

JULY 2008

MONAVONI & WESTERN FARMS DEVELOPMENT FRAMEWORK 2020

Compiled on behalf of the
City of Tshwane by:

Maluleke Luthuli and Associates

P.O.Box 291803
MELVILLE
2109

Tel: (011) 482 3666
Fax: (011) 482 9734
www.malulekeluthuli.co.za
Contact: Heinrich Melcher

EXECUTIVE SUMMARY

1. STUDY BRIEF

The City of Tshwane appointed Maluleke Luthuli and Associated to prepare a Multi-Disciplinary Development Framework for the Monavoni/ Mnandi Agricultural Holdings and Western Farms Area located in the Southern Region of Tshwane. The Development Framework has the following strategic objectives:

- To provide a strategic vision for the Study Area emanating from the MSDF and RSDF.
- To address specific developmental issues and challenges facing the Study Area.
- To guide development within the area in a sustainable and responsible manner.
- To provide a basis for guiding the land use management decision making process.

2. CONTEXTUAL SETTING

The Monavoni and Western Farms area (collectively referred to as the Monavoni Region or Study Area) is located within the Southern Region of the City of Tshwane. As depicted on Figure A, the Study Area is situated midway between the Tshwane and Johannesburg, directly northwest of Midrand, and abuts the N1 freeway linking Tshwane and Johannesburg. Most of the Study Area is still rural in nature, comprising farmland and scattered agricultural holdings. Urban development is gradually extending westward into the Study Area from the Centurion area. These developments are steadily filling in the undeveloped land located between Centurion and Midrand, west of the N1 freeway.

3. EXISTING MUNICIPAL SERVICES

Currently, the Monavoni Region is served by 2 waste water treatment plants: the Sutherland Ridge plant, which is a municipal plant serving most of the Study Area, and the Peachtree plant, which is a private plant that serves the Peachtree development.

Both these plant are operating close to capacity. As illustrated on Figure B, most of the Study Area is located above the 1380m² contour, which is the contour level of the Sutherland Ridge plant. However, a watershed that stretches through the centre of the Study Area, only allows the eastern half of the Study Area to drain to the Sutherland Ridge plant. Any development west of this watershed will require an additional waste water treatment plant to be constructed. A number of options are currently being considered: the Alwynkop, Vlakplaas and Schurweberg plants.

MONAVONI & WESTERN FARMS DEVELOPMENT FRAMEWORK 2020

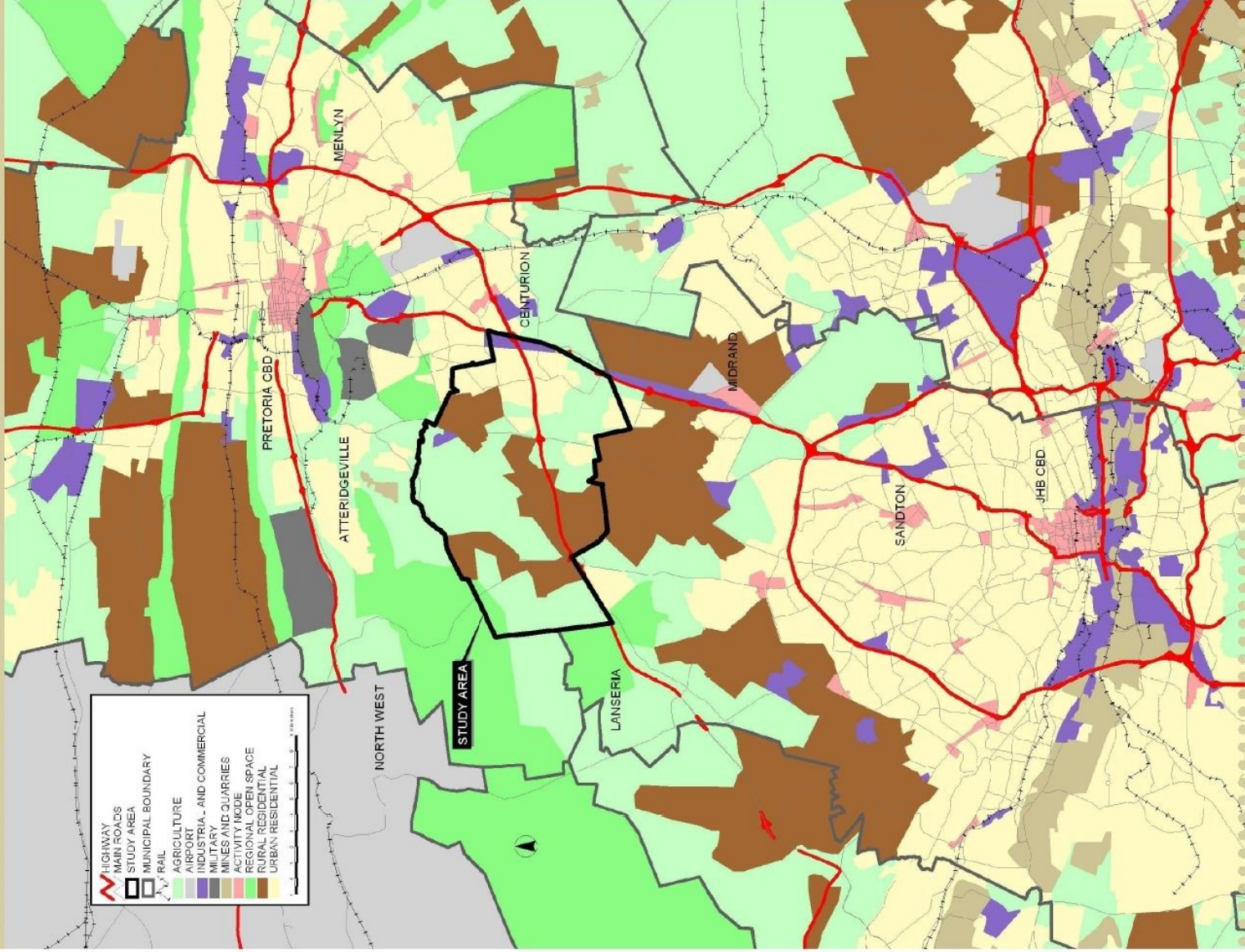
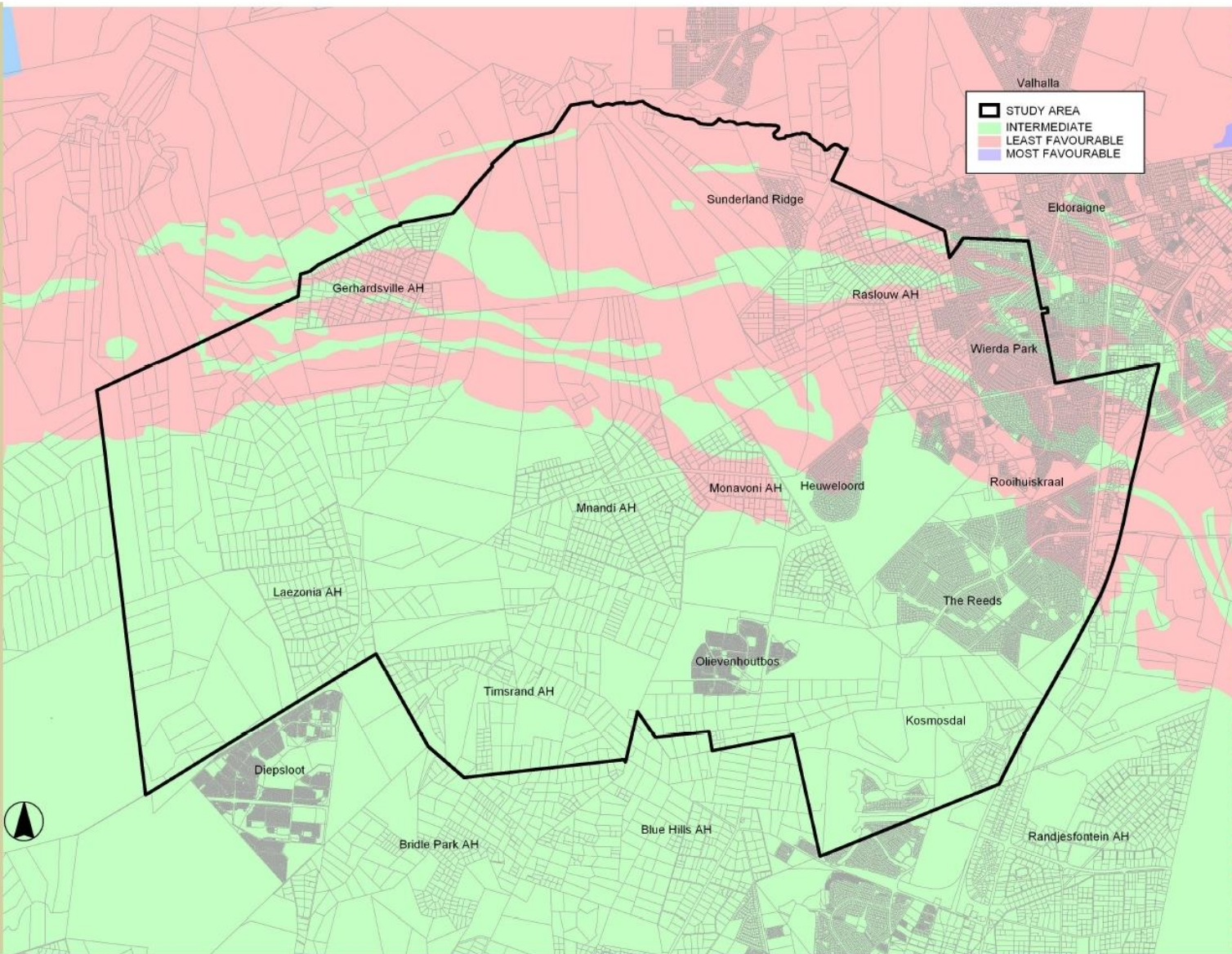


FIGURE A
STUDY AREA LOCALITY



FIGURE B MUNICIPAL SERVICES NETWORK



**FIGURE C
GEOTECHNICAL SUITABILITY**

4. GEOTECHNICAL SUITABILITY

As is depicted on Figure C, the Monavoni Region has geotechnical conditions that range from intermediately favourable in the south of the Study Area to least favourable in the north of the Study Area. The northern band of least favourable geotechnical condition is due to Dolomitic limestone formations (Dolomite). This dolomite belt does not prohibit urban development within the Monavoni Region, but generally restricts urban density to a maximum of 10 units per hectare.

5. POPULATION ESTIMATE

A population growth rate of between 5.9% and 4.6% per annum was used for the period 2010 to 2020. According to the Table below, the population of the Monavoni Region in 2008 was estimated to be approximately 93000 people or 28000 households. Of the 28000 households, approximately 14000 households were estimated to be informal. The Monavoni Region population will grow to an estimated total population of approximately 163000 people and 49000 households by the year 2020. The growth rate for the Monavoni Region is expected to outperform the Provincial growth rate, as the Monavoni Region lies within a high growth area within the Province.

TABLE A: MONAVONI REGION POPULATION 2020

Census Place Name	Census Population (2001)	Population Estimate (2008)	Population Estimate (2010)	Population Estimate (2015)	Population Estimate (2020)
Total Population	53407	92724	103988	130209	163042
Population Growth		39789	11368	26452	32764
% growth		8.2	5.9	4.6	4.6
Households	18834	28098	31511	39457	49407
Formal Households	13077	14569	23394	34046	49407
Informal Households	5757	13529	8117	5411	0

Source: Estimated from Census 2001 and PMM 2005 figures

6. SETTLEMENT EXPANSION

The Land Use Budget calculated the total land required for the periods 2008-2020 and 2020-2040, as depicted by the Table below. According to this Table, the Monavoni Region requires approximately 3100ha of land for urban expansion up to the year 2020, and an additional 4300ha of land for urban expansion up to the year 2040. A development framework was drafted, based on the 2008-2020 timeframe.

This period is considered the lifespan of the development framework. In other words, this document makes proposals for the urban expansion and land use development up to the year 2020. The development framework is presented by Figure D:.

TABLE B: LAND NEEDED FOR URBAN EXPANSION 2020 AND 2040

Area	Period	
	2008-2020	2020-2040
Monavoni and Western Farms Region	3110.7	4263.4

Source: Maluleke Luthuli and Associates, 2008

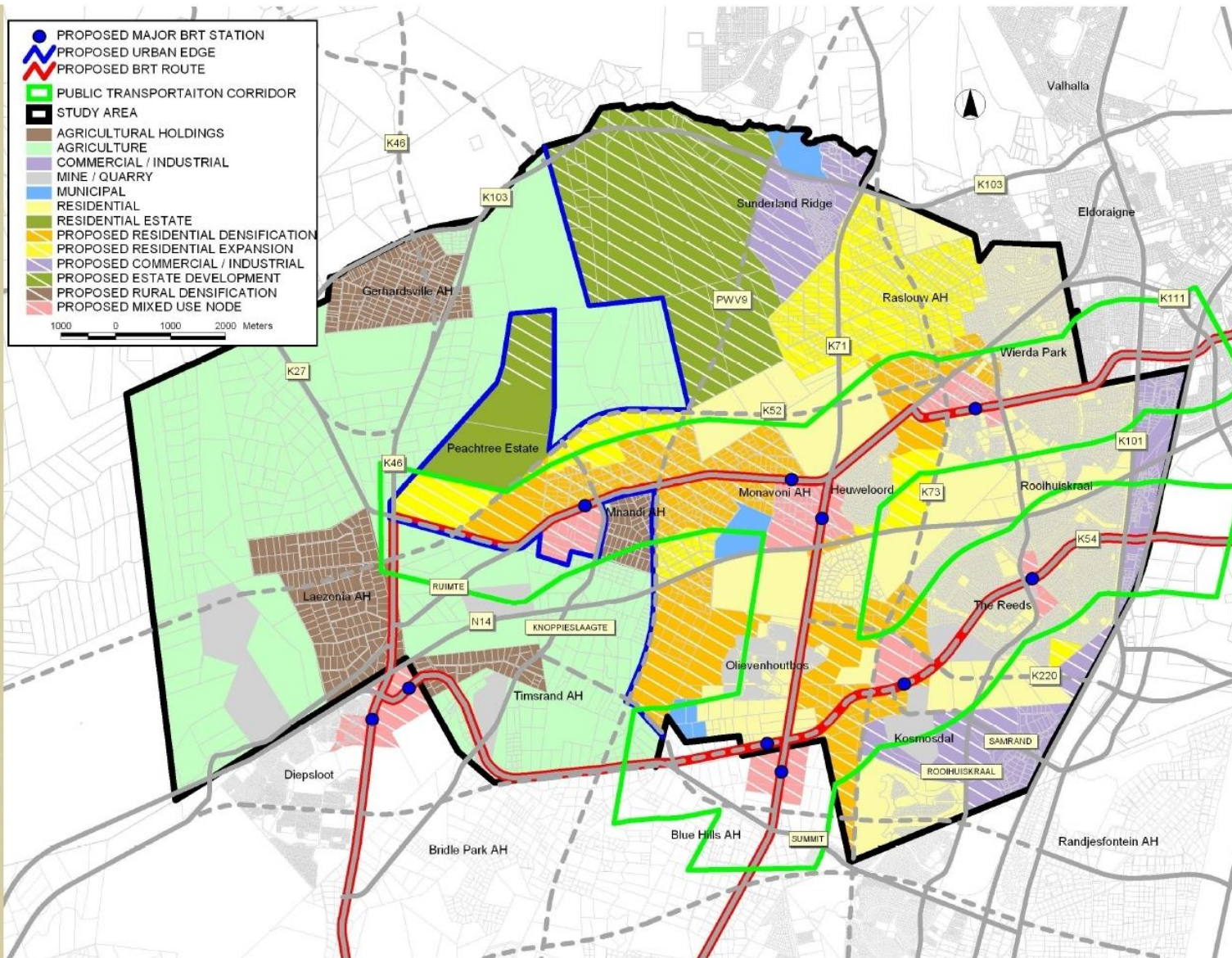
The land allocated for urban expansion on the development framework aimed at directing urban growth to strengthen potential public transportation spines within the Monavoni Region, especially on Ruimte Street. Also, allowing the area between Olievenhoutbosch, Heuweloord and Kosmosdal to develop was considered important to enable urban consolidation and corridor development along the N1 freeway and the potential K54 public transportation spine.

Geotechnical and municipal services constraints also played a central role in determining the urban expansion possibilities within the Monavoni Region. The dolomite belt limits urban development in the northern half of the Study Area. With regard to municipal services constraints, a watershed extends through the centre of the Monavoni Region. This watershed is currently the western boundary of the Sutherland Ridge Waste Water Treatment Plant drainage area. It was necessary to first fill in the unurbanised areas east of this watershed, before allowing urban development to extent past this municipal services boundary.

7. TRANSPORTATION DEVELOPMENT

An extensive freeway and distributor road network is planned for the Monavoni Region, characterized by strong north-south and east-west linkages. Although many of the roads within the Monavoni Region are in place, there remain roads to be developed that will improve the accessibility within the Monavoni Region, especially with regard to east-west movements.

Roads, that are necessary to unlock the development potential of the Monavoni Region up to the year 2020, as depicted on Figure D, are as follows:



**FIGURE 17
DEVELOPMENT FRAMEWORK**

Freeway construction:

The planned PWV9 freeway traversing the centre of the Study Area is considered a development priority, as this freeway will relieve pressure on the N1 freeway between Tshwane and Johannesburg. However, due to the complex nature of building such a freeway, it may still take a number of years before it becomes a reality.

Distributor road construction:

Two distributor roads in particular are a priority within the Monavoni Region: the K54 and the westward extension of the K220. The construction of the section of this road between The Reeds and where it intersects with Summit Street, directly south of the Timsrand Agricultural Holdings, should be considered a priority. The construction of the planned westward extension of the K220 over the N1 freeway will provide better access to the proposed Kosmosdal mixed-use node

Collector road construction:

Only minor adjustments to the collector road network are required. The first and most important adjustment is to link Ruimte Street to HF Verwoerd Drive directly west of Wierda Park. Secondly, it will be necessary to deviate Ruimte Street west of the Mnandi Agricultural Holding, by aligning it on the southern boundary of the Peachtree Estate and linking it up with the K27. This will allow the proposed BRT route on Ruimte Street to serve an additional future mixed-use node north of the Leazonia Agricultural Holdings.

8. PUBLIC TRANSPORTATION DEVELOPMENT

As depicted on Figure D, it is proposed that Ruimte Street, linked to Hendrik Verwoerd Drive, be developed as a BRT route. This alignment has the necessary road reserve width to accommodate the BRT network. This alignment connects the Study Area to the Gautrain Station at Centurion City and could therefore become a feeder system to the Gautrain Station. A second eastwest aligned BRT route is proposed along Summit Road and the K52. This BRT route will connect Diepsloot and Olievenhoutbosch and has the potential to be extended to the Irene Metrorail Station, thus becoming a feeder route to the Metrorail system. This BRT route is also proposed as part of the Johannesburg BRT network.

To north-south aligned BRT routes are proposed by the Johannesburg Metropolitan Municipality, which can be extended into the Monavoni Region. The first north-south BRT route is aligned along the K46 (William Nicol Drive) and will link Fourways and Diepsloot to the proposed Ruimte Street BRT route. The second north-south BRT route is aligned along the K71 (Main Road/ Voortrekker Road) and will link Sunninghill and Kyalami to the proposed Ruimte Street BRT route. Extending these north-south aligned BRT routes north of Ruimte Street will not be feasible, because the dolomite belt located north of Ruimte Street will not allow the necessary urban densities to support the viable functioning of such a public transportation system.

It is important to note that the BRT network does not necessarily have to be developed in full at once, but can be phased in.

This phasing in of the BRT network can apply to both the routes and well as the infrastructure. With regard to the infrastructure, This phasing in of the BRT network can apply to both the routes and well as the infrastructure. With regard to the infrastructure, the BRT network can, at first, only function as part of the Tshwane SPTN. For example, the proposed Ruimte Street/ HF Verwoerd Drive BRT route can initially operate a Metrobus system, before converting to a BRT system at a later stage.

9. MUNICIPAL SERVICES DEVELOPMENT

A watershed extends trough the centre of the Monavoni Region, which acts as the western boundary of the Sutherland Ridge Waste Water Treatment Plant drainage area, the municipal plant currently serving the Monavoni Region. In other word, it is necessary to first fill in the unurbanised areas east of this watershed, before allowing urban development to extent past this municipal services boundary. Passing this boundary will require the construction of a new waste water treatment plant along the Hennops River. Urbanasition should fill in the unurbanised areas east of this watershed within the next 4 to 5 years, which will then require the new waste water treatment plant to be in place to serve the area west of the watershed.

10. NODAL DEVELOPMENT

Creating a sustainable urban environment involves creating balanced communities in terms of employment opportunities, social amenities and recreation facilities. In other words, it involves supporting residential development with other land use types, such as schools, clinics, retail facilities, office development and public parks.

The Development Framework of the Monavoni Region uses a 3-tier hierarchy of mixed-use nodes to delineate and contain mixed-use development within the Study Area. A metropolitan mixed-use node occupies the first place in the nodal hierarchy, followed by a regional mixed-use and a district mixed-use node, which occupy second and third place in the nodal hierarchy respectively. The metropolitan mixed-use node serving the Study Area is represented by the Centurion CBDs. The regional and district mixed-use nodes are delineated and are illustrated on Figure D.

The mixed-use nodes aim to serve local neighbourhoods and are therefore centrally located within the suburbs they serve. These nodes are also located on the Bus Rapid Transit (BRT) routes proposed for the Monavoni Region, ensuring good access to these nodes. The composition of each mixed-use node within the nodal hierarchy must take into account certain key variable, such as its intended function of the node; the size of the population its serves and its geographical location. For example, a higher order mixed-use node will contain higher-order functions, such as a hospital and police station. Lower-order mixed-use nodes will contain uses that are required on a neighbourhood level, such as a clinics and library.

To ensure the viability of future business activities within the proposed mixed-use nodes, it is important to (a) link the business areas proposed to the Land Use Budget to the mixed-use nodes, and (b) develop a retail hierarchy to ensure the orderly and logical development of retail facilities within the Monavoni Region. The Table above provides a list of the mixed-use nodes proposed for the Study Area, as well as the retail and office space that can be support within these nodes.

TABLE C: BUSINESS CENTRE SIZE AND COMPOSITION

Node	Node Classification	Retail Centre Classification	Allocation 2008-2020	
			ha	m ²
Centurion CBD (leakage)	Metropolitan		19.5	275523
Retail (10% of total)			8.5	34132
Private Office			11.0	241391
Monavoni	Regional		87.8	1239852
Retail (45% of total)		Super-Regional	38.4	153595
Private Office			49.4	1086257
Celtisdal	District		19.5	275523
Retail (10% of total)		Small Regional	8.5	34132
Private Office			11.0	241391
Kosmosdal	District		39.0	551045
Retail (20% of total)		Regional	17.1	68264
Private Office			21.9	482781
Mnandi	District		19.5	275523
Retail (10% of total)		Small Regional	8.5	34132
Private Office			11.0	241391
Rooihuiskraal	District		9.8	137761
Retail (5% of total)		Community	4.3	17066
Private Office			5.5	120695
TOTAL			195.1	2755227
Retail			85.3	341322
Private Office			109.7	2413906

Source: Maluleke Luthuli and Associates, 2008

10. COMMUNITY FACILITY DEVELOPMENT

The Monavoni Region has a poorly developed community infrastructure network, lacking the most basic community facilities such as schools and clinics. One of the reasons for this is the fact that much of the Study Area's small holdings are being converted into cluster housing development. Individually, these cluster developments do not reach the thresholds for providing community facilities. However, collectively, these cluster developments are developing large numbers of housing units, without any of these cluster developments taking responsibility for providing stands for community facilities, such as schools.

To address the above-mentioned situation, it is proposed that the developers of cluster housing be required to provide contributions for the purchasing of stands for community facilities, much in the same way that developers make bulk services contribution. These funds will have to be ring-fenced and used by the municipality to purchase land (small holdings) for the development of community facilities.

11. AFFORDABLE HOUSING DEVELOPMENT

The challenge is to go beyond the simple provision of houses and build communities and create conditions that promote sustainability. Central to sustainability is the issue of location, which involves building houses on well-located land that is close to job opportunities and the necessary social amenities. It is also important to point out that no single approach would full address the affordable housing backlog within Gauteng or the Monavoni Region. A number of planning approaches (new town development, inclusionary housing, etc.) are necessary.

Olievenhoutbosch is the only large-scale affordable housing development within the Monavoni Region. Although this development has provided a number of affordable housing units within the Study Area, the available land surrounding Olivenhoutbosch is steadily running out, requiring additional land to be identified before the year 2020. There are two potential sites for the location of affordable housing units after Olivenhoutbosch has been fully developed. The first site is located directly west of Olivenhoutbosch and will represent the westward expansion of Olivenhoutbosch up to the planned PWV9 freeway. The primary advantage of this site is that contains large land parcels, which usually facilitates the development of large housing projects. The second potential site is located southwest of the Monavoni Agricultural Holdings (south of Ruimte Street). This site will have good access to the BRT system proposed on Ruimte Street, but because this area consists of agricultural holdings, could potentially price the land to high for affordable housing development.

In addition, both identified sites are located west of the watershed that acts as the western boundary of the Sutherland Ridge Waste Water Treatment Plant drainage area. To services any of the potential sites identified for the future expansion of Olivenhoutbosch will require the construction of a new waste water treatment plant along the Hennops River. It was proposed in this report that such a plant be developed within the next 4 to 5 years, which should coincide with the time that Olivenhoutbosch starts running out of land for affordable housing development.

12. LAND USE MANAGEMENT ZONES

The Land Use Management System aims to implement the development framework proposals through applications for land use change, such as township establishment applications. The Land Use Management System comprises the following mutual supporting elements:

- ***Demarcated zones***: The Study Area was divided into a number of Land Use Management zones. These zones aim to promote the development of a specific land use character (as defined in the development framework) through the application of land use mix and density.

- ***Land use matrix***: The Land Use Management zones are linked to a matrix. The matrix defines the land use mix and density to be allowed within each demarcated zone.

The abovementioned Land Use Management Zones are demarcated on Figure E and the proposed land use matrix is set out in the Table below. It is important to note that the land use zones presented above do not overwrite the relevant Town Planning Scheme, but only intended to supplement it.

- ZONE 1 MEDIUM DENSITY RESIDENTIAL ZONE
- ZONE 2 LOW DENSITY RESIDENTIAL ZONE
- ZONE 3 RESIDENTIAL ESTATE
- ZONE 4A REGIONAL MIXED-USE NODE CORE
- ZONE 4B REGIONAL MIXED-USE NODE PERIPHERY
- ZONE 5B DISTRICT MIXED-USE NODE PERIPHERY
- ZONE 6 COMMERCIAL ZONE
- ZONE 7 INDUSTRIAL ZONE
- ZONE 8 AGRICULTURAL HOLDING ZONE
- ZONE 9 AGRICULTURAL ZONE

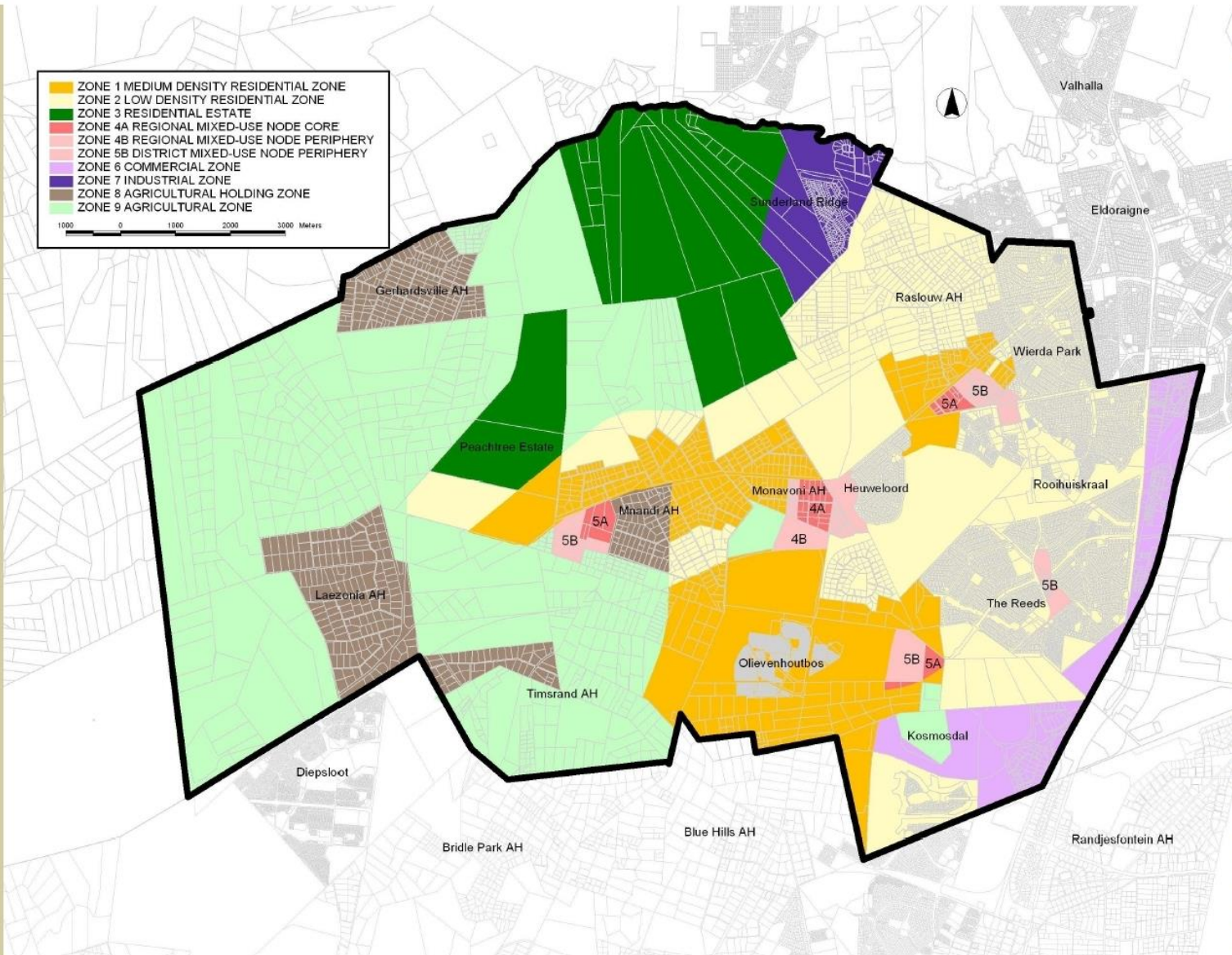
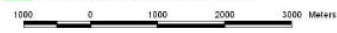


FIGURE 20
LAND USE MANAGEMENT ZONES

TABLE D: LAND USE MANAGEMENT SCHEDULE

Broad Land Use Category	Land Use Category	Zone 1 Medium-density residential zone	Zone 2 Low-density residential zone	Zone 3 Residential Estate zone	Zone 4A Regional mixed-use node core	Zone 4B Regional mixed-use node periphery	Zone 5A District mixed-use node core	Zone 5B District mixed-use node periphery	Zone 6 Commercial zone	Zone 7 Industrial zone	Zone 8 Agricultural holding zone	Zone 9 Agricultural zone
Residential	Very low-density			•							•	•
	Low-density		•									
	Medium-density	•	•									
	High-density	•			•	•	•	•				
	Accommodation	•			•	•	•	•				
Community	Educational	•	•	•		•		•			•	•
	Medical				•	•	•	•				
	Religious	•	•	•							•	•
	Social			•		•		•			•	•
	Cemetery											•
Business	Retail				•	•	•	•				
	Office				•	•	•	•	•			
	Entertainment				•	•	•	•				
	Motor trade					•		•	•			
	Micro enterprise	▲									▲	▲
Institutional	Municipal					•		•	•	•		
	Government					•		•	•	•		
Industrial	Light								•	•		
	Heavy									•		
	Commercial								•	•		
	Mining											►
Open space	Active	•	•	•		•		•			•	•
	Passive	•	•	•	•	•	•	•	•	•	•	•
Agriculture	Agriculture			•							•	•
Minimum FAR		n/a	n/a	n/a	1.8 (3 storeys)	1.2 (2 storeys)	0.8 (2 storeys)	n/a	n/a	n/a	n/a	n/a
Maximum FAR		n/a	n/a	n/a	2.4	1.8	1.2	0.8	0.8	0.8	n/a	n/a
Maximum Coverage		n/a	n/a	n/a	60%	60%	40%	40%	40%	40%	n/a	n/a
Maximum Height		4 storeys	2 storeys	2 storeys	4 storeys	3 storeys	3 storeys	2 storeys	2 storeys	2 storeys	►	►
Minimum Residential Density		25 u/ha	10 u/ha	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Maximum Residential Density		160 u/ha	25 u/ha	10 u/ha	n/a	n/a	n/a	n/a	n/a	n/a	►	►

Source: Maluleke Luthuli and Associates, 2008

▲ Subject to relevant policy document

► Subject to relevant legislation and Rural Development Strategy

Zones 1, 2 and 3 proposed residential densities subject to geotechnical investigation

13. DENSITY BONUS PROGRAMME

A Density Bonus is a planning approach widely used internationally to promote certain land use objectives within a given part of a city, which would not otherwise occur within such a part of the city. Basically, this approach provides additional density within such an area, over and above the maximum density that would be provided by the zoning ordinance, in exchange for implementing specific land use objectives, as defined in the Density Bonus Programme.

TABLE E: DENSITY BONUS PROGRAMME

Category	Definition	Regional Mixed-Use Node		District Mixed-Use Node	
		Zone 5A Regional mixed-use nodal core	Zone 5B Regional mixed-use node periphery	Zone 6A District mixed-use nodal core	Zone 6B District mixed-use nodal periphery
Middle income dwelling units	Dwelling units with a unit floor area not exceeding 80m ² .	15% added to floor area if 10% of floor area is dedicated to medium-income units, with a 1.5% floor area increase for every percentage increase in floor area dedicated to medium-income dwelling units above 10% and;			
Low income dwelling units	Dwelling units with a unit floor area not exceeding 60m ² .	20% added to floor area if 10% of floor area is dedicated to low income units, with a 2.0% floor area increase for every percentage increase in floor area dedicated to low-income dwelling units above 10% and;			
Very-low income dwelling units	Dwelling units qualifying for and accessing the Housing Subsidy and Restructuring Grant within a Restructuring Zone. Zones 1A, 1B, 2A and 2B are considered Restructuring Zones.	25% added to floor area if 10% of floor area is dedicated to very low income units, with a 2.5% floor area increase for every percentage increase in floor area dedicated to very low-income dwelling units above 10% and;			
Community facilities	Including a crèche, primary school, secondary school, tertiary education institution, clinic, day-hospital, hospital, community hall, library, post office, police station or emergency service centre all open to the general public for a minimum period of 15 years.	10% added to floor area if 5% of floor area is dedicated to social facilities, with a 2% density increase for every percentage increase in floor area dedicated to social facilities above 5% and;			
Pedestrian facilities	Including a pedestrian thoroughfare on the property, pedestrian mall on the property, town square on the property or a minimum 2m street-front sidewalk on the property all accessible to the general public for the life-span of the density bonus	0.5m ² added to floor area for every 1m ² dedicated to pedestrian facilities and;	0.5m ² added to floor area for every 2m ² dedicated to pedestrian facilities and;	0.5m ² added to floor area for every 2m ² dedicated to pedestrian facilities and;	0.5m ² added to floor area for every 3m ² dedicated to pedestrian facilities and;
Vehicle access	Use of a non-public transport route vehicle entrance, shared vehicle access, service road access or park and ride facility for the life-span of the density bonus	10% added to building floor area for a non-public transport route vehicle entrance or a shared vehicle access or a service road access and 2m ² added to floor area for every 1m ² dedicated to a park and ride facility to a;			
Maximum FAR of:		5.4	3.6	2.4	1.6
Maximum Coverage of:		60%	60%	40%	40%
Maximum Height of:		9 storeys	6 storeys	6 storeys	4 storeys
Parking reduction		1% parking reduction for every 0.1 FAR earned using density bonus			
Maximum parking reduction:		12%	4%	4%	3%

Source: Maluleke Luthuli and Associates, 2008

In the Monavoni Region, the goal of the proposed Density Bonus Programme is to promote the development of a land use structure along the proposed BRT routes that will ensure the optimal functioning of the BRT system. This includes:

- Increasing densities close to public transport stations
- Creating a land use mix and discouraging the development of single-uses building, such office blocks
- Maximizing pedestrian accessibility to public transport stations

Compliance with the Density Bonus Programme can earn developers additional density (FAR) within certain Land Use Management Zones, over and above that which is proposed in the Land Use Management Schedule. The Table above provides a matrix for the calculation of Density Bonuses. The Density Bonuses earned for a property must be added together, not exceeding the maximum allowable FAR under the Density Bonus Programme (as set out in the Table above). The Density Bonus Program also provides an additional parking reduction incentive. The parking reductions are automatically earned when earning density bonuses, thus not requiring specific conditions to be met to earn such parking reductions.