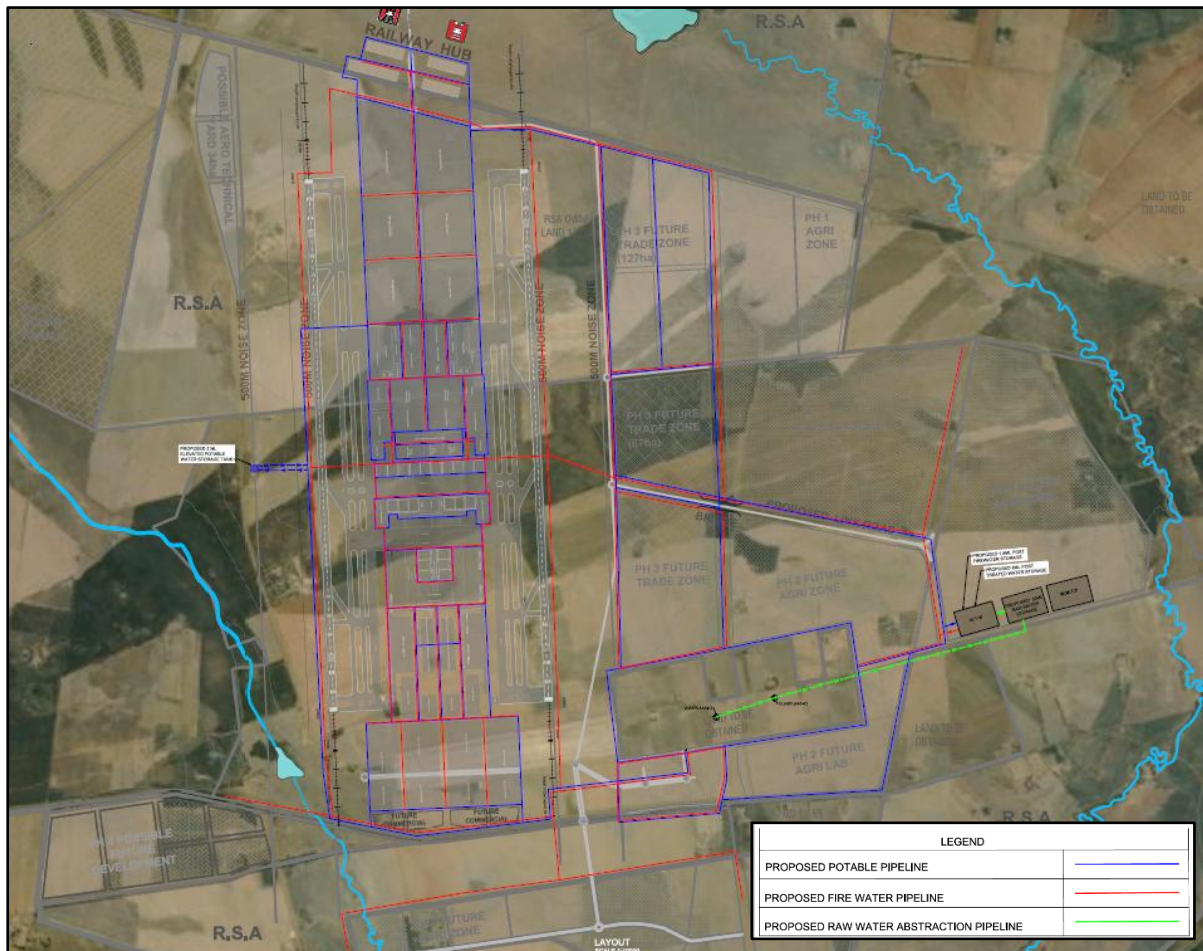


Figure 14: Bulk Water & Fire Layout

The bulk water system has been designed to align with a phased development framework, ensuring that infrastructure investment is incremental, cost-effective, and scalable. Each phase introduces additional abstraction, treatment, storage, and distribution capacity, allowing the system to grow in parallel with demand while minimising upfront capital expenditure. The system proposes:

- Groundwater abstraction and treatment for early phase supply
- Progressive expansion of bulk conveyance infrastructure
- Storage and pressure management facilities designed for operational resilience
- Integration of backup supply systems to ensure continuity of service.
- Appropriate treatment processes to ensure compliance with applicable potable water quality standards and regulatory requirements

A strong emphasis is placed on sustainability and operational reliability, including protection of groundwater resources and provision of emergency storage to maintain supply during system disruptions. Overall, the bulk water services strategy provides a practical and technically robust solution that addresses immediate constraints while enabling long-term expansion, ensuring that the Vaal Aerotropolis development is supported by a dependable and future-ready water supply system. The way forward will be to conduct the detailed design for the WTW and continue engagements with Rand Water and the Municipality to ensure future integration to their bulk water network for Phase 2 onwards.



Figure 15: Proposed Rand Water Pipeline Route

8.2.2. Bulk Sewer

The Bulk Sewer Services Report, attached in **Annexure L**, defines the proposed bulk sewer service provision for the Vaal Aerotropolis development. It assesses the availability, capacity, and suitability of sewer supply solutions required to support the Phase 1 demand, while establishing appropriate design criteria and sewer infrastructure strategies for implementation.

Existing sewer infrastructure within the Emfuleni Local Municipality is constrained, aging, and operating near capacity, with limited ability to accommodate new developments. As a result, the Vaal Aerotropolis Development cannot rely on municipal sewer services in the short term. A phased, self-sufficient wastewater strategy is therefore proposed, where the development initially develops its own bulk sewer and treatment infrastructure, aligned with municipal master planning for potential future integration.

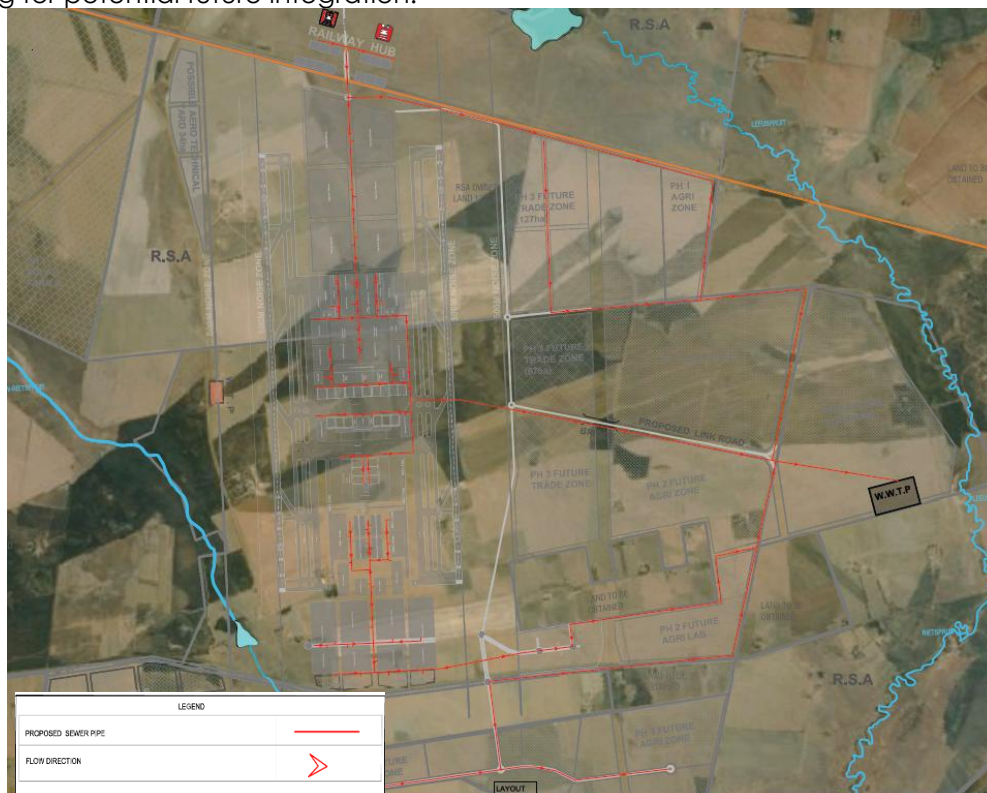


Figure 16: Bulk Sewer Concept Layout



A provisional location for the Wastewater Treatment Works (WWTW) has been identified within the development. It is currently positioned to serve key sewer catchments efficiently, support reuse of treated effluent (e.g. agricultural zones) and integrate with the broader masterplan. The final location will be confirmed during detailed design, informed by detailed hydraulic modelling, topography, and further technical assessments.

The key design parameters adopted for the sewer design are summarised and the sewer demands per phase are indicated in **Annexure L**. The Neighbourhood Planning and Design Guide, Red Book, Section K: Sanitation (2019), was used to determine the sewer demands.

The capacity of the WWTW will be based on the demand for Phase 1 and the sewage inflow is indicated. With a 15% inclusion to account for infiltration, the capacity of the WWTP will be 1.8 ML/day.

The applicable standards for the design of the Onsite Sewerage System are:

- SANS 10400: National Building Regulations: Part P: Drainage
- The Neighbourhood Planning and Design Guide, Red Book, Section K: Sanitation (2019)
- Technical Guidelines for the Development of Water & Sanitation Infrastructure, Second Edition,
- 2004- Department of Water Affairs & Forestry (DWAF)

The phasing of the proposed sewer infrastructure is as follows:

Phase 1 - Phase 1 sewer infrastructure will serve the airport, Airport City, and initial trade zones via a 300mm bulk and 450mm gravity pipelines conveying wastewater to an on-site WWTW. The system prioritises gravity flow, with pump stations only where required for low-lying areas. An on-site Vaal Aerotropolis WWTW (1.8 ML/day capacity) will include primary, biological, and tertiary treatment, aligned with the reuse requirements for the Vaal Aerotropolis. Treated effluent will be reused for non-potable purposes (e.g. irrigation and industrial use), while sludge will be processed through anaerobic digestion and composting for agricultural or energy applications.

Phase 2 - Phase 2 expands the sewer network constructed in Phase 1 to serve the enlarged airport precinct, trade zones, and agricultural areas, while introducing a secondary connection to the regional Rietspruit WWTW. A new 200mm bulk sewer pipeline will convey wastewater to the regional system and will be designed to accommodate future Phase 3 capacity. Pump stations will be upgraded, with an additional pumpstation constructed to manage increased flows and diversion to the Rietspruit WWTW, including one river crossing along the pipeline route. The on-site Vaal Aerotropolis WWTP will remain operational, focusing on efficient treatment and reuse for selected parts of the development.

Phase 3 - For Phase 3, a fully integrated sewer system serving the entire development, including the railway hub and remaining zones, will be required. Pipeline capacity will be expanded and upgraded to meet full development demands. Excess flow beyond the on-site Vaal Aerotropolis WWTP capacity will be diverted to the Rietspruit WWTW via the bulk sewer network. Enhanced reuse and sustainability measures will optimise sludge treatment for energy and agricultural use, alongside advanced water reclamation technologies.

The report further deals with the proposed WWTW Treatment Process and Sustainable Re-Use Applications.

In conclusion, there is no available bulk sewer in the surrounding area, and existing municipal systems lack the capacity to support the new Vaal Aerotropolis development, necessitating independent solutions. The proposed approach for Phase 1 involves a bulk sewer network



collecting wastewater through a combination of gravity and pump systems. Wastewater will then be treated at an on-site WWTW (1.8 ML/day capacity).

As the development grows, a phased expansion strategy will be implemented, including a future pipeline to the Rietspruit WWTW, contingent on its upgrade and regional capacity availability. Further design refinement (e.g. hydraulic analysis, pipe alignment, and capacity assessments) will be required to optimise system performance and ensure alignment with future development phases.

The way forward will be to conduct the detailed design for the WWTW, pumpstations and bulk sewer pipelines and continue engagements with the municipality to ensure confirmation to integrate the additional sewer demand to the municipal WWTW in future.

8.3. Transport Impact Assessment & Roads

The WSP engineering services report on traffic and roads is attached as **Annexure M** and includes the Transportation Impact Assessment as well as the N1 Interchange Fatal Flaw Report & Application to GDRT.

The key municipal and provincial routes that will support the Vaal Aerotropolis, includes the N1 freeway, R54 (K178), D2459 (Roots Road). The R54 will require an upgrade to a 2-lane per direction dual carriageway, and a new split diamond interchange with the N1 to accommodate the Phase 1 development traffic. The study area was determined using TMH 16 guidelines but expanded due to the project's scale and expected traffic volumes, focusing on key interchanges, intersections and access routes.

The data collection process used to inform the traffic analysis included classified traffic surveys conducted in October and November 2024 at key intersections and along major routes such as the N1, R54, and K176 to establish existing traffic conditions and peak periods (06:45–07:45 AM and 16:30–17:30 PM). Additional surveys were undertaken at King Shaka International Airport to derive representative airport trip generation rates for the Vaal Aerotropolis. The analysis also incorporated latent (future approved) developments, including Johandeo Phase 2, Lethabong, and Sebokeng Extensions 33 and 28, to account for cumulative future traffic demand.

There is currently no suitable direct access to the N1, making new interchange infrastructure critical to the development's viability. Several interchange options were assessed and refined based on safety, spacing, and network performance, with unsuitable options discarded. The two viable solutions are:

- a split diamond interchange at the N1/R54/D2459 (preferred option) offering efficient multidirectional access and strong regional integration, and
- a narrow diamond interchange at N1/K170/K176, supported by SANRAL and linked via upgraded provincial roads.

Both options require significant road upgrades, including Provincial roads upgraded to dual carriageways or new Provincial dual carriageways, and two grade-separated airport access interchanges. The two accesses lead to an internal road network distributing traffic to key land uses (terminal, trade, cargo, and Airport City). The N1/R54/D2459 Split Diamond Interchange (SDI) emerged as the preferred option, as it best satisfies operational efficiency, network integration, and planning objectives while meeting the necessary technical and regulatory criteria. Refer to the N1 Interchange Fatal Flaw reports in **Annexure O**.



Fatal Flaw Assessment of the Preferred Interchange

This interchange will consist of two grade-separated ramp sets connecting the N1 to the P24/1 in the north and the D2459 in the south, with roundabout-controlled ramp terminals selected due to the rural context and potential vulnerability of traffic signals that are isolated.

While certain ramp spacing distances fall short of prescribed minimums due to existing physical and contextual constraints, alternative measurement approaches (such as centreline spacing) demonstrate acceptable compliance.

When assessed against the YLBP spacing requirements, the proposed N1–P24/1 interchange layout appears to be substandard, whereas the N1–D2459 interchange layout is compliant with the standard. However, it is noted that the YLBP spacing criteria primarily relate to on ramp to off-ramp spacing associated with weaving sections. As the proposed configuration does not constitute a conventional weaving condition, the applicability of YLBP spacing as the primary assessment criterion for this proposal may be limited. A review of TRH 17, Section 10.11 (Ramp Terminals) indicates that a spacing of approximately 300 m between successive freeway ramp terminals may be considered adequate. When benchmarked against international standards such as AASHTO and the UK DMRB, the proposed configuration meets acceptable safety and operational thresholds, indicating that the spacing deviations are justifiable and do not constitute fatal flaws.

Appropriate directional and regulatory signage are required to ensure safe and efficient navigation through the Split Diamond Interchange. Clear advance guidance, lane allocation information, and compliance with relevant road authority standards (e.g., SANRAL) to support driver decision-making along the N1 and connecting routes is required.

Potential environmental constraints such as existing land conditions, servitudes, and surrounding land uses must be carefully managed, but do not present a fatal constraint at this stage. A more detailed environmental assessment will be required during subsequent project phases to confirm impacts, secure approvals, and ensure appropriate mitigation measures are implemented.

Development of the infrastructure will likely need to be staged in-line with traffic demand and the rollout of the Vaal Aerotropolis. The SDI can be implemented in a functional, cost-effective configuration, with provision for future upgrading or expansion as volumes increase. Construction timing must be aligned with development triggers, funding availability, and approvals, ensuring that the infrastructure is delivered efficiently while remaining adaptable to long-term growth requirements.

The proposed interchange in support of Phase 1 of the Aerotropolis can proceed beyond the fatal flaw stage. More detailed technical investigations, including geometric design, environmental approvals, and stakeholder engagement and continued coordination with authorities such as SANRAL and GDRT are required. The proposed Split Diamond Interchange meets design intent and functional requirements, is compliant with applicable standards, when appropriately interpreted and does not present a fatal flaw.

To note, SANRAL has provided high-level comments to the report, and the principle of the Split Diamond is accepted. Their comments have been addressed in a revised report pending additional liaison with GDRT. The report in Appendix E is the version submitted to SANRAL on which comments were received.

The reports in **Annexure M** further deals with parking provision and provides detail regarding the development trips based on estimated traffic demand from each land use component. It also projects future traffic volumes, comments on capacity analysis and indicates what road infrastructure requires upgrading to accommodate Phase 1 of the development.



Key findings are as follows:

- **Interchange Access:** Three interchange options were investigated. The N1 split diamond at R54/D2459 is preferred, with no objections from the Gauteng Department of Roads and Transport.
- **Traffic Generation:** Phase 1 will generate approximately 4 731 trips in the AM peak and 5 010 trips in the PM peak, with the majority attributed to passenger terminal and trade zone activities.
- **Parking Provision:** Based on King Shaka International Airport benchmarks, Phase 1 will require an estimated 6 243 parking bays, with opportunities to reduce demand through public transport provision.
- **Provincial Road Upgrades for the N1 SDIO:** Upgrades to the R54 (future K178) and D2459 are required, including construction of two new grade-separated access interchanges to the airport.
- **Non-Motorised and Public Transport:** Provision for minibus taxi, bus, and NMT facilities is recommended to support modal shift and reduce private vehicle dependency.

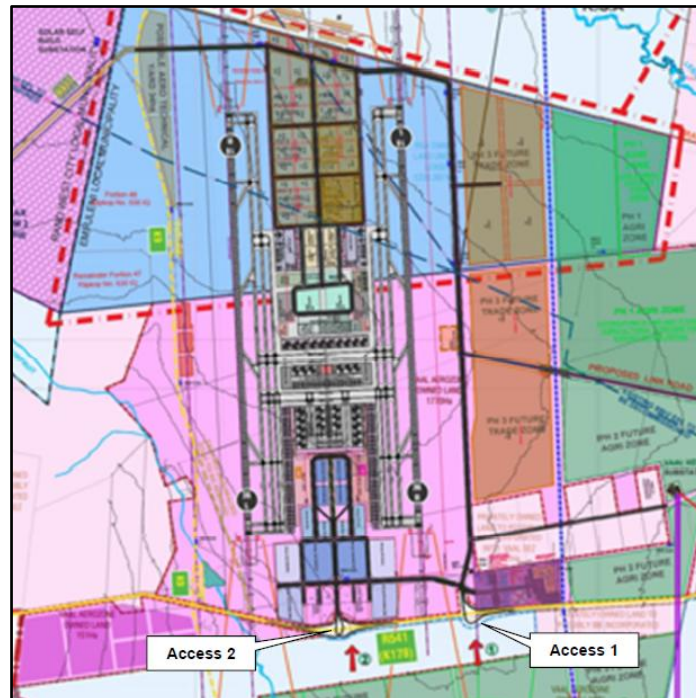


Figure 17: Airport Accesses and Internal Road Network

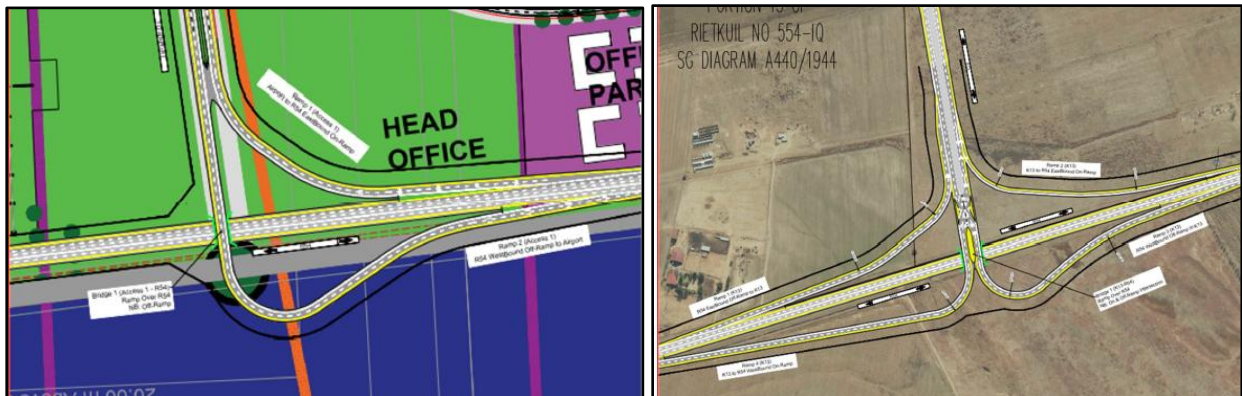


Figure 18: Airport Accesses 1 (East) and 2 (West)



The TIA demonstrates that with the recommended interchange configuration, associated provincial road upgrades, and public transport integration, the Vaal Aerotropolis Phase 1 can be accommodated within the regional transport network. Future phases (2 and 3) will require additional analysis and updates to the TIA as the development scales.

8.4. Bulk Electrical Report

The Electrical Services Report, attached in Appendix J, defines the proposed bulk electrical supply strategy for the Vaal Aerotropolis development. The development's long-term electrical demand is estimated at approximately 50 MVA, with an initial Phase 1 requirement of 20 MVA, necessitating a phased, scalable infrastructure solution.

To accommodate the proposed development footprint, existing 88 kV infrastructure (Rigi-SAR Tweefontein line) will be realigned along the northern boundary of the site. This involves:

- Construction of approximately 15 km of new overhead line,
- Decommissioning and dismantling of existing infrastructure within the development area, and
- Implementation of Eskom-controlled connection works and servitude adjustments.

Network analysis confirms that the existing distribution system operates within acceptable thermal, voltage, and fault level limits, indicating that the deviation will not introduce adverse system impacts.

In terms of Bulk Supply (Transmission and Substation Infrastructure), the preferred solution is based on a 132 kV bulk supply integration, comprising:

- A new 132/11 kV Vaal Airport Substation with provision for three transformers,
- Approximately 10 km of new 132 kV overhead line from Olympus Substation, and
- A premium loop-in-loop-out (LILO) connection from the Lochvaal-Scafell line to enhance supply reliability.

This configuration meets the initial 20 MVA demand, allows seamless expansion to ~50 MVA, and ensures compliance with Eskom standards for reliability and system performance. Contingency (N-1) analysis confirms that the network remains operationally stable under failure conditions, with acceptable voltage profiles and no thermal overloading.

The anticipated costs are:

- Line Deviation (Distribution): ~R29.6 million (incl. VAT)
- Bulk Supply (Transmission + Distribution): ~R197.9 million (incl. VAT)
- Total indicative capital investment: Significant and subject to refinement

The anticipated implementation timelines are:

- Approximately 30 months for realignment distribution works, and
- Approximately 36 months for bulk supply infrastructure.

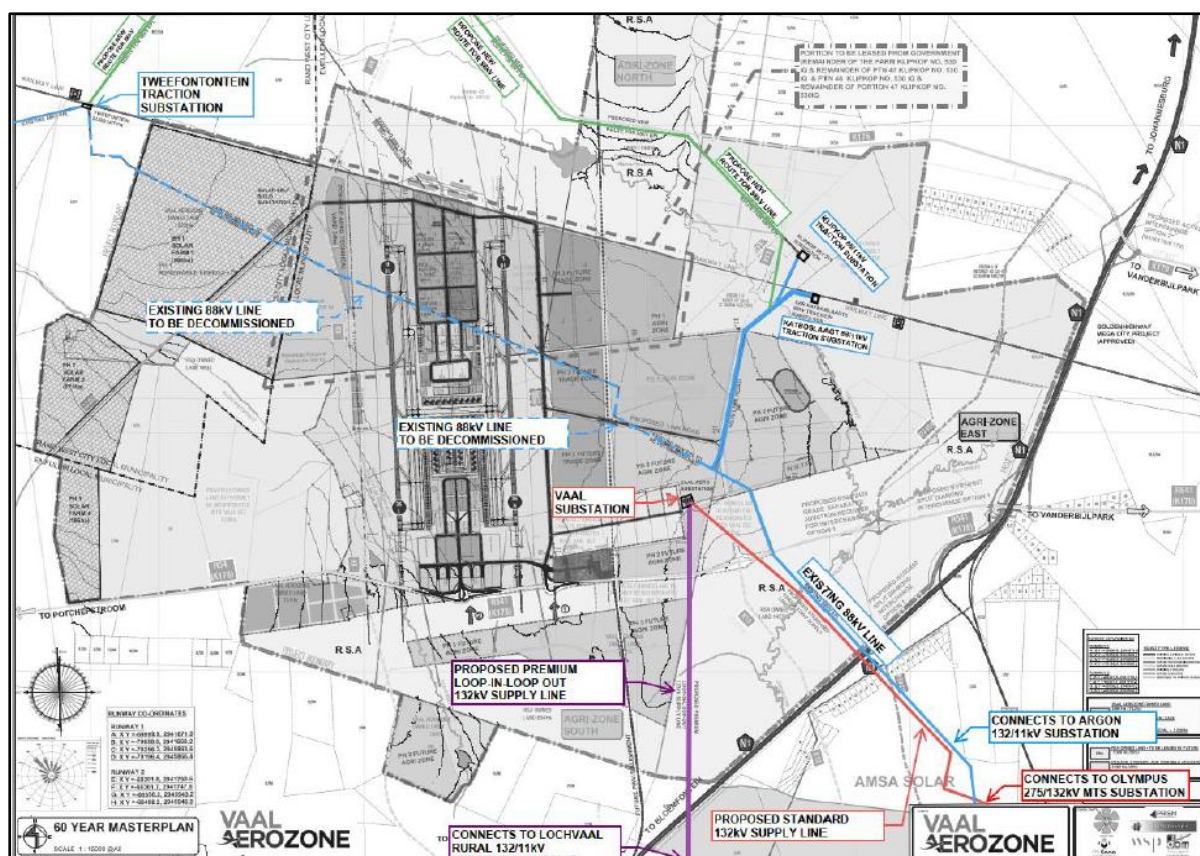


Figure 19: Proposed Rigi-Tweefontein 88kV Rebuild and Bulk Supply 132kV

All estimates are based on non-binding CELs, and remain subject to refinement during the Budget Quotation (BQ) phase, where detailed design and final costs will be confirmed.

Overall, the proposed electrical supply solution is technically feasible, robust, and scalable, with no fundamental constraints identified at a concept level. The strategy provides a clear pathway to support both immediate and long-term development requirements, subject to progression into detailed design and commercial confirmation during the next project phase.

8.5. Stormwater

The Stormwater Management Plan (SWMP), attached in **Annexure N**, forms part of the Environmental Impact Assessment (EIA) process and provides a conceptual, specialist assessment of stormwater systems, flood risk, and environmental considerations associated with the development. Its primary aim is to ensure that stormwater infrastructure is designed to manage flood risks, protect receiving environments, and maintain pre-development hydrological conditions, while supporting sustainable development outcomes.

The primary objective of the SWMP is to determine the potential flood risk from the new development and outline the stormwater management plan for the site. Direction and essential elements for the final stormwater management are proposed and will assist with determining future work parameters, infrastructure requirements and the management of stormwater from planning all the way through to operational phase with the scope addressing water quantity and quality regulations.

The SWMP is aligned with key legislation including the National Environmental Management Act (NEMA) and supports EIA requirements. It responds to municipal requirements to ensure protection of watercourses, reduction of flood risk and minimisation of environmental impacts. The plan is conceptual in nature, based on preliminary inputs. Critical design elements (e.g.



final earthworks and platform levels) are still to be confirmed. Modelling and system layouts demonstrate feasibility only, with further refinement required during detailed design.

The proposed development converts predominantly rural land into a high-intensity, multi-use aerotropolis, resulting in a substantial increase in impervious surfaces and associated runoff. Without intervention, this would elevate flood risks, accelerate erosion, and compromise sensitive downstream water systems. These risks necessitate a robust, integrated stormwater management strategy incorporating both quantity and quality control measures. In response, this SWMP adopts a proactive, risk-based design philosophy that:

- Maintains pre-development hydrological conditions, protecting downstream systems
- Mitigates flood risks through integrated modelling and infrastructure design
- Safeguards water quality through structured treatment and separation systems
- Embeds climate resilience, including a 30% rainfall increase allowance

Furthermore, the study recognises that the Vaal Aerotropolis is not a conventional development. It integrates aviation-specific requirements with environmental protection, resulting in a tailored stormwater solution that:

- Avoids permanent standing water to minimise aviation hazards (e.g. bird strike risk)
- Protects critical receiving environments including the Vaal River system
- Aligns with local legislation (NEMA, National Water Act) and international aviation standards (ICAO, FAA)
- Supports municipal stormwater requirements while exceeding minimum baseline expectations.

This approach ensures the development is not only compliant but also future-proofed against increasing climate variability and regulatory scrutiny.

The Stormwater Management Plan in **Annexure N** deals with the Site Characteristics, Stormwater Management Philosophy and contains a detailed Floodline Assessment. A preliminary hydrological model is provided, and the proposed stormwater infrastructure includes:

Attenuation Facilities

A central attenuation pond system, designed to regulate post-development flows and mitigate flood risks for events greater than the 1:50 year storm is proposed. Key conceptual parameters for this attenuation pond are:

- Storage capacity of approximately 0.95 million m³
- Maximum depth of 4 m with a ~29 ha footprint
- Dry detention design (no permanent standing water), with a 24 – 48 hr drawdown time
- Emergency Overflow Control: Spillway with a controlled discharge matching pre-development
- conditions for a 1:50-year event.
- Emergency spillway designed for the 1:100-year event.

Additional features of the pond will include oil-water separators and silt traps (pre-treatment), controlled outlet structures to match pre-development flows and erosion protection at discharge points. The pond will discharge primarily to the Leeuspruit, requiring strict environmental controls.



Major System

The major stormwater system will convey flows for the return periods including and more than the 1:50 year storm event. The purpose of the major stormwater system is to drain overland flow towards the attenuation facilities.

Overland flow routes are to be identified, defined, maintained and adequately protected over the life cycle of the site, both during and after construction. The Vaal Aerotropolis is being developed in a phased manner. Any stormwater control within this footprint will need to consider this phased approach. i.e., overland flow routes within the development must also accommodate overland pre-development flow from the adjacent developments. The overland flow routes must be adequately protected against erosion and sufficiently roughed surfaced to retard stormwater flow to the same degree, or more, as that found in the natural state of the site.

Minor System

The minor stormwater system will convey flows for the 1:50 year storm event. The system will comprise of reticulation pipes, kerb inlets, side channels, manholes and controlled wetland outlet structures. A conventional pipe network with kerb inlets to control the flow of water off the road surface is proposed.

However, alternative more sustainable networks (e.g., swales, soakaways, etc.) can also be considered during the detail design as supplementary to the piped network.

The design criteria for stormwater reticulation networks are as follows:

- Type of Pipe: Concrete Interlocking SANS 677
- Minimum size of pipe (for bulk stormwater pipes): 900 mm Diameter
- Minimum velocity in pipes: 0.8 m/s
- Minimum pipe slope: $1/1000 = 0.1\%$
- Minimum pipe cover: 0.9m (in verges, sidewalks and under roads)
- Structure type and material: Concrete manhole structure (with a slab top)
- Structure size: 1300 mm

Road upgrades (e.g. N1 interchange) will include new drainage channels, culverts, and integrated systems and existing drainage infrastructure will be retained and connected to new systems to ensure continuity.

Water Quality and Environmental Protection

To protect receiving environments, it is proposed that the stormwater infrastructure incorporates:

- Oil-water separators and pre-treatment systems for contaminated runoff
- First-flush diversion to isolate polluted initial flows
- Separation of clean and dirty water streams
- Erosion and sediment control measures across the site

These measures are critical to safeguarding downstream ecosystems, including the Vaal Barrage and associated water supply systems.

The SWMP confirms that the proposed stormwater management system is feasible at a conceptual level and aligned with local and international best practices, including municipal requirements and aviation-specific standards. The proposed stormwater system incorporates:

- Dual drainage (minor and major systems)
- Attenuation to pre-development flows



- Water quality and erosion control measures

However, the plan emphasises that:

- The current design has been developed to conceptual, strategic level and is based on preliminary inputs.
- Detailed design development is required to refine infrastructure layouts, detailed hydraulic modelling, and system optimisation
- Additional data (e.g. dam outflows, final earthworks design) to enhance accuracy and reliability



Figure 20: Major Stormwater Routes

Overall, the proposed approach provides a robust framework to mitigate flood risk, protect sensitive water environments, and support sustainable, large-scale infrastructure development within the Vaal Aerotropolis. The stormwater management plan ensures that stormwater risks can be effectively managed for the development.

8.6. Waste Management

The Integrated Waste Management Plan (IWMP), attached in **Appendix Q**, presents a comprehensive, phased, and implementation-focused framework for the management of all waste streams associated with the development of the Vaal Aerotropolis. The plan aligns with the waste hierarchy, international best practice, and South African legislation, while supporting environmental authorisation and future operational implementation.



The Vaal Aerotropolis is a large-scale, multi-precinct development incorporating aviation, logistics, trade, agri-processing, and commercial activities. As such, it will generate diverse and complex waste streams that extend beyond conventional airport municipal waste. The IWMP therefore adopts an integrated approach that recognises the operational, environmental, and regulatory requirements of each distinct waste stream across the full lifecycle of the development, including construction, initial operations, expansion, and ultimate build-out.

Waste management Philosophy

It is proposed that waste management prioritises avoidance, reuse, recycling, recovery, and lastly disposal, applied pragmatically based on operational feasibility rather than rigid targets. The focus should be on high-volume, repeatable waste streams (e.g. packaging, organics, construction waste), with circular initiatives implemented gradually based on market availability and operational readiness.

All waste generators (airport operators, tenants, airlines, contractors) are legally responsible for proper handling, storage, transport, and disposal of waste. Waste generators are to be accountable for the cost of managing their own waste, encouraging minimisation and proper segregation. Performance relies on clear procedures, training, and user behaviour, supported by simple and consistent systems. Systems are designed to minimise waste handling costs and maximise efficiency without compromising compliance and waste performance should be tracked through data-driven monitoring, enabling gradual and practical system improvements over time.

The following key waste management measures are proposed:

- **Waste Avoidance and Minimisation:** Waste reduction is driven primarily through design, procurement, and tenant requirements, focusing on reducing non-recyclable materials and unnecessary single-use items.
- **Waste Segregation at Source:** Segregation is the primary driver of recycling performance, implemented through standardised waste streams, colour coding, and clear signage, with a strong focus on back-of-house areas.
- **Collection and On-Site Storage:** Systems are designed to ensure hygiene, safety, and operational efficiency, including designated storage areas, controlled access, and infrastructure aligned with municipal requirements.
- **Recycling and Resource Recovery:** Recycling is treated as an incremental, non-critical element, implemented through licensed off-site providers and focused on high-volume recyclable materials (e.g. paper, plastics, metals).
- **Hazardous and Regulated Waste Management:** Strict controls are applied, including proper classification, secure storage, and traceable disposal via licensed contractors, supported by strong recordkeeping.
- **International Catering Waste (ICW) Management:** ICW is managed as a high-risk waste stream, requiring strict segregation, secure handling, and specialised disposal procedures.
- **Integration with Bulk Engineering Services:** Waste management is closely linked to water, wastewater, and stormwater systems, ensuring coordinated planning, environmental compliance, and operational efficiency.



Waste Streams

Key waste streams identified are:

- Municipal Solid Waste (MSW): General, non-hazardous waste from terminals, offices, retail, and logistics areas, managed through Emfuleni Local Municipality services.
- Sewerage, Wastewater and Treatment Residuals: Includes sewage, sludge, grit, and screenings generated from on-site wastewater treatment systems, treated as controlled waste streams.
- Waste from Aircraft Operations (Deplaned Waste): Generated from aircraft cabins and galleys, requiring strict handling, sealed storage, and rapid removal due to hygiene and airside safety constraints.
- International Catering Waste (ICW): A high-risk, regulated waste stream requiring strict segregation, secure storage, and disposal through licensed facilities due to biosecurity risks.
- Organic and Biodegradable Waste: Includes food waste, agricultural residues, and green waste, with potential for future reuse or composting, subject to approvals.
- Construction and Demolition (C&D) Waste: A recurring, high-volume stream across all development phases, requiring material reuse and recycling-focused management.
- Hazardous and Industrial Waste: Includes chemicals, contaminated materials, and maintenance residues, requiring strict classification, containment, and licensed disposal.
- Aviation-Specific and Special Waste: Includes medical waste, spill residues, e-waste, and other specialised streams requiring dedicated handling and compliance controls.

Each waste stream is defined based on source, risk profile, and operational context. Systems are to be designed to avoid overlap, ensure clear responsibilities, and enable auditable compliance. Waste volumes are not yet quantified due to early-stage planning, but systems are designed to be scalable and adaptable as the development evolves.

Specific attention will also be given to Construction and demolition (C&D) waste management to ensure material segregation at source, maximising reuse and recycling (e.g. concrete, rubble, metals), implementation of contractor-specific waste management plans, compliance with disposal regulations, protection of environmental features (e.g. stormwater systems) and maintenance of records of waste volumes, reuse, and disposal destinations. Contractors will be primarily responsible for waste segregation, reuse, and lawful disposal, through project specific waste management plans aligned with the IWMP. The aerotropolis management entity is to provide oversight and ensure consistency across multiple contractors and development phases

Volume of Waste Generation

For planning purposes, an order-of-magnitude estimate has been derived from comparable airport and aviation waste benchmarks. Phase 1 is planned for 7.2 million passengers per annum (mppa). Recent IATA waste audits indicate approximately 0.94 kg of aircraft cabin waste per passenger, yielding a passenger-related estimate of approximately 18 500 kg/day (excluding landside activities such as retail, food courts, offices, cargo and logistics).

To account for the cargo terminal, trade zones, airport-city commercial developments and logistics/warehousing, a solid waste generation rate of approximately 25 tonnes/day (25 000 kg/day) has been adopted. This estimate is subject to refinement during detailed design once the tenant mix, cargo throughput, commercial floor areas and operational arrangements are confirmed.



In conclusion, the IWMP (refer to **Annexure Q**) for the Vaal Aerotropolis provides a robust, practical, and strategically phased framework that ensures all waste streams are managed in a manner that is compliant, operationally efficient, and environmentally responsible. By integrating international best practice with local legislative requirements and aligning closely with bulk engineering services, the IWMP enables the aerotropolis to progress confidently through its development phases without introducing environmental or approval risk. Ultimately, the plan establishes a strong foundation for sustainable waste management, while maintaining the flexibility to adapt, optimise, and improve resource efficiency over time as the Vaal Aerotropolis evolves into a fully integrated logistics and economic hub.



9. LAYOUT CONCEPT AND DESIGN

9.1. Introduction

This section of the motivating memorandum explains the vision and principles that will underpin the success of this project.

The developer of Vaal Aerotropolis, Vaal Aerozone (Pty) Ltd. is highly experienced in the development and management of International Airports and is uniquely positioned and capable to take on a landmark project such as this.

9.2. Development Vision

The vision of Vaal Aerozone with the establishment of the Vaal Aerotropolis is:

- To be a driving force for economic and trade growth through the Vaal Aerotropolis in catalysing global trade in Southern Africa.
- To be a benefit to local businesses and community while serving our customers and our country.
- To be a premier hub for trade in South Africa, offering a gateway to the continent, creating employment opportunities, empowerment opportunities and significant economic growth.
- Aspiring to be the first port of call for international logistics in Southern Africa, while building a prosperous community in the Vaal Aerotropolis SEZ.
- Envisioning a region filled with growth and opportunity, with strong community engagement and support based on the opportunities that will be provided.

9.3. Development Principles

The project known as 'Vaal Aerotropolis' will ultimately comprise of many different components, including:

- Road network with direct access to and from the N1 and eventually linking with the proposed new PWV5;
- International Airport with a 4,2km runway length to accommodate any size of aircraft and second runway added in the future with central apron link;
- Passenger and Cargo terminals and all supporting facilities;
- Trade port with logistics and distribution facilities and general and cold warehousing and other commercial and industrial opportunities;
- Agri-zones and holding areas for produce being air freighted across the world;
- Commercial opportunities with landmark Offices, Hotel, Conference, Retail and Medical facilities.

The development will be managed as an SEZ entity in accordance with the SEZ act ,16 of 2014 and its regulations.

A SEZ is a tool for economic growth to promote economic development to attract foreign and domestic investments. Its development principles are:

- Facilitating the creation of an industrial complex
- Developing infrastructure to support the targeted industries
- Provide the location for the establishment of the investment
- Enabling the beneficiation of natural resources
- Promoting regional development and local and social benefits to local communities
- The generation of new and innovative economic activities.



9.4. Air Platform

9.4.1. Obstacle Limitation Surfaces

A high-level study of the Obstacle Limitation Surfaces (OLS) has been undertaken to provide a preliminary assessment of the safeguarding requirements and therefore potential constraints for Aerotropolis developments surrounding the Airport Precinct. The objectives of the definition of the OLS are to define the airspace around the Airport precinct to be maintained free from obstacles as to permit the intended aircraft operations to be conducted safely. The OLS define the limits to which objects may project into the airspace.

The definition of the OLS undertaken for Vaal Aerotropolis has been aligned to the ICAO Annex 14 international regulation. The image overleaf shows an example (source ICAO) of the OLS defined for a precision approach runway category III:

- conical surface;
- inner horizontal surface;
- approach surface and inner approach surface;
- transitional surfaces;
- inner transitional surfaces; and
- balked landing surface.

The description and characteristics of each of the OLS are contained in the ICAO Annex 14 Chapter 4 and ICAO Airport Services Manual Part 6.

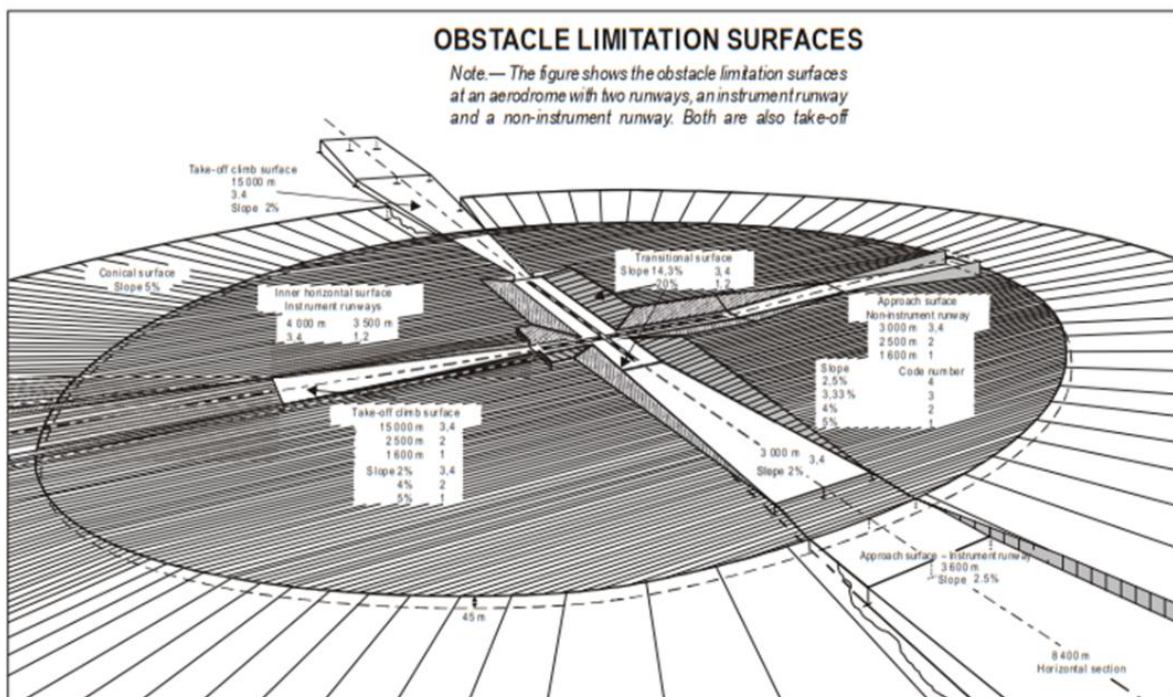


Figure 21 "ICAO Obstacle Limitation Surfaces (Source: ICAO)

The next image shows the Runway Approach surfaces, and Transitional surfaces based on the airport layout plan assuming a 1700m spacing between the runways. The Approach surface is a combination of inclined planes preceding each threshold; starting from the runway strip, the two sides of the Approach surface diverge uniformly at a specified rate from the extended centre line of the runway; the two sides

meet the Transitional surface which develops from the side of the runway strip at the level of the runway platform and slopes upwards and outwards to the inner horizontal surface located



at 45m above the runway level; the image below shows the Approach and Transitional surfaces levels (every 10m) from the runway level to 45m where they join the Inner horizontal surface which represents a horizontal plane above the aerodrome.

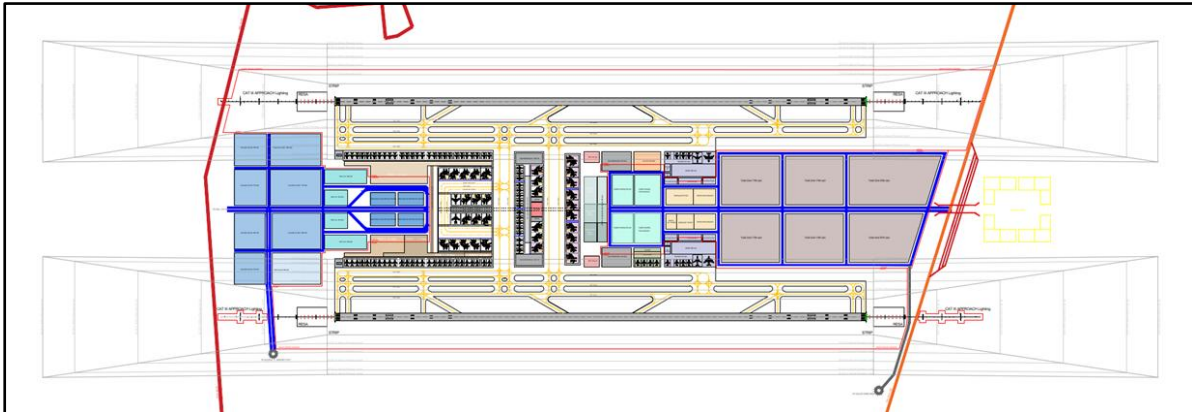


Figure 22: Airport Precinct Layout Plan for 45m ppa with basic OLS

The entire extension of the OLS for the two runways is shown in the next image:

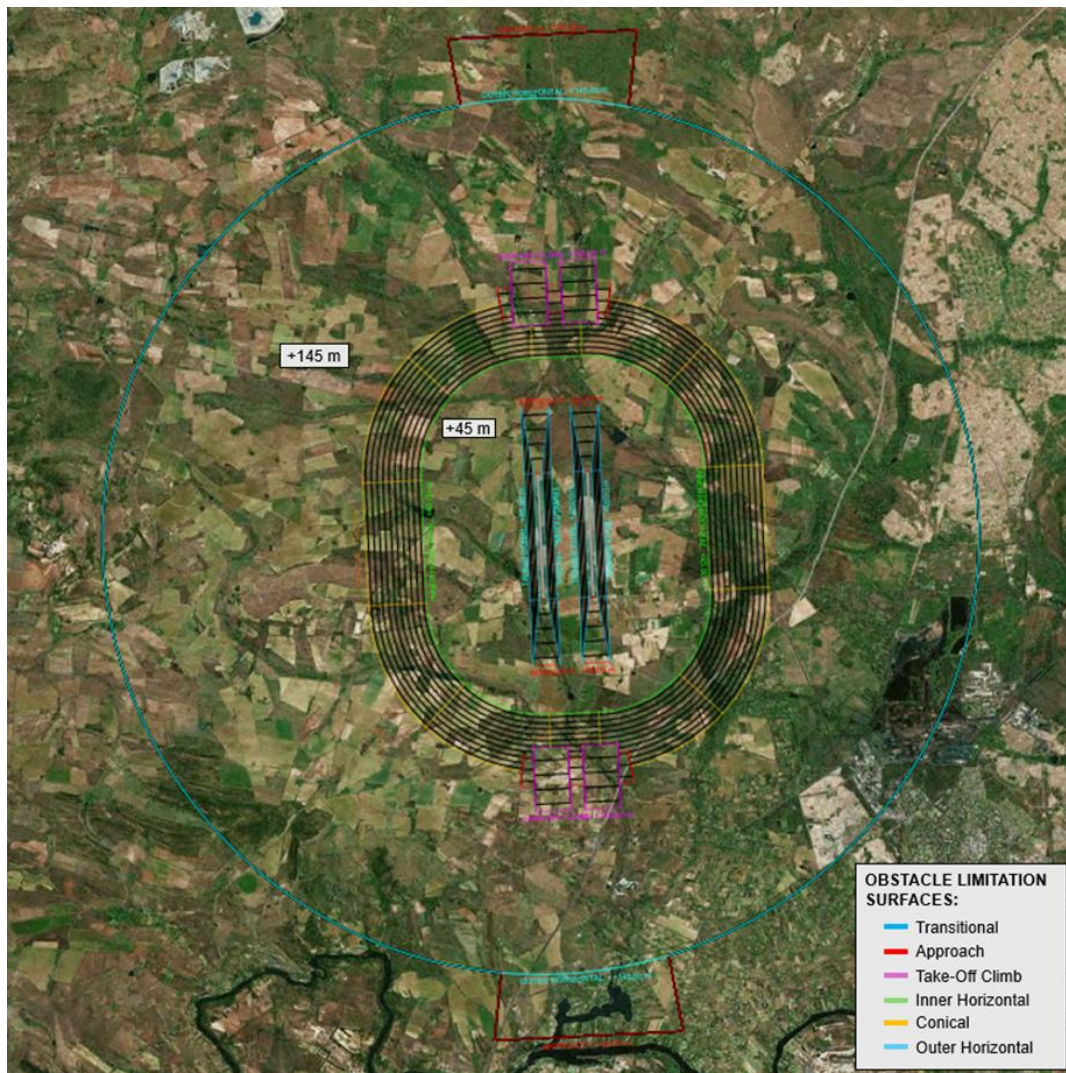


Figure 23: Obstacle limitation surfaces for the Airport Precinct (45m ppa)

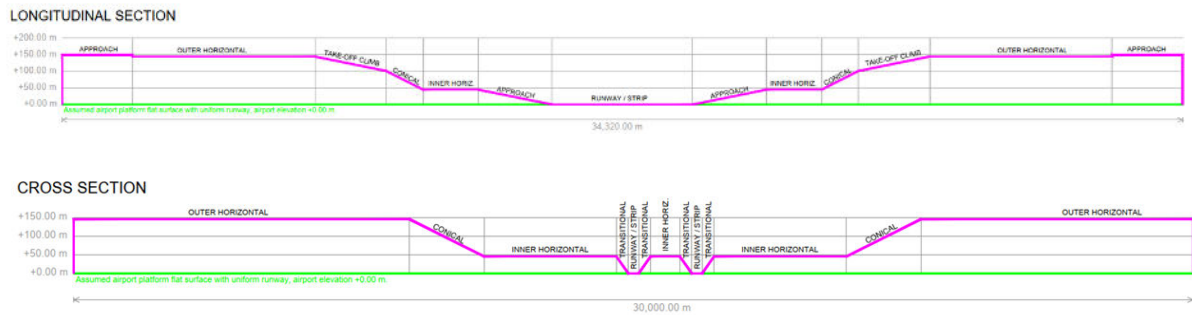


Figure 24: Obstacle limitation surfaces for the Airport Precinct (45mppa), longitudinal section and cross sections

The Inner horizontal surface develops at a height of 45m over the runway level from the Transitional surface and Approach surface to the Conical surface (highlighted in green in the previous figure). The Conical surface slopes upwards and outwards from the periphery of the Inner horizontal surface to the Outer horizontal surface (in orange) at 145m over the runway level. In correspondence to the extended centre line of the runways the Conical surface joins the Approach surface (in red) and Take-off climb surface (in magenta). The contours of the Conical surface are provided with 10m intervals from 45m to 145m above the runway level.

It should be noted that no assessment has yet been undertaken to determine the optimum airport platform elevation based on three-dimensional balanced cut and fill earthwork calculations. Therefore, the working assumption is that the airport platform will be a flat surface with a uniform runway and airport elevation. The obstacle limitation surface heights represented on the plans are therefore considered in relation to the height in metres above the assumed runway level. Further studies are required in the next design phases to establish the optimum airport platform elevation and any slopes permitted. This will then enable a subsequent assessment of the existing terrain to identify if there are any obstacles that could potentially infringe the runways' obstacle limitation surfaces.

9.4.2. Runways and Aircraft Approach / Take-Off Zones

The Obstacle Limitation Surfaces (OLS) described above protects aircraft operations in the airspace closest to the airport and these impose some planning restrictions on neighbouring land uses. The Aircraft Approach and Take Off surfaces extend beyond the end of each runway or runway threshold and are required to provide maximum safety for the operations of the aircraft during landing or taking off. Development of buildings and structures in these zones are limited for safety reasons, however some low occupancy land uses are sometimes permitted in these areas, e.g. car parking, provided that there is no impact on aviation safety.

The runways and the associated OLS largely define the available space for airport development. The area between the two runways will be developed for the key Airport Precinct facilities such as car parking, passenger terminal building, apron, cargo terminal building, and trade zones. Buildings outside of the airport precinct located close to the airport must also be compliant with the OLS requirements so to avoid any infringement of the obstacle surfaces and endanger aircraft flight operations.

9.4.3. Building Height Restrictions

Building height restrictions for developments adjacent to the airport to the east and west of the airport are determined by OLS, specifically the Transitional Surfaces and Inner Horizontal Surfaces. The Transitional Surface restrictions on building height decrease the further the distance is from the edge of the runway strips and form a building height restriction "envelope" which extends from the runway ground elevation outwards until it connects with the Inner Horizontal Surface that surrounds the airport, which limits development to below 45m above



the runway elevation. Currently no buildings within the Vaal Aerotropolis master plan are proposed to infringe the transitional surface slope or exceed the 45m height restriction imposed by the Inner Horizontal Surface.

9.4.4. Noise Zones

The determination of noise zones is dependent on the flight tracks, characteristics of different aircraft types as well as the development layout and is important as the zones will place restrictions on developments immediately adjacent to the airport platform. Various noise zones have been identified, mapped and incorporated into the planning and design of each development precincts. The preliminary noise zones based on the expected ATMs and aircraft types for the different phases of the development have been modelled at high level and can be seen below (Figure 4-6 to Figure 4-8). The modelling of these zones will be refined during the EIA process.

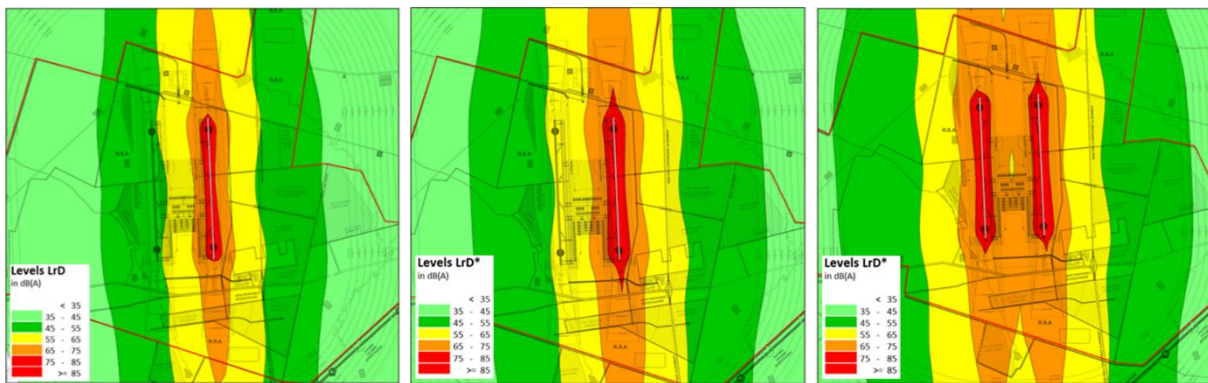


Figure 25: Preliminary Noise Zones for Phases 1 - 3 at 23, 55 & 84 ATM's per hour

9.5. Access & Circulation Framework

9.5.1. Objectives

- To ensure appropriate regional and metropolitan access to the Aerotropolis and all future surrounding land-uses.
- Ensure direct and efficient road access to and linkage between the various sub-zones of the greater aerotropolis and its precincts.
- To establish a suitable, economical and hierarchical movement network for all vehicles, for passengers, staff, freight and non-motorised transport.
- Enable the establishment of effective and efficient public transportation access, road based and potentially rail based.
- Promote integrated and safe vehicle and non-motorised access and circulation to site, on site, for an efficiently connected site.
- Promote a multi-modal approach to transport provision.

9.5.2. Regional Access and Circulation System

Regional Road Access Locations

The Aerotropolis will have access to the primary regional road network from three main locations:

Short-term

- A future access interchange of the N1 Freeway with the future K13, located approximately 7.0 km to the south-east of the site. The route determination of the K13 has been undertaken, and the interchange is shown on the Gauteng Provincial



Strategic Road Network Plan. The Basic Planning of the interchange has not been undertaken.

Long term

- A future access interchange of the N1 Freeway with the K176/K170 will be located approximately 10.0 km to the north-east of the site. This interchange is contained in the Provincial Strategic Road Network Plan, and the Basic Planning of the interchange has been undertaken. The interchange will be required for Phase 3 to provide additional freeway access to the N1 via the K176, the K13 and the K178.
- A future access interchange of the future PWV5 with the K178, the R54 Vanderbijlpark to Potchefstroom link. The interchange will be located approximately 3.5km south-east of the site. The route determination of the PWV5 has been undertaken, the interchange is contained in the Provincial Strategic Road Network Plan. The Basic Planning of the PWV5 and interchange has not been undertaken. Note this interchange is not required for access to the Aerotropolis from a capacity perspective, however when the PWV5 is implemented it will provide additional long-distance accessibility to the site.

The Vaal Aerotropolis will obtain access from the following Provincial roads, the K-Road network of the Gauteng Strategic Major Road Network. These roads are future Class 2 roads, with an ultimate 2 lane or more lanes per direction with a segregated dual carriageway cross-section.

Short-term

- A portion of the future K13 to be located south-east of the site on a north-south alignment between the N1 and the K178. A single carriageway with 1 lane per direction will be required for Phase 1 to provide access to the N1 via a new access interchange.
- The construction of the K13 and N1 access interchange, for the first phase a single road over road bridge and the on and off ramps from the N1 is required.

Medium-term

- Upgrade the K13 and N1 access interchange to a dual carriageway 2 lane per direction overpass over the N1.
- Upgrade the K13 to dual carriageway with 2 lanes per direction between the N1 and the K178
- Upgrade the K13 and K178 to a grade separated intersection.
- Upgrade the K178 to a dual carriageway with 3 lanes per direction between the K13 and the Airport access. Note that the road reserve may have to be widened.

Long-term

- The future K176 located north of the site on an east-west alignment. This is currently a surfaced single carriageway road and will be upgraded to its ultimate dual carriageway 2-lane per direction configuration between the N1 and the K13.
- The construction of the K176 and N1 access interchange, a second road over road bridge and the on and off ramps from the N1 will be required.
- A further section of the future K13 east of the site for access to the N1 via the K176. It will be implemented to its ultimate dual carriageway 2-lane per direction configuration between the K176 and the K178. A road over rail bridge will also be required.
- A further upgrade of the K178 to 5 lanes per direction between the K13 and the Airport's western access interchange. This may require a widening of the road reserve or the K178.



- The portion of the future K9 to be located west of the site on a north-south alignment between the K176 and the K178. This is currently an unsurfaced road built on a portion of the future alignment. It will be required for access the agri-zones west of the airport and supplementary access to the rail hub and trade zones. A single carriageway with 1 lane per direction is required.

9.5.3. Vaal Aerotropolis Road network

Secondary road network

A secondary road network is planned to connect the regional high-order roads to the Aerotropolis precincts. The routes are described in terms of the precincts and the zones they will provide access to. These roads will be a combination of Class 3 to Class 5 links, with varying cross-sections to be determined by the land-uses and precincts they will serve.

Terminal building precinct, Airport City & Agri-zone south

- A north-south direct access off the K178 with a signalised intersection. This will link to the terminal and Airport City link road, and to the Agri-zone South, to be located south of the K178.
- An east-west link to the terminal precinct and the Airport City. This road will also link to the secondary road network that will serve the Trade Zones 3 to 5 and the Agri-zone East.
- For Phase 3, a supplementary north-south aligned direct access off the K178 with a grade-separated intersection. This will link to the terminal buildings and the Airport City link road.

Trade zone 1 & 2, Railway Hub, and Agri-Zone North

- An east-west aligned road from the airport trade zone access road to the access road from the Airport City. This road will also provide access to the future Trade Zones 3 to 5.
- Alternatively, or in addition:
- An east-west aligned road from the K9 to the trade zone access road.
- A link from the K9 to the Railway Hub, with a grade separated road over rail structure to Trade Zone 1 and 2 and the cargo precinct of the airport. (Future link)

Agri-zone East, Trade zone 3 - 5, solar farms

- The north-south aligned route from the main access off the K178 to the Trade Zones 1 and 2 is required for Phase 1. This road will also provide access to Trade Zone 3, 4 and 5 and the land-uses east of the airport.
- An east-west road from the K13 to the Trade Zone access roads.
- An east-west road from the Trade Zone access road between northern Trade Zone or solar farms.

Agri-zone west

- Access to Agri-zone West can be provided off the K9. It must be noted that direct access to properties is not allowed off Class 2 K-roads. Additional low order roads will be required to link the K9 to the Agri-zone and land-uses west of the airport.
- Vaal Aerotropolis Tertiary Road Network.



Secondary road network

- The tertiary road network will be the lowest order roads to connect the secondary road network to the various sub-precincts and erven. Seeing as the land-use details of the trade and Agri-zones (types, densities, etc.) has not been determined, additional analysis and geometric design will be required to inform the requirements of the tertiary roads.

9.5.4. Public Transport Provision

Road based

- Road based public transport provision to the Aerotropolis will be accommodated on the secondary road network. At all appropriate locations, lay-bys for kerbside stopping for buses and mini buses will be provided.

Rail based

- Metrorail operates a commuter service from Vereeniging to Johannesburg Park Station via Sebokeng, Orange Farm, Lenasia, and Soweto. A future airport commuter rail service can be considered to link to the Vereeniging/Park Station service at Vereeniging Station.
- A rail siding can potentially be implemented from the main railway line north of the site, on a north-south alignment, which will terminate at a sub-surface station near the terminal buildings within the terminal surface parking area.
- A high-level desk-top assessment noted that the link is feasible from a horizontal alignment perspective. The vertical alignment requires further investigation to test the feasibility.

Non-motorised Transport Provision

- Non-motorised transport will be accommodated on all precinct access roads, where appropriate, by means of surfaced sidewalks and safe pedestrian crossings at intersections and public transport lay-bys.
- At the large public transport demand areas such as the terminal buildings and the high density Airport City, public transport hubs such as a bus and taxi ranks will be incorporated in the site development planning.

9.5.5. Summary

The planned transport network will provide a hierarchical and clear network to serve the long-distance mobility access needs, regional access needs and the local and inter-zone zone transport needs of the Aerotropolis.

The network is more than sufficient to accommodate the land-use development as they are implemented over the course of the life of the Aerotropolis. The network is also robust and flexible to be adapted in future should land-uses within zones change and/or intensify that may require additional and accessibility.

9.6. Land Use Framework

This section defines the Airport's facility requirements and describes the proposed Airport layout plan based on the information received and agreed airport planning assumptions.



9.6.1. Land Use Objectives

The spatial requirements of the airport facilities are based on the air traffic demand forecasts and airport planning assumptions suited to the proposed airport operations. A detailed bottom-up analysis for the definition of the spatial requirements would be based on the peak hour volumes (passengers, ATMs and cargo); however, in most cases the requirements for the Airport Precinct facilities have been defined using a top-down high-level approach based on annual volumes, planning ratios, benchmarking and industry best practices, in the absence of detailed demand and operational information being available at this stage of the project.

9.6.2. Land Use Distribution within the VA Site

Planning horizons and demand forecast:

- The proposed opening year planning capacity has been identified as 7.2mppa for the passenger facilities, 150,000 tons/year for the cargo facilities, supported by a single runway with an estimated peak throughput demand of 23 ATMs/hr;
- The ultimate planning capacity for the passenger terminal and related facilities has been set to 45mppa;
- An interim phase has also been identified for a capacity of 25mppa, which could be the trigger point for the development of the second runway; however, the need for a second runway is dependent on several factors including demand and also airspace restrictions, which is not included in the scope of this work;
- Overall, the Airport Precinct has therefore been planned based on three main development phases at 20 years intervals for a total development period of 60 years.

9.6.3. Land Use Distribution within the Aerotropolis

Planning horizons and demand forecast:

- The proposed opening year planning capacity has been identified as 7.2mppa for the passenger facilities, 150,000 tons/year for the cargo facilities, supported by a single runway with an estimated peak throughput demand of 23 ATMs/hr;
- The ultimate planning capacity for the passenger terminal and related facilities has been set to 45mppa;
- An interim phase has also been identified for a capacity of 25mppa, which could be the trigger point for the development of the second runway; however, the need for a second runway is dependent on several factors including demand and also airspace restrictions, which is not included in the scope of this work;
- Overall, the Airport Precinct has therefore been planned based on three main development phases at 20-year intervals for a total development period of 60 years.

Airfield facilities:

- Airfield planning standards are based on ICAO Annex 14 Volume 1 9th Edition 2022;
- The aerodrome reference code is ICAO Code 4F as the proposed runways exceed 1,800m and the design aircraft for planning purposes is Code F for both cargo and passenger facilities;
- Runway approach procedures have been assumed to be ICAO Precision Approach Category III for ILS, OLS, approach lighting and the runway strips;
- The design aircraft types are as follows: Code C = A321 Neo / B737-MAX, Code E = A350-1000, Code F = A380-800
- Runway End Safety Areas (RESA): Maximum RESAs defined by ICAO to be provided at each runway end;
- Airfield separations and clearances: Runway to taxiway, taxiway to taxiway, taxi lane to taxi lane and taxiway/taxiway to object clearances as per ICAO Annex 14.



Ancillary Facilities:

- Maintenance, Repair and Overhaul (MRO) facilities (including hangar, hardstand, offices and car parking) planned to accommodate based regional airlines with ultimate capacity to accommodate up to 8 code C, 2 code E and 2 code F aircraft in the 45 mppa planning horizon;
- Other airfield support facilities and car parking requirements have been based on international ratios and best practice.

Using a combination of the demand forecast data, international design standards and recommendations, rules of thumb based on experience, and benchmarking with other similar airports the facility requirements for each component of the airport Master Plan have been defined.

AIRFIELD FACILITY REQUIREMENTS

The key planning assumptions adopted for the definition of the airfield facilities including runways, taxiways and apron stands have been defined as follows:

- Runway length = 4,200 m based on client requirements;
- Runway width = 60 m, plus 7.5m paved shoulders on either side for a total width of 75m for Code F operations;
- Runway End Safety Areas (RESA): Maximum RESAs to be provided at each runway end 240m long by 150m wide as per ICAO recommendations;
- Runway Approach Lighting provided has been based on CAT III requirements to safeguard space for the worst-case scenario;
- It has been assumed that a CAT III Instrument Landing System (ILS) would also be provided to maintain operations in low visibility conditions, and therefore space has been safeguarded for the provision of ILS glidepath and localiser facilities and surrounding protected areas;
- Distance between runway centre line and taxiway centre line = 180m, for code F operations;
- Two parallel taxiways are recommended for greater operational flexibility;
- Code F Taxiway centre line to Code E taxiway centre line = calculated as 83.5m using ICAO methodology;
- Code E Taxiway centre line to Code C taxiway centre line = calculated as 61.5m using ICAO methodology;
- Taxiway width: Code E/F taxiway width = 23m;
- Other airfield separations and clearances as per ICAO Annex 14;
- Airside Roads: 10m wide two-way 'Head of Stand' and 'Back of Stand Roads' plus inter-stand roads should be provided every 4-5 aircraft stands. 5m parking/kerb zone also provided between 'Head of Stand' road and terminal building;
- Code F MARS stand size: stand sizing for initial master plan layouts = 95m deep x 91m wide;
- Code E MARS stand size: stand sizing for initial master plan layouts = 91m deep x 85.5m wide;
- Code C stand size: stand sizing for initial master plan layouts = 60m deep x 45m wide;
- Cargo Stands: stand sizing as per passenger aircraft stands plus operational area between stand and cargo terminal building of approximately 50m to provide airside road and operational areas for cargo equipment storage.

PASSENGER AIRCRAFT STANDS REQUIREMENTS

The aircraft stand requirements are typically calculated based on the analysis of aircraft on the ground derived from the design day flight schedule. However, this information is not



available for this project, and therefore the stand requirements have been estimated at a high level using the annual volumes, planning ratios, and benchmarking.

The high-level approach adopted for defining the passenger aircraft stand requirements has been based on the expected ratio of annual passenger volumes per aircraft stand. This ratio typically varies based on the type of airport, airline mix, aircraft types and load factors; the ratio typically decreases for smaller, less busy airports, and it increases for larger busier international airports. For master planning purposes we would recommend not to assume the highest ratios of passengers per stand in order to safeguard sufficient space for aircraft stands and provide contingency to handle changes in demand. Based on this approach, the passenger aircraft stand requirements have been defined based on the following ratios for the three phases of development:

- 200,000-250,000 pax/ stand for 7.2mppa (opening year)
- 300,000-350,000 pax/stand for 25 mppa (interim phase)
- 400,000-450,000 pax/stand for 45 mppa (final phase)

For comparison, King Shaka International Airport has been built with 29 stands NBE (narrow body equivalent) for a declared capacity of 7.5mppa; this corresponds to a ratio of ca. 260,000 pax/stand.

The table below provides the total passenger aircraft stand requirements for the three phases of development. For each phase of development, a range of passenger aircraft stands is provided.

Table 5: Passenger stand requirements, top-down approach

High-level passenger stand requirements	Annual pax / stand ratio	7.2 MPPA	25 MPPA	45 MPPA
Phase 1	200,000	36		
	250,000	29		
Phase 2	300,000		84	
	350,000		72	
Phase 3	400,000			113
	450,000			100

An alternative methodology has also been developed to define the mix of passenger aircraft stands; this methodology was based on a bottom-up approach that defined the requirements based on the passenger Air Traffic Movement (ATM) peak volumes derived from the annual passenger demand provided by the Client. The peak movements were defined using annual to peak hour ratios because of the lack of detailed information provided in the Client's traffic forecast. The peak ATMs were then split by ICAO aircraft type. The estimated passenger ATM peak hour demand by type of aircraft is reported in the table below:



Table 6: Estimated passenger ATM peak hour demand by type of aircraft

PAX ATM Aircraft Split	ATM demand		
	7.2 mppa	25 mppa	45 mppa
Aircraft Type A	0	0	0
Aircraft Type B	1	1	1
Aircraft Type C	18	47	73
Aircraft Type D	0	1	1
Aircraft Type E	2	5	8
Aircraft Type F	1	1	1
Total ATM peak - PAX	22	55	84

In absence of any specific information coming from the traffic forecast, the stand requirements were calculated by increasing the peak ATM demand by 20%. The total passenger aircraft stand requirement is reported in the table below:

Table 7: Passenger stand requirements, bottom-up approach

Total PAX Stand requirements	Total		
	7.2 mppa	25 mppa	45 mppa
Aircraft Type A	0	0	0
Aircraft Type B	1	1	1
Aircraft Type C	22	56	88
Aircraft Type D	0	1	1
Aircraft Type E	2	6	10
Aircraft Type F	1	1	1
Total PAX Stand requirements	26	65	101
Total PAX Stand requirement - NBE	29	73	113
Total PAX Stand requirement - MARS*	15	37	57

* if all stands were MARS

The results coming from the bottom-up approach are within the ranges provided by the top-down approach. For space safeguarding purposes it has been assumed that the highest requirements between the two approaches should be adopted and the requirements by type have been calculated in proportion to the bottom-up approach.

The summary of the passenger aircraft stand requirements is presented in the table below. The split between contact and remote stands has been defined by assuming:

- Narrow-body aircraft: 60% contact – 40% remote
- Wide-body aircraft: 80% contact – 20% remote

Table 8: Passenger stand requirements, contact / remote split

Total PAX Stand requirements	Total			Contact			Remote		
	7.2 mppa	25 mppa	45 mppa	7.2 mppa	25 mppa	45 mppa	7.2 mppa	25 mppa	45 mppa
Aircraft Type A	0	0	0	0	0	0	0	0	0
Aircraft Type B	1	1	1	1	1	1	0	0	0
Aircraft Type C	22	56	88	14	34	53	8	22	35
Aircraft Type D	0	1	1	0	1	1	0	0	0
Aircraft Type E	2	6	10	2	5	8	0	1	2
Aircraft Type F	1	1	1	1	1	1	0	0	0
Total PAX Stand requirements	26	65	101	18	42	64	8	23	37
Total PAX Stand requirement - NBE	29	73	113	21	49	74	8	24	39
Total PAX Stand requirement - MARS*	15	37	57	11	25	37	4	12	20

* if all stands were MARS

The definition of the concept Master Plan layout for the ultimate phase of 45mppa has been aligned to the passenger stand requirements defined with the bottom-up approach (i.e. 113 NBE passenger aircraft stands).



PASSENGER TERMINAL FACILITY REQUIREMENTS

Due to the absence of detailed passenger demand forecasts, it has not been possible at this early stage of planning to adopt a typical bottom-up analysis to calculate the terminal facility requirements based on IATA planning standards, busy hour information, and facility processing assumptions to define the requirements. Therefore, a top-down methodology has been used to size the terminal building based on industry recognised rules of thumb/ratios based on benchmarking the building area expected per million annual pax with other similar airports and other planning assumptions, which are presented below:

- Terminal Gross Floor Area (GFA) Sizing rule of thumb: 10,000sqm per MPPA for International operations.
- Terminal Gross Floor Area (GFA) Sizing rule of thumb: 8,000sqm per MPPA for Domestic operations.

The split of domestic and regional / international facilities has been derived from the traffic forecast information provided. The following splits have been assumed:

- 7.2 mppa: Dom = 65% and Reg/Int = 35%
- 25 mppa: Dom = 65% and Reg/Int = 35%
- 45 mppa: Dom = 70% and Reg/Int = 30%

Different assumptions have been used to convert the GFA figures into a terminal building footprint for planning purposes:

- International terminal area = Average of 2.5 levels e.g. BHS basement (half level)/Arrivals (half level)/Departures (one level)/Offices (half level).
- Domestic terminal area = Average of 2 levels e.g. BHS basement (half level)/Arrivals (half level)/Departures (one level).

These different sizing assumptions and GFA/footprint ratios by sector take into consideration that larger areas are needed for international passenger processing facilities compared to domestic operations.

The Passenger Terminal area requirements are presented in the following table.

Table 9: Passenger terminal requirements (GFA, sqm)

		7.2 MPPA		25 MPPA		45 MPPA	
		Int 35%	Dom 65%	Int 35%	Dom 65%	Int 30%	Dom 70%
	<i>sqm/mppa ratio</i>						
International Terminal GFA sqm	10,000	25,200		87,500		135,000	
Domestic Terminal GFA sqm	8,000		37,500		130,000		252,000
Total Terminal GFA sqm			62,700		217,500		387,000
	<i>No. of levels</i>						
International Terminal Footprint sqm	2.5	10,080		35,000		54,000	
Domestic Terminal Footprint sqm	2		18,750		65,000		126,000
Total Terminal Footprint sqm			28,830		100,000		180,000

CARGO TERMINAL FACILITY REQUIREMENTS

The air cargo facilities have been planned to serve dedicated cargo freighter aircraft operations and therefore the cargo terminal has been planned with dedicated cargo aircraft stands.

The space requirements for the Air Cargo building have been calculated using a top-down approach based on benchmarking information due to the lack of detailed cargo demand forecasts available for the interim and final phases. A benchmarking study has been conducted to assess the cargo facilities provided at King Shaka and O. R. Tambo international



airports. The study has provided a ratio of annual cargo tonnes per cargo terminal square metre to calculate the cargo building requirement. Also, guidelines provided by IATA have been considered to take into account the potential level of automation to be adopted in the new cargo terminal building and the assumption that over time the operations should become more efficient with increased levels of automation. The requirements have been then defined based on the following assumptions:

- Phase 1: 150,000 tons/yr: assuming 10 tons/sqm (as per King Shaka international airport)
- Phase 2: 362,000 tons/yr: assuming 13.5 tons/sqm (as per IATA's medium/high level of automation)
- Phase 3: 872,000 tons/yr: assuming 17 tons/sqm (as per IATA's high level of automation)

Table 10: Cargo terminal requirements (GFA, sqm)

CARGO TERMINAL		150k	360k	870k
Footprint requirement (sqm)		tonnes	tonnes	tonnes
	<i>tons/sqm ratio</i>	Footprint	Footprint	Footprint
High level of automation	17.0	8,830	21,300	51,300
Medium/High level of automation	13.5	11,120	26,820	64,600
King Shaka benchmarking ratio	10.0	15,000	36,200	87,200
O.R. Tambo benchmarking ratio	8.2	18,370	44,340	106,790

Between the cargo building and the cargo stands a buffer area of 50 m wide which would be provided to safeguard space for cargo operations (including airside road, storage and manoeuvring area). On the landside of the cargo building, a buffer area of 75 m wide would be provided to safeguard space for car parking, landside loading/unloading and vehicle manoeuvring areas.

To support the cargo terminal operations, freight forwarding facilities (buildings and yards) would be required, similar to the concept of operations found at King Shaka International Airport. In the absence of detailed requirements for this facility and operation, the space requirements for planning this function have been calculated based on the tonnes per year / sqm ratio found at King Shaka International Airport.

Table 11: Freight forwarding facility requirements (GFA, sqm)

FREIGHT FORWARDING		150k	360k	870k
Footprint requirement (sqm)		tonnes	tonnes	tonnes
Including car parking	<i>tons/sqm ratio</i>	Footprint	Footprint	Footprint
King Shaka benchmarking ratio	6.6	22,700	54,790	131,970

CARGO AIRCRAFT STANDS REQUIREMENTS

The requirements for the number of Cargo aircraft stands have been calculated with the same bottom-up methodology used to define the number of passenger aircraft stands. In the absence of any specific information contained in the traffic forecast, the stand requirements were calculated by increasing the peak demand by 20%. The total cargo aircraft stand requirement is reported in the table below:



Table 12: Cargo stand requirements, bottom-up approach

Total CARGO Stand requirements		150k tonnes	360k tonnes	870k tonnes
Aircraft Type A		0	0	0
Aircraft Type B		0	0	0
Aircraft Type C		1	2	5
Aircraft Type D		2	4	6
Aircraft Type E		1	1	2
Aircraft Type F		1	1	1
Total CARGO Stand requirements		5	8	14
Total CARGO Stand requirement - WBE		5	7	12

AIRSIDE ANCILLARY FACILITY REQUIREMENTS

Air Traffic Control (ATC) tower

The footprint requirement for the ATC tower has been calculated by assessing the footprint provided at King Shaka and O. R. Tambo international airports:

- King Shaka international airport: 7,000 sqm footprint
- O. R. Tambo international airport: 25,000 sqm footprint

As a minimum requirement it is assumed an area of 10,000sqm dedicated to the ATC tower, car parking and related functions.

An indicative location for the ATC tower will be included in the concept airport master plan, however the exact position and height of the ATC Tower required to adequately view the operational areas will need to be determined during a later design stage through undertaking an ATC Tower line of sight study. However, a benchmarking study has been undertaken to identify the heights of ATC towers at international airports with a similar runway configuration (two wide-spaced parallel runways). Based on this study it is expected that the ATC tower should be ca. 70m in height; however, a more detailed line of sight study would need to be undertaken to determine the exact height.

Airport Rescue & Fire-Fighting Services RFFS

The footprint requirement for the RFFS facilities has been calculated by assessing the footprint provided at King Shaka and O. R. Tambo international airports:

- King Shaka international airport: 10,000 sqm footprint
- O. R. Tambo international airport: 35,000 sqm footprint

In this case it is assumed two stations (main and support), each with a total footprint for buildings and support areas of ca.10,000sqm, will be provided at Vaal Airport, with one used to serve each runway in order to meet the response times to the end of the runways and to other airside facilities. The footprint requirements include space for the RFFS station buildings, car parking, internal roads and other RFFS related functions. Due to the lack of information related to the specific air traffic forecast and fleet mix, the highest Aircraft Category for Fire Fighting assumed has been based on the need to handle Code E/F aircraft (Category 10 - design aircraft with overall length > 76m).

GSE and Airport Maintenance Facilities

The definition of the requirements for the Airport and GSE maintenance facilities has been undertaken by assessing King Shaka and O. R. Tambo International airports as well as using rule



of thumb ratio (footprint area per mppa) based on benchmarking with other international airports.

The footprint per mppa ratio calculated for O.R. Tambo airport is almost three times higher than King Shaka international airport due to the different type and scale of operations and historical development of O. R. Tambo to serve a wider range of commercial and general aviation activities. Given the uncertainty regarding the operational strategy for the long-term development of Vaal Aerotropolis, we therefore recommend using requirements based on the area per mppa ratio taken from benchmarking with other international airports.

Table 13: Airport maintenance and GSE requirements (GFA, sqm)

GSE Maintenance		7.2	25	45
Footprint requirement		MPPA	MPPA	MPPA
	<i>Footprint/mppa</i>	Footprint	Footprint	Footprint
International ratio	3,000	21,600	75,000	135,000
King Shaka ratio	2,530	18,216	63,250	113,850
O.R. Tambo ratio	7,140	51,408	178,500	321,300

Maintenance, Repair and Overhaul (MRO) Facilities

Similar to the airport / GSE maintenance, the space requirements for the MRO facilities have been defined by a benchmarking exercise with other international airports, O. R. Tambo Airport and King Shaka Airports. Given the difference in the type of operations of the latter two airports, discussions have been undertaken with Vaal Aerotropolis's management team in order to understand the long-term strategy for the MRO development. Following these discussions, it has been agreed that Vaal Aerotropolis will not be a replacement for O. R. Tambo operations in the ultimate 45mppa phase and therefore carriers like South African Airways would not be relocating their base of operations to the airport. However, the ambition is to attract regional commercial / business aviation operators to be based at Vaal and therefore these airlines would need MRO and related facilities; furthermore, the airport management team requested to include third party MRO facilities capable of handling larger commercial aircraft, including code F, in order to increase the airport's commercial attractiveness.

Therefore, the requirements for the MRO facilities have been calculated as:

- Phase 1: 2 Code C and 1 Code F hangars;
- Phase 2: 4 Code C, 1 code E and 1 Code F hangars;
- Phase 3: 8 Code C, 2 code E and 2 Code F hangars.

The facilities supporting the MRO hangars, such as hardstand, workshop, warehouse, and car parking, have been defined using sqm/mppa ratios based on benchmarking with other international airports.

The overall requirements for the footprint required for the MRO facilities are summarised in the table below:



Table 14: MRO requirements (GFA, sqm)

MRO Footprint requirement (including supporting areas)		7.2 MPPA	25 MPPA	45 MPPA
	Methodology	Footprint	Footprint	Footprint
2 Code C + 1 code F	Bottom-up	41,400		
4 Code C + 1 code E + 1 code F	Bottom-up		102,200	
8 Code C + 2 code E + 2 code F	Bottom-up			193,700

Aviation Fuel Farm Facility

In order to calculate the aviation fuel storage requirements (JetA1/SAFs etc) the standard methodology would determine the fuel needed to service the flights operated on a peak day and then provide a defined number of days of fuel reserves in case of a break in regular supply. However, due to the limited availability of data, the facilities have been sized based on benchmarking the size of the existing fuel farms at King Shaka and O. R. Tambo airports as well as other international airports with passenger demands up to 45mppa.

Based on these benchmarks, a space requirement of ca. 700 sqm/mppa has been defined for Vaal Aerotropolis. This requirement assumes that the distribution of fuel would be with a hydrant system with SAF / conventional jet A1 aviation fuel given this a new greenfield airport site. The assumed requirement is lower than King Shaka and O. R. Tambo airports where the refuelling process is based on bowser operations.

Table 15: Fuel farm requirements (GFA, sqm)

Fuel Farm Footprint requirement		7.2 MPPA	25 MPPA	45 MPPA
	Footprint/mppa	Footprint	Footprint	Footprint
International ratio	700	5,040	17,500	31,500
King Shaka ratio	1,680	12,100	42,000	75,600
O. R. Tambo ratio	2,000	14,400	50,000	90,000

Due to lack of information, no space requirements have been calculated for hydrogen refuelling operations; however, an area for a potential hydrogen fuel farm has been identified in the aerotropolis Master Plan layout.

Flight catering facilities

Bottom-up calculations based on number of meals per flight multiplied by number of flights per peak day are usually used to develop the size of flight catering facilities; however, due to lack of data it has been assumed that an area of 1,200sqm per MPPA is required for a catering facility and car parking based on international benchmarks.

Table 16: Flight catering requirements (GFA, sqm)

Flight Catering Footprint requirement		7.2 MPPA	25 MPPA	45 MPPA
	Footprint/mppa	Footprint	Footprint	Footprint
International ratio	1,200	8,640	30,000	54,000
King Shaka	n.a.	n.a.	n.a.	n.a.
O.R. Tambo ratio	n.a.	n.a.	n.a.	n.a.



Landside car parking

The requirements for the car parking facilities have been defined from international benchmarks and by assessing King Shaka and O. R. Tambo international airports. Discussions have been undertaken with Vaal Aerotropolis' management team to define the long-term commercial strategy to determine the car park requirements.

The proportion of car parking area by different products/facilities has been assumed to be as follows:

- Multi-storey car parks for short to medium stays (MSCP) "Parkades": 35%
- Long-stay car parks: 45%
- Car rental ('front of house' facilities): 10%
- Staff: 10%

Based on international benchmarks the MSCP requirement has been based on an assumption of 300 car parking spaces per mppa and 35 sqm per car parking space (including internal roads and landscaping). The long-stay requirement has been based on an assumption of 650 car parking spaces per mppa and 20 sqm per car parking space (including internal roads and landscaping).

Based on the assumption above, the space requirements for all types of car parking are approximately 29,000 sqm / mppa which is slightly higher than the ratio found at King Shaka International Airport (which is estimated to be approximately 27,700 sqm / mppa). The car parking facilities provided at O. R. Tambo international airport are assumed not to be representative of the requirements for a new airport like Vaal because of the airport's space constraints and therefore high proportion of MSCP.

The total requirements for the car parking facilities including passengers ("parkades" and long stay car parks), staff parking and rent a car are highlighted in green in the table below.

Table 17: Car parking total requirements (GFA, sqm)

Car Parks space requirement		7.2 MPPA	25 MPPA	45 MPPA
	<i>total space/mppa</i>	Total space	Total space	Total space
International ratio	29,000	208,800	725,000	1,305,000
King Shaka	27,740	199,728	693,500	1,248,300
O.R. Tambo ratio	16,750	120,600	418,750	753,750

The space requirement for the MSCP will be allocated on multiple levels depending on the space available near the terminal/s.



9.7. Landscape and Built Form Strategies

The development zones identified in the previous section will be designed in such a manner that the development aesthetically fit into the natural environment. This is achieved by considering the opportunities and constraints identified within the study area and combining it with the needs of the development in terms of development layout, building and infrastructure footprints, heights and forms of infrastructure.

Therefore, each precinct should be designed in such a way that it proactively responds to the informants by mitigating the negative impacts associated with the transformation of the site and enhancing the natural landscapes by creating a unique, sustainable and memorable environment. This will ensure the creation of an efficient as well as cohesive landscape.

Two key overriding principles underpin the landscape strategy (see Figure 7-5) described below.

- Ensure that the conservation areas identified in the natural environment are maintained and enhanced in a sustainable manner in order to ensure and protect the ecological integrity of the ecosystem. The identified conservation areas form part of an integrated open space system within which development areas have been identified.
- Ensure that the new assets that will be created during the development of the VA utilise the assets and characteristics of the existing natural environment and landforms. This will ensure the creation of environments with distinct character and identities which is sensitive to human needs as well as efficient with respect to their roles in the VA.

Both of the above principles will be combined to generate an environment with an agricultural, but contemporary image, "feel" and experience that will be an important part of the branding strategy for the VA as a gateway to South Africa and the Emfuleni Region as an investment location.

The following identifies and describes the primary elements of the landscape and built form framework that will be established through the detailed design and construction of each element and precinct within the site.

Table 18: Primary Elements of the Landscape and Built Form

Element	Description
Open Space System	This is the primary landscape element of the VA site which will contain existing and future core components of the highveld grassland vegetation, freshwater systems as well as agricultural assets. It will spatially structure development on the site and will provide a backdrop for the built environment components of the development. It will be retained and developed as a common visual character element to all development precincts and will be physically integrated with each precinct wherever possible.
Airport Platform	This includes the entire levelled platform containing primary airport infrastructure and facilities including the Passenger and Cargo Terminals and runway and taxi areas. Whilst this platform will be developed in terms of strict aviation regulations, the design of its various built elements will, wherever possible within operational imperatives, incorporate and respond to the surrounding highveld grassland and agricultural landscape character by way of form, materials, colours and textures. Planting and landscaping within the platform's various precincts will also reflect the highveld grassland characteristics. Built form in the platform will set up a human scaled and legible environment at the local scale and will contribute to the establishment of an identifiable new regional landscape.



Precincts	The VA site will consist of a number of discrete but linked development precincts with varying, but identifiable layout footprints and built environmental characters. Layout and building footprints, associated massing in response to the land use functions and operational requirements, land form characteristics of each precinct and location within and adjacent to surrounding development will determine the landscape character, "grain" and scale of the built environment of each precinct.
Movement Corridors	The network of primary movement corridors providing access to the VA area (e.g. N1, R54 and future PWV 5) and providing access and circulation within the VA site itself (e.g. Airport Access Road and other internal roads) will each have a discernible character representative of its role and hierarchy in the wider regional setting and / or within the VA site itself. The character of each will be determined by landscaping reserves and planting and signage themes and by concomitant building controls relating to built form, architecture and signage of buildings and structures which abut each road corridor.
Landmark Features	Prominent natural features including skylines, grasslands, fresh water systems etc. will be acknowledged and celebrated either through their protection from development, or celebration through appropriate built form to form a system of landmarks that will assist in the structure of the landscape and with orientation within the VA site.
Gateways	A hierarchy of gateways and entrance points to the VA site and individual precincts will be established which will be created through the development of new intersections and interchanges and celebrated by the design and grouping of buildings and appropriate landscaping treatments.
Vistas and Views	A network of vistas and views will be identified that will contribute to the experiences within, and images of, the various components of the Vaal Aerotropolis and its precincts.

9.8. Layout Plan

The proposed development will establish a mixed-use township with a range of land uses.

The land use rights applied for through this application for township establishment will be entrenched but flexible as the final total development will take up to 60 years to be completed.

It is envisaged the development will be phased through the drafting of various precinct plans.

The zoning rights will be entrenched only for the first phase of the development. The other phases of the development will have their zoning rights approved but will only become implementable through the approval of Site Development plans (SDP) and/ or with the consent of the municipality. This will ensure that the payment of development contributions apply to usable zoning rights and rates and taxes on zoning rights used.

The zoning will be split between Aerodrome and Agriculture zonings with specific conditions related to land uses required by the Vaal Aerotropolis.



Table 19: Use of Land and Buildings: Agriculture

USE OF LAND AND BUILDINGS: <u>AGRICULTURE</u>		
STATEMENT OF INTENT: To provide, preserve, use land or buildings for Agricultural productivity, industrial development and uses ancillary to agricultural activity and industrial accommodation are permitted at the discretion of the Municipality.		
Column 1: PRIMARY RIGHTS	Column 2: CONSENT USES	Column 3: PROHIBITED USES
• Agricultural buildings • Agricultural land • Staff accommodation. • Agricultural Industry • Warehouses • Laboratories	• Communication facility • Places of instruction • Places of public worship • Social halls • Special buildings and special uses Dwelling houses • Second dwelling house and out-buildings in connection therewith.	Building and land uses not included in columns 1 and 2

Table 20: Use of Land and Buildings: Aerodrome

USE OF LAND AND BUILDINGS: <u>AERODROME</u>			
STATEMENT OF INTENT: This zone makes provision for the landing and take-off of aircrafts, facilities for refuelling and repair, and various accommodation facilities for passengers.			
Column 1: PRIMARY RIGHTS	Column 2: CONSENT USES	Column 3: PROHIBITED USES	Column 4: ADDITIONAL CONTROLS
• Aerodrome • Buildings necessary for and in connection with an Aerodrome • Commercial uses • Business purposes • Shops • Places of refreshment • Light industries • Filling Stations, Conference Facilities • Government and Municipal Purposes • Special uses which are subservient and related to the uses mentioned in column (1)	• Communication facility • Dwelling units for key personnel • Special building and special uses • Filling stations • Conference facilities and ancillary uses	Buildings and other uses not included in columns (1) to (2)	Land uses specified in this table are permitted in the Airport Zone at Municipality's sole discretion and must be specifically related to the functioning of the airport, as well as other works ancillary to the function of an airfield and subject to agreement being reached on the permissible floor area ratio, coverage and height restrictions, the placing of buildings on the site, on-site parking requirements and/or any other related matters by way of a site development plan in terms of this Scheme. Such site development plan shall have due consideration for any relevant regulations on airports and any related legislation as may be laid down from time to time by the Minister of Transport or any other responsible authority.



Table 21: Use of Land and Buildings: Public Services and Utilities

USE OF LAND AND BUILDINGS: PUBLIC SERVICES AND UTILITIES			
STATEMENT OF INTENT: This zone makes provision for sites and corridors reserved for the Municipality and other service delivery agents to supply services throughout the municipality. It includes waterworks, sewerage treatment works and associated infrastructure necessary for the Municipality to deliver clean potable water and manage disposal of sewage.			
Column 1: PRIMARY RIGHTS	Column 2: CONSENT USES	Column 3: PROHIBITED USES	ADDITIONAL CONTROLS
• Communication facilities • Electricity substations • Power station / sub-station • Reservoir and buildings in connection therewith • Sewerage works • Water treatment works	• None	Buildings and other uses not included in columns (1) to (2)	.

Table 22: Use of Land and Buildings: Business 1

USE OF LAND AND BUILDINGS: BUSINESS 1			
STATEMENT OF INTENT: To provide, preserve, use land or buildings for commercial or business activities.			
Column 1: PRIMARY RIGHTS	Column 2: CONSENT USES	Column 3: PROHIBITED USES	ADDITIONAL CONTROLS
• Business purposes • Offices • Dwelling units • Hotels • Filling Stations, • Conference Facilities • Institutions • Places of instruction • Places of public worship • Places of refreshment • Public garages • Residential buildings • Shops • Social halls • Sport and recreation	• Buildings not in columns (1) and (3) • Filling Station	Noxious industries	



Table 23: Use of Land and Buildings: Private Open Space

USE OF LAND AND BUILDINGS: PRIVATE OPEN SPACE			
STATEMENT OF INTENT: To provide, preserve, use land or buildings for provision of active and passive recreational areas on privately owned land. Generally, to promote recreation, enhance aesthetical appearance and the maintenance of open space systems.			
Column 1: PRIMARY RIGHTS	Column 2: CONSENT USES	Column 3: PROHIBITED USES	Column 4: ADDITIONAL CONTROLS
- Gardens - Parks - Public open space - Public sport and recreation grounds and buildings used in connection therewith. - Conservation Area	- Communication facility - Uses ancillary to the main use, at the discretion of the municipality.	Buildings and other uses not included in columns (1) to (2)	

Table 24: Use of Land and Buildings: Existing and Proposed Roads

USE OF LAND AND BUILDINGS: EXISTING AND PROPOSED ROADS			
STATEMENT OF INTENT: This zone makes provision for the protection of existing and proposed roads and road reserves as a means to enable an unhindered movement of vehicular and pedestrian traffic. Proposed roads indicate approximate positions or reservations of land for proposed future roads and road widening.			
Column 1: PRIMARY RIGHTS	Column 2: CONSENT USES	Column 3: PROHIBITED USES	Column 4: ADDITIONAL CONTROLS
- Road / street - Future roads - Road reserves - Proposed new roads and widenings	Uses ancillary to the main use at the discretion of the Municipality.	Buildings and other uses not included in columns (1) to (2)	

For the purpose of clarity, the definitions in the Emfuleni LUS are applicable, and the following definitions are highlighted:

- **Agricultural Building** - Means a building designed for use in connection with, and which is ordinarily incidental to, or reasonably necessary in connection with the use of the land on which the building is situated as agricultural land and may include staff accommodation and not more than two dwelling houses.
- **Agricultural Industry** - Means a building on agricultural land used for the intensive production in any form whatsoever, of poultry, game birds, livestock and allied products, and includes any final processing of these commodities and the processing of cultivated produce.
- **Agricultural Land (Uses)** - Means arable, meadow and/or pasture land used for bona fide farming activities, such as crop or grain farming, grazing, land used for beekeeping, bird and animal breeding and keeping, livestock farming, dairy farming, game farming, aquaculture, nursery gardens, plantations, orchards, market gardens and such other ancillary uses and buildings, normally regarded as incidental thereto.



- **Business Purposes** - Means land or buildings used for offices, banks, hair and beauty salons, and any other business activity not elsewhere defined or listed in the Scheme, but excludes a Shop, Warehouse, Industry and Filling station.
- **Commercial Use** - Means land or buildings used for purposes such as assembling and packaging, distribution centres, wholesale trade, storage, mini storage units, warehouses, cartage and transport services, laboratories and computer centres, and may include a canteen, offices and ancillary retailing of their products.
- **Conservation Area** - Means land used or buildings designed for the protection of biological diversity, natural or built environment such as but not limited to conservancies, protected environments, natural reserves, natural parks, museums, monuments, heritage sites and historical buildings as defined in the National Environmental Management Act (Act 107 of 1998).
- **Government** - Means land or buildings used for state purposes, whether provincial or national
- **Warehouse** - Means buildings used for the storage of products or materials for distribution or collection, in relation to any wholesale trade, or in relation to any manufacturing industry. A building or use of land for the exclusive purpose of storage of goods, which in the opinion of goods, which in the opinion of the Municipality are not dangerous, noxious or unsightly and includes wholesales trade, and may also include ancillary office accommodation which is subsidiary to the main use, but excludes any retail trade on the property of such building, unless the special consent of the municipality has been obtained.

The following floor areas for various land uses are indicated for Phase 1 and for the total project in the following table

Table 25: Vaal Aerotropolis Phase 1 Land Use Areas

AIRPORT BUILDING AREAS										
	AIRPORT TERMINAL	MULTI STOREY OFFICE PARK	CARGO TERMINAL	FREIGHT FORWARDING	RFFS	AIRPORT MAINTENANCE GSE	HANGARS	CATERING	TOTAL BUILDING AREA	SITE AREA
PHASE 1	47635	120000	15000	40000	10000	23000	29000	10000	294635	12133904,63
FINAL PHASE	207834	480000	51000	180000	20000	110000	96000	98000	1242934	12133904,63

TRADE ZONE		
	TRADE ZONE BUILDING AREA	SITE AREA
PHASE 1	176000	352000
FINAL PHASE	1217650	2435300

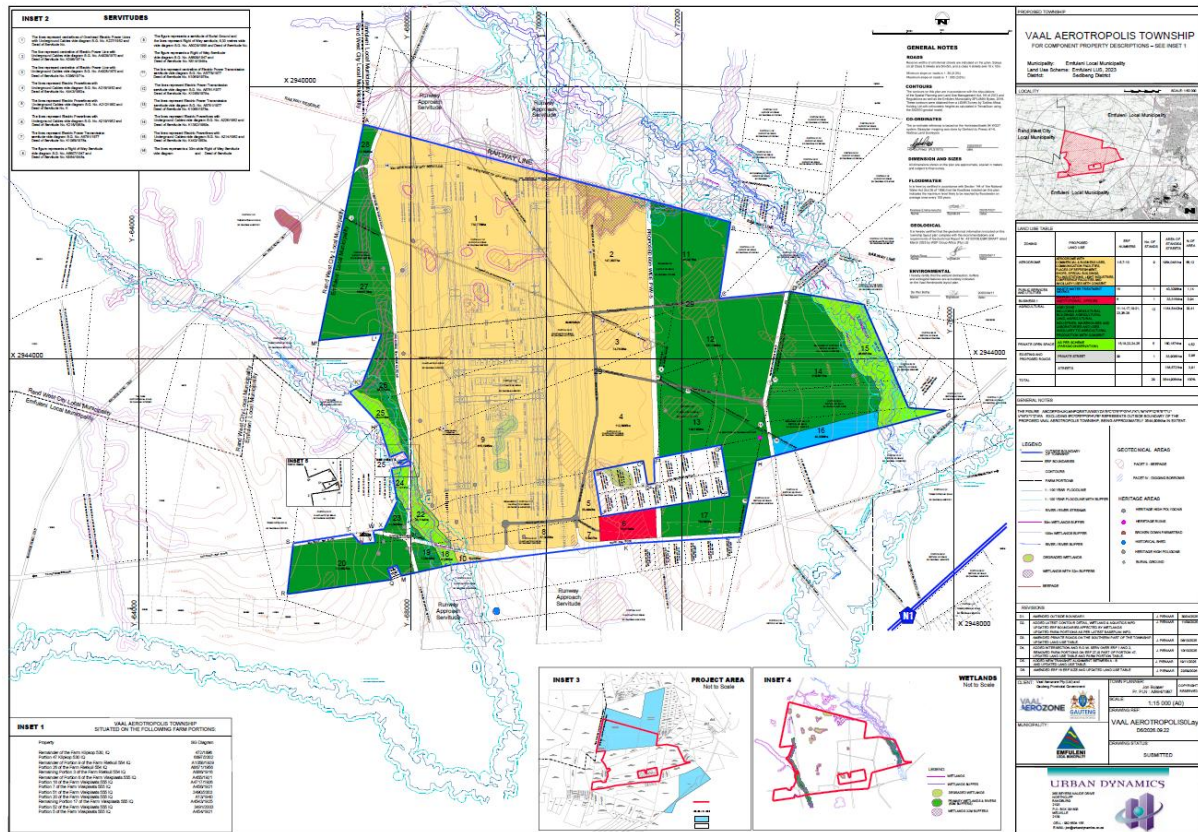
AERO CITY		
	AERO CITY BUILDING AREA	SITE AREA
PHASE 1	4000	346544
FINAL PHASE	371409	742819

Table 26: Airport Building Areas.

The proposed layout plan for the Vaal Aerotropolis township is indicated in Figure 24. The proposed **Vaal Aerotropolis Layout Plan** is also attached hereto as **Annexure B**.



Figure 26: Proposed Layout Plan



The following Land Uses are provided in terms of the layout plan:

VAAL AEROTROPOLIS				
ZONING	LAND USE	ERF NO.	NO. OF STANDS	SIZE (HA)
AERODROME	Aerodrome, Buildings necessary for and in connection with an Aerodrome, Commercial uses, Business purposes, Shops, Places of refreshment, Light industries, Filling Stations, Conference Facilities, Government and Municipal Purposes, Parking Area / Parking Garage, Special buildings, land uses subservient and related to the above uses and ancillary uses with consent	1-5,7-10	9	1954,0481
PUBLIC SERVICES AND UTILITIES	Communication facilities, Power station / sub-station, Reservoir and buildings in connection therewith, Sewerage and Water treatment works and ancillary uses with consent	16	1	40,3296
BUSINESS 1	Business purposes, Offices, Dwelling units, Hotels, Shops, Conference Facilities, Institutions, Places of instruction, Places of public worship, Parking Area / Parking Garage, Places of refreshment, Parking Area / Public garage, Residential buildings, Shops, Social halls, Sport and recreation uses and Filling Stations and ancillary uses with consent.	6	1	33,3164
AGRICULTURAL	Agricultural buildings, Agricultural land, Staff accommodation, Agricultural Industry, Warehouses, Laboratories and uses ancillary to agricultural production with consent	11-14,17,19-21, 23,26-28	12	1184,5442



PRIVATE OPEN SPACE	As per scheme including Gardens, Parks, Public open space, public sport and recreation grounds and buildings used in connection therewith. Conservation Area and ancillary uses with consent.	15,18,22,24,25	5	160,1874
EXISTING AND PROPOSED ROADS	Private Road	29	1	33,9086
	Streets			138,5721
TOTAL			29	3544,9064

Table 27: Vaal Aerotropolis Zoning and Land Use Table

The proposed development controls associated with the Emfuleni Land Use Scheme, 2023 zonings in Table 25 (above), are as follows:

Table 28: Proposed Development Controls

Zoning	Floor Area	Zone Description	Broad Land-use	Phase 1	Phase 2	Phase 3
Aerodrome Erven 1-5,7-10	147 000m ²	Airport Zone	Passenger Terminal	7.2 mppa	25 mppa (total) (7.2 mppa + 17,8 mppa)	45 mppa (total) (7.2 mppa + 17,8 mppa + 20 mppa)
		Airport Zone	Cargo terminal	1500,000 tons/yr 15 000 m ²	362,000 tons/yr	872,000 tons/yr
		Airport Zone	Freight Forwarding	40 000 m ²		
		Airport Zone	Airport maintenance + GSE	23 000 m ²		
		Airport Zone	Hangers	59 000 m ²		
		Airport Zone	Catering (for flights)	10 000 m ²		
	176 000m ²	Trade Zone	Manufacturing	3,52 Ha	11, 12 Ha (total) (3,52Ha + 7,6Ha)	42, 92 Ha (total) (3,52Ha + 7,6Ha + 31,8Ha)
		Trade Zone	Warehousing/ Distribution	14,08 Ha	44, 48 Ha (total) (14,08Ha + 30.4Ha)	171, 68 Ha (total) (14,08Ha + 30.4Ha + 127.2Ha)
Business 1 Erf 6	FAR 0.6	Airport City Zone	Office Park	2 600 m ² GLA		
		Airport City Zone	Support commercial (banking, restaurant, retail) and Shopping Centre	1 400 m ² GLA		
Agriculture Erven 11-14,17,19-21, 23,26-28	480 000m ²	Agri Zone	Climate-controlled growing area	48 Ha	tbc	Tbc
Public Services & Utilities Erf 16	As per SDP	Refer to Table 25				
Private Open Space Erven 15,18,22,24, 25	As per SDP	Refer to Table 25				
Private Road Erf 29	As per SDP	Refer to Table 25				
Existing and Proposed Roads	As per SDP	Refer to Table 25				
Floor Area Ratio	As per table above, FAR may be increased with the Consent of the municipality					
Height	3 storeys which may be increased with consent of the municipality					
Coverage	As per Site Development Plan					
Building Lines	As per Scheme					
Parking	As approved by the Emfuleni Local Municipality Roads & Stormwater Department in accordance with an approved Traffic Impact Assessment					



10. MOTIVATION

10.1. Introduction

This section contains a motivation for the proposed development in terms of need and desirability. It further motivates the proposed airport in terms of the full suite of policies from national and provincial level to regional and local Spatial Development Frameworks. Lastly, the proposed township is also motivated in terms of the development principles and objectives of the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013).

A development of this nature and size invariably affects many facets of the physical and socio-economic environment. In addition, this application follows the preparation and approval of a LSDF and master plan which was created through a multi-disciplinary process of needs determination, engineering reports and environmental studies, resulting in the opportunity to motivate the establishment of the Vaal Aerotropolis development on a number of levels.

An attempt will therefore be made to motivate this development from a range of different viewpoints while keeping with the legislative prescriptions, in motivating the proposed development in terms of need and desirability. The development principles of Spatial Planning and Land Use Management Act (SPLUMA), Act 16 of 2013 will also be discussed as these influence spatial and land developments on local level.

10.2. Need

10.2.1. Introduction

The Vaal Aerotropolis represents a transformative urban development initiative aimed at revitalizing the Emfuleni Local Municipality and the broader Sedibeng District. Anchored by a proposed international airport, the development is designed to catalyse economic growth, attract investment, and address long-standing spatial and socio-economic imbalances in southern Gauteng. There is a compelling need for the project from a town planning perspective when considering policy alignment, economic imperatives, infrastructure demands and spatial justice principles of SPLUMA.

10.2.2. Economic Reindustrialization and Regional Revitalization

The Sedibeng region has suffered significant economic decline due to the collapse of its once-dominant steel industry. This has led to widespread unemployment, underutilization of land, and a stagnating local economy.

The Vaal Aerotropolis development is positioned as a catalytic project to reverse this trend by:

- Establishing a Special Economic Zone (SEZ) as phase 2 of the Vaal SEZ that attracts logistics, manufacturing, agri-processing and aviation-linked industries.
- Creating a new economic core in southern Gauteng, reducing reliance on the larger metropolitan areas of Johannesburg, Tshwane and Ekurhuleni.
- Stimulating private sector investment, with confirmed interest from international financiers and developers.
- The development aligns with the Gauteng Provincial Growth and Development Strategy and the "Growing Gauteng Together 2030" vision, which identifies the need for a third international airport and a dedicated cargo hub in the province.



10.2.3. Employment Creation and Socio-Economic Inclusion

The Vaal Aerotropolis is expected to generate substantial employment opportunities across all skill levels:

- Construction Phase: $\pm 118,000$ jobs (direct, indirect, and induced)
- Operational Phase: $\pm 19,800$ sustained jobs annually
- SMME Development: Over 70% of new formal small businesses expected to be black owned

This employment generation directly addresses the high unemployment rates in Emfuleni and surrounding areas such as Sebokeng and Vanderbijlpark. The proximity of job opportunities will reduce travel costs and times for residents, improve household incomes and contribute to social upliftment.

The development also supports skills development and upskilling, particularly in high-tech logistics, aviation services, and agri-processing, aligning with national goals for inclusive economic growth.

10.2.4. Infrastructure Relief and Strategic Expansion

Gauteng's existing international airports—OR Tambo and Lanseria - are facing capacity constraints due to limited land and surrounding urban development. The Vaal Aerotropolis offers:

- A new international airport with a 4.2 km runway capable of handling any aircraft size
- Dedicated cargo and logistics terminals to absorb excess freight demand
- Strategic relief to existing aviation infrastructure, enabling continued growth in passenger and cargo volumes

The development is also integrated with planned upgrades to the N1 freeway, new highway interchanges and internal road networks, ensuring regional connectivity and accessibility. It will support the Gauteng Spatial Development Framework's vision of a freight and logistics hub and will complement the province's strategic transport corridors.

10.2.5. Spatial Justice and Redressing Historical Imbalances

The Vaal Aerotropolis directly supports the Spatial Planning and Land Use Management Act (SPLUMA) principles, particularly:

- Spatial Justice: Redressing past development imbalances by creating economic opportunities in historically marginalized areas
- Spatial Sustainability: Promoting land development that is environmentally responsible and economically viable
- Efficiency: Optimizing the use of land and infrastructure through integrated planning
- Resilience: Creating a flexible, phased development that can adapt to future needs and shocks

The development is located within the Urban Development Boundary (UDB) and is supported by the proclaimed Emfuleni SDF, Sedibeng SDF and the Vaal-River Regional SDF. The approved Integrated Development Plans (IDP) of Emfuleni Local and Sedibeng District municipalities also identified the Vaal Aerotropolis as a mega project of critical importance that will support the re-industrialisation of the Vaal region. It is also aligned with the District Development Model (DDM) One Plan, which identifies the Aerotropolis as a flagship and a catalytic project essential to achieve regional transformation.



10.2.6. Agricultural Integration and Environmental Stewardship

The Vaal Aerotropolis will include a dedicated Agri-Zone, which will:

- Support high-tech agricultural production, including hydroponics and live animal export
- Provide infrastructure for processing, packaging, and distribution
- Enhance food security and create export opportunities for local farmers

Environmental studies, including a comprehensive Environmental Impact Assessment (EIA), have been completed. Sensitive ecological areas such as wetlands and floodlines have been mapped and integrated into the layout plan. The development will incorporate sustainable infrastructure, including solar PV farms, stormwater reuse systems, and eco-friendly building designs.

10.2.7. Long-Term Urban Transformation and Strategic Land Use

The Vaal Aerotropolis is planned as a 60-year phased development, with flexible zoning and precinct planning to accommodate evolving needs. It will transform underutilized agricultural land into a vibrant, mixed-use urban node, featuring:

- Aerodrome and aviation facilities
- Logistics and trade zones
- Commercial and institutional precincts
- Open space and conservation areas

This transformation supports the creation of a compact, efficient and integrated urban form, reducing urban sprawl and promoting sustainable development. It also enhances the municipality's ability to attract investment, improve service delivery, and manage growth proactively.

10.2.8. Conclusion: Need

The need for the Vaal Aerotropolis is clear and compelling. It addresses critical economic, spatial, and infrastructural challenges facing the Emfuleni region and aligns with national and provincial development priorities. From a town planning perspective, the project:

- Promotes inclusive and sustainable development
- Supports spatial transformation and economic diversification
- Enhances infrastructure and connectivity
- Creates long-term employment and investment opportunities

The Vaal Aerotropolis is not only desirable—it is essential for the future prosperity of southern Gauteng and the broader national economy.

10.3. Desirability

Whereas need is easily quantified, desirability is often based upon personal opinion and more qualitative aspects. Critical factors that influence existing and new developments are the National, Provincial and Local legislative frameworks, which is discussed below:

10.3.1. Spatial Planning Policy Context

The Spatial Planning and Land Use Management Act 16 of 2013 ('SPLUMA') was signed into law by the President on 2 August 2013 but only came into operation on 1 July 2015. On 22 December 1995, the Development Facilitation Act 67 of 1995 ('DFA') came into operation. This



act created a procedure in terms of which land development applications could be submitted to a Development Tribunal that operated at provincial level and whose members were appointed by an MEC of a province. A land development application (which included an application for township establishment, although formally designated as a land development area) provided an alternative and parallel procedure for township establishment to the processes under the Town Planning Ordinance.

It should be noted that the intention of SPLUMA is that municipal planning is done at municipal level and not at Regional, Provincial or National levels of government. This is why the content of a municipal SDF is much more detailed and extensive than the Regional, Provincial or National SDF's, as it has a priority of how municipal areas must be developed. It is also emphasized in the Constitution of South Africa.

This section contains a comprehensive analysis of the spatial planning policies that informed the conceptualization and actively supports the establishment of the Vaal Aerotropolis airport development. These policies are:

- The Spatial Planning and Land Use Management Act 16 of 2013 ('SPLUMA')
- Gauteng Spatial Development Framework
- Gauteng Provincial Growth and Development Strategy
- Growing Gauteng Together 2030 (GERT)
- Sedibeng Spatial Development Framework
- Emfuleni Spatial Development Frameworks (2022 & 2023)
- Emfuleni Spatial Development Framework, 2024
- Proclaimed Local Special Development Framework
- Draft Proclaimed Vaal-River Regional Spatial Development Framework
- Rietkuil Agri-Hub Precinct Plan 2021
- Sedibeng District Development Model (DDM) One Plan
- Integrated Development Plan for Emfuleni and Sedibeng municipalities

The contents of these policies in relation to the Vaal Aerotropolis project are described below:

10.3.2. Gauteng Spatial Development Framework and Provincial Growth and Development Strategy

The provincial SDF also supports the SEZ approach for economic growth as a tool on page 37. It has identified a new SEZ for Emfuleni (Vaal Region). The SDF also highlighted that Gauteng is a "freight and logistics hub". The SDF on page 172 and 184 also provides guidelines for accelerating development of SEZ, especially where there is sufficient private sector interest. On page 134 the support of the SEZ, green economy and Vaal River Smart City will consolidate the potential of urban critical mass in the Vanderbijlpark/Vereeniging area.

10.3.3. Growing Gauteng Together 2030 (GERT)

The goal for Sedibeng (referred to as the Southern Corridor in GERT 2030) which has suffered significant de-industrialization due to the collapse of the steel industry, is to revitalize the economy. The vision and plans for the Southern Corridor of the GCR, the aerotropolis is the main pillar of future economic growth for the southern corridor with agriculture and agri-processing and logistics. The Vaal Aerotropolis is indicated as a GCR Apex infrastructure project. The introduction of an SEZ is also a priority of Gauteng City Regional policy where feasible as a mechanism for economic growth.

10.3.4. Sedibeng Spatial Development Framework

The Sedibeng SDF is silent on the development of the Aerotropolis but supports the development of Special Economic Zones. The map on page 133 indicates two areas along the N1 development corridor where one is where the aerotropolis will be located west of the



N1 and along the existing railway line. The Sedibeng SDF on page 131 is “embedded on principles” where two of them are relevant:

- Support and align the SDF's of municipalities in the Sedibeng District.
- Support appropriate major current and new development initiatives.

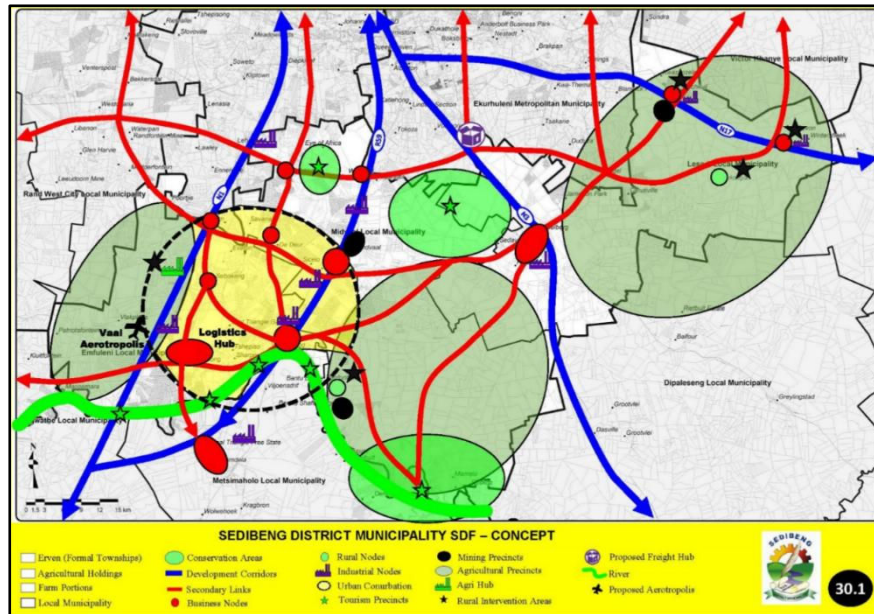


Figure 27: Sedibeng SDF Concept

In March 2025 the Sedibeng District Council took a decision to formally include the Vaal Aerotropolis into their SDF as well as the Sedibeng DDM One Plan as a catalytic project. The Sedibeng District Council also requested the Vaal Aerotropolis development be included in the Vaal SEZ.

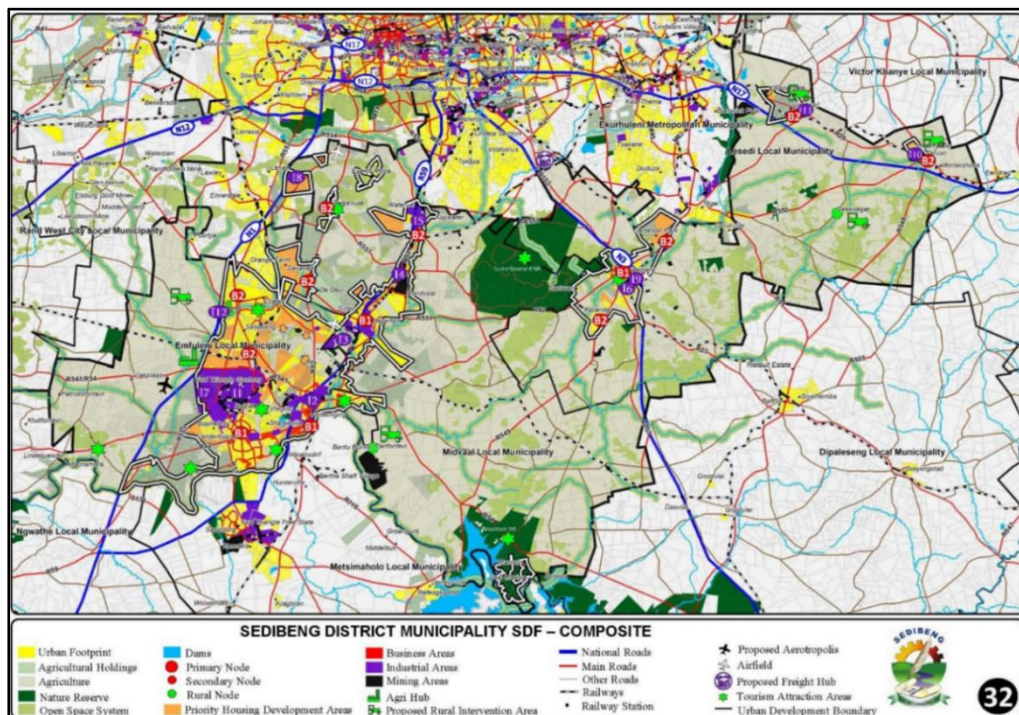


Figure 28: Sedibeng SDF



10.3.5. The previous Emfuleni approved Spatial Development Framework

The approved 2021-2022 EMFULENI SDF is in full support of the Vaal Aerotropolis project. The Spatial Development Framework on page 7 of the executive summary and on page 72 of the SDF clearly describe the location of the Vaal Aerotropolis to the west of the N1 corridor and its linkages to the agri-zone, agri-park and logistical hub.

The location of the Vaal Aerotropolis was also demarcated as being inside the Urban Development Boundary (UDB).

Page 92 of the SDF document also emphasizes the logistical hub including the airport. The Emfuleni SDF has also identified various "special projects" including the Vaal Aerotropolis as being essential for catalytic economic growth of the municipality. These are detailed in Section 5.9, in particular, in 5.9.2 "the Emfuleni Aerotropolis", pages 241 to 244.

This SDF is approved and binding on all levels of government. This has also been confirmed in an Emfuleni Local Municipality letter dated 10 April 2024.

10.3.6. The Emfuleni Spatial Development Framework, 2024

This SDF has been advertised by the municipality for public comment, and it is now an approved SDF. It provides clear policy direction of where Emfuleni Local Council intends to steer economic development in the Emfuleni municipal area. This SDF also confirms the location of the Vaal Aerotropolis to the west of the N1, and inside the Urban Development Boundary (See Map below). The Emfuleni SDF provides several proposed interventions such as: Project 8 requires an "Urban Development Plan for the proposed Airport and Logistic Hub". This has also been confirmed in the abovementioned letter of support from Emfuleni Local Municipality dated 10 April 2024.

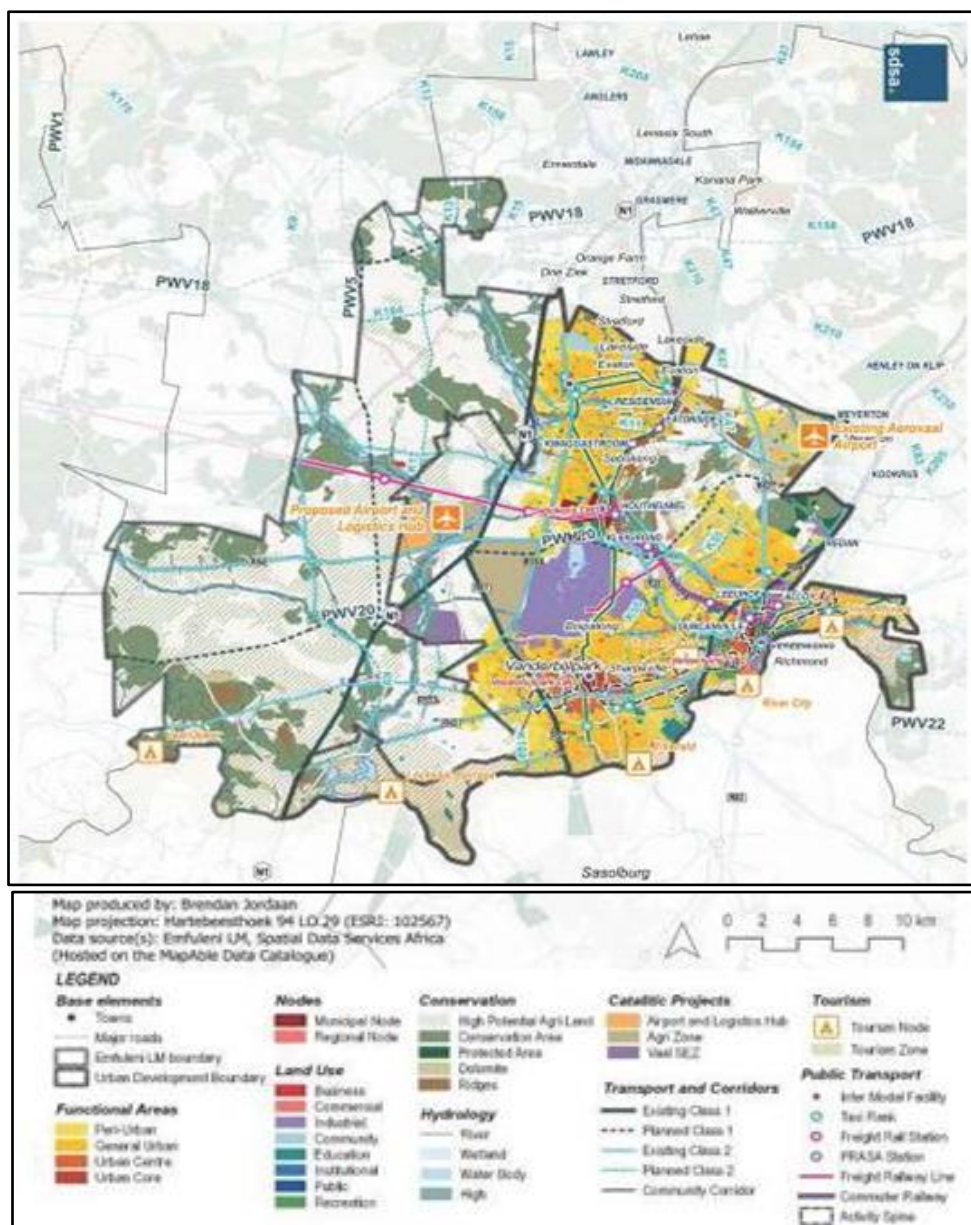


Figure 29: Emfuleni Spatial Development Framework, 2024

10.3.7. Proclaimed Vaal-River Regional Spatial Development Framework

The VRRSDF has clearly defined spatial planning and economic development objectives contained on page 14. These objectives support the establishment of an aerotropolis in the Vaal River region. A new airport is mentioned to be located within the Emfuleni Local Municipality, more specifically to the west of the N1 Highway. One of the key regional development constraints identified is that the existing logistic infrastructure will prohibit economic growth.

The key influencing economic factors are as follows:

- Economic diversification
- Growth in sectors with competitive advantage
- Regional infrastructure and connectivity.



In the VRRSDF, the Rietkuil Agri-Hub is mentioned as a proposed agricultural development in Emfuleni to the east of the Vaal Aerotropolis. Inter land sub-regional described the land west of the N1 in Emfuleni as part of the Central Urban Conurbation Subregion.

Concept Connectivity indicates the N1 as national corridors and also the location of the proposed aerotropolis west of the N1. The Spatial Development concept for the VRRSDF on four development principles are as follows:

- Growth focus
- Connectivity
- Concentration
- Conservation

Besides the last principle, all other 3 principles are met by developing an aerotropolis along an existing railway and a national road corridor. The Spatial Development concept again supports the location of the aerotropolis to the west of the N1 as it is not linked to urban and industrial development focus areas.

The proposed Agri-hub also requires an airport to have an economic advantage in order to export agriculture product and produce from the region worldwide. The Emfuleni SDF is fully in support of the Vaal Aerotropolis to be located to the west of the N1. The Vaal Aerotropolis supports diversified economic growth for the region and cannot be used as an infill project due to its requirements but needs to be close to corridors and agricultural products. For obvious reasons, an international airport cannot be an infill development next to existing residential developments.

The approved VRRSDF has purposely supported the location of the Vaal Aerotropolis for the abovementioned reasons. The SPLUMA dictates that a Regional SDF must support and align to a municipal SDF and not the contrary. Proposed Development and critical linkage corridors indicate the proposed aerotropolis along development corridors and critical linkages to the west of the N1 and adjacent to the existing railway line. The VRRSDF indicates the location of the Vaal Aerotropolis to the west of the N1. It also adjoins the proposed Vaal SEZ to the east of the N1. The VRRSDF supports "the establishment of a SEZ which comprises a Transnet container depot, an industrial development zone, an airport, warehouses and storage facilities, and intelligence information infrastructure to form a Logistic Hub". This is an important flagship project within the Vaal River region.

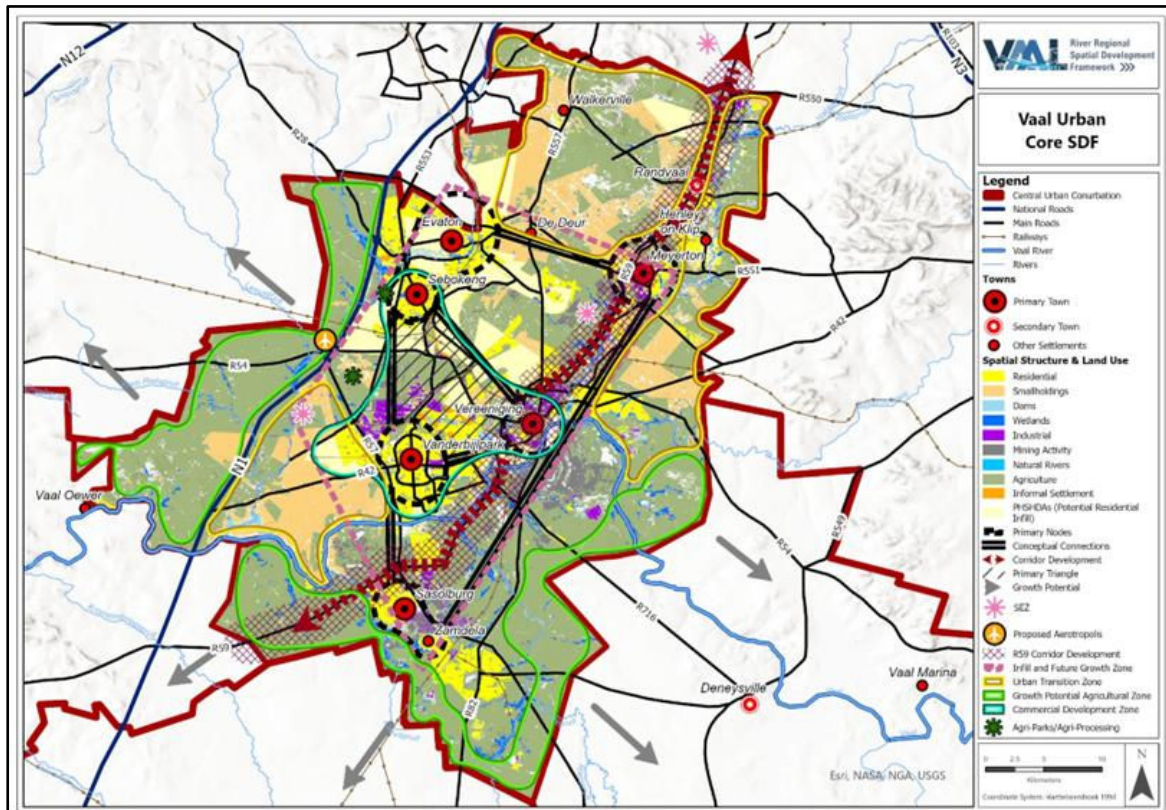


Figure 30" Vaal Vaal-River Regional SDF

10.3.8. Rietkuil Agri-Hub Precinct Plan 2021

The Rietkuil Agri-Hub Precinct Plan 2021 (RAPP) is a conceptual framework for the proposed Rietkuil Agri-Hub, Vaal Aerotropolis and the Logistics Hub. The RAPP proved these proposals feasible, especially the need of the Vaal Aerotropolis and its essential linkages with the Agri-Hub and Logistics Hub. It proposed that a Local Spatial Development Framework be compiled and included in the Emfuleni SDF (now completed and proclaimed). Many interactions have taken place between all relevant actors, and the proposal was supported at all levels of government.

The final Rietkuil Precinct Plan was completed on 13 May 2021 for the SEZ designation to be approved by the Department of Trade, Industry and Competition. The applicant required suitable land parcels and preferably public owned land. The SEZ process (including the Vaal Aerotropolis) is well advanced and is supported by all levels of government.

Potential investors that are interested in locating some to their investments in this parcel of land of which some pre-feasibility studies and business case development have been completed and these have shown great potential. The proposed Vaal international airport, which has favourably received funding approval by Citibank, will ideally be located on parcels of land allocated by DALRRD and forms part of the Greater Vaal Aerotropolis Development.

This is required for the construction of the two runways for the Vaal International Airport project. Thus far, an Equity Equivalent Investment Programme application has been granted by the DTIC to the value of **R1,4 billion** which is earmarked the development of the initial phases of the Vaal International Airport. It is in this programme that black industrialist participation will be sourced upon the creation of a Special Purpose Vehicle as well as governance and funding management structure that will govern the disbursement of this funding.



Once all regulatory and statutory compliance have been met, the Vaal International Airport may be incorporated into the Vaal SEZ as an extension of the designation licence for the SEZ or will apply for its own SEZ designation. A similar approach to an integrated airport with industrial activities was achieved in the DUBE Trade Port SEZ, where agglomeration of airport and industrial activity has shown great potential and economic development.

A pipeline of investment proposals for the different land parcels within this precinct comprises amongst others:

- An aerotropolis - a city developed around an airport;
- An aviation solution entity – Vaal International Airport;
- Trade Zone directly linked to cargo terminal, with airside access for manufacturers, assemblers and distributors;
- Airport City – Premium offices, retail, hospitality and leisure space in an urban green precinct;
- Agri Zone – Integrated perishable supply chain, high tech agricultural sector including a 200 ha of climate controlled green houses, pack houses, tissue lab, providing the first air platform in Africa for export of live animals.

10.3.9. Sedibeng District Development Model One Plan

The District Development Model (DDM) puts a focus on the implementation of longer-term priority projects, stabilisation of local government and long-term institutionalisation of integrated planning, budgeting and delivery through the development and implementation of the “One Plan”. It is guided by the long-term objectives of the National Development Plan 2030 (NDP) and provides South Africa with long-term perspective through providing broad objectives to eliminate poverty and reduce the levels of inequality and unemployment. The success of the NDP is supported through the implementation of long-term sector strategies which are implemented through short, medium and long-term plans.

The DDM was officially endorsed and supported at various levels of government. After the President's announcement, it gained backing from the Local Government Ministerial and Members of the Executive Council (MINMEC), received approval from the President's Co-ordinating Council (PCC), and was ultimately approved by Cabinet in August 2019. In the context of the Gauteng Provincial Government the Premier's Co-ordinating Forum (PCF) endorsed the DDM approach in December 2019, and the Gauteng Provincial Government EXCO granted approval for its implementation in June 2020.

In line with Section 47 of the Intergovernmental Relations (IGR) Framework Act (Act No. 13 of 2005 that:

- Strives the objects of local government set out in section 152 of the Constitution.
- Gives effect to its departmental duties as required by section 153 of the Constitution.
- Must ensure that National and Provincial government support and strengthen the capacity of municipalities to manage their own affairs, to exercise their powers and to perform their functions as required by section 154 of the Constitution.

The Sedibeng Draft Second Generation (DDM) One Plan of the Sedibeng District Municipality served before the Municipal Council on Wednesday 27th March 2024 and was subsequently endorsed and adopted by Council.

The Sedibeng One Plan (SOP) document's emphasis was towards the encouragement of international (grant) funding and the implementation of SEZ to address economic growth and job creation. It was also further highlighted the “need to invest in infrastructure in the district”. Two projects were identified out of four projects, are related to the Aerotropolis project:

- Sedibeng Catalytic Investments.



- SEZ and Financing.

Collaboration with SEZ's, strategic financing and organizational restructuring are crucial components for successful implementation.

The main competitive advantages of the Sedibeng municipality are linked to agriculture and logistics. These sectors have the potential to grow the regional economy. The SEZ process is the mechanism to implement those economic opportunities. The Vaal Aerotropolis is a perfect example of a catalytic project as described in the Sedibeng IDP 2023-2024 to realize those economic opportunities. The recommendations below as contained in page 54 of the document are fully supported. "The Vaal SEZ will re-vitalise the economy by focusing high growth sectors: Agri-processing, agribusiness, food and beverage, cannabis farming, renewable energy, transport and logistics, and tourism and hospitality. Increase agricultural activities through efficient use of arable land (Agri-processing) which take into consideration development corridors and the associated competitive advantage of transport and distribution opportunities. Diversify the economy to be less reliant on single industries such as the manufacturing industry. This would involve examining the following criteria when selecting an industry to diversify:

- Economic potential of the industry
- Complementary industries
- Skill and labour availability for the industry
- Resource availability
- Technological readiness
- Market demand and export potential
- Environmental sustainability in alignment with the Sedibeng Growth and Development Strategy
- Resilience to economic fluctuations
- Competitive advantage examined competitive advantage analysis
- Risks and challenges
- Promote labour-intensive industries specifically those that can grow by drawing on unskilled and semiskilled workers with strong backward and forward linkages. This could include the following industries:
 - Agriculture and agribusiness: planting, harvesting, food processing of Construction industry: site prep, material handling, basic construction
 - Tourism and hospitality: food service, housekeeping
 - Healthcare industry: administrative personnel, maintenance workers, aids requiring varying levels of training
- Promote rapidly growing industries with a comparative advantage (e.g. agriculture, agro-processing, logistics)
- The stimulation of investor interest through place marketing which involves the promotion and advertising of the region in an effort to improve the desirability to visit, live and work there. In order to realize these recommendations, the establishment of aerotropolis catalytic project is critical to its success."

The One Plan Vision is "Fostering Sedibeng as an accessible economic development region". In order to implement the vision, key catalytic projects must not only be seen to be supported but be supported by inclusion in approved public documents in order to provide comfort and confidence for the private sector to invest in these catalytic projects.

The DDM pillars are in full support of the Vaal Aerotropolis which will ensure that the SDM will realize its vision.

The document on page 70 states: "The process of identifying programs and projects involves a careful consideration of the unique characteristics and needs of the Sedibeng region, ensuring that each initiative contributes meaningfully to the overall vision."



From infrastructure development to social and economic programs, the selected projects are aimed at fostering sustainable growth, improving the quality of life for residents, and positioning Sedibeng as an accessible economic development region. The programs and projects flow from the strategies to ensure a cohesive and targeted approach towards achieving the envisioned future for the Sedibeng study area." The catalytic project is defined as "projects that kick start economic development and stimulate investment in a particular area. Catalytic projects are intended to generate development momentum and attract further investment. The Vaal Aerotropolis fits perfectly in this category as it meets the "2 key questions to consider" perfectly. It will also measure very high on "success matric" as it will increase GDP, create sustainable jobs after construction and attract private sector investment. The Vaal Aerotropolis also meets the next 3 categories to a lesser extent. The process of identifying programs and projects involves a careful consideration of the unique characteristics and needs of the Sedibeng region, ensuring that each initiative contributes meaningfully to the overall vision. From infrastructure development to social and economic programs, the selected projects are aimed at fostering sustainable growth, improving the quality of life for residents, and positioning Sedibeng as an accessible economic development region. The programs and projects flow from the strategies to ensure a cohesive and targeted approach towards achieving the envisioned future for the Sedibeng study area.

The Vaal Aerotropolis is now described as a catalytic project in all the documents mentioned earlier on. The Sedibeng District municipality confirmed at the council meeting in March 2025 that the Vaal Aerotropolis project is a catalytic project and is to be included in the Sedibeng DDM One Plan as well as the Vaal SEZ.

This catalytic project supports the Vision and the Strategies of the One Plan document and has now been identified as a project in the document to be implemented.

10.3.10. Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)

This section of the motivating memorandum seeks to prove that the proposed development of an international airport in Emfuleni complies with the relevant principles of this act as set out below. These principles are interrelated and are intended to guide land use planning and development in the country.

Furthermore, SPLUMA provides a uniform framework for spatial planning and land use management in South Africa. It seeks to promote consistency and uniformity in procedures and decision-making in spatial planning.

The objectives of the Act are:

- Provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic of South Africa.
- Ensure that the system of spatial planning and land use management promotes social and economic inclusion.
- Provide for development principles and norms and standards.
- Provide for the sustainable and efficient use of land.
- Provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and
- Redress the imbalances of the past and to ensure that there is equity.

Implications of the Act on the Proposed Development

The application of the SPLUMA principles applies to all organs of state and other authorities responsible for implementation of legislation regulating the use and development of land. The



following principles, with relevant sub principles, apply to spatial planning, land development and land use management.

(a) Principle of Spatial Justice, whereby -

(i) Past spatial and other development imbalances must be redressed through improved access to and uses of land

The Emfuleni Local Municipality identified this strategically located and sparsely economically active land to develop an international airport with its associated mixed land use developments.

The development of the Vaal Aerotropolis is an initiative which promotes economic development within the Emfuleni and Sedibeng municipal areas. It is intended to help generate employment opportunities in Emfuleni and to reduce the need for Emfuleni residents to migrate or to commute over long distances to access economic opportunities in other parts of Gauteng. The Emfuleni Local Municipality envisages an aerotropolis that will encompass the International Airport, the Airport City, the Logistical Hub and the Agricultural Hub. Typical of other aerotropolis, the Vaal Aerotropolis will have the proposed International Airport as its multimodal commercial central core, with other developments permeating outwards. By nature, an airport is therefore a powerful engine for local economic growth which attracts many aviation-linked businesses.

(ii) Spatial development frameworks and policies at all spheres of government must address the inclusion of persons and areas that were previously excluded, with an emphasis on informal settlements, former homeland areas and areas characterised by widespread poverty and deprivation

The proposed Vaal Aerotropolis development will provide for inclusion of marginalized communities. The comprehensive market assessment indicates that an estimated 347 additional formal small, medium and micro-enterprise opportunities could be created. Black-owned SMMEs would potentially represent 72.91% of new formal SMME opportunities, given the prevailing legislative environment.

Formal employment during the construction phase is estimated at 92 746 jobs (total direct, indirect and induced) and approximately 22.92% of formal employment opportunities are expected to be filled by skilled labourers compared to 58.53% semi-skilled labourers and 18.55% low-skilled labourers. Additional compensation paid to employees during the construction phase is estimated to be approximately R13.33 billion.

(b) Principle of spatial sustainability, whereby spatial planning and land use management systems must -

(i) Promote land development that is within the fiscal, institutional and administrative means of the Republic

The proposed Vaal Aerotropolis development is an initiative between government and the private sector aimed at providing a mixed-use development with substantial fiscal benefits. This forms a public private partnership which will ensure a collaborative partnership of managing and administering the development short and long term.

It is estimated that approximately R9.98 billion in additional taxes will be generated during the construction phase. The largest contributor to new taxes is because of personal income tax, contributing 33.45% to all taxes collected economy wide.

(ii) Ensure that special consideration is given to the protection of prime and unique agricultural land



The land presents undeveloped / vacant land within an agrarian setting. Surrounding agricultural areas will not be negatively affected by this proposed township. The reason for this is that the development will include an Agri-zone that will provide production, equipment hire, processing, packaging, logistics and training. Such an agro industrial zone is a complex of integrated industries (animal husbandry, crop production, food processing, agricultural machinery, organic farming) and supportive facilities (storage, insurance, transportation, distribution of food and agricultural products). The Agri-zone will be located on both public and private land and is set to become a transition zone between urban and agricultural uses.

Agricultural land will therefore not only be protected but will be actively managed as a more intensive network of contact between producers, markets and processors, but also provide the physical infrastructure required for the transforming agro-industries. The focus of the Agri-zone is primarily the processing of "agricultural products". Of prime importance will be linkages between the zone and surrounding agricultural land for production.

(iii) Uphold consistency of land use measures in accordance with environmental management instruments

The proposed Vaal Aerotropolis development is structured in a manner that is in accordance with the Gauteng Province Environmental Management Framework and Gauteng Department of Agriculture and Rural Development (GDARD) policies, which aims to manage scarce environmental resources to achieve sustainable development. This application has taken into consideration the existing natural environment and how best to develop the land with minimal impact. Parallel to this application for township establishment, an Environmental Impact Assessment is currently being concluded which assessed the suitability of the area and found it to be suitable for development and proposes measures to mitigate the impact on the surrounding environment.

The Emfuleni Local Municipality is promoting development that is environmentally friendly and sustainable. It is noted that the proposed development will employ eco-friendly technologies and alternative energy sources such as solar energy reducing the effect that this development will have on its natural environment.

Vaal Aerotropolis is aimed at providing a high-quality interface between proposed urban elements and the natural environment in a controlled manner to ensure that these elements benefit from one another. All sensitive environmental features such as wetlands will be protected.

The proposed development is confined within the Emfuleni Environmental Management Framework, as it promotes sustainable development and abides with NEMA regulations. The application will also be circulated to various environmental departments within the city for comments and recommendations.

(iv) Promote and stimulate the effective and equitable functioning of land markets

The Emfuleni region is in urgent need for re-industrialization. The region's historic dependence on the steel industry and decade-long demise thereof, has effectively driven the Emfuleni land market into being dysfunctional.

The Vaal Aerotropolis is set to reverse this trend as it is estimated that approximately R9.98 billion in additional taxes could be generated during the construction phase. The largest contributor to new taxes is because of personal income tax, contributing 33.45% to all taxes collected economy wide. It is estimated that during the operational phase approximately R2.29 billion in additional taxes could be generated during the operational phase with personal income tax contributing 37.34%.



(v) Consider all current and future costs to all parties for the provision of infrastructure and social services in land development

The application for a provision of mixed-use inclusionary development will be circulated to the different government departments and parastatals (Eskom, Telkom, Transnet etc.) for technical coordination and consultation. The developer will be responsible for providing the necessary infrastructure development or upgrades to the satisfaction of the local authority. The developer will enter into the necessary agreements (e.g. waste management agreements) with the relevant MOE's and council to ensure long term maintenance of infrastructure.

The local economy will benefit from the use of alternative energy sources adopted in the proposed development, reducing operation cost. The maintenance of these social services will also be discussed and developed to the satisfaction of the Emfuleni Local Municipality.

(vi) Promote land development in locations that are sustainable and limit urban sprawl

In many instances, the legacy of Apartheid and planning practices of the past have resulted in sprawling urban areas characterized as being uneconomical and offering one-dimensional opportunities to residents. The proposed development is partly classified as infill development in terms of the Gauteng Spatial Development Framework on vacant land within the urban environment (Provincial Economic Core).

(vii) Result in communities that are viable

The proposed Vaal Aerotropolis development adopts a holistic approach to providing a well-functioning, sustainable mixed-use development that will offer mixed land uses with maximum possibilities for pedestrian movement and transit via safe and efficient public transport. The development will result in great economic opportunity and will therefore promote the principle of spatial sustainability.

(c) Principle of Efficiency, whereby

(i) Land development optimises the use of existing resources and infrastructure

This principle calls for the optimization of investment already made in terms of existing development of services infrastructure. The proposed development is not located in close proximity to existing bulk sewer, bulk water, electrical infrastructure although it is fairly well located in terms of existing road infrastructure. While some basic services are already available on the borders of the site and in areas surrounding this development the developer applies to upgrade the bulk services and infrastructure in the area.

(d) Principle of spatial resilience, whereby flexibility in spatial plans, policies and land use management systems are accommodated to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks;

This proposed development seeks to implement a Masterplan which outlines the planned land usage and the phased roll out of the development over the next 60-Years. The supported LSDF explained in broad how the Vaal Aerotropolis will be positioned in terms of Regional and Local Spatial Development frameworks and integrated into the existing and future infrastructure of the region so that all role players fully understand the project demands and can plan, programme and budget accordingly.

This township establishment application developed the broad aerotropolis concept into a more detailed implementable plan which will result in the development of 4 main precincts, being:



- Air Platform
- Trade Zone
- Agri-Zones
- Airport City

This clearly provides a diversity of land uses to support the re-industrialization of Emfuleni and the Sedibeng Region. Most of the supportive land uses are located in nodes at the intersections of the main arterials through the township. The township will be a formal and new development and should be addressed with urgency.

(e) Principle of good administration

(i) All spheres of government ensure an integrated approach to land use and land development that is guided by the spatial planning and land use management systems as embodied in this Act;

The proposed development is an initiative by the private sector in collaboration with the Emfuleni Local Municipality and Gauteng Provincial Government. The development builds upon the principles and legislative framework governing development in the Gauteng Province and Emfuleni Local Municipality, such as the:

- National Development Plan
- Growing Gauteng Together 2030 (GERT)
- Sedibeng Spatial Development Framework
- Emfuleni approved Spatial Development Framework
- Draft Proclaimed Vaal-River Regional Spatial Development Framework
- Rietkuil Agri-Hub Precinct Plan 2021
- Sedibeng District Development Model One Plan
- Approved IDP for both Emfuleni and Sedibeng municipalities
- Vaal Aerotropolis LSDF 2025

The above legislation and policies are aimed at promoting development that are integrated, offering employment opportunities to previously disadvantaged individuals in order to re-industrialize Emfuleni, address the distorted apartheid cities. The proposed development is in line with the spatial planning and land use management systems of the Emfuleni Local Municipality and promotes the development objectives of the Gauteng province. The proposed development is a formal land development based on the establishment of Land Use Rights in terms of existing policies and administrative practices.

(ii) All government departments must provide their sector inputs and comply with any other prescribed requirements during the preparation or amendment of spatial development frameworks;

The application will be circulated to the relevant government departments, both external and internal departments, for comments. The application/motivating memorandum will be submitted to the municipality to ensure timeous circulation of the application to all relevant departments. The departments will receive a period of 60 days (from the date on which a copy of the application is submitted) to comment on the application, in terms of the requirements of the Emfuleni Municipal Planning By-Law. This will ensure coordination of all technical, social, economic and environmental issues affecting the development. The inputs and comments received from the different departments will be incorporated in the development.

(iii) The requirements of any law relating to land development and land use are met timeously;



The application for the township establishment of the Vaal Aerotropolis will be made in terms of Section 44 of the Emfuleni Local Municipal Planning By-Law, 2018. The Environmental Impact Assessment is being conducted in terms of the National Environmental Management Act. The application abides with all legislation governing and regulating land development in the Emfuleni Local Municipality and Sedibeng Region.

(iv) The preparation and amendment of spatial plans, policies, land use schemes as well as procedures for development applications, include transparent processes of public participation that afford all parties the opportunity to provide inputs on matters affecting them; and

Particulars of the application will lie for inspection during at the office of the Emfuleni Local Municipality, Office 202, First Floor, Old Trust Bank Building, Corner Eric Louw Street and President Kruger Street, Vanderbijlpark, 1900, as prescribed.

(v) Policies, legislation and procedures must be clearly set in order to inform and empower members of the public.

The above principles call for a transparent and clear public participation process with all parties adhering to allocated timeframes. The public also be given a chance to object, make representations and comment on the development. The proposed development will be advertised for public participation in the prescribed manner informing the public of the development and relevant contact person to acquire information. Site notices will also be visibly placed around the site, to ensure all members of the public have sufficient resources to make informative decisions.



11. CONCLUSION

It is our opinion that the proposed Vaal Aerotropolis development will not only benefit the existing residents of Emfuleni, but it will also benefit future generations as it will result in much needed economic growth in a part of the country that is in desperate need of re-industrialization and economic recovery.

This development represents an opportunity for this land to be developed to its highest potential at an appropriate scale and in an economically viable way.

It has been demonstrated that the proposed development is needed, will be economically viable and desirable from an engineering, town planning and economical point of view. The approval of this application in terms of the Emfuleni Local Municipal Planning By-Law, 2018 will be appropriate.

The report provided background and general information pertaining to the proposed township. It also serves as a motivation in compliance with the General Principles for land development as set out in contemporary spatial planning and development policies. In light of the motivation provided in this report, the application for township establishment of the Vaal Aerotropolis is desirable and can be supported based on the following:

- The proposed application complies with the Development Principles set out in Spatial Planning Land Use Management (SPLUMA) Act No. 16 of 2013.
- The proposed township establishment is aligned with the policies associated with the Emfuleni Local Municipality:
 - Emfuleni Local Municipality SDF.
 - National Development Plan
 - Growing Gauteng Together 2030 (GERT)
 - Sedibeng Spatial Development Framework
 - Draft Proclaimed Vaal-River Regional Spatial Development Framework
 - Rietkuil Agri-Hub Precinct Plan 2021
 - Sedibeng District Development Model One Plan
 - Approved IDP for both Emfuleni and Sedibeng municipalities
 - Proclaimed Vaal Aerotropolis LSDF 2025
- There are no legal or technical impediments to the proposed development.
- Vaal Aerotropolis can be considered as necessary and desirable from a town planning point of view.
- The proposed township establishment is one of the Emfuleni region's highest development priorities and an essential part of its re-industrialization strategy.
- Vaal Aerozone has been issued with an Aerodrome Licence of Intent on 11 September 2026 by the South African Civil Aviation Authority valid for 5 years in terms of the Civil Aviation Regulations, 2011. This will allow an application for a Licence of International Airport to be submitted to the authorities as soon as the township establishment and the Environmental Impact Assessment applications have been approved.

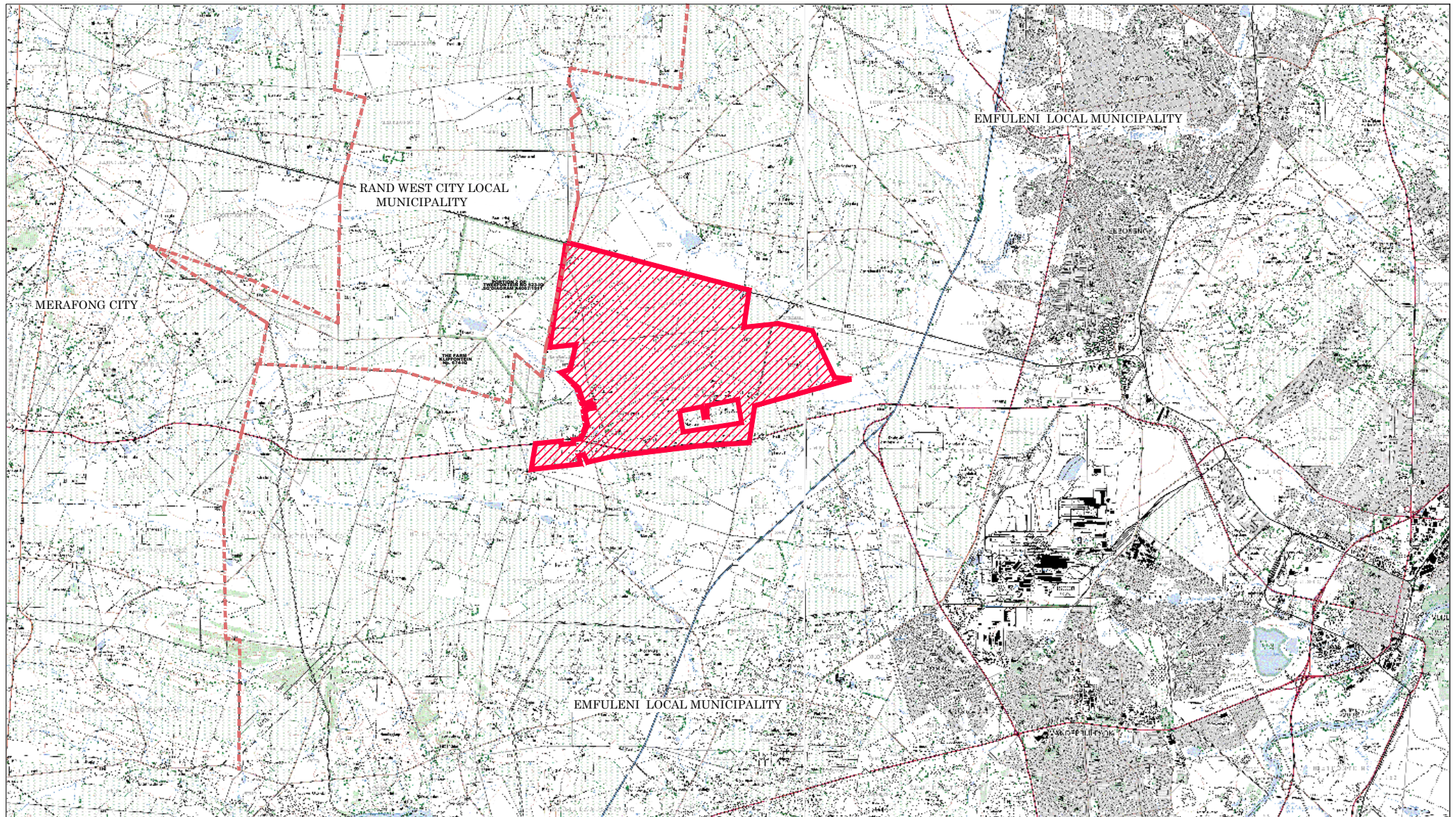
It can therefore be concluded that this application is desirable and that it will be in the interest of South Africa and the Southern African Development Community (SADC).

****END****

ANNEXURE A

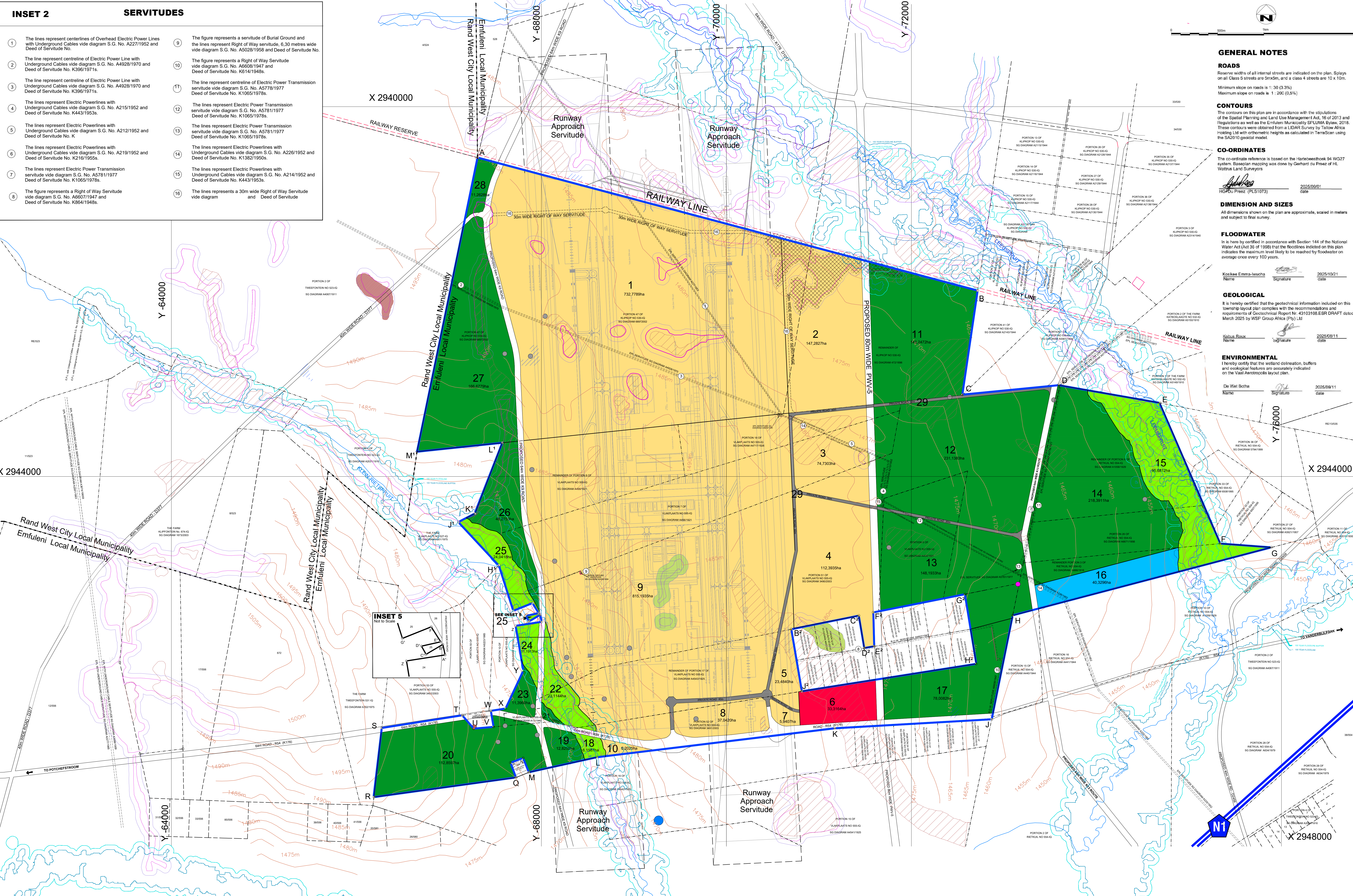
LOCALITY PLAN

VAAL AEROTROPOLIS TOWNSHIP

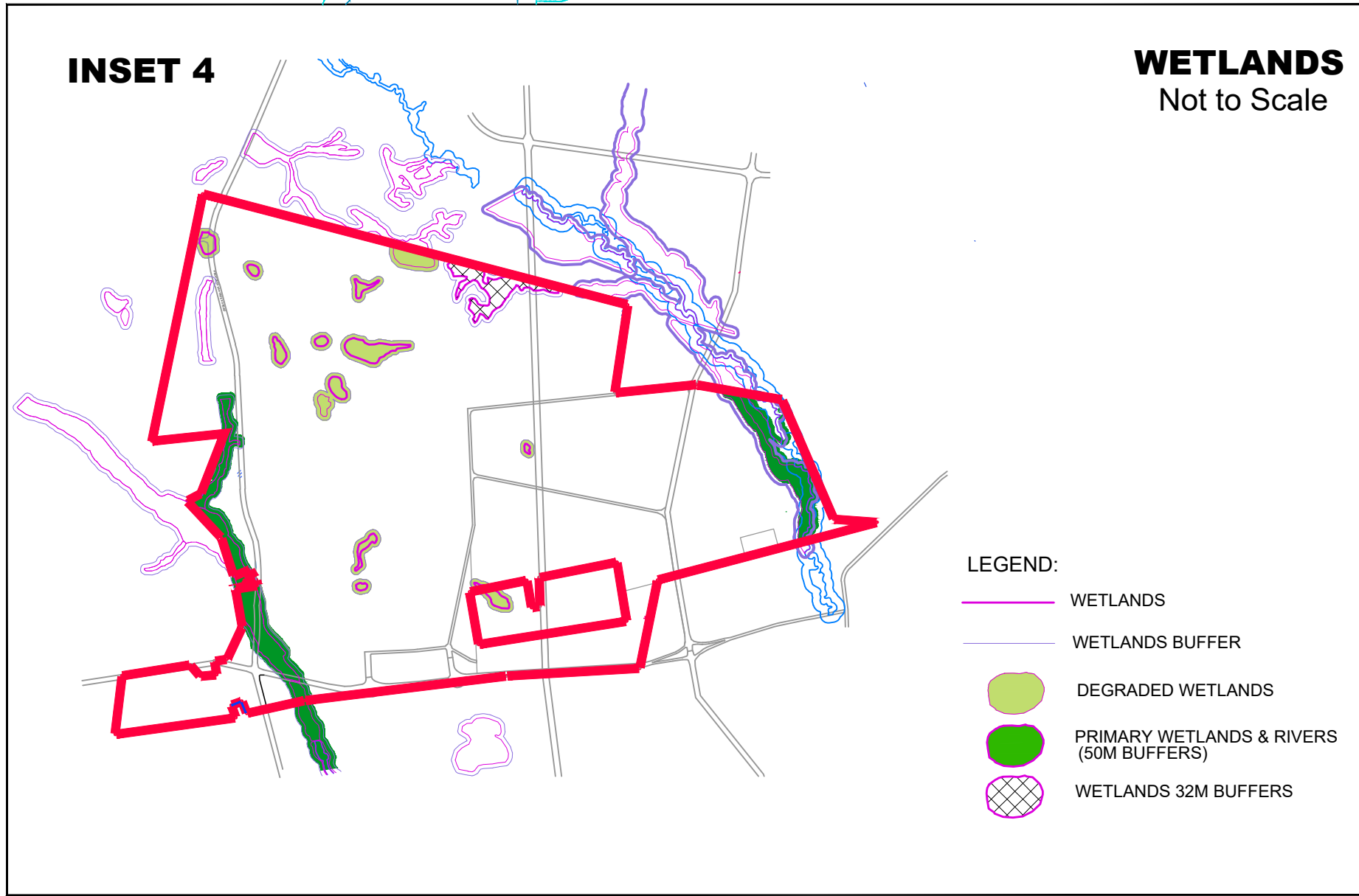
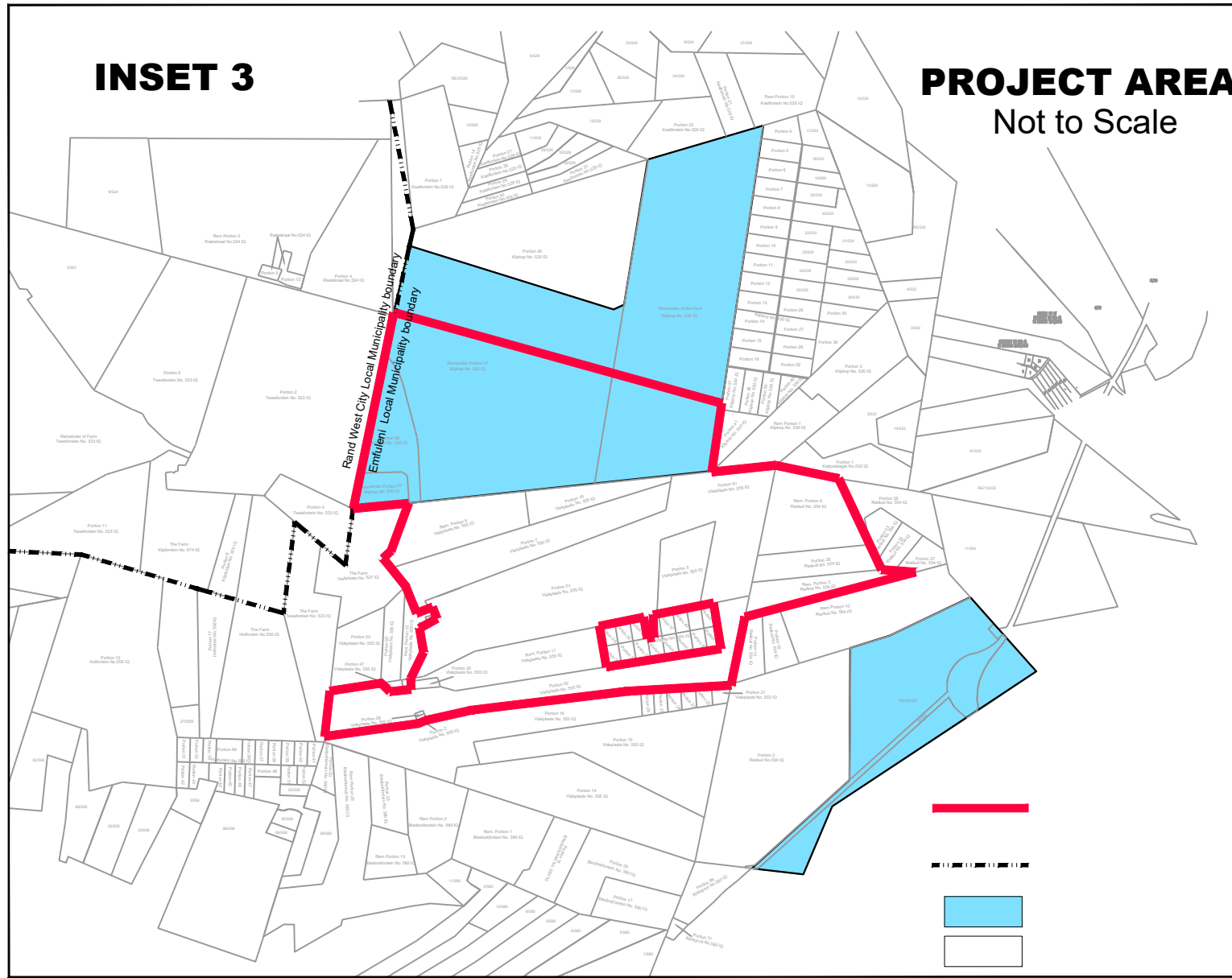


ANNEXURE B

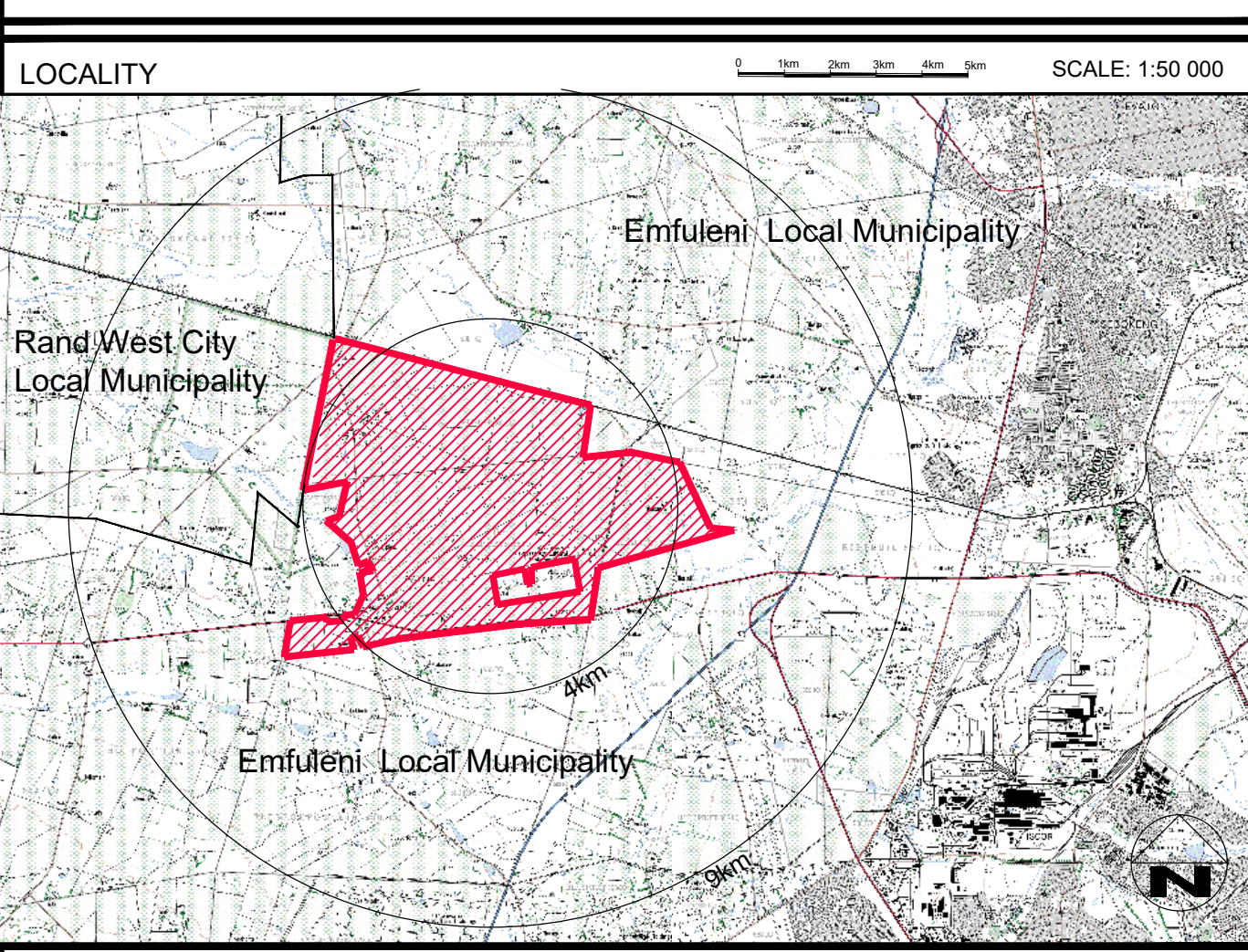
INSET 2	SERVITUDES
1	The lines represent centerlines of Overhead Electric Power Lines with Underground Cables vide diagram S.G. No. A227/1952 and Deed of Servitude No.
2	The line represent centreline of Electric Power Line with Underground Cables vide diagram S.G. No. A4928/1970 and Deed of Servitude No. K396/1971s.
3	The line represent centreline of Electric Power Line with Underground Cables vide diagram S.G. No. A219/1952 and Deed of Servitude No. K443/1953s.
4	The lines represent Electric Powerlines with Underground Cables vide diagram S.G. No. A219/1952 and Deed of Servitude No. K219/1955s.
5	The lines represent Electric Powerlines with Underground Cables vide diagram S.G. No. A219/1952 and Deed of Servitude No. K219/1955s.
6	The lines represent Electric Powerlines with Underground Cables vide diagram S.G. No. A219/1952 and Deed of Servitude No. K219/1955s.
7	The lines represent Electric Powerlines with Underground Cables vide diagram S.G. No. A219/1952 and Deed of Servitude No. K219/1955s.
8	The figure represents a Right of Way Servitude vide diagram S.G. No. A6607/1947 and Deed of Servitude No. K864/1948s.
9	The figure represents a servitude of Burial Ground and the lines represent Right of Way servitude, 6,30 metres wide vide diagram S.G. No. A5028/1958 and Deed of Servitude No.
10	The figure represents a Right of Way Servitude vide diagram S.G. No. A6608/1947 and Deed of Servitude No. K614/1948s.
11	The line represent centreline of Electric Power Transmission servitude vide diagram S.G. No. A5781/1977 Deed of Servitude No. K1065/1978s.
12	The lines represent Electric Power Transmission servitude vide diagram S.G. No. A5781/1977 Deed of Servitude No. K1065/1978s.
13	The lines represent Electric Power Transmission servitude vide diagram S.G. No. A5781/1977 Deed of Servitude No. K1065/1978s.
14	The lines represent Electric Powerlines with Underground Cables vide diagram S.G. No. A226/1952 and Deed of Servitude No. K1382/1950s.
15	The lines represent Electric Powerlines with Underground Cables vide diagram S.G. No. A214/1952 and Deed of Servitude No. K443/1953s.
16	The lines represent a 30m wide Right of Way Servitude vide diagram and Deed of Servitude



INSET 1	VAAL AEROTROPOLIS TOWNSHIP SITUATED ON THE FOLLOWING FARM PORTIONS:
Property	SG Diagram
Remainder of the Farm Klipkop 530, IQ	472/1896
Portion 47 Klipkop 530 IQ	6897/2002
Remainder of Portion 9 of the Farm Rietkuil 554 IQ	A1058/1929
Portion 26 of the Farm Rietkuil 554 IQ	A6671/1956
Remaining Portion 3 of the Farm Rietkuil 554 IQ	A666/1916
Remainder of Portion 6 of the Farm Viakplaats 555 IQ	A455/1921
Portion 18 of the Farm Viakplaats 555 IQ	A4717/1926
Portion 7 of the Farm Viakplaats 555 IQ	A456/1921
Portion 51 of the Farm Viakplaats 555 IQ	3490/2003
Portion 20 of the Farm Viakplaats 555 IQ	A131/1940
Remaining Portion 17 of the Farm Viakplaats 555 IQ	A4543/1925
Portion 52 of the Farm Viakplaats 555 IQ	3491/2003
Portion 5 of the Farm Viakplaats 555 IQ	A454/1921



PROPOSED TOWNSHIP
VAAL AEROTROPOLIS TOWNSHIP FOR COMPONENT PROPERTY DESCRIPTIONS – SEE INSET 1
Municipality: Emfuleni Local Municipality Land Use Scheme: Emfuleni LUS, 2023 District: Sediberg District



LAND USE TABLE					
ZONING	PROPOSED LAND USE	ERF NUMBERS	No. OF STANDS	AREA OF STANDS STREETS	% OF AREA
AERODROME	AERODROME, BUILDINGS NECESSARY FOR AND IN CONNECTION WITH AN AERODROME, COMMERCIAL, BUSINESS PURPOSES, SHOPS, PLACES OF REFRESHMENT, LIGHT INDUSTRIES, FILLING STATIONS, CONFERENCE FACILITIES, GOVERNMENT AND MUNICIPAL PURPOSES, PARKING AREA / PARKING GARAGE, SPECIAL BUILDINGS, LAND USES (SUBSERVIENT AND RELATED TO THE USES AND ANCILLARY USES WITH CONSENT)	1-5,7-10	9	1954,048tha	55.12
PUBLIC SERVICES AND UTILITIES	COMMUNICATION FACILITIES, POWER STATION / SUB-STATION, RESERVOIR AND BUILDINGS IN CONNECTION THEREWITH, SEWERAGE AND WATER TREATMENT WORKS AND ANCILARY USES WITH CONSENT	16	1	40,3296ha	1.14
BUSINESS 1	BUSINESS PURPOSES, OFFICES, DWELLING UNITS, HOTELS, SHOPS, CONFERENCE FACILITIES, INSTITUTIONS, PLACES OF INSTRUCTION, PLACES OF PUBLIC WORSHIP, PARKING AREA, PARKING GARAGE, PLACES OF REFRESHMENT, PARKING AREA / PUBLIC GARAGE, RESIDENTIAL BUILDINGS, SHOPS, SOCIAL HALLS, SPORT AND RECREATION USES AND FILLING STATIONS AND ANCILARY USES WITH CONSENT	6	1	33,3164ha	0.94
AGRICULTURAL	AGRICULTURAL BUILDINGS, AGRICULTURAL LAND, STAFF ACCOMMODATION, AGRICULTURAL INDUSTRY, WAREHOUSES, LABORATORIES AND USES ANCILARY TO AGRICULTURAL PRODUCTION WITH CONSENT	11-14,17,19-21, 23,25-28	12	1184,5442ha	33.41
PRIVATE OPEN SPACE	AS PER SCHEME INCLUDING GARDENS, PARKS, PUBLIC OPEN SPACE, PUBLIC SPORT AND RECREATION GROUNDS AND BUILDINGS USED IN CONNECTION THEREWITH, CONSERVATION AREA	15,18,22,24,25	5	160,1674ha	4.52
EXISTING AND PROPOSED ROADS	PRIVATE ROAD	29	1	33,9086 ha	0.96
	STREETS			138,5721ha	3.91
TOTAL			29	3544,9064ha	100%

GENERAL NOTES
THE FIGURE: ABCDEFGHIJKLMNOPQRSTUVWXYZA/B/C/D/E/F/G/H/I/J/K/L/M/N/O/P/Q/R/S/T/U/V/W/X/Y/Z/A/A EXCLUDING CYCLOPS/H/B REPRESENTS OUTSIDE BOUNDARY OF THE PROPOSED VAAL AEROTROPOLIS TOWNSHIP, BEING APPROXIMATELY 3544,9064ha IN EXTENT.
LEGEND
OUTSIDE BOUNDARY OF TOWNSHIP
ERF BOUNDARIES
CONTOURS
FARM PORTIONS
1: 100 YEAR FLOODLINE
1: 100 YEAR FLOODLINE WITH BUFFER
RIVER / RIVER STREAMS
50m WETLANDS BUFFER
100m WETLANDS BUFFER
RIVER / RIVER BUFFER
DEGRADED WETLANDS
WETLANDS WITH 32m BUFFERS
GEOTECHNICAL AREAS
FACET II - SEEPAGE
FACET IV - DIGGING BORROWS
HERITAGE AREAS
HERITAGE HIGH POLYGONS
HERITAGE RUNS
BROKEN DOWN FARMSTEAD
HISTORICAL SHED
HERITAGE HIGH POLYGONS
BURIAL GROUND

REVISIONS		
D1.	AMENDED OUTSIDE BOUNDARY.	J. PIENAR 30/04/2025
D2.	ADDED LATEST CONTOUR DETAIL, WETLAND & AQUATICS INFO ADDED LATEST ERF BOUNDARIES, AFFLECTED BY THE LANDS UPDATED FARM PORTIONS AS PER LATEST BASEPLAN INFO.	J. PIENAR 11/09/2025
D3.	ADDED PRIVATE ROADS ON THE SOUTHERN PART OF THE TOWNSHIP. UPDATED LAND USE TABLE.	J. PIENAR 08/10/2025
D4.	ADDED INTERSECTION AND R.O.W. SERV OVER ERF 1 AND 2. REMOVED FARM PORTIONS ON ERF 27 IS PART OF PORTION 47. UPDATED LAND USE TABLE AND FARM PORTION TABLE.	J. PIENAR 10/10/2025
D5.	ADDED NEW TRANSIT ALIGNMENT BETWEEN A - B AND UPDATED LAND USE TABLE.	J. PIENAR 19/11/2025
D6.	AMENDED ERF 16 ERF SIZE AND UPDATED LAND USE TABLE.	J. PIENAR 22/09/2026

CLIENT: Vaal Aerozone Pty (Ltd) and Gauteng Provincial Government	TOWN PLANNER: Jon Busser Pr. PLN : A/994/1997	COPYRIGHT RESERVED
SCALE: 1:15 000 (A0)	DRAWING REF: VAAL AEROTROPOLIS0Lay	
DRAWING STATUS: SUBMITTED		
MUNICIPALITY: EMFULENI LOCAL MUNICIPALITY	Urbans Dynamics 305 RIVERSIDE DRIVE NORTHCLIFF 2193 P.O. BOX 291803 JHEWILLE 2109 CELL : 082 6034 155 E-MAIL : jon@urbansdynamics.co.za	